

# FULL LINE CONDENSED CATALOG



\$4.00

**FAIRCHILD**

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**FAIRCHILD**

464 Ellis Street, Mountain View, California 94042

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Manufactured under one of the following U.S. Patents: 2981877, 3015048, 3064167, 3108359, 3117260; other patents pending.



# INTRODUCTION

This full line condensed catalog is quick reference source on all Fairchild semiconductor products. It contains three basic types of information — numerical product listing, short-form data and general reference material — organized into the following sections:

## *Section 1 — Product Index*

Numerical index listing device types, general product category, and the catalog page and line item number where the actual short-form data can be found.

Due to the complexity and variety of device numbering systems now used in the semiconductor industry, the product index is organized in a numeric-alpha sequence. Device order is dependent first on the numeric value of the first digit on the left, then on the value of the second digit, then the third et cetera, regardless of the total numeric value of the device number. For example, device number 10000 will precede device number 900. Device number 54107 will follow 5410 and precede device number 5411. Device numbers containing a letter of the alphabet are placed after devices containing no alpha character. For example, the 74H series of device numbers follows the last 7400 series number, 7497.

## *Sections 2 through 11 — Selection Guides*

Diodes, Transistors, Optoelectronics, Charge-Coupled Devices, Hybrids, Linear, Interface, Digital, Memories, Microcomputers are organized into functional selection guides for easy reference. More complete product data is available from Fairchild in data books, application handbooks or notes, and individual data sheets.

## *Section 12 — Aerospace and Defense*

Lists currently qualified Jan QPL products.

## *Section 13 — Logic/Connection Diagrams*

Logic and/or connection diagrams organized by product types in the order shown in the Table of Contents.

## *Section 14 — Ordering Information and Package Outlines*

## *Section 15 — Sales Offices, Representatives and Distributors*





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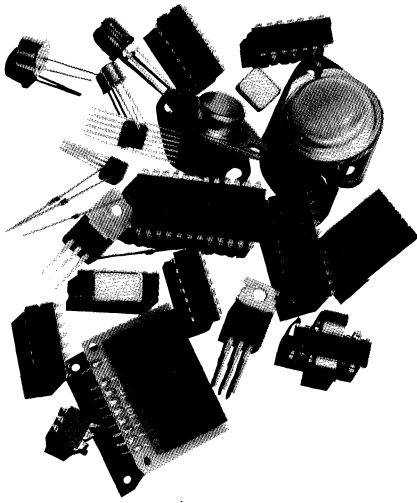
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$\mu$ A706BPC	Linear	7-14/14
$\mu$ A709DC	Linear	7-8/13
$\mu$ A709HC	Linear	7-8/13
$\mu$ A709PC	Linear	7-8/13
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$\mu$ A710DM	Linear	7-12/10
$\mu$ A710FM	Linear	7-12/10
$\mu$ A710HC	Linear	7-12/10
$\mu$ A710HM	Linear	7-12/10
$\mu$ A710PC	Linear	7-12/10
$\mu$ A711DC	Linear	7-12/11
$\mu$ A711DM	Linear	7-12/11
$\mu$ A711DMQB	Linear	7-12/11
$\mu$ A711FM	Linear	7-12/11
$\mu$ A711FMQB	Linear	7-12/11
$\mu$ A711HC	Linear	7-12/11
$\mu$ A711HM	Linear	7-12/11
$\mu$ A711HMQB	Linear	7-12/11
$\mu$ A711PC	Linear	7-12/11
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$\mu$ A7151PC	Interface	8-14/4
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$\mu$ A715HC	Linear	7-8/17
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$\mu$ A720PC	Linear	7-16/2
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$\mu$ A723DMQB	Linear	7-7/5
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$\mu$ A723HC	Linear	7-7/6
$\mu$ A723HCQR	Linear	7-7/6
$\mu$ A723PC	Linear	7-7/6
$\mu$ A723PCQR	Linear	7-7/6
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$\mu$ A725EHC	Linear	7-8/19
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$\mu$ A726HM	Interface	8-17/1
$\mu$ A726HMQB	Interface	8-17/1
$\mu$ A727HC	Linear	7-8/20
$\mu$ A7300PC	Linear	7-16/15
$\mu$ A7302DC	Linear	7-12/16
$\mu$ A7302PC	Linear	7-12/16
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$\mu$ A733DM	Interface	8-15/5
$\mu$ A733DMQB	Interface	8-15/5
$\mu$ A733FM	Interface	8-15/5
$\mu$ A733FMQB	Interface	8-15/5
$\mu$ A733HC	Interface	8-15/5
$\mu$ A733HM	Interface	8-15/5
$\mu$ A733HMQB	Interface	8-15/5
$\mu$ A733PC	Interface	8-15/5
$\mu$ A734DC	Linear	7-12/12
$\mu$ A734DM	Linear	7-12/12
$\mu$ A734HC	Linear	7-12/12
$\mu$ A734HM	Linear	7-12/12
$\mu$ A739DC	Linear	7-16/13
$\mu$ A739PC	Interface	8-15/6
$\mu$ A739PC	Linear	7-16/13
$\mu$ A739PC	Interface	8-15/6
$\mu$ A7390TC	Linear	7-16/19
$\mu$ A7391PC	Linear	7-16/20
$\mu$ A7392DC	Linear	7-16/21
$\mu$ A7392DM	Linear	7-16/21
$\mu$ A7392PC	Linear	7-16/21
$\mu$ A740EHC	Linear	7-8/22
$\mu$ A741DC	Linear	7-8/23
$\mu$ A741HC	Linear	7-8/23
$\mu$ A741PC	Linear	7-8/23
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$\mu$ A741ERC	Linear	7-8/24	$\mu$ A7805UCQR	Linear	7-5/2
$\mu$ A741ETC	Linear	7-8/24	$\mu$ A7806KM	Linear	7-5/6
$\mu$ A742DC	Linear	7-16/18	$\mu$ A7806KC	Linear	7-5/7
$\mu$ A746HC	Linear	7-15/12	$\mu$ A7806UC	Linear	7-5/7
$\mu$ A746PC	Linear	7-15/12	$\mu$ A7808KM	Linear	7-5/8
$\mu$ A747DC	Linear	7-8/25	$\mu$ A7808KC	Linear	7-5/9
$\mu$ A747HC	Linear	7-8/25	$\mu$ A7808UC	Linear	7-5/9
$\mu$ A747PC	Linear	7-8/25	$\mu$ A781PC	Linear	7-15/14
$\mu$ A747PCQR	Linear	7-8/25	$\mu$ A7812KM	Linear	7-5/12
$\mu$ A747EDC	Linear	7-8/26	$\mu$ A7812KC	Linear	7-5/13
$\mu$ A747EHC	Linear	7-8/26	$\mu$ A7812UC	Linear	7-5/13
$\mu$ A748DC	Linear	7-8/27	$\mu$ A7812UCQR	Linear	7-5/13
$\mu$ A748HC	Linear	7-8/27	$\mu$ A7815KM	Linear	7-5/14
$\mu$ A748RC	Linear	7-8/27	$\mu$ A7815KC	Linear	7-5/15
$\mu$ A748TC	Linear	7-8/27	$\mu$ A7815UC	Linear	7-5/15
$\mu$ A749DC	Linear	7-16/14	$\mu$ A7815UCQR	Linear	7-5/15
$\mu$ A749DHC	Linear	7-16/14	$\mu$ A7818KM	Linear	7-5/16
$\mu$ A749DM	Linear	7-16/14	$\mu$ A7818KC	Linear	7-5/17
$\mu$ A749PC	Linear	7-16/14	$\mu$ A7818UC	Linear	7-5/17
$\mu$ A753TC	Linear	7-16/5	$\mu$ A7824KM	Linear	7-5/18
$\mu$ A757DC	Linear	7-16/6	$\mu$ A7824KC	Linear	7-5/19
$\mu$ A757DM	Linear	7-16/6	$\mu$ A7824UC	Linear	7-5/19
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$\mu$ A760DC	Linear	7-12/13	$\mu$ A783P4C	Linear	7-14/15
$\mu$ A760DM	Linear	7-12/13	$\mu$ A787PC	Linear	7-15/15
$\mu$ A760MQB	Linear	7-12/13	$\mu$ A788PC	Linear	7-15/16
$\mu$ A760HC	Linear	7-12/13	$\mu$ A7885KM	Linear	7-5/10
$\mu$ A760HM	Linear	7-12/13	$\mu$ A7885KC	Linear	7-5/11
$\mu$ A760HMQB	Linear	7-12/13	$\mu$ A7885UC	Linear	7-5/11
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$\mu$ A775PC	Linear	7-12/14	$\mu$ A78C08U1C	Linear	7-3/18
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$\mu$ A777HC	Linear	7-10/2	$\mu$ A78C18U1C	Linear	7-4/3
$\mu$ A777TC	Linear	7-10/2	$\mu$ A78C20U1C	Linear	7-4/6
$\mu$ A780PC	Linear	7-15/13	$\mu$ A78C22U1C	Linear	7-4/7
$\mu$ A7805KM	Linear	7-5/1	$\mu$ A78C24U1C	Linear	7-4/10
$\mu$ A7805KC	Linear	7-5/2	$\mu$ A78CBKC	Linear	7-6/10
			$\mu$ A78CBUC	Linear	7-6/10
			$\mu$ A78GKC	Linear	7-7/9
			$\mu$ A78GKM	Linear	7-7/10

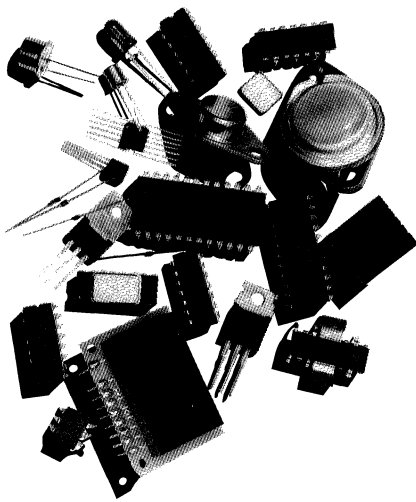
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$\mu$ A78H05KM	Hybrids	6-4/4	$\mu$ A78M24UC	Linear	7-4/9
	Linear	7-6/14	$\mu$ A78MGHM	Linear	7-7/7
$\mu$ A78H12KC	Hybrids	6-4/7	$\mu$ A78MGHC	Linear	7-7/8
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	Linear	7-6/17			
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$\mu$ A78L05AWC	Linear	7-3/2	$\mu$ A7905KM	Linear	7-5/20
$\mu$ A78L09AHC	Linear	7-3/5	$\mu$ A7905KC	Linear	7-5/21
$\mu$ A78L09AWC	Linear	7-3/5	$\mu$ A7905UC	Linear	7-5/21
$\mu$ A78L12AHC	Linear	7-3/6	$\mu$ A7906KM	Linear	7-5/22
$\mu$ A78L12AWC	Linear	7-3/6	$\mu$ A7906KC	Linear	7-5/23
$\mu$ A78L15AHC	Linear	7-3/7	$\mu$ A7906UC	Linear	7-5/23
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$\mu$ A78L18AWC	Linear	7-3/8	$\mu$ A7908UC	Linear	7-6/1
$\mu$ A78L24AHC	Linear	7-3/9	$\mu$ A7912KM	Linear	7-6/2
$\mu$ A78L24AWC	Linear	7-3/9	$\mu$ A7912KC	Linear	7-6/3
$\mu$ A78L26AHC	Linear	7-3/1	$\mu$ A7912UC	Linear	7-6/3
$\mu$ A78L26AWC	Linear	7-3/1	$\mu$ A7915KM	Linear	7-6/4
$\mu$ A78L62AHC	Linear	7-3/3	$\mu$ A7915KC	Linear	7-6/5
$\mu$ A78L62AWC	Linear	7-3/3	$\mu$ A7915UC	Linear	7-6/5
$\mu$ A78L82AHC	Linear	7-3/4	$\mu$ A7918KM	Linear	7-6/6
$\mu$ A78L82AWC	Linear	7-3/4	$\mu$ A7918KC	Linear	7-6/7
$\mu$ A78M05HM	Linear	7-3/10	$\mu$ A7918UC	Linear	7-6/7
$\mu$ A78M05HC	Linear	7-3/11	$\mu$ A791KC	Linear	7-10/3
$\mu$ A78M05UC	Linear	7-3/11	$\mu$ A791P5C	Linear	7-10/3
$\mu$ A78M06HM	Linear	7-3/13	$\mu$ A7924KM	Linear	7-6/8
$\mu$ A78M06HC	Linear	7-3/14	$\mu$ A7924KC	Linear	7-6/9
$\mu$ A78M06UC	Linear	7-3/14	$\mu$ A7924UC	Linear	7-6/9
$\mu$ A78M08HM	Linear	7-3/16	$\mu$ A796HC	Linear	7-15/17
$\mu$ A78M08HC	Linear	7-3/17	$\mu$ A796HM	Linear	7-15/17
$\mu$ A78M08UC	Linear	7-3/17	$\mu$ A796PC	Linear	7-15/17
$\mu$ A78M12HM	Linear	7-3/20	$\mu$ A798HC	Linear	7-10/4
$\mu$ A78M12HC	Linear	7-3/21	$\mu$ A798RC	Linear	7-10/4
$\mu$ A78M12UC	Linear	7-3/21	$\mu$ A798TC	Linear	7-10/4
$\mu$ A78M15HM	Linear	7-3/23	$\mu$ A79GKM	Linear	7-7/16
$\mu$ A78M15HC	Linear	7-3/24	$\mu$ A79GKC	Linear	7-7/17
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$\mu$ A79M05AUC	Linear	7-4/12	ZPD27	Diodes	2-14/14
$\mu$ A79M05HM	Linear	7-4/11	ZPD3	Diodes	2-8/14
$\mu$ A79M06AHC	Linear	7-4/14	ZPD3,3	Diodes	2-8/19
$\mu$ A79M06AUC	Linear	7-4/14	ZPD3,6	Diodes	2-9/7
$\mu$ A79M06HM	Linear	7-4/13	ZPD3,9	Diodes	2-9/14
$\mu$ A79M08AHC	Linear	7-4/16	ZPD30	Diodes	2-14/22
$\mu$ A79M08AUC	Linear	7-4/16	ZPD33	Diodes	2-14/29
$\mu$ A79M08HM	Linear	7-4/15	ZPD4,3	Diodes	2-9/21
$\mu$ A79M12AHC	Linear	7-4/18	ZPD4,7	Diodes	2-9/28
$\mu$ A79M12AUC	Linear	7-4/18	ZPD5,1	Diodes	2-10/4
$\mu$ A79M12HM	Linear	7-4/17	ZPD5,6	Diodes	2-10/11
$\mu$ A79M15AHC	Linear	7-4/20	ZPD6,2	Diodes	2-10/19
$\mu$ A79M15AUC	Linear	7-4/20	ZPD6,8	Diodes	2-10/27
$\mu$ A79M15HM	Linear	7-4/19	ZPD7,5	Diodes	2-11/5
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$\mu$ A79M24AHC	Linear	7-4/24			
$\mu$ A79M24AUC	Linear	7-4/24			
$\mu$ A79M24HM	Linear	7-4/23			
$\mu$ A79MGHC	Linear	7-7/15			
$\mu$ A79MGHM	Linear	7-7/14			
$\mu$ A79MGT2C	Linear	7-7/15			
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# FAIRCHILD DIODES

## DIODES

### COMPUTER DIODES (BY ASCENDING $t_{rr}$ ) GLASS PACKAGE

Item	DEVICE NO.	$t_{rr}$ ns Max	BV V Min	$I_R$ nA Max	@	$V_R$ V	$V_F$ V Max	@	$I_F$ mA	C pF Max	Package No.
1	FD700	0.70	30	50		20	1.1		50	1.0	DO-7
2	1N4376	0.75	20	100		10	1.1		50	1.0	DO-7
3	BAY82	0.75	15	100		12	1.0		20	1.3	DO-7
4	FD777	0.75	15	100		8.0	1.0		20	1.3	DO-7
5	1N5282	2.0	80	100		55	1.3		500	2.5	DO-35
6	1N4153	2.0	75	50		50	0.88		20	4.0	DO-35
7	1N4151	2.0	75	50		50	1.0		50	4.0	DO-35
8	1N4305	2.0	75	100		50	0.85		10	2.0	DO-35
9	BAY71	2.0	50	100		35	1.0		20	2.0	DO-35
10	1N4152	2.0	40	50		30	0.88		20	4.0	DO-35
11	1N4154	2.0	35	100		25	1.0		30	4.0	DO-35
12	1N914	4.0	100	25		20	1.0		10	4.0	DO-35
13	1N914A	4.0	100	25		20	1.0		20	4.0	DO-35
14	1N914B	4.0	100	25		20	1.0		100	4.0	DO-35
15	1N916	4.0	100	25		20	1.0		10	2.0	DO-35
16	1N916A	4.0	100	25		20	1.0		20	2.0	DO-35
17	1N916B	4.0	100	25		20	1.0		30	2.0	DO-35
18	1N4148	4.0	100	25		20	1.0		10	4.0	DO-35
19	1N4149	4.0	100	25		20	1.0		10	2.0	DO-35
20	1N4446	4.0	100	25		20	1.0		20	4.0	DO-35
21	1N4447	4.0	100	25		20	1.0		20	4.0	DO-35
22	1N4448	4.0	100	25		20	1.0		100	2.0	DO-35
23	1N4449	4.0	100	25		20	1.0		30	2.0	DO-35
24	1N3604	4.0	75	50		50	1.0		50	2.0	DO-35
25	1N3600	4.0	75	100		50	1.0		200	2.5	DO-35
26	FDH600	4.0	75	100		50	1.0		200	2.5	DO-35
27	1N3064	4.0	75	100		50	1.0		10	2.0	DO-35
28	1N4150	4.0	75	100		50	1.0		200	2.5	DO-35
29	1N4454	4.0	75	100		50	1.0		10	2.0	DO-35
30	BAX13	4.0	50	200		50	1.0		20	3.0	DO-35
31	BAY74	4.0	50	100		35	1.1		300	3.0	DO-35
32	FDH900	4.0	45	500		40	1.1		100	3.0	DO-35

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# FAIRCHILD DIODES

## DIODES

### COMPUTER DIODES (BY ASCENDING $t_{rr}$ ) (Cont'd)

#### GLASS PACKAGE

Item	DEVICE NO.	$t_{rr}$ ns Max	BV V Min	$I_R$ nA Max	@	$V_R$ V	$V_F$ V Max	@	$I_F$ mA	C pF Max	Package No.
1	FDH666	4.0	40	100		25	1.0		100	3.5	DO-35
2	1N4450	4.0	40	50		30	1.0		200	4.0	DO-35
3	1N4009	4.0	35	100		25	1.0		30	4.0	DO-35
4	1N625	4.0	30	1000		20	1.5		4.0	—	DO-35
5	FDH999	5.0	35	1000		25	1.0		10	5.0	DO-35

### LOW LEAKAGE DIODES (BY DESCENDING BV)

#### GLASS PACKAGE

Item	DEVICE NO.	BV V Min	$I_R$ nA Max	@	$V_R$ V	$V_F$ V Max	@	$I_F$ mA	C pF Max	Package No.
6	1N486B	250	50		225	1.0		100	—	DO-35
7	1N485B	200	25		180	1.0		100	—	DO-35
8	1N459	200	25		175	1.0		3.0	—	DO-35
9	1N459A	200	25		175	1.0		100	—	DO-35
10	FDH300	150	1.0		125	1.0		200	6.0	DO-35
11	1N3595	150	1.0		125	1.0		200	8.0	DO-35
12	FDH333	150	3.0		125	1.05		200	6.0	DO-35
13	1N458A	150	5.0		125	1.0		100	—	DO-35
14	1N484B	150	25		130	1.0		100	—	DO-35
15	1N458	150	25		125	1.0		7.0	6.0	DO-35
16	BAY73	125	5.0		100	1.0		200	8.0	DO-35
17	1N483B	80	25		70	1.0		100	—	DO-35
18	1N457	70	25		60	1.0		20	8.0	DO-35
19	1N457A	70	25		60	1.0		100	—	DO-35
20	1N482B	40	25		36	1.0		100	—	DO-35
21	FJT1100	30	0.001		5.0	1.05		10	1.5	DO-7
22	1N456A	30	25		25	1.0		100	—	DO-35
23	1N456	30	25		25	1.0		40	10	DO-35

## FAIRCHILD DIODES

### DIODES

#### HIGH VOLTAGE SWITCHING DIODES (BY DESCENDING BV) GLASS PACKAGE

Item	DEVICE NO.	BV V Min	I <sub>R</sub> nA Max	@	V <sub>R</sub> V	V <sub>F</sub> V Max	@	I <sub>F</sub> mA	C pF Max	t <sub>rr</sub> ns Max	Package No.
1	1N661	240	10000		200	1.0		6.0	—	300	DO-35
2	FDH400	200	100		150	1.0		200	2.0	50	DO-35
3	1N3070	200	100		175	1.0		100	5.0	50	DO-35
4	1N643	200	1000		100	1.0		10	3.0	300	DO-35
5	1N842	200	100		160	1.0		150	—	300	DO-35
6	1N629	200	1000		175	1.5		4.0	—	1000	DO-35
7	FDH444	150	50		100	1.1		200	2.5	60	DO-35
8	1N628	150	1000		125	1.5		4.0	—	1000	DO-35
9	BAY72	125	100		100	1.0		100	5.0	50	DO-35
10	1N658	120	50		50	1.0		100	—	300	DO-35
11	1N660	120	5000		100	1.0		6.0	—	300	DO-35
12	1N627	100	1000		75	1.5		4.0	—	1000	DO-35
13	1N626	50	1000		35	1.5		4.0	—	1000	DO-35

#### GENERAL PURPOSE DIODES (BY DESCENDING BV) GLASS PACKAGE

Item	DEVICE NO.	BV V Min	I <sub>R</sub> nA Max	@	V <sub>R</sub> V	V <sub>F</sub> V Max	@	I <sub>F</sub> mA	C pF Max	t <sub>rr</sub> ns Max	Package No.
14	1N661	240	10000		200	1.0		6.0	—	300	DO-35
15	1S923	200	100		200	1.2		200	—	—	DO-35
16	1N463A	200	500		175	1.0		100	—	—	DO-35
17	BA129	200	10		180	1.0		50	6.0	—	DO-35
18	1S922	150	100		150	1.2		200	—	—	DO-35
19	BAX16	150	100		150	1.0		1.0	10	120	DO-35
20	1N660	120	5000		100	1.0		6.0	—	—	DO-35
21	1S921	100	100		100	1.2		200	—	—	DO-35
22	BA219	100	200		50	0.85		10	5.0	—	DO-35
23	BA128	75	100		50	1.0		50	5.0	—	DO-35
24	1N462A	70	500		60	1.0		100	—	—	DO-35
25	1N659	60	5000		50	1.0		6.0	—	—	DO-35
26	1S920	50	100		50	1.2		200	—	—	DO-35



## FAIRCHILD DIODES

### DIODES

#### GENERAL PURPOSE DIODES (BY DESCENDING BV) (Cont'd) GLASS PACKAGE

Item	DEVICE NO.	BV V Min	I <sub>R</sub> nA Max	@	V <sub>R</sub> V	V <sub>F</sub> V Max	@	I <sub>F</sub> mA	C pF Max	t <sub>rr</sub> ns Max	Package No.
1	BA218	50	50		25	1.0		10	5.0	—	DO-35
2	1S44	50	50		10	1.15		10	6.0	—	DO-35
3	FDH900	45	500		40	1.1		100	3.0	4.0	DO-35
4	FDH999	35	1000		25	1.0		10	5.0	5.0	DO-35
5	1N461A	30	500		25	1.0		100	10	—	DO-35
6	BA217	30	50		10	1.0		10	5.0	—	DO-35
7	BA130	30	100		25	1.0		10	2.0	—	DO-35
8	BA164	20	2000		15	1.0		10	—	—	DO-35
9	BA216	10	1500		10	1.0		15	—	—	DO-35

#### MILITARY QUALIFIED SMALL SIGNAL DIODES (NUMERIC LISTING) GLASS PACKAGE

Item	DEVICE NO.	BV V Min	I <sub>R</sub> nA Max	@	V <sub>R</sub> V	V <sub>F</sub> V Max	@	I <sub>F</sub> mA	C pF Max	t <sub>rr</sub> ns Max	Package No.
10	1N457JAN	70	25		60	1.0		20	6.0	—	DO-7
11	1N458JAN	150	25		125	1.0		7.0	6.0	—	DO-7
12	1N459JAN	200	25		175	1.0		3.0	6.0	—	DO-7
13	1N483BJAN	80	25		70	1.0		100	—	—	DO-7
14	1N483BJANTX	80	25		70	1.0		100	—	—	DO-7
15	1N485BJAN	200	25		180	1.0		100	—	—	DO-7
16	1N485BJANTX	200	25		180	1.0		100	—	—	DO-7
17	1N486BJAN	250	25		225	1.0		100	—	—	DO-7
18	1N486BJANTX	250	25		225	1.0		100	—	—	DO-7
19	1N914JAN	100	25		20	1.0		10	4.0	4.0	DO-35
20	1N914JANTX	100	25		20	1.0		10	4.0	4.0	DO-35
21	1N3064JAN	75	100		50	1.0		10	2.0	4.0	DO-7
22	1N3064JANTX	75	100		50	1.0		10	2.0	4.0	DO-7
23	1N3595JAN	150	1.0		125	1.0		200	8.0	3000	DO-7
24	1N3595JANTX	150	1.0		125	1.0		200	8.0	3000	DO-7
25	1N3595JANTXV	150	1.0		125	1.0		200	8.0	3000	DO-7
26	1N3600JAN	75	100		50	1.0		200	2.5	4.0	DO-7
27	1N3600JANTX	75	100		50	1.0		200	2.5	4.0	DO-7

## FAIRCHILD DIODES

### DIODES

#### MILITARY QUALIFIED SMALL SIGNAL DIODES (NUMERIC LISTING) (Cont'd) GLASS PACKAGE

Item	DEVICE NO.	BV V Min	I <sub>R</sub> nA Max	@	V <sub>R</sub> V	V <sub>F</sub> V Max	@	I <sub>F</sub> mA	C pF Max	t <sub>rr</sub> ns Max	Package No.
1	1N3600JANTXV	75	100		50	1.0		200	2.5	4.0	DO-7
2	1N4148JAN	100	25		20	1.0		10	4.0	4.0	DO-35
3	1N4148JANTX	100	25		20	1.0		10	4.0	4.0	DO-35
4	1N4148JANTXV	100	25		20	1.0		10	4.0	4.0	DO-35
5	1N4148-1JAN	100	25		20	1.0		10	4.0	4.0	DO-35
6	1N4148-1JANTX	100	25		20	1.0		10	4.0	4.0	DO-35
7	1N4148-1JANTXV	100	25		20	1.0		10	4.0	4.0	DO-35
8	1N4150JAN	75	100		50	1.0		200	2.5	4.0	DO-35
9	1N4150JANTX	75	100		50	1.0		200	2.5	4.0	DO-35
10	1N4150JANTXV	75	100		50	1.0		200	2.5	4.0	DO-35
11	1N4150-1JAN	75	100		50	1.0		200	2.5	4.0	DO-35
12	1N4150-1JANTX	75	100		50	1.0		200	2.5	4.0	DO-35
13	1N4150-1JANTXV	75	100		50	1.0		200	2.5	4.0	DO-35
14	1N4376JAN	20	100		10	1.1		50	1.0	0.75	DO-7
15	1N4376JANTX	20	100		10	1.1		50	1.0	0.75	DO-7
16	1N4454JAN	75	100		50	1.0		10	2.0	4.0	DO-35
17	1N4454JANTX	75	100		50	1.0		10	2.0	4.0	DO-35
18	1N4454JANTXV	75	100		50	1.0		10	2.0	4.0	DO-35
19	1N4454-1JAN	75	100		50	1.0		10	2.0	4.0	DO-35
20	1N4454-1JANTX	75	100		50	1.0		10	2.0	4.0	DO-35
21	1N4454-1JANTXV	75	100		50	1.0		10	2.0	4.0	DO-35

#### HOT CARRIER DIODE

#### GLASS PACKAGE

Item	DEVICE NO.	BV V Min	I <sub>R</sub> nA Max	@	V <sub>R</sub> V	V <sub>F</sub> V Max	@	I <sub>F</sub> mA	C pF Max	NF dB Max	Package No.
22	FH1100	5.0	50		1.0	0.55		10	1.0	10	DO-7

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# FAIRCHILD DIODES

## DIODES

### VOLTAGE VARIABLE CAPACITOR DIODES GLASS PACKAGE

Item	DEVICE NO.	BV V Min	I <sub>R</sub> nA Max	@ V <sub>R</sub> V	C pF Max	Figure of Merit (Q) Min	C1/C4 V <sub>R1</sub> = 0.1V V <sub>R4</sub> = 4.0V	C3/C20 V <sub>R3</sub> = 3V V <sub>R20</sub> = 20V	Package No.
1	RF400	35	30	30	10	350	2.0	2.0	DO-35
2	RF401	35	30	30	7.0	350	2.0	2.0	DO-35

### BANDSWITCH DIODES

#### GLASS PACKAGE

Item	DEVICE NO.	BV V Min	I <sub>R</sub> nA Max	@ V <sub>R</sub> V	C pF Max	R <sub>S</sub> Ω Max	V <sub>F</sub> V Max	@ I <sub>F</sub> mA	Package No.
3	BA243	20	100	15	2.0	1.0	1.0	100	DO-35
4	BA244	20	100	15	2.0	0.5	1.0	100	DO-35

### ZENER DIODES (BY ASCENDING V<sub>Z</sub>)

#### GLASS PACKAGE

Item	DEVICE NO.	V <sub>Z</sub> V Nom	Tol.* ±V <sub>Z</sub> %	Z <sub>Z</sub> Ω Max	@ I <sub>Z</sub> mA	I <sub>R</sub> μA Max	@ V <sub>R</sub> V	T.C. %/°C Typ (Max)	P <sub>D</sub> mW T <sub>A</sub> =25°C	Package No.
5	1N5221B	2.4	5	30	20	100	1.0	(-.085)	500	DO-35
6	BZX55C2V4	2.4	5	80	5.0	50	1.0	-.080	500	DO-35
7	1N5222B	2.5	5	30	20	100	1.0	(-.085)	500	DO-35
8	1N5223B	2.7	5	30	20	75	1.0	(-.080)	500	DO-35
9	BZX55C2V7	2.7	5	75	5.0	50	1.0	-.070	500	DO-35
10	ZPD2,7	2.7	5	83	5.0	—	—	(-.090)	500	DO-35
11	1N5224B	2.8	5	30	20	75	1.0	(-.080)	500	DO-35
12	1N5225B	3.0	5	29	20	50	1.0	(-.075)	500	DO-35
13	BZX55C3V0	3.0	5	80	5.0	40	1.0	-.065	500	DO-35
14	ZPD3	3.0	5	90	5.0	—	—	(-.090)	500	DO-35
15	1N746A	3.3	5	28	20	10	1.0	-.070	500	DO-35
16	1N5226B	3.3	5	28	20	25	1.0	(-.070)	500	DO-35
17	BZX55C3V3	3.3	5	85	5.0	40	1.0	-.060	500	DO-35
18	BZY88C3V3	3.3	5	22	20	3.0	1.0	(-.091)	500	DO-35
19	ZPD3,3	3.3	5	90	5.0	—	—	(-.080)	500	DO-35

\*Tolerance: All zener diodes are also available in ±1%, ±2%, ±10% and ±20% tolerances.

# FAIRCHILD DIODES

## DIODES

### ZENER DIODES (BY ASCENDING V<sub>Z</sub>) (Cont'd)

#### GLASS PACKAGE

Item	DEVICE NO.	V <sub>Z</sub> V Nom	Tol.* ±V <sub>Z</sub> %	Z <sub>Z</sub> Ω Max	@ I <sub>Z</sub> mA	I <sub>R</sub> μA Max	V <sub>R</sub> V @	T.C. %/°C Typ (Max)	P <sub>D</sub> mW T <sub>A</sub> =25°C	Package No.
1	1N4728A	3.3	5	10	76	100	1.0	—	1000	DO-41
2	BZX85C3V3	3.3	5	20	80	40	1.0	-.065	1000	DO-41
3	1N747A	3.6	5	24	20	10	1.0	-.065	500	DO-35
4	1N5227B	3.6	5	24	20	15	1.0	(-.065)	500	DO-35
5	BZX55C3V6	3.6	5	85	5.0	40	1.0	-.055	500	DO-35
6	BZY88C3V6	3.6	5	20	20	3.0	1.0	(-.069)	500	DO-35
7	ZPD3,6	3.6	5	90	5.0	—	—	(-.080)	500	DO-35
8	1N4729A	3.6	5	10	69	100	1.0	—	1000	DO-41
9	BZX85C3V6	3.6	5	15	60	20	1.0	-.065	1000	DO-41
10	1N748A	3.9	5	23	20	10	1.0	-.060	500	DO-35
11	1N5228B	3.9	5	23	20	10	1.0	(-.060)	500	DO-35
12	BZX55C3V9	3.9	5	80	5.0	40	1.0	-.050	500	DO-35
13	BZY88C3V9	3.9	5	18	20	3.0	1.0	(-.062)	500	DO-35
14	ZPD3,9	3.9	5	90	5.0	—	—	(-.070)	500	DO-35
15	1N4730A	3.9	5	9.0	64	50	1.0	—	1000	DO-41
16	BZX85C3V9	3.9	5	15	60	10	1.0	-.045	1000	DO-41
17	1N749A	4.3	5	22	20	2.0	1.0	±.055	500	DO-35
18	1N5229B	4.3	5	22	20	5.0	1.0	(±.055)	500	DO-35
19	BZX55C4V3	4.3	5	70	5.0	40	1.5	-.040	500	DO-35
20	BZY88C4V3	4.3	5	17	20	3.0	1.0	(-.047)	500	DO-35
21	ZPD4,3	4.3	5	90	5.0	—	—	(-.060)	500	DO-35
22	1N4731A	4.3	5	9.0	58	10	1.0	—	1000	DO-41
23	BZX85C4V3	4.3	5	13	50	3.0	1.0	-.020	1000	DO-41
24	1N750A	4.7	5	19	20	2.0	1.0	±.043	500	DO-35
25	1N5230B	4.7	5	19	20	5.0	2.0	(±.030)	500	DO-35
26	BZX55C4V7	4.7	5	60	5.0	30	1.5	-.020	500	DO-35
27	BZY88C4V7	4.7	5	17	20	3.0	2.0	(-.032)	500	DO-35
28	ZPD4,7	4.7	5	78	5.0	—	—	(-.050)	500	DO-35
29	1N4732A	4.7	5	8.0	53	10	1.0	—	1000	DO-41
30	BZX85C4V7	4.7	5	13	45	3.0	1.5	+0.05	1000	DO-41
31	1N751A	5.1	5	17	20	1.0	1.0	±.030	500	DO-35

\*Tolerance: All zener diodes are also available in ±1%, 2±%, ±10% and ±20% tolerances.

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# FAIRCHILD DIODES

## DIODES

### ZENER DIODES (BY ASCENDING $V_Z$ ) (Cont'd)

#### GLASS PACKAGE

Item	DEVICE NO.	$V_Z$ V Nom	Tol.* $\pm V_Z$ %	$Z_Z$ $\Omega$ Max	@ $I_Z$ mA	$I_R$ $\mu A$ Max	$V_R$ V @	T.C. %/°C Typ (Max)	$P_D$ mW $T_A=25^\circ C$	Package No.
1	1N5231B	5.1	5	17	20	5.0	2.0	(±.030)	500	DO-35
2	BZX55C5V1	5.1	5	35	5.0	2.0	1.0	+0.10	500	DO-35
3	BZY88C5V1	5.1	5	11	20	1.0	2.0	(-.030)	500	DO-35
4	ZPD5,1	5.1	5	60	5.0	0.1	0.8	(+.040)	500	DO-35
5	1N4733A	5.1	5	7.0	49	10	1.0	—	1000	DO-41
6	BZX85C5V1	5.1	5	10	45	1.0	2.0	+0.10	1000	DO-41
7	1N752A	5.6	5	11	20	1.0	1.0	+0.28	500	DO-35
8	1N5232B	5.6	5	11	20	5.0	3.0	(±.038)	500	DO-35
9	BZX55C5V6	5.6	5	25	5.0	2.0	1.0	+0.25	500	DO-35
10	BZY88C5V6	5.6	5	8	20	1.0	2.0	(+.054)	500	DO-35
11	ZPD5,6	5.6	5	40	5.0	0.1	1.0	(+.060)	500	DO-35
12	1N4734A	5.6	5	5.0	45	10	2.0	—	1000	DO-41
13	BZX85C5V6	5.6	5	7.0	45	1.0	2.0	+0.25	1000	DO-41
14	1N5233B	6.0	5	7.0	20	5.0	3.5	(+.038)	500	DO-35
15	1N753A	6.2	5	7.0	20	0.1	1.0	+0.45	500	DO-35
16	1N5234B	6.2	5	7.0	20	5.0	4.0	(+.045)	500	DO-35
17	BZX55C6V2	6.2	5	10	5.0	2.0	2.0	+0.32	500	DO-35
18	BZY88C6V2	6.2	5	3.1	20	1.0	2.0	(+.065)	500	DO-35
19	ZPD6,2	6.2	5	10	5.0	0.1	2.0	(+.070)	500	DO-35
20	1N4735A	6.2	5	2.0	41	10	3.0	—	1000	DO-41
21	BZX85C6V2	6.2	5	4.0	35	1.0	3.0	+0.32	1000	DO-41
22	1N754A	6.8	5	5.0	20	0.1	1.0	+0.50	500	DO-35
23	1N957B	6.8	5	4.5	18.5	150	5.2	+0.50	500	DO-35
24	1N5235B	6.8	5	5.0	20	3.0	5.0	(+.050)	500	DO-35
25	BZX55C6V8	6.8	5	8.0	5.0	2.0	3.0	+0.40	500	DO-35
26	BZY88C6V8	6.8	5	3.0	20	1.0	3.0	(+.070)	500	DO-35
27	ZPD6,8	6.8	5	8.0	5.0	0.1	3.0	(+.070)	500	DO-35
28	1N4736A	6.8	5	3.5	37	10	4.0	—	1000	DO-41
29	BZX85C6V8	6.8	5	3.5	35	1.0	4.0	+0.40	1000	DO-41
30	1N755A	7.5	5	6.0	20	0.1	1.0	+0.58	500	DO-35

\*Tolerance: All zener diodes are also available in  $\pm 1\%$ ,  $\pm 2\%$ ,  $\pm 10\%$ , and  $\pm 20\%$  tolerances.

# FAIRCHILD DIODES

## DIODES

### ZENER DIODES (BY ASCENDING V<sub>Z</sub>) (Cont'd)

#### GLASS PACKAGE

Item	DEVICE NO.	V <sub>Z</sub> V Nom	Tol.* ±V <sub>Z</sub> %	Z <sub>Z</sub> Ω Max	@ I <sub>Z</sub> mA	I <sub>R</sub> μA Max	V <sub>R</sub> @ V	T.C. %/°C Typ (Max)	P <sub>D</sub> mW T <sub>A</sub> =25°C	Package No.
1	1N958B	7.5	5	5.5	16.5	75	5.7	+0.58	500	DO-35
2	1N5236B	7.5	5	6.0	20	3.0	6.0	(+0.58)	500	DO-35
3	BZX55C7V5	7.5	5	7.0	5.0	2.0	5.0	+0.45	500	DO-35
4	BZY88C7V5	7.5	5	5.0	20	0.5	3.0	(+0.79)	500	DO-35
5	ZPD7,5	7.5	5	7.0	5.0	0.1	5.0	(+0.70)	500	DO-35
6	1N4737A	7.5	5	4.0	34	10	5.0	—	1000	DO-41
7	BZX85C7V5	7.5	5	3.0	35	1.0	4.5	+0.45	1000	DO-41
8	1N756A	8.2	5	8.0	20	0.1	1.0	+0.62	500	DO-35
9	1N959B	8.2	5	6.5	15	50	6.2	+0.62	500	DO-35
10	1N5237B	8.2	5	8.0	20	3.0	6.5	(+0.62)	500	DO-35
11	BZX55C8V2	8.2	5	7.0	5.0	2.0	6.0	+0.48	500	DO-35
12	BZY88C8V2	8.2	5	6.0	20	0.4	3.0	(+0.73)	500	DO-35
13	ZPD8,2	8.2	5	7.0	5.0	0.1	6.0	(+0.70)	500	DO-35
14	1N4738A	8.2	5	4.5	31	10	6.0	—	1000	DO-41
15	BZX85C8V2	8.2	5	5.0	25	1.0	5.0	+0.48	1000	DO-41
16	1N5238B	8.7	5	8.0	20	3.0	6.5	(+0.65)	500	DO-35
17	1N757A	9.1	5	10	20	0.1	1.0	+0.68	500	DO-35
18	1N960B	9.1	5	7.5	14	25	6.9	+0.68	500	DO-35
19	1N5239B	9.1	5	10	20	3.0	7.0	(+0.68)	500	DO-35
20	BZX55C9V1	9.1	5	10	5.0	2.0	7.0	+0.50	500	DO-35
21	BZY88C9V1	9.1	5	7.0	20	0.4	5.0	(+0.77)	500	DO-35
22	ZPD9,1	9.1	5	10	5.0	0.1	7.0	(+0.80)	500	DO-35
23	1N4739A	9.1	5	5.0	28	10	7.0	—	1000	DO-41
24	BZX85C9V1	9.1	5	5.0	25	1.0	6.5	+0.51	1000	DO-41
25	1N758A	10	5	17	20	0.1	1.0	+0.75	500	DO-35
26	1N961B	10	5	8.5	12.5	10	7.6	+0.72	500	DO-35
27	1N5240B	10	5	17	20	3.0	8.0	(+0.75)	500	DO-35
28	BZX55C10	10	5	15	5.0	2.0	7.5	+0.55	500	DO-35
29	BZY88C10	10	5	25	5.0	2.5	6.7	(+0.72)	500	DO-35
30	ZPD10	10	5	15	5.0	0.1	7.5	(+0.80)	500	DO-35

\*Tolerance: All zener diodes are also available in ±1%, ±2%, ±10% and ±20% tolerances.

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# FAIRCHILD DIODES

## DIODES

### ZENER DIODES (BY ASCENDING $V_Z$ ) (Cont'd)

#### GLASS PACKAGE

Item	DEVICE NO.	$V_Z$ V Nom	Tol.* $\pm V_Z$ %	$Z_Z$ $\Omega$ Max	@ $I_Z$ mA	$I_R$ $\mu A$ Max	@ $V_R$ V	T.C. %/°C Typ (Max)	$P_D$ mW $T_A=25^\circ C$	Package No.
1	1N4740A	10	5	7.0	25	10	7.6	—	1000	DO-41
2	BZX85C10	10	5	7.0	25	0.5	7.0	+055	1000	DO-41
3	1N962B	11	5	9.5	11.5	5.0	8.4	+073	500	DO-35
4	1N5241B	11	5	22	20	2.0	8.4	(+076)	500	DO-35
5	BZX55C11	11	5	20	5.0	2.0	8.5	+060	500	DO-35
6	BZY88C11	11	5	35	5.0	2.5	7.37	(+073)	500	DO-35
7	ZPD11	11	5	20	5.0	0.1	8.5	(+090)	500	DO-35
8	1N4741A	11	5	8.0	23	5.0	8.4	—	1000	DO-41
9	BZX85C11	11	5	8.0	20	0.5	7.7	+060	1000	DO-41
10	1N759A	12	5	30	20	0.1	1.0	+077	500	DO-35
11	1N963B	12	5	11.5	10.5	5.0	9.1	+076	500	DO-35
12	1N5242B	12	5	30	20	1.0	9.1	(+077)	500	DO-35
13	BZX55C12	12	5	20	5.0	2.0	9.0	+065	500	DO-35
14	BZY88C12	12	5	35	5.0	2.5	8.04	(+076)	500	DO-35
15	ZPD12	12	5	20	5.0	0.1	9.0	(+090)	500	DO-35
16	1N4742A	12	5	9.0	21	5.0	9.1	—	1000	DO-41
17	BZX85C12	12	5	9.0	20	0.5	8.4	+065	1000	DO-41
18	1N964B	13	5	13	9.5	5.0	9.9	+079	500	DO-35
19	1N5243B	13	5	13	9.5	0.5	9.9	(+079)	500	DO-35
20	BZX55C13	13	5	26	5.0	2.0	10	+070	500	DO-35
21	BZY88C13	13	5	35	5.0	2.5	8.71	(+079)	500	DO-35
22	ZPD13	13	5	25	5.0	0.1	10	(+090)	500	DO-35
23	1N4743A	13	5	10	19	5.0	9.9	—	1000	DO-41
24	BZX85C13	13	5	10	20	0.5	9.1	+065	1000	DO-41
25	1N5244B	14	5	15	9.0	0.1	10	(+082)	500	DO-35
26	1N965B	15	5	16	8.5	5.0	11.4	+082	500	DO-35
27	1N5245B	15	5	16	8.5	0.1	11	(+082)	500	DO-35
28	BZX55C15	15	5	30	5.0	2.0	11	+070	500	DO-35
29	BZY88C15	15	5	40	5.0	2.5	10.05	(+082)	500	DO-35
30	ZPD15	15	5	30	5.0	0.1	11	(+090)	500	DO-35

\*Tolerance: All zener diodes are also available in  $\pm 1\%$ ,  $\pm 2\%$ ,  $\pm 10\%$  and  $\pm 20\%$  tolerances.

# FAIRCHILD DIODES

## DIODES

### ZENER DIODES (BY ASCENDING $V_Z$ ) (Cont'd)

#### GLASS PACKAGE

Item	DEVICE NO.	$V_Z$ V Nom	Tol.* $\pm V_Z$ %	$Z_Z$ $\Omega$ Max	@ $I_Z$ mA	$I_R$ $\mu A$ Max	@ V	$V_R$ V	T.C. %/°C Typ (Max)	$P_D$ mW $T_A=25^\circ C$	Package No.
1	1N4744A	15	5	14	17	5.0	11.4	—	1000	DO-41	
2	BZX85C15	15	5	15	15	0.5	10.5	+0.070	1000	DO-41	
3	1N966B	16	5	17	7.8	5.0	12.2	+0.083	500	DO-35	
4	1N5246B	16	5	17	7.8	0.1	12	(+0.083)	500	DO-35	
5	BZX55C16	16	5	40	5.0	2.0	12	+0.075	500	DO-35	
6	BZY88C16	16	5	45	5.0	2.5	10.72	(+0.083)	500	DO-35	
7	ZPD16	16	5	40	5.0	0.1	12	(+0.095)	500	DO-35	
8	1N4745A	16	5	16	15.5	5.0	12.2	—	1000	DO-41	
9	BZX85C16	16	5	15	15	0.5	11.0	+0.070	1000	DO-41	
10	1N5247B	17	5	19	7.4	0.1	13	(+0.084)	500	DO-35	
11	1N967B	18	5	21	7.0	5.0	13.7	+0.085	500	DO-35	
12	1N5248B	18	5	21	7.0	0.1	14	(+0.085)	500	DO-35	
13	BZX55C18	18	5	55	5.0	2.0	14	+0.075	500	DO-35	
14	BZY88C18	18	5	50	5.0	2.5	12.06	(+0.085)	500	DO-35	
15	ZPD18	18	5	50	5.0	0.1	14	(+0.095)	500	DO-35	
16	1N4746A	18	5	20	14	5.0	13.7	—	1000	DO-41	
17	BZX85C18	18	5	20	15	0.5	12.5	+0.075	1000	DO-41	
18	1N5249B	19	5	23	6.6	0.1	14	(+0.086)	500	DO-35	
19	1N968B	20	5	25	6.2	5.0	15.2	+0.086	500	DO-35	
20	1N5250B	20	5	25	6.2	0.1	15	(+0.086)	500	DO-35	
21	BZX55C20	20	5	55	5.0	2.0	15	+0.080	500	DO-35	
22	BZY88C20	20	5	60	5.0	2.5	13.4	(+0.086)	500	DO-35	
23	ZPD20	20	5	50	5.0	0.1	15	(+0.100)	500	DO-35	
24	1N4747A	20	5	22	12.5	5.0	15.2	—	1000	DO-41	
25	BZX85C20	20	5	24	10	0.5	14	+0.075	1000	DO-41	
26	1N969B	22	5	29	5.6	5.0	16.7	+0.087	500	DO-35	
27	1N5251B	22	5	29	5.6	0.1	17	(+0.087)	500	DO-35	
28	BZX55C22	22	5	55	5.0	2.0	17	+0.080	500	DO-35	
29	BZY88C22	22	5	65	5.0	2.5	14.74	(+0.087)	500	DO-35	
30	ZPD22	22	5	55	5.0	0.1	17	(+0.100)	500	DO-35	
31	1N4748A	22	5	23	11.5	5.0	16.7	—	1000	DO-41	

\*Tolerance: All zener diodes are also available in  $\pm 1\%$ ,  $\pm 2\%$ ,  $\pm 10\%$  and  $\pm 20\%$  tolerances.

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# FAIRCHILD DIODES

## DIODES

### ZENER DIODES (BY ASCENDING $V_Z$ ) (Cont'd) GLASS PACKAGE

Item	DEVICE NO.	$V_Z$ V Nom	Tol.* $\pm V_Z$ %	$Z_Z$ $\Omega$ Max	@ $I_Z$ mA	$I_R$ $\mu A$ Max	$V_R$ V @	T.C. %/°C Typ (Max)	$P_D$ mW $T_A=25^\circ C$	Package No.
1	BZX85C22	22	5	25	10	0.5	15.5	+080	1000	DO-41
2	1N970B	24	5	33	5.2	5.0	18.2	+088	500	DO-35
3	1N5252B	24	5	33	5.2	0.1	18	(+.088)	500	DO-35
4	BZX55C24	24	5	80	5.0	2.0	18	+085	500	DO-35
5	BZY88C24	24	5	75	5.0	2.5	16.08	(+.088)	500	DO-35
6	ZPD24	24	5	80	5.0	0.1	18	(+.100)	500	DO-35
7	1N4749A	24	5	25	10.5	5.0	18.2	—	1000	DO-41
8	BZX85C24	24	5	25	10	0.5	17	+080	1000	DO-41
9	1N5253B	25	5	35	5.0	0.1	19	(+.089)	500	DO-35
10	1N971B	27	5	41	4.6	5.0	20.6	+090	500	DO-35
11	1N5254B	27	5	41	4.6	0.1	21	(+.090)	500	DO-35
12	BZX55C27	27	5	80	5.0	2.0	20	+085	500	DO-35
13	BZY88C27	27	5	85	5.0	2.5	18.09	(+.090)	500	DO-35
14	ZPD27	27	5	80	5.0	0.1	20	(+.100)	500	DO-35
15	1N4750A	27	5	35	9.5	5.0	20.6	—	1000	DO-41
16	BZX85C27	27	5	30	8.0	0.5	19	+085	1000	DO-41
17	1N5255B	28	5	44	4.5	0.1	21	(+.091)	500	DO-35
18	1N972B	30	5	49	4.2	5.0	22.8	+091	500	DO-35
19	1N5256B	30	5	49	4.2	0.1	23	(+.091)	500	DO-35
20	BZX55C30	30	5	80	5.0	2.0	22	+085	500	DO-35
21	BZY88C30	30	5	95	5.0	2.5	20.1	(+.091)	500	DO-35
22	ZPD30	30	5	80	5.0	0.1	22.5	(+.100)	500	DO-35
23	1N4751A	30	5	40	8.5	5.0	22.8	—	1000	DO-41
24	BZX85C30	30	5	30	8.0	0.5	21	+085	1000	DO-41
25	1N973B	33	5	58	3.8	5.0	25.1	+092	500	DO-35
26	1N5257B	33	5	58	3.8	0.1	25	(+.092)	500	DO-35
27	BZX55C33	33	5	80	5.0	2.0	24	+085	500	DO-35
28	BZY88C33	33	5	120	5.0	2.5	21	(+.100)	500	DO-35
29	ZPD33	33	5	80	5.0	0.1	25	(+.100)	500	DO-35
30	1N4752A	33	5	45	7.5	5.0	25.1	—	1000	DO-41
31	BZX85C33	33	5	35	8.0	0.5	23	+085	1000	DO-41

\*Tolerance: All zener diodes are also available in  $\pm 1\%$ ,  $\pm 2\%$ ,  $\pm 10\%$  and  $\pm 20\%$  tolerances.

# FAIRCHILD DIODES

## DIODES

### MILITARY QUALIFIED ZENER DIODES (BY ASCENDING V<sub>Z</sub>) GLASS PACKAGE

Item	DEVICE NO.	V <sub>Z</sub> V Nom	Tol. ±V <sub>Z</sub> %	Z <sub>Z</sub> Ω Max	@ I <sub>Z</sub> mA	I <sub>R</sub> μA Max	@ V	V <sub>R</sub> V	T.C. %/°C Max	P <sub>D</sub> mW T <sub>A</sub> =25°C	Package No.
1	1N747AJAN	3.6	5	22	20	3.0	1.0	-0.65	400	DO-7	
2	1N747AJANTX	3.6	5	22	20	3.0	1.0	-0.65	400	DO-7	
3	1N747AJANTXV	3.6	5	22	20	3.0	1.0	-0.65	400	DO-7	
4	1N748AJAN	3.9	5	20	20	2.0	1.0	-0.60	400	DO-7	
5	1N748AJANTX	3.9	5	20	20	2.0	1.0	-0.60	400	DO-7	
6	1N748AJANTXV	3.9	5	20	20	2.0	1.0	-0.60	400	DO-7	
7	1N749AJAN	4.3	5	18	20	2.0	1.0	-0.55	400	DO-7	
8	1N749AJANTX	4.3	5	18	20	2.0	1.0	-0.55	400	DO-7	
9	1N749AJANTX	4.3	5	18	20	2.0	1.0	-0.55	400	DO-7	
10	1N750AJAN	4.7	5	16	20	5.0	1.5	-0.43	400	DO-7	
11	1N750AJANTX	4.7	5	16	20	5.0	1.5	-0.43	400	DO-7	
12	1N750AJANTXV	4.7	5	16	20	5.0	1.5	-0.43	400	DO-7	
13	1N751AJAN	5.1	5	14	20	5.0	2.0	±0.30	400	DO-7	
14	1N751AJANTX	5.1	5	14	20	5.0	2.0	±0.30	400	DO-7	
15	1N751AJANTXV	5.1	5	14	20	5.0	2.0	±0.30	400	DO-7	
16	1N752AJAN	5.6	5	8.0	20	5.0	2.5	+0.32	400	DO-7	
17	1N752AJANTX	5.6	5	8.0	20	5.0	2.5	+0.32	400	DO-7	
18	1N752AJANTXV	5.6	5	8.0	20	5.0	2.5	+0.32	400	DO-7	
19	1N962BJAN	11	5	9.5	11.5	5.0	8.4	+0.73	400	DO-35	
20	1N962BJANTX	11	5	9.5	11.5	5.0	8.4	+0.73	400	DO-35	
21	1N962BJANTXV	11	5	9.5	11.5	5.0	8.4	+0.73	400	DO-35	
22	1N962B-1JAN	11	5	9.5	11.5	5.0	8.4	+0.73	400	DO-35	
23	1N962B-1JANTX	11	5	9.5	11.5	5.0	8.4	+0.73	400	DO-35	
24	1N962B-1JANTXV	11	5	9.5	11.5	5.0	8.4	+0.73	400	DO-35	
25	1N963BJAN	12	5	11.5	10.5	5.0	9.1	+0.76	400	DO-35	
26	1N963BJANTX	12	5	11.5	10.5	5.0	9.1	+0.76	400	DO-35	
27	1N963BJANTXV	12	5	11.5	10.5	5.0	9.1	+0.76	400	DO-35	
28	1N963B-1JAN	12	5	11.5	10.5	5.0	9.1	+0.76	400	DO-35	
29	1N963B-1JANTX	12	5	11.5	10.5	5.0	9.1	+0.76	400	DO-35	
30	1N963B-1JANTXV	12	5	11.5	10.5	5.0	9.1	+0.76	400	DO-35	
31	1N964BJAN	13	5	13	9.5	5.0	9.9	+0.79	400	DO-35	
32	1N964BJANTX	13	5	13	9.5	5.0	9.9	+0.79	400	DO-35	

# FAIRCHILD DIODES

## DIODES

### MILITARY QUALIFIED ZENER DIODES (BY ASCENDING $V_Z$ ) (Cont'd)

#### GLASS PACKAGE

Item	DEVICE NO.	$V_Z$ V Nom	Tol. $\pm V_Z$ %	$Z_Z$ $\Omega$ Max	@ $I_Z$ mA	$I_R$ $\mu A$ Max	@ V	$V_R$ V	T.C. %/°C Max	$P_D$ mW $T_A=25^\circ C$	Package No.
1	1N964BJANTXV	13	5	13	9.5	5.0	9.9	+0.79	400	DO-35	
2	1N964B-1JAN	13	5	13	9.5	5.0	9.9	+0.79	400	DO-35	
3	1N964B-1JANTX	13	5	13	9.5	5.0	9.9	+0.79	400	DO-35	
4	1N964B-1JANTXV	13	5	13	9.5	5.0	9.9	+0.79	400	DO-35	
5	1N965BJAN	15	5	16	8.5	5.0	11	+0.82	400	DO-35	
6	1N965BJANTX	15	5	16	8.5	5.0	11	+0.82	400	DO-35	
7	1N965BJANTXV	15	5	16	8.5	5.0	11	+0.82	400	DO-35	
8	1N965B-1JAN	15	5	16	8.5	5.0	11	+0.82	400	DO-35	
9	1N965B-1JANTX	15	5	16	8.5	5.0	11	+0.82	400	DO-35	
10	1N965B-1JANTXV	15	5	16	8.5	5.0	11	+0.82	400	DO-35	
11	1N966BJAN	16	5	17	7.8	5.0	12	+0.83	400	DO-35	
12	1N966BJANTX	16	5	17	7.8	5.0	12	+0.83	400	DO-35	
13	1N966BJANTXV	16	5	17	7.8	5.0	12	+0.83	400	DO-35	
14	1N966B-1JAN	16	5	17	7.8	5.0	12	+0.83	400	DO-35	
15	1N966B-1JANTX	16	5	17	7.8	5.0	12	+0.83	400	DO-35	
16	1N966B-1JANTXV	16	5	17	7.8	5.0	12	+0.83	400	DO-35	
17	1N967BJAN	18	5	21	7.0	5.0	14	+0.85	400	DO-35	
18	1N967BJANTX	18	5	21	7.0	5.0	14	+0.85	400	DO-35	
19	1N967BJANTXV	18	5	21	7.0	5.0	14	+0.85	400	DO-35	
20	1N967B-1JAN	18	5	21	7.0	5.0	14	+0.85	400	DO-35	
21	1N967B-1JANTX	18	5	21	7.0	5.0	14	+0.85	400	DO-35	
22	1N967B-1JANTXV	18	5	21	7.0	5.0	14	+0.85	400	DO-35	
23	1N968BJAN	20	5	25	6.2	5.0	15	+0.86	400	DO-35	
24	1N968BJANTX	20	5	25	6.2	5.0	15	+0.86	400	DO-35	
25	1N968BJANTXV	20	5	25	6.2	5.0	15	+0.86	400	DO-35	
26	1N968B-1JAN	20	5	25	6.2	5.0	15	+0.86	400	DO-35	
27	1N968B-1JANTX	20	5	25	6.2	5.0	15	+0.86	400	DO-35	
28	1N968B-1JANTXV	20	5	25	6.2	5.0	15	+0.86	400	DO-35	
29	1N969BJAN	22	5	29	5.6	5.0	17	+0.87	400	DO-35	
30	1N969BJANTX	22	5	29	5.6	5.0	17	+0.87	400	DO-35	
31	1N969BJANTXV	22	5	29	5.6	5.0	17	+0.87	400	DO-35	
32	1N969B-1JAN	22	5	29	5.6	5.0	17	+0.87	400	DO-35	

# FAIRCHILD DIODES

## DIODES

### MILITARY QUALIFIED ZENER DIODES (BY ASCENDING $V_Z$ ) (Cont'd) GLASS PACKAGE

Item	DEVICE NO.	$V_Z$ V Nom	Tol. $\pm V_Z$ %	$Z_Z$ $\Omega$ Max	@ $I_Z$ mA	$I_R$ $\mu A$ Max	@ $V_R$ V	T.C. %/°C Max	$P_D$ mW $T_A=25^\circ C$	Package No.
1	1N969B-1JANTX	22	5	29	5.6	5.0	17	+0.087	400	DO-35
2	1N969B-1JANTXV	22	5	29	5.6	5.0	17	+0.087	400	DO-35
3	1N970BJAN	24	5	33	5.2	5.0	18	+0.088	400	DO-35
4	1N970BJANTX	24	5	33	5.2	5.0	18	+0.088	400	DO-35
5	1N970BJANTXV	24	5	33	5.2	5.0	18	+0.088	400	DO-35
6	1N970B-1JAN	24	5	33	5.2	5.0	18	+0.088	400	DO-35
7	1N970B-1JANTX	24	5	33	5.2	5.0	18	+0.088	400	DO-35
8	1N970B-1JANTXV	24	5	33	5.2	5.0	18	+0.088	400	DO-35
9	1N971BJAN	27	5	41	4.6	5.0	21	+0.090	400	DO-35
10	1N971BJANTX	27	5	41	4.6	5.0	21	+0.090	400	DO-35
11	1N971BJANTXV	27	5	41	4.6	5.0	21	+0.090	400	DO-35
12	1N971B-1JAN	27	5	41	4.6	5.0	21	+0.090	400	DO-35
13	1N971B-1JANTX	27	5	41	4.6	5.0	21	+0.090	400	DO-35
14	1N971B-1JANTXV	27	5	41	4.6	5.0	21	+0.090	400	DO-35
15	1N972BJAN	30	5	49	4.2	5.0	23	+0.091	400	DO-35
16	1N972BJANTX	30	5	49	4.2	5.0	23	+0.091	400	DO-35
17	1N972BJANTXV	30	5	49	4.2	5.0	23	+0.091	400	DO-35
18	1N972B-1JAN	30	5	49	4.2	5.0	23	+0.091	400	DO-35
19	1N972B-1JANTX	30	5	49	4.2	5.0	23	+0.091	400	DO-35
20	1N972B-1JANTXV	30	5	49	4.2	5.0	23	+0.091	400	DO-35
21	1N973BJAN	33	5	58	3.8	5.0	25	+0.092	400	DO-35
22	1N973BJANTX	33	5	58	3.8	5.0	25	+0.092	400	DO-35
23	1N973BJANTXV	33	5	58	3.8	5.0	25	+0.092	400	DO-35
24	1N973B-1JAN	33	5	58	3.8	5.0	25	+0.092	400	DO-35
25	1N973B-1JANTX	33	5	58	3.8	5.0	25	+0.092	400	DO-35
26	1N973B-1JANTXV	33	5	58	3.8	5.0	25	+0.092	400	DO-35

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# FAIRCHILD DIODES

## DIODES

### MATCHED DIODE ASSEMBLIES PLASTIC AND GLASS PACKAGES

Number of Diodes				2	2	4	4	4
Package				Moulded Pair (308)	Discrete Pair DO-7 or DO-35	Moulded Quad (310)	Discrete Quad DO-7 or DO-35	Moulded Bridge (309)
Item	$V_F$ Matching ( $-55^\circ\text{C}$ to $+100^\circ\text{C}$ )			DEVICE NO.	DEVICE NO.	DEVICE NO.	DEVICE NO.	DEVICE NO.
	Basic Diode Specification	$I_F$ Range mA	$\Delta V_F$ mV					
1	1N914	0.01-1.0	3.0	FA2310E	FA2310U	FA4310E	FA4310U	FA3310
2	1N3070	0.01-1.0	3.0	FA2320E	FA2320U	FA4320E	FA4320U	FA3320
3	1N3595	0.01-1.0	10	FA2330E	FA2330U	FA4330E	FA4330U	FA3330
4	—	0.1-10	10	1N4306	—	—	—	—
5	—	0.1-10	10	—	—	1N4307	—	—

### MILITARY QUALIFIED DIODE ASSEMBLIES PLASTIC AND GLASS PACKAGES

Item	DEVICE NO.	BV V Min	$I_R$ nA Max	@	$V_R$ V	$V_F$ V Max	@	$I_F$ mA	C pF Max	$t_{rr}$ ns Max	Package No.
6	1N4306JAN	75	50		50	1.0		50	2.0	4.0	308
7	1N4306JANTX	75	50		50	1.0		50	2.0	4.0	308
8	1N4306JANTXV	75	50		50	1.0		50	2.0	4.0	308
9	1N4307JAN	75	50		50	1.0		50	2.0	4.0	310
10	1N4307JANTX	75	50		50	1.0		50	2.0	4.0	310
11	1N4307JANTXV	75	50		50	1.0		50	2.0	4.0	310

### MONOLITHIC DIODE ARRAYS (NUMERIC LISTING) PLASTIC - CERAMIC - METAL PACKAGES

Item	DEVICE NO.	BV V Min	$V_F$ V Max	@	$I_F$ mA	$\Delta V_F$ mV Max	$t_{rr}$ ns Min	Configuration	Package No.
12	FSA1410M	60	1.0		100	15	10	CA8	TO-18
13	FSA1411M	60	1.0		100	15	10	CC8	TO-18
14	FSA2002M	60	1.0		100	15	10	CC8	TO-91
15	FSA2003M	60	1.0		100	15	10	CA8	TO-91
16	FSA2500M	60	1.0		100	15	10	M16	TO-91
17	FSA2501M	60	1.0		100	15	10	M16	TO-116
18	FSA2501P	60	1.0		100	15	10	M16	TO-116
19	FSA2502M	60	1.0		100	15	10	M16	TO-96

# FAIRCHILD DIODES

## DIODES

### MONOLITHIC DIODE ARRAYS (NUMERIC LISTING) (Cont'd) PLASTIC - CERAMIC - METAL PACKAGES

Item	DEVICE NO.	BV V Min	V <sub>F</sub> V Max	@	I <sub>F</sub> mA	ΔV <sub>F</sub> mV Max	t <sub>rr</sub> ns Min	Configuration	Package No.
1	FSA2503M	60	1.0		100	15	10	2M8	TO-116
2	FSA2503P	60	1.0		100	15	10	2M8	TO-116
3	FSA2504M	60	1.0		100	15	10	2M8	TO-86
4	FSA2508M	60	1.3		500	15	10	4M4	6B
5	FSA2508P	60	1.3		500	15	10	4M4	9B
6	FSA2509M	60	1.3		500	15	10	2M8	TO-116
7	FSA2509P	60	1.3		500	15	10	2M8	TO-116
8	FSA2510M	60	1.3		500	15	10	M16	TO-116
9	FSA2510P	60	1.3		500	15	10	M16	TO-116
10	FSA2563M	60	1.3		500	15	10	CC8	TO-116
11	FSA2563P	60	1.3		500	15	10	CC8	TO-116
12	FSA2564M	60	1.3		500	15	10	CA8	TO-116
13	FSA2564P	60	1.3		500	15	10	CA8	TO-116
14	FSA2565M	60	1.3		500	15	10	CC13	TO-116
15	FSA2565P	60	1.3		500	15	10	CC13	TO-116
16	FSA2566M	60	1.3		500	15	10	CA13	TO-116
17	FSA2566P	60	1.3		500	15	10	CA13	TO-116
18	FSA2619M	100	1.0		10	15	5	S8	6B
19	FSA2619P	100	1.0		10	15	5	S8	9B
20	FSA2620M	100	1.0		10	15	5	S7	TO-116
21	FSA2620P	100	1.0		10	15	5	S7	TO-116
22	FSA2621M	100	1.0		10	15	5	S7	TO-86
23	FSA2702M	60	1.0		200	3	6	R4	TO-33
24	FSA2703M	60	1.0		200	3	6	R4	TO-72
25	FSA2704M	60	1.0		200	—	6	R4	TO-33
26	FSA2705M	60	1.0		200	—	6	R4	TO-72
27	FSA2719M	75	1.0		10	15	6	S8	6B
28	FSA2719P	75	1.0		10	15	6	S8	9B
29	FSA2720M	75	1.0		10	15	6	S7	TO-116
30	FSA2720P	75	1.0		10	15	6	S7	TO-116
31	FSA2721	75	1.0		10	15	6	S7	TO-86

Note: See configurations on following page.

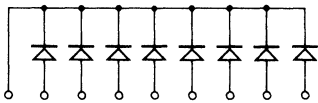
# FAIRCHILD DIODES

## DIODES

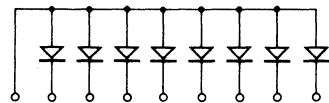
### MILITARY QUALIFIED DIODE ARRAYS (NUMERIC LISTING) CERAMIC PACKAGES

Item	DEVICE NO.	BV V Min	V <sub>F</sub> V Max @	I <sub>F</sub> mA	t <sub>fr</sub> ns Max	t <sub>rr</sub> ns Max	Configuration	Package No.
1	1N5768JAN	60	1.0	100	40	20	CC8	TO-91
2	1N5768JANTX	60	1.0	100	40	20	CC8	TO-91
3	1N5768JANTXV	60	1.0	100	40	20	CC8	TO-91
4	1N5770JAN	60	1.0	100	40	20	CA8	TO-91
5	1N5770JANTX	60	1.0	100	40	20	CA8	TO-91
6	1N5770JANTXV	60	1.0	100	40	20	CA8	TO-91
7	1N5772JAN	60	1.0	100	40	20	M16	TO-91
8	1N5772JANTX	60	1.0	100	40	20	M16	TO-91
9	1N5772JANTXV	60	1.0	100	40	20	M16	TO-91
10	1N5774JAN	60	1.0	100	40	20	2M8	TO-86
11	1N5774JANTX	60	1.0	100	40	20	2M8	TO-86
12	1N5774JANTXV	60	1.0	100	40	20	2M8	TO-86
13	1N6100JAN	75	1.0	100	15	5.0	S7	TO-86
14	1N6100JANTX	75	1.0	100	15	5.0	S7	TO-86
15	1N6100JANTXV	75	1.0	100	15	5.0	S7	TO-86

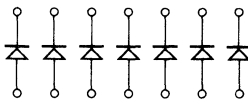
### CONFIGURATIONS



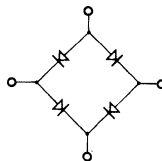
CC8



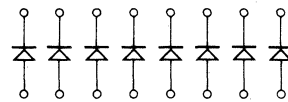
CA8



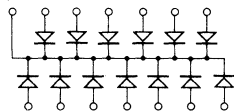
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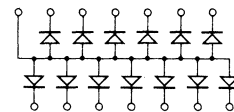
R4



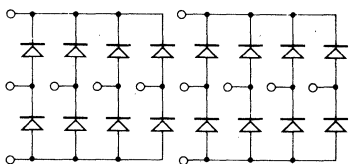
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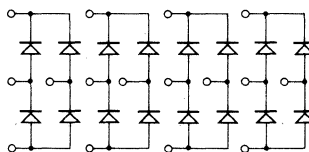
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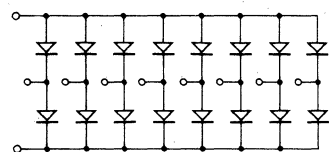
CA13



2M8



4M4



M16

## FAIRCHILD DIODES/RECTIFIERS

### DIODES

#### DIODE DICE (BY DESCENDING BV)

Item	DEVICE NO.	Basic Standard Device	BV V Min	I <sub>R</sub> nA @ V Max	V <sub>R</sub> V	V <sub>F</sub> V @ mA Max	I <sub>F</sub> mA	t <sub>rr</sub> ns @ Typ	I <sub>f</sub> = I <sub>r</sub> mA	C pF Max	Chip Size Mils	Basic Application
1	FDC3070	1N3070	200	100	175	1.0	100	50	10	2.5	15x15	High Voltage Switching
2	FDC485B	1N485B	200	25	175	1.0	100	500	10	5.0	17.5x17.5	High Voltage Low Leakage
3	FDC3600	1N3600	75	100	50	1.0	100	4.0	10	2.5	15x15	General Purpose Switching
4	FDC4376	1N4376	20	100	10	1.1	50	0.8	10	1.2	17.5x17.5	Ultra High Speed Switching

### RECTIFIERS

#### GENERAL PURPOSE RECTIFIERS

##### GLASS PACKAGE

Item	DEVICE NO.	V <sub>R</sub> V Min	@	I <sub>R</sub> μA	V <sub>F</sub> V Max	@	I <sub>F</sub> A	V <sub>FM</sub> V Max	@	I <sub>O</sub> A	Package No.
5	1N4001	50		10	1.1		1.0	1.6		1.0	DO-41
6	1N4002	100		10	1.1		1.0	1.6		1.0	DO-41
7	1N4003	200		10	1.1		1.0	1.6		1.0	DO-41
8	1N4004	400		10	1.1		1.0	1.6		1.0	DO-41
9	1N4005	600		10	1.1		1.0	1.6		1.0	DO-41

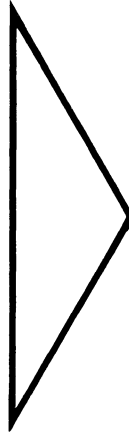
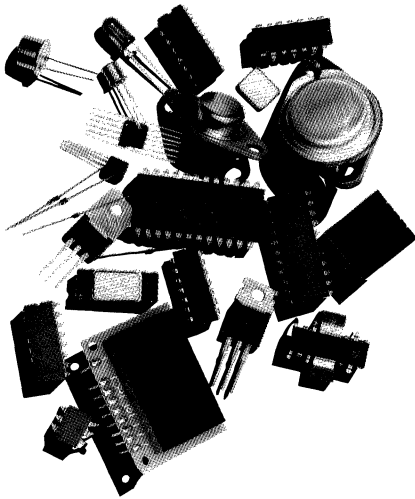
#### FAST RECOVERY RECTIFIERS

##### GLASS PACKAGE

Item	DEVICE NO.	V <sub>R</sub> V Min	@	I <sub>R</sub> μA Max	V <sub>F</sub> V Max	@	I <sub>F</sub> A	t <sub>rr</sub> ns Max	Package No.
10	1N4933	50		5.0	1.2		1.0	200	DO-41
11	1N4934	100		5.0	1.2		1.0	200	DO-41
12	1N4935	200		5.0	1.2		1.0	200	DO-41
13	1N4936	400		5.0	1.2		1.0	200	DO-41
14	1N4937	600		5.0	1.2		1.0	200	DO-41







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# FAIRCHILD TRANSISTORS

## POWER

### POWER TRANSISTORS (BY $I_C$ max, POLARITY AND ASCENDING $V_{CE0}$ )

Item	DEVICE NO. Polarity		$V_{CE0}$ V Max	$h_{FE}$ Min/Max	@ $I_C$ A	$V_{CE(sat)}$ V Max	@ $I_C$ A	$f_T$ MHz Min(Typ)	$P_D(\text{Max})$ W $T_C = 25^\circ\text{C}$	Package No.
	NPN	PNP								
<b><math>I_C = 0.1</math> A Max Continuous</b>										
1	BF257		160	25/-	0.03	1.0	0.03	75	1.0	TO-39
2	BF336		180	20/-	0.03	—	—	50	1.0	TO-39
3	BF337		200	20/-	0.03	—	—	50	1.0	TO-39
4	BF338		225	20/-	0.03	—	—	50	1.0	TO-39
5	BF258		250	25/-	0.03	1.0	0.03	75	1.0	TO-39
6	D40N1F		250	30/90	0.02	—	—	40	10	Dynawatt
7	D40N2F		250	60/180	0.02	—	—	40	10	Dynawatt
8	BF259		300	25/-	0.03	1.0	0.03	75	1.0	TO-39
9	D40N3F		300	30/90	0.02	—	—	40	10	Dynawatt
10	D40N4F		300	60/180	0.02	—	—	40	10	Dynawatt
<b><math>I_C = 0.15</math> A Max Continuous</b>										
11	2N5059		250	30/150	0.03	1.0	0.03	30	1.0	TO-39
12	2N5058		300	35/150	0.03	1.0	0.03	30	1.0	TO-39
<b><math>I_C = 0.5</math> A Max Continuous</b>										
13	TIP61	TIP62	40	40/-	0.05	0.07	0.50	3.0	15	TO-220
14	TIP61A	TIP62A	60	40/-	0.05	0.07	0.50	3.0	15	TO-220
15	TIP61B	TIP62B	80	40/-	0.05	0.07	0.50	3.0	15	TO-220
16	TIP61C	TIP62C	100	40/-	0.05	0.07	0.50	3.0	15	TO-220
17	SE7055		220	40/-	0.03	1.00	0.02	50	1.0	TO-39
18	SE7056		300	40/-	0.03	1.00	0.02	50	1.0	TO-39
19	MPS-U10F		300	40/-	0.03	—	—	40	10	Dynawatt
<b><math>I_C = 1.0</math> A Max Continuous</b>										
20	FT427		30	20/-	0.50	—	—	—	10	Dynawatt
21	FT527		30	20/-	0.50	—	—	—	10	TO-220
22	D40D1F	D41D1F	30	50/150	0.10	0.5	0.5	—	10	Dynawatt
23	TIP29	TIP30	40	15/75	1.00	0.7	1.0	3.0	30	TO-220
24		2N4898	40	20/100	0.50	0.6	1.0	3.0	25	TO-66
25	2N4910		40	20/100	0.50	0.6	1.0	4.0	25	TO-66
26	D40D4F	D41D4F	45	50/150	0.10	0.5	0.5	—	10	Dynawatt
27	TIP29A	TIP30A	60	15/75	1.00	0.7	1.0	3.0	30	TO-220
28		2N3740	60	30/100	0.25	0.6	1.0	4.0	25	TO-66

# FAIRCHILD TRANSISTORS

## POWER

### POWER TRANSISTORS (BY $I_{Cmax}$ , POLARITY AND ASCENDING $V_{CEO}$ ) (Cont'd)

Item	DEVICE NO. Polarity		$V_{CEO}$ V Max	$h_{FE}$ @ $I_C$ A Min/Max	$V_{CE(sat)}$ V Max	$f_T$ MHz Min(Typ)	$P_D(Max)$ W $T_C=25^\circ C$	Package No.		
	NPN	PNP								
<b><math>I_C = 1.0</math> A Max Continuous (Cont'd)</b>										
1	2N4911		60	20/100	0.50	0.5	1.0	4.0	25	TO-66
2		2N4899	60	20/100	0.50	0.6	1.0	3.0	25	TO-66
3	D40D7F	D41D7F	60	50/150	0.10	0.5	0.5	—	10	Dynawatt
4	D40D10F	D41D10F	75	50/150	0.10	0.5	0.5	—	10	Dynawatt
5	D40D13F	D41D13F	75	50/150	0.10	0.5	0.5	—	10	Dynawatt
6	TIP29B	TIP30B	80	15/75	1.00	0.7	1.0	3.0	30	TO-220
7		2N3741	80	30/100	0.25	0.6	1.0	4.0	25	TO-66
8		2N4900	80	20/100	0.50	0.6	1.0	3.0	25	TO-66
9	2N4912		80	20/100	0.50	0.6	1.0	4.0	25	TO-66
10	TIP29C	TIP30C	100	15/75	1.00	0.7	1.0	3.0	30	TO-220
11	2N5681	2N5679	100	40/150	0.25	1.0	0.5	30	10	TO-39
12	2N5682	2N5680	120	40/150	0.25	1.0	0.5	30	10	TO-39
13		2N5415	200	30/150	0.05	2.5	0.5	15	10	TO-39
14		FTD5415	200	30/150	0.05	2.5	0.05	15	10	Dynawatt
15	FTD3440		250	40/160	0.02	0.5	0.05	15	10	Dynawatt
16	2N3440		250	40/160	0.02	0.5	0.05	15	10	TO-39
17	FT47		250	30/150	0.30	1.0	1.0	10	40	TO-220
18	SE9331		300	30/250	0.10	2.5	0.10	10	20	TO-66
19	FT48		300	30/150	0.30	1.0	1.00	10	40	TO-220
20		2N5416	300	30/120	0.05	2.0	0.05	15	10	TO-39
21		FTD5416	300	30/120	0.05	2.0	0.05	15	10	Dynawatt
22	2N3439		350	40/160	0.02	0.5	0.05	15	10	TO-39
23	FT49		350	30/150	0.30	1.0	1.00	10	40	TO-220
24	FTD3439		350	40/160	0.02	0.5	0.05	15	10	Dynawatt
25	FT50		400	30/150	0.30	1.0	1.00	10	40	TO-220
<b><math>I_C = 2.0</math> A Max Continuous</b>										
26	FT428		25	20/-	0.5	—	—	—	10	Dynawatt
27	FT528		25	20/-	0.5	—	—	—	10	TO-220
28	FTD5321	FTD5323	50	40/250	0.5	0.8	0.5	40	10	Dynawatt
29	2N5321	2N5323	50	40/250	0.5	0.8	0.5	50	10	TO-39
30	MPS-U05F	MPS-U55F	60	50/-	0.25	0.5	0.25	40	10	Dynawatt

# FAIRCHILD TRANSISTORS

## POWER

### POWER TRANSISTORS (BY $I_{Cmax}$ , POLARITY AND ASCENDING $V_{CE0}$ ) (Cont'd)

Item	DEVICE NO. Polarity		$V_{CE0}$ V Max	$h_{FE}$ Min/Max	@ $I_C$ A	$V_{CE(sat)}$ V Max	@ $I_C$ A	$f_T$ MHz Min(Typ)	$P_D(Max)$ W $T_C=25^\circ C$	Package No.
	NPN	PNP								
<b><math>I_C = 2.0</math> A Max Continuous (Cont'd)</b>										
1	TIP110*	TIP115*	60	1000/-	1.0	2.5	2.0	—	50	TO-220
2	2N5320	2N5322	75	30/130	0.5	0.5	0.5	50	10	TO-39
3	FTD5320	FTD5322	75	30/130	0.5	0.5	0.5	40	10	Dynawatt
4	MPS-U06F	MPS-U56F	80	50/-	0.25	0.5	0.25	40	10	Dynawatt
5	TIP111*	TIP116*	80	1000/-	1.0	2.5	2.0	—	50	TO-220
6	TIP112*	TIP117*	100	1000/-	1.0	2.5	2.0	—	50	TO-220
7	MPS-U07F	MPS-U57F	100	30/-	0.25	0.05	0.25	40	10	Dynawatt
8	FT401		300	20/100	0.5	0.8	0.5	2.0	100	TO-3
<b><math>I_C = 3.0</math> A Max Continuous</b>										
9	TIP31	TIP32	40	10/50	3.0	1.2	3.0	3.0	40	TO-220
10		2N4234	40	30/150	0.25	0.6	1.0	3.0	6.0	TO-39
11		2N4235	60	30/150	0.25	0.6	1.0	3.0	6.0	TO-39
12	2N3766		60	40/160	0.5	1.0	0.5	10	20	TO-66
13	2N5334		60	30/150	1.0	0.7	2.0	40	6.0	TO-39
14	TIP31A	TIP32A	60	10/50	3.0	1.2	3.0	3.0	40	TO-220
15	TIP31B	TIP32B	80	10/50	3.0	1.2	3.0	3.0	40	TO-220
16		2N4236	80	30/150	0.25	0.6	1.0	3.0	6.0	TO-39
17	2N3767		80	40/160	0.5	1.0	0.5	10	20	TO-66
18	2N5335		80	30/150	1.0	0.7	2.0	40	6.0	TO-39
19	TIP31C	TIP32C	100	10/50	3.0	1.2	3.0	3.0	40	TO-220
20	2N5838		250	8/40	3.0	1.0	3.0	5.0	100	TO-3
21	2N5839		275	10/50	2.0	1.5	2.0	5.0	100	TO-3
22	FT402		325	20/100	0.5	2.0	3.0	2.0	100	TO-3
23	2N5840		350	10/50	2.0	1.5	2.0	5.0	100	TO-3
<b><math>I_C = 4.0</math> A Max Continuous</b>										
24	2N5296		40	30/120	1.0	1.0	1.0	0.8	36	TO-220
25	BD221	BD224	40	30/120	1.0	1.0	1.0	0.8	36	TO-220
26	2N4231		40	25/100	1.5	0.7	1.5	4.0	35	TO-66
27	2N4237		40	30/150	0.25	0.6	1.0	1.0	6.0	TO-39
28	2N6121	2N6124	45	25/100	1.5	0.6	1.5	2.5	40	TO-220

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# FAIRCHILD TRANSISTORS

## POWER

### POWER TRANSISTORS (BY $I_{Cmax}$ , POLARITY AND ASCENDING $V_{CE0}$ ) (Cont'd)

Item	DEVICE NO. Polarity		$V_{CE0}$ V Max	$h_{FE}$ Min/Max	@ $I_C$ A	$V_{CE(sat)}$ V Max	@ $I_C$ A	$f_T$ MHz Min(Typ)	$P_D(Max)$ W $T_C=25^\circ C$	Package No.
	NPN	PNP								

#### $I_C = 4.0$ A Max Continuous (Cont'd)

1	2N3054		55	25/150	0.5	1.0	0.5	—	25	TO-66
2	2N5298		60	20/80	1.5	1.0	1.5	0.8	36	TO-220
3	BD222	BD225	60	20/80	1.5	1.0	1.5	0.8	36	TO-220
4	2N6122	2N6125	60	25/100	1.5	0.6	1.5	2.5	40	TO-220
5	2N4232		60	25/100	1.5	0.7	1.5	4.0	35	TO-66
6	2N4238		60	30/150	0.25	0.6	1.0	1.0	6.0	TO-39
7	2N5294		70	30/120	0.5	1.0	0.5	0.8	36	TO-220
8	BD220	BD223	70	30/120	0.5	1.0	0.5	0.8	36	TO-220
9	2N6123	2N6126	80	20/80	1.5	0.6	1.5	2.5	40	TO-220
10	2N4233		80	25/100	1.5	0.7	1.5	4.0	35	TO-66
11	2N4239		80	30/150	0.25	0.6	1.0	1.0	6.0	TO-39
12	FT317	FT417	100	35/-	1.0	0.5	1.0	20	40	TO-220
13	2N6473	2N6475	100	15/150	1.5	1.2	1.5	10	40	TO-220
14	FT317A	FT417A	120	35/-	1.0	0.5	1.0	20	40	TO-220
15	2N6474	2N6476	120	15/150	1.5	1.2	1.5	10	40	TO-220
16	FT317B	FT417B	140	35/-	1.0	0.5	1.0	20	40	TO-220

#### $I_C = 5.0$ A Max Continuous

17	2N5067	2N4901	40	20/80	1.0	0.4	1.0	4.0	87.5	TO-3
18	2N4913	2N4904	40	25/100	2.5	1.5	5.0	4.0	87.5	TO-3
19	2N5490		40	20/100	2.0	1.0	2.0	0.8	50	TO-220
20	2N5494		40	20/100	3.0	1.0	3.0	0.8	50	TO-220
21	2N5492		55	20/100	2.5	1.0	2.5	0.8	50	TO-220
22	TIP120*	TIP125*	60	1000/-	0.5	2.0	3.0	—	65	TO-220
23	BC323		60	50/250	0.5	0.15	0.5	—	7.0	TO-39
24	2N5068	2N4902	60	20/80	1.0	0.4	1.0	4.0	87.5	TO-3
25	2N4895		60	40/120	2.0	1.0	5.0	50	7.0	TO-39
26	BFX34		60	40/150	2.0	1.0	0.5	70	5.0	TO-39
27	2N4896		60	100/300	2.0	1.0	5.0	80	7.0	TO-39
28	2N4914	2N4905	60	25/100	2.5	1.5	5.0	4.0	87.5	TO-3
29	2N5496		70	20/100	3.5	1.0	3.5	0.8	50	TO-220

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# FAIRCHILD TRANSISTORS

## POWER

### POWER TRANSISTORS (BY $I_{Cmax}$ , POLARITY AND ASCENDING $V_{CE0}$ ) (Cont'd)

Item	DEVICE NO. Polarity		$V_{CE0}$ V Max	hFE @ $I_C$ A Min/Max	@ $I_C$ A	$V_{CE(sat)}$ V Max	@ $I_C$ A	$f_T$ MHz Min(Typ)	$P_D(Max)$ W $T_C=25^\circ C$	Package No.
	NPN	PNP								
<b><math>I_C = 5.0</math> A Max Continuous (Cont'd)</b>										
1	TIP121*	TIP126*	80	1000/-	0.5	2.0	3.0	—	65	TO-220
2	2N5069	2N4903	80	20/80	1.0	0.4	1.0	4.0	87.5	TO-3
3	2N4897		80	40/120	2.0	1.0	5.0	50	7.0	TO-39
4	2N5336		80	30/120	2.0	0.7	2.0	30	6.0	TO-39
5	2N5337		80	60/240	2.0	0.7	2.0	30	6.0	TO-39
6	2N4915	2N4906	80	25/100	2.5	1.5	5.0	4.0	87.5	TO-3
7	TIP122*	TIP127*	100	1000/-	0.5	2.0	3.0	—	65	TO-220
8	2N5338		100	30/120	2.0	0.7	2.0	30	6.0	TO-39
9	2N5339		100	60/240	2.0	0.7	2.0	30	6.0	TO-39
<b><math>I_C = 6.0</math> A Max Continuous</b>										
10	TIP41	TIP42	40	30/-	0.3	1.5	6.0	3.0	65	TO-220
11	TIP41A	TIP42A	60	30/-	0.3	1.5	6.0	3.0	65	TO-220
12	TIP41B	TIP42B	80	30/-	0.3	1.5	6.0	3.0	65	TO-220
13	TIP41C	TIP42C	100	30/-	0.3	1.5	6.0	3.0	65	TO-220
<b><math>I_C = 7.0</math> A Max Continuous</b>										
14	2N6111		30	30/150	3.0	1.0	3.0	10	40	TO-220
15	2N6129	2N6132	40	20/100	2.5	1.4	7.0	2.5	50	TO-220
16	2N6109		50	30/150	2.5	1.0	2.5	10	40	TO-220
17	2N5873	2N5871	60	20/100	2.5	1.0	4.0	4.0	115	TO-3
18	2N6130	2N6133	60	20/100	2.5	1.4	7.0	2.5	50	TO-220
19	2N6107		70	30/150	2.0	1.0	2.0	10	40	TO-220
20	2N5874	2N5872	80	20/100	2.5	1.0	4.0	4.0	115	TO-3
21	2N6131	2N6134	80	20/100	2.5	2.8	7.0	2.5	50	TO-220
<b><math>I_C = 7.5</math> A Max Continuous</b>										
22	FT410		200	30/90	1.0	0.8	1.0	(5.0)	100	TO-3
23	FT411		300	30/90	1.0	0.8	1.0	(5.0)	100	TO-3
24	FT413		325	20/80	0.5	0.8	0.5	(5.0)	100	TO-3
25	FT423		325	30/90	1.0	0.8	1.0	(5.0)	100	TO-3
<b><math>I_C = 8.0</math> A Max Continuous</b>										
26	2N5877	2N5875	60	20/100	4.0	1.0	5.0	4.0	150	TO-3

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# FAIRCHILD TRANSISTORS

## POWER

### POWER TRANSISTORS (BY $I_{Cmax}$ , POLARITY AND ASCENDING $V_{CE0}$ ) (Cont'd)

Item	DEVICE NO. Polarity		$V_{CE0}$ V Max	$h_{FE}$ Min/Max	@ $I_C$ A	$V_{CE(sat)}$ V Max	@ $I_C$ A	$f_T$ MHz Min(Typ)	PD(Max) W $T_C=25^\circ C$	Package No.
	NPN	PNP								
<b><math>I_C = 8.0</math> A Max Continuous (Cont'd)</b>										
1	2N6055*	2N6053*	60	750/18K	4.0	2.0	4.0	4.0	100	TO-3
2	2N5878	2N5876	80	20/100	4.0	1.0	5.0	4.0	150	TO-3
3	2N6056*	2N6054*	80	750/18K	4.0	2.0	4.0	4.0	100	TO-3
4	2N6306		250	15/75	3.0	0.8	3.0	5.0	125	TO-3
5	2N6307M		300	15/75	3.0	1.0	3.0	5.0	125	TO-3
6	2N6308M		350	12/60	3.0	1.5	3.0	5.0	125	TO-3
<b><math>I_C = 10.0</math> A Max Continuous</b>										
7	2N6103		40	15/60	8.0	2.5	16	—	75	TO-220
8	2N6386*		40	1K/20K	3.0	2.0	3.0	20	40	TO-220
9		2N4907	40	20/80	4.0	0.75	4.0	4.0	150	TO-3
10	2N6383*		40	1K/20K	5.0	2.0	5.0	20	100	TO-3
11	2N3713		60	25/75	1.0	1.0	5.0	4.0	150	TO-3
12		2N3789	60	25/90	1.0	1.0	5.0	4.0	150	TO-3
13	2N6099		60	20/80	4.0	2.5	10	—	75	TO-220
14	2N3715		60	50/150	1.0	0.8	5.0	4.0	150	TO-3
15		2N3791	60	50/180	1.0	1.0	5.0	4.0	150	TO-3
16	2N6387*		60	1K/20K	3.0	2.0	3.0	20	40	TO-220
17	MJE3055F		60	20/70	4.0	1.1	4.0	2.0	70	TO-220
18		2N4908	60	20/80	4.0	0.75	4.0	4.0	150	TO-3
19	SE9300*	SE9400*	60	1000/-	4.0	2.0	4.0	1.0	70	TO-220
20	SE9303*	SE9403*	60	1000/-	4.0	2.0	4.0	1.0	100	TO-3
21	2N6384*		60	1K/20K	5.0	2.0	5.0	20	100	TO-3
22	MJ2500*	MJ3000*	60	1000/-	5.0	2.0	10	—	150	TO-3
23	2N6101		70	20/80	5.0	2.5	10	—	75	TO-220
24	2N3714		80	25/75	1.0	1.0	5.0	4.0	150	TO-3
25		2N3790	80	25/90	1.0	1.0	5.0	4.0	150	TO-3
26	2N3716		80	50/150	1.0	0.8	5.0	4.0	150	TO-3
27		2N3792	80	50/180	1.0	1.0	5.0	4.0	150	TO-3
28	2N6388*		80	1K/20K	3.0	2.0	3.0	20	40	TO-220
29		2N4909	80	20/80	4.0	0.75	4.0	4.0	150	TO-3

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# FAIRCHILD TRANSISTORS

## POWER

### POWER TRANSISTORS (BY $I_{Cmax}$ , POLARITY AND ASCENDING $V_{CE0}$ ) (Cont'd)

Item	DEVICE NO. Polarity		$V_{CE0}$ V Max	$h_{FE}$ Min/Max	@ $I_C$ A	$V_{CE(sat)}$ V Max	@ $I_C$ A	$f_T$ MHz Min(Typ)	$P_D(Max)$ W $T_C=25^\circ C$	Package No.
	NPN	PNP								
<b><math>I_C = 10.0</math> A Max Continuous (Cont'd)</b>										
1	SE9304*	SE9404*	80	1K/-	4.0	2.0	4.0	1.0	100	TO-3
2	SE9301*	SE9401*	80	1K/-	4.0	2.0	4.0	1.0	70	TO-220
3	2N6385*		80	1K/20K	5.0	2.0	5.0	20	100	TO-3
4	MJ2501	MJ3001	80	1000/-	5.0	2.0	10		150	TO-3
5	SE9302*	SE9402*	100	1K/-	4.0	2.0	1.0		70	TO-220
6	SE9305*	SE9405*	100	1K/-	4.0	2.0	40	1.0	100	TO-3
7	2N6249		200	10/50	10	1.5	10	2.5	100	TO-3
8	2N6250		275	8/50	10	1.5	10	2.5	100	TO-3
9	FT430		300	15/45	2.5	0.9	2.5	—	125	TO-3
10	FT160		300	55/-	4.0	1.9	5.0	—	70	TO-220
11	FT431		325	15/35	2.5	0.7	2.5	—	125	TO-3
12	FT161		330	55/-	4.0	1.9	5.0	—	70	TO-220
13	FT162		350	55/-	4.0	1.9	5.0	—	70	TO-220
14	FT359*		350	250/-	3.0	2.8	7.0	—	125	TO-3
15	2N6251		350	6/50	10	1.5	10	2.5	100	TO-3
<b><math>I_C = 12.0</math> A Max Continuous</b>										
16	2N6569		40	15/200	0.2	1.5	4.0	1.5	100	TO-3
17	2N6057*	2N6050*	60	750/18K	6.0	2.0	6.0	4.0	150	TO-3
18	2N5881	2N5879	60	20/100	6.0	1.0	7.0	4.0	160	TO-3
19	2N5882	2N5880	80	20/100	6.0	1.0	7.0	4.0	160	TO-3
20	2N6058*	2N6051*	80	750/18K	6.0	2.0	6.0	4.0	150	TO-3
21	2N6059*	2N6052*	100	750/18K	6.0	2.0	6.0	4.0	150	TO-3
<b><math>I_C = 15.0</math> A Max Continuous</b>										
22	2N6486	2N6489	40	20/150	5.0	1.3	5.0	5.0	75	TO-220
23	MJ2955		60	20/70	4.0	1.1	4.0	4.0	150	TO-3
24	2N6576*		60	2K/20K	4.0	4.0	15	10	120	TO-3
25	2N3055SD		60	20/70	4.0	1.1	4.0	0.8	115	TO-3
26	FT3055	FT2955	60	20/70	4.0	1.1	4.0	2.0	70	TO-220
27	2N3055		60	20/70	4.0	1.1	4.0	—	117	TO-3
28	2N6487	2N6490	60	20/150	5.0	1.3	5.0	5.0	75	TO-220

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# FAIRCHILD TRANSISTORS

## POWER

### POWER TRANSISTORS (BY $I_C$ max, POLARITY AND ASCENDING $V_{CE0}$ ) (Cont'd)

Item	DEVICE NO. Polarity		$V_{CE0}$ V Max	hFE Min/Max	@ $I_C$ A	$V_{CE(sat)}$ V Max	@ $I_C$ A	$f_T$ MHz Min(Typ)	$P_D$ (Max) W $T_C=25^\circ C$	Package No.
	NPN	PNP								
<b><math>I_C = 15.0</math> A Max Continuous (Cont'd)</b>										
1	2N6488	2N6491	80	20/150	5.0	1.3	5.0	5.0	75	TO-220
2	2N6577*		90	2K/20K	4.0	4.0	15	10	120	TO-3
<b><math>I_C = 16.0</math> A Max Continuous</b>										
3	2N5629		100	25/100	8.0	1.0	10	0.5	200	TO-3
4		2N6029	100	25/100	8.0	2.0	16	1.0	200	TO-3
5	2N5630		120	20/80	8.0	1.0	10	0.5	200	TO-3
6		2N6030	120	20/80	8.0	2.0	16	1.0	200	TO-3
7	2N5631		140	15/60	8.0	1.0	10	0.5	200	TO-3
8		2N6031	140	15/60	8.0	2.0	16	1.0	200	TO-3
<b><math>I_C = 20.0</math> A Max Continuous</b>										
9	2N3772		60	15/60	10	1.4	10	0.2	150	TO-3
10	2N5885	2N5883	60	20/100	10	1.0	15	4.0	200	TO-3
11	2N6282*	2N6285*	60	750/18K	10	2.0	10	4.0	160	TO-3
12	2N5039		75	20/100	10	1.0	10	60	140	TO-3
13	2N6283*	2N6286*	80	750/18K	10	2.0	10	4.0	160	TO-3
14	2N5886	2N5884	80	20/100	10	1.0	15	4.0	200	TO-3
15	2N5303		80	15/60	10	2.0	20	2.0	200	TO-3
16	2N5038		90	20/100	12	1.0	12	60	140	TO-3
17	2N6284*	2N6287*	100	750/18K	10	2.0	10	4.0	160	TO-3
<b><math>I_C = 30.0</math> A Max Continuous</b>										
18	2N3771		40	15/60	15	2.0	15	0.2	150	TO-3
19		2N4398	40	15/60	15	1.0	15	4.0	200	TO-3
20	2N5301		40	15/60	15	2.0	20	2.0	200	TO-3
21		2N4399	60	15/60	15	1.0	15	4.0	200	TO-3
22	2N5302		60	15/60	15	2.0	20	2.0	200	TO-3
23	SE9306	SE9406	60	1000/-	10	2.0	10	4.0	160	TO-3
24	SE9307	SE9407	80	1000/-	10	2.0	10	4.0	160	TO-3
25	MJ802	MJ4502	90	25/100	7.5	0.8	7.5	2.0	200	TO-3
26	SE9308	SE9408	100	1000/-	10	2.0	10	4.0	160	TO-3

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# FAIRCHILD TRANSISTORS

## POWER

### POWER TRANSISTORS (BY $I_C$ max, POLARITY AND ASCENDING $V_{CE0}$ ) (Cont'd)

Item	DEVICE NO. Polarity		$V_{CE0}$ V Max	$h_{FE}$ @ $I_C$ A		$V_{CE(sat)}$ @ $I_C$ V A		$f_T$ MHz Min(Typ)	$P_D$ (Max) W $T_C=25^\circ C$	Package No.
	NPN	PNP		Min/Max	Max	Max				
<b><math>I_C = 50.0</math> A Max Continuous (Cont'd)</b>										
1	2N5685	2N5683	60	15/60	25	1.0	25	2.0	300	TO-3
2	2N5686	2N5684	80	15/60	25	1.0	25	2.0	300	TO-3

### POWER SWITCHING TRANSISTORS (BY $I_C$ max, POLARITY)

Item	DEVICE NO. Polarity		$V_{CE0}$ V Max	$h_{FE}$ @ $I_C$ A		Switching Times (Typ)				$P_D$ W $T_C=25^\circ C$	Package No.
	NPN	PNP		Min/Max	A	$t_{on}$ $\mu s$	$t_s$ $\mu s$	$t_f$ $\mu s$	@ $I_C$ A		
<b><math>I_C</math> Max = 1.0 A</b>											
3	2N3440		250	40/160	0.2	0.07	2.2	0.35	0.1	10	TO-39
4	FT47		250	30/150	0.3	0.08	1.8	0.4	1.0	40	TO-220
5	FT48		300	30/150	0.3	0.08	1.8	0.4	1.0	40	TO-220
6	FT49		350	30/150	0.3	0.08	1.8	0.4	1.0	40	TO-220
7	FT50		400	30/150	0.3	0.08	1.8	0.4	1.0	40	TO-220
<b><math>I_C</math> Max = 3.0 A</b>											
8	2N5839		275	10/50	2.0	0.45	3.0	0.3	2.0	100	TO-3
9	2N5840		350	10/50	2.0	0.45	3.0	0.3	2.0	100	TO-3
<b><math>I_C</math> Max = 10 A</b>											
10	2N3716		80	50/150	1.0	0.4	.8	0.4	5.0	150	TO-3
11	FT430		300	115/45	2.5	0.5	2.6	0.3	2.5	125	TO-3
12	FT431		325	15/35	2.5	0.5	2.6	0.3	2.5	125	TO-3
13	2N6249		200	10/50	10	0.5	1.0	0.4	10	175	TO-3
14	2N6250		275	8/50	10	0.5	1.0	0.4	10	175	TO-3
15	2N6251		350	6/50	10	0.5	1.0	0.4	10	175	TO-3
16	FT3055	FT2955	60	20/70	4.0	.65/.35	.5/.25	.4/.15	10	70	TO-220
17	2N6386*		40	1K/20K	3.0	0.8	4.0	5.0	3.0	40	TO-220
18	2N6387*		60	1K/20K	5.0	0.8	3.5	5.0	5.0	40	TO-220
19	2N6388*		80	1K/20K	5.0	0.8	3.5	5.0	5.0	40	TO-220

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# FAIRCHILD TRANSISTORS

## POWER

### POWER SWITCHING TRANSISTORS (BY $I_C$ max, POLARITY) (Cont'd)

Item	DEVICE NO. Polarity		$V_{CE0}$ V Max	$h_{FE}$ Min/Max	@ $I_C$ A	Switching Times				$P_D$ W $T_C=25^\circ C$	Package No.
	NPN	PNP				$t_{on}$ $\mu s$ Typ	$t_s$ $\mu s$ Typ	$t_f$ $\mu s$ Typ	@ $I_C$ A Typ		
<b><math>I_C</math> Max = 20 A</b>											
1	2N5038		90	20/100	10	0.30	0.75	0.15	10	140	TO-3
2	2N6282 <sup>(1)</sup>	2N6285 <sup>(1)</sup>	60	750/18K	10	.8/6	3.3/2.5	4/1.5	10	160	TO-3
3	2N6283 <sup>(1)</sup>	2N6286 <sup>(1)</sup>	80	750/18K	10	.8/6	3.3/2.5	4/1.5	10	160	TO-3
4	2N6284 <sup>(1)</sup>	2N6287 <sup>(1)</sup>	100	750/18K	10	.8/6	3.3/2.5	4/1.5	10	160	TO-3
<b><math>I_C</math> Max = 30 A</b>											
5	2N5301	2N4398	40	15/60	15	.35/.3	1.2/.7	.5/.4	10	200	TO-3

### POWER GROOVE MOS TRANSISTORS

Item	DEVICE NO.		$V_{DS}$ V Max	$V_{DG}$ V Max	$I_{GF}$ mA Max	$I_D$ A Max	$g_{fs}$ mV Min	Switching Times <sup>(2)</sup>				$P_D$ W Max	Package No.
	N-Channel	P-Channel						$t_{d(on)}$ ns Max	$t_r$ ns Max	$t_{d(off)}$ ns Max	$t_f$ ns Max		
6	VN46AF		40	40	2.0	2.0	170	5.0	5.0	5.0	5.0	12.5	Dynawatt
7	VN66AF		60	60	2.0	2.0	170	5.0	5.0	5.0	5.0	12.5	Dynawatt
8	2N6657		60	60	2.0	2.0	170	5.0	5.0	5.0	5.0	25	TO-3
9	FVN2		60	60	2.0	2.0	100	10	10	10	10	6.25	TO-39
10		FVP1	60	60	2.0	2.0	150	10	10	10	10	25	TO-3
11		FVP2	60	60	2.0	1.5	100	10	10	10	10	6.25	TO-39
12	VN88AF		80	80	2.0	2.0	170	5.0	5.0	5.0	5.0	12.5	Dynawatt
13	2N6658		90	90	2.0	2.0	170	5.0	5.0	5.0	5.0	25	TO-3
14	2N6661		90	90	2.0	2.0	170	5.0	5.0	5.0	5.0	6.25	TO-39

1. Darlington

2.  $I_D = 1A$ ,  $R_L = 25\Omega$

# FAIRCHILD TRANSISTORS

## SMALL SIGNAL

### HIGH SPEED SWITCHING TRANSISTORS (BY ASCENDING V<sub>CEO</sub>) (FOR MEDIUM SPEED—SEE GENERAL PURPOSE SECTION)

Item	DEVICE NO.		V <sub>CEO</sub> (V <sub>CER</sub> ) V Min	t <sub>s</sub> @ I <sub>C</sub> (t <sub>off</sub> ) ns mA		hFE @ I <sub>C</sub> mA		V <sub>CE</sub> (sat) @ I <sub>C</sub> V mA		f <sub>T</sub> MHz Min	C <sub>ob</sub> pF Max	P <sub>D</sub>		Package No.
	Polarity NPN	PNP		Min	Max	Min/Max	Max	Max	Max			T <sub>A</sub> 25°C mW	T <sub>C</sub> 25°C W	
1		2N5228	5.0	(140)	10	30/-	10	0.40	10	300	5.0	625	1.0	TO-92
2		2N3639	6.0	30	10	30/120	10	0.16	10	500	3.5	200	0.5	TO-106
3	2N5134		10	18	10	20/150	10	0.25	10	250	4.0	200	0.5	TO-106
4	2N4274		12	13	10	35/120	10	0.20	10	400	4.0	280	0.83	TO-106
5	2N5224		12	(60)	10	40/400	10	0.35	10	250	4.0	625	1.0	TO-92
6		2N4258A	12	15	10	30/120	10	0.15	10	700	3.0	200	0.5	TO-106
7		2N4208	12	20	10	30/120	10	0.15	10	700	3.0	350	0.7	TO-18
8		2N4258	12	20	10	30/120	10	0.15	10	700	3.0	200	0.5	TO-106
9		PN4258	12	20	10	30/120	10	0.15	10	700	3.0	625	1.0	TO-92
10		2N4313	12	20	10	30/120	30	0.19	30	700	4.5	200	0.5	TO-106
11		PN3640	12	(35)	50	30/120	10	0.20	10	500	3.5	625	1.0	TO-92
12		2N3640	12	50	10	30/120	10	0.20	10	500	3.5	200	0.5	TO-106
13		2N2894	12	(90)	30	30/150	30	0.20	30	400	6.0	360	1.2	TO-18
14		BSX29	12	(90)	30	30/120	30	0.20	30	400	6.0	360	1.2	TO-18
15		2N4209	15	20	10	50/120	10	0.18	10	850	3.0	350	0.7	TO-18
16		2N5771	15	20	10	50/120	10	0.15	10	850	3.0	625	1.0	TO-92
17	2N4275		15	13	10	35/120	10	0.20	10	400	4.0	280	0.83	TO-106
18	2N2369		15	13	10	40/120	10	0.25	10	500	4.0	360	1.2	TO-18
19	PN2369		15	13	10	40/120	10	0.25	10	500	4.0	625	1.0	TO-92
20	2N2369A		15	13	10	40/120	10	0.20	10	500	4.0	360	1.2	TO-18
21	2N5769		15	13	10	40/120	10	0.20	10	500	4.0	625	1.0	TO-92
22	BSX26		15	13	10	40/120	10	0.25	10	500	4.0	360	1.2	TO-18
23	2N3009		15	18	10	30/120	30	0.18	30	350	5.0	360	1.2	TO-52
24	2N3013		15	18	10	30/120	30	0.18	30	350	5.0	360	1.2	TO-52
25	2N3646		15	18	10	30/120	30	0.20	30	350	5.0	200	0.5	TO-106
26	MPS3646		15	18	10	30/120	30	0.20	30	350	5.0	625	1.0	TO-92
27	2N5772		15	18	10	30/120	30	0.20	30	350	5.0	625	1.0	TO-92
28	BSX20		15	18	10	30/120	30	0.18	30	350	5.0	360	1.2	TO-18
29	2N914		15	20	20	30/120	10	0.25	20	300	6.0	360	1.2	TO-18
30	2N708		15	25	10	30/120	10	0.40	10	300	6.0	360	1.2	TO-18
31	2N3014		20	18	10	30/120	30	0.18	30	350	5.0	360	1.2	TO-52
32	BSX39		20	18	10	40/120	30	0.18	30	350	6.0	360	1.2	TO-18

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# FAIRCHILD TRANSISTORS

## SMALL SIGNAL

### HIGH SPEED SWITCHING TRANSISTORS (BY ASCENDING $V_{CE0}$ ) (Cont'd) (FOR MEDIUM SPEED—SEE GENERAL PURPOSE SECTION)

Item	DEVICE NO. Polarity		$V_{CE0}$ ( $V_{CER}$ ) V Min	$t_s$ @ $I_C$ ( $t_{off}$ ) ns mA		$h_{FE}$ @ $I_C$ mA		$V_{CE(sat)}$ @ $I_C$ V mA		$f_T$ MHz Min	$C_{ob}$ pF Max	PD		Package No.
	NPN	PNP		Max	Min/Max	Max	Max	Max	Max			Max	Max	
1		2N5910	20	20	10	30/120	10	0.15	10	700	3.0	200	0.5	TO-106
2		2N3209	20	(90)	30	30/120	30	0.20	30	400	5.0	360	1.2	TO-18
3		2N5023	30	(90)	500	40/100	500	0.35	500	200	25	1000	4.0	TO-39
4	2N3724		30	(60)	500	60/150	100	0.20	100	300	12	800	3.5	TO-39
5	2N4013		30	(60)	500	60/150	100	0.20	100	300	12	360	1.2	TO-18
6	BSX32		40	(60)	500	60/150	100	0.25	100	300	10	800	3.5	TO-39
7	2N3253		40	(70)	500	25/-	150	0.35	150	175	12	1000	5.0	TO-39
8		2N3467	40	(90)	500	40/120	500	0.50	500	175	25	1000	5.0	TO-39
9		2N5022	50	(90)	500	25/100	500	0.40	500	170	25	1000	4.0	TO-39
10		2N3468	50	(90)	500	25/75	500	0.60	500	150	25	1000	5.0	TO-39
11	2N4047		50	(60)	500	40/150	100	0.26	100	250	10	800	3.5	TO-39
12	2N3725		50	(60)	500	60/150	100	0.26	100	300	10	800	3.5	TO-39
13	2N4014		50	(60)	500	60/150	100	0.26	100	300	10	360	1.2	TO-18
14	2N3444		50	(70)	500	20/60	500	0.60	500	150	12	1000	5.0	TO-39

### GENERAL PURPOSE AMPLIFIER AND SWITCHING TRANSISTORS (BY ASCENDING $V_{CE0}$ )

(ALSO SEE LOW LEVEL AND HIGH VOLTAGE SECTION)

Item	DEVICE NO. Polarity		$V_{CE0}$ ( $V_{CER}$ ) V Min	$h_{FE}$ @ $I_C$ ( $h_{fe}$ ) mA		$V_{CE(sat)}$ @ $I_C$ V mA		$C_{ob}$ pF Max	$f_T$ MHz Min	$t_{off}$ ns Max	PD		Package No.
	NPN	PNP		Min/Max	Max	Max	Max				Max	Max	
15	2N5128		12	35/350	50	0.25	150	10	200	—	300	0.70	TO-105
16		PN5139	20	-/30	10	0.20	10	5.0	300	—	625	1.0	TO-92
17		2N5142	20	-/30	50	0.50	50	30	100	200	300	0.70	TO-105
18		MPS6563	20	50/200	350	0.50	350	30	60	—	625	1.0	TO-92
19	2N5223		20	50/800	2.0	0.70	2.0	4.0	150	—	625	—	TO-92
20	2N5136		20	20/400	150	0.25	150	35	40	—	220	0.60	TO-105
21	BFY52		20	60/-	150	0.35	150	12	200	—	800	2.86	TO-39
22	MPS6561		20	50/200	350	0.50	150	30	60	—	625	1.0	TO-92
23	MPS6515		25	250/500	2.0	0.50	2.0	3.5	—	—	625	1.0	TO-92
24	MPS2925		25	(235/470)	2.0	—	—	12	—	—	625	1.0	TO-92
25	MPS3392		25	150/300	2.0	—	—	3.5	—	—	625	1.0	TO-92
26	MPS6514		25	150/300	2.0	0.50	2.0	3.5	—	—	625	1.0	TO-92

# FAIRCHILD TRANSISTORS

## SMALL SIGNAL

### GENERAL PURPOSE AMPLIFIER AND SWITCHING TRANSISTORS (BY ASCENDING V<sub>CEO</sub>) (Cont'd)

(ALSO SEE LOW LEVEL AND HIGH VOLTAGE SECTION)

Item	DEVICE NO. Polarity		V <sub>CEO</sub> (V <sub>CER</sub> ) V Min	h <sub>FE</sub> (h <sub>fe</sub> ) Min/Max	@ I <sub>C</sub> mA	V <sub>CE(sat)</sub> V @ I <sub>C</sub>		C <sub>ob</sub> pF Max	f <sub>T</sub> MHz Min	t <sub>off</sub> ns Max	P <sub>D</sub>		Package No.
	NPN	PNP				Max	mA				25°C mW	25°C W	
1	MPS2924		25	(150/300)	2.0	—	—	12	—	—	625	1.0	TO-92
2	2N4124		25	120/360	2.0	0.30	2.0	4.0	300	—	625	—	TO-92
3	MPS3393		25	90/180	2.0	—	—	3.5	—	—	625	1.0	TO-92
4	EN5172		25	100/500	10	0.25	10	12	—	—	200	0.50	TO-106
5	MPS5172		25	100/500	10	0.25	10	12	—	—	625	1.0	TO-92
6	2N5135		25	50/600	10	1.00	100	25	40	—	300	0.80	TO-105
7	2N5225	2N5226	25	30/600	50	0.80	50	20	50	—	625	—	TO-92
8	BC738	BC728	25	40/250	100	0.5	1000	45	100	—	1120	3.4	TO-92
9	BC738-6	BC728-6	25	40/100	100	0.5	1000	45	100	—	1120	3.4	TO-92
10	BC738-10	BC728-10	25	63/163	100	0.5	1000	45	100	—	1120	3.4	TO-92
11	PE8050	PE8550	25	65/200	100	0.5	1000	45	100	—	1120	3.4	TO-92
12	BC738-16	BC728-16	25	100/250	100	0.5	1000	45	100	—	1120	3.4	TO-92
13	MPS6560		25	50/200	500	0.50	500	30	60	—	625	1.0	TO-92
14		MPS6519	25	250/500	2.0	0.50	2.0	4.0	—	—	625	1.0	TO-92
15		2N4126	25	120/360	2.0	0.40	2.0	4.5	250	—	625	—	TO-92
16		PN6076	25	100/500	10	0.25	10	15	—	—	721	1.47	TO-92
17		BCY72	25	-/50	10	0.25	10	6.0	200	—	360	1.2	TO-18
18		2N3638	25	-/30	50	0.25	50	20	100	170	300	0.7	TO-105
19		MPS3702	25	60/300	50	0.25	50	12	100	—	625	1.0	TO-92
20		2N3638A	25	-/100	50	0.25	50	10	150	170	300	0.7	TO-105
21		MPS3638A	25	-/100	50	0.25	50	10	150	170	625	1.0	TO-92
22		MPS6562	25	50/200	500	0.50	500	30	60	—	625	1.0	TO-92
23	2N718		28	40/120	150	1.50	150	35	50	—	400	1.5	TO-18
24	2N4123		30	50/150	2.0	0.30	2.0	4.0	250	—	625	—	TO-92
25	2N3566		30	50/160	10	1.00	100	25	40	—	300	0.80	TO-105
26	MPS3704		30	100/300	50	0.60	50	12	100	—	625	1.0	TO-92
27	BFY51		30	40/-	150	0.35	150	12	50	—	800	2.86	TO-39
28	BC119		30	40/120	150	0.35	150	25	40	—	800	5.0	TO-39
29	2N2218		30	40/120	150	0.40	150	8.0	250	—	800	3.0	TO-39
30	2N2221		30	40/120	150	0.40	150	8.0	250	—	500	1.8	TO-18



# FAIRCHILD TRANSISTORS

## SMALL SIGNAL

### GENERAL PURPOSE AMPLIFIER AND SWITCHING TRANSISTORS

(BY ASCENDING  $V_{CE0}$ ) (Cont'd)

(ALSO SEE LOW LEVEL AND HIGH VOLTAGE SECTION)

Item	DEVICE NO. Polarity		$V_{CE0}$ ( $V_{CER}$ ) V Min	$h_{FE}$ ( $h_{fe}$ ) Min/Max	@ $I_C$ mA	$V_{CE(sat)}$ V @ $I_C$		$C_{ob}$ pF Max	$f_T$ MHz Min	$t_{off}$ ns Max	$P_D$ $T_A$ $T_C$		Package No.
	NPN	PNP				Max	mA				25°C mW	25°C W	
1	2N3641		30	40/120	150	0.22	150	8.0	250	—	350	0.70	TO-105
2	2N3300		30	100/300	150	0.22	150	8.0	250	150	800	3.0	TO-39
3	2N3302		30	100/300	150	0.22	150	8.0	250	150	360	1.80	TO-18
4	2N2219		30	100/300	150	0.40	150	8.0	250	—	800	3.0	TO-39
5	2N2222		30	100/300	150	0.40	150	8.0	250	—	500	1.8	TO-18
6	2N3643		30	100/300	150	0.22	150	8.0	250	—	350	0.70	TO-105
7	PN3643		30	100/300	150	0.22	150	8.0	250	—	625	1.0	TO-92
8		2N4125	30	50/150	2.0	0.40	2.0	4.5	200	—	625	—	TO-92
9		2N5227	30	50/700	2.0	0.40	2.0	5.0	100	—	625	—	TO-92
10		PN4916	30	70/200	10	0.14	10	4.5	400	150	625	1.0	TO-92
11		PN4917	30	150/300	10	0.14	10	4.5	200	150	625	1.0	TO-92
12		MPS3703	30	30/150	50	0.25	50	12	100	—	625	1.0	TO-92
13		BC126	30	30/120	150	0.50	150	—	—	—	300	0.8	TO-105
14	BC737-6	BC727-6	35	40/100	100	0.75	1000	45	100	—	1120	3.4	TO-92
15		PE8551	35	40/180	100	0.5	1000	45	100	—	1120	3.4	TO-92
16	BC737	BC727	35	40/250	100	0.75	1000	45	100	—	1120	3.4	TO-92
17	BC737-10	BC727-10	35	63/160	100	0.75	1000	45	100	—	1120	2.4	TO-92
18	BC737-16	BC727-16	35	100/200	100	0.75	1000	45	100	—	1120	2.4	TO-92
19		2N1132	35	30/90	150	1.50	150	45	60	—	600	2.0	TO-39
20	PE8051		35	40/180	100	.75	1000	45	100	—	1120	3.4	TO-92
21	BFY50		35	30/-	150	0.20	150	12	50	—	800	2.86	TO-39
22	MPSA10		40	40/400	5.0	—	—	4.0	50	—	625	1.0	TO-92
23	MPSA20	MPSA70	40	40/400	5.0	0.25	5.0	4.0	125	—	625	1.0	TO-92
24	2N3903		40	50/150	10	0.20	10	4.0	250	225	625	—	TO-92
25	2N3904		40	100/300	10	0.20	10	4.0	300	225	625	—	TO-92
26	2N3947		40	100/300	10	0.20	10	4.0	300	450	360	1.2	TO-18
27	BC140	BC160	40	40/400	100	1.40	1000	25	50	—	800	5.0	TO-39
28	BC140-6	BC160-6	40	40/100	100	1.40	1000	25	50	—	800	5.0	TO-39
29	MPS6530		40	40/120	100	0.50	100	5.0	—	—	625	1.0	TO-92
30	BC140-10	BC160-10	40	63/160	100	1.40	1000	25	50	—	800	5.0	TO-39

# FAIRCHILD TRANSISTORS

## SMALL SIGNAL

### GENERAL PURPOSE AMPLIFIER AND SWITCHING TRANSISTORS

(BY ASCENDING  $V_{CE0}$ ) (Cont'd)

(ALSO SEE LOW LEVEL AND HIGH VOLTAGE SECTION)

Item	DEVICE NO. Polarity		$V_{CE0}$ ( $V_{CER}$ ) V Min	$h_{FE}$ @ $I_C$ ( $h_{fe}$ ) mA		$V_{CE(sat)}$ V @ $I_C$ Max mA		$C_{ob}$ pF Max	$f_T$ MHz Min	$t_{off}$ ns Max	$P_D$ $T_A$ $T_C$ 25°C 25°C mW W		Package No.
	NPN	PNP		Min/Max	Max	Max	Max				Max	Max	
1	MPS6531	MPS6534M	40	90/270	100	0.30	100	5.0	—	—	625	1.0	TO-92
2	BC140-16	BC160-16	40	100/250	100	1.40	1000	25	60	800	800	5.0	TO-39
3	BC140-25	BC160-25	40	160/400	100	1.40	1000	25	50	—	800	5.0	TO-39
4	2N3567		40	40/120	150	0.25	150	20	60	—	300	0.8	TO-105
5	PN3567		40	40/120	150	0.25	150	20	60	—	625	1.0	TO-92
6	2N2218A		40	40/120	150	0.30	150	8.0	250	285	800	3.0	TO-39
7	2N2221A		40	40/120	150	0.30	150	8.0	250	285	500	1.8	TO-18
8	2N4400		40	50/150	150	0.40	150	6.5	200	255	625	—	TO-92
9	2N697		(40)	40/120	150	1.50	150	35	50	—	600	2.0	TO-39
10	2N3569		40	100/300	150	0.25	150	20	60	—	300	0.8	TO-105
11	2N2219A		40	100/300	150	0.30	150	8.0	300	285	800	3.0	TO-39
12	PN2219A		40	100/300	150	0.30	150	8.0	300	285	625	1.0	TO-92
13	2N2222A		40	100/300	150	0.30	150	8.0	300	285	500	1.8	TO-18
14	PN2222A		40	100/300	150	0.30	150	8.0	300	285	625	1.0	TO-92
15	2N4401		40	100/300	150	0.40	150	6.5	250	225	625	—	TO-92
16		MPS6516	40	50/100	2.0	0.50	2.0	4.0	—	—	625	1.0	TO-92
17		BCY70	40	50/-	10	0.25	10	6.0	200	—	360	1.2	TO-18
18		2N3250	40	50/150	10	0.25	10	6.0	250	225	360	1.2	TO-18
19		2N3905	40	50/150	10	0.25	10	4.5	200	260	625	—	TO-92
20		BFY64	40	80/-	10	0.30	50	10	200	120	700	3.0	TO-39
21		2N3251	40	100/300	10	0.25	10	6.0	300	250	360	1.2	TO-18
22		PN3251	40	100/300	10	0.25	10	6.0	250	225	625	1.0	TO-92
23		2N3906	40	100/300	10	0.25	10	4.5	250	300	625	—	TO-92
24		2N2904	40	40/120	150	0.40	150	8.0	200	110	600	3.0	TO-39
25		PN2906	40	40/120	150	0.40	150	8.0	200	110	625	1.0	TO-92
26		2N4402	40	50/150	150	0.40	150	8.5	150	255	625	—	TO-92
27		2N4037	40	50/250	150	1.40	150	—	60	—	1000	—	TO-39
28		BC116A	40	80/240	150	0.40	150	8.0	130	—	300	0.8	TO-39
29		2N2905	40	100/300	150	0.40	150	8.0	200	110	600	3.0	TO-39
30		2N2907	40	100/300	150	0.40	150	8.0	200	110	400	1.8	TO-18

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# FAIRCHILD TRANSISTORS

## SMALL SIGNAL

### GENERAL PURPOSE AMPLIFIER AND SWITCHING TRANSISTORS

(BY ASCENDING  $V_{CE0}$ ) (Cont'd)

(ALSO SEE LOW LEVEL AND HIGH VOLTAGE SECTION)

Item	DEVICE NO.		$V_{CE0}$ ( $V_{CER}$ ) V Min	$h_{FE}$ ( $h_{fe}$ ) Min/Max	@ $I_C$ mA	$V_{CE(sat)}$ V @ $I_C$ Max mA		$C_{ob}$ pF Max	$f_T$ MHz Min	$t_{off}$ ns Max	PD $T_A$ $T_C$ 25°C 25°C mW W		Package No.
	NPN	PNP				Max	mA				25°C	25°C	
1		2N4403	40	100/300	150	0.40	150	8.5	200	255	625	—	TO-92
2		BCY71	45	100/600	10	0.25	10	6.0	200	—	360	1.2	TO-18
3		2N3502	45	115/300	50	0.25	50	8.0	200	100	700	3.0	TO-39
4		2N3504	45	115/300	50	0.25	50	8.0	200	100	400	1.3	TO-18
5		2N3644	45	115/300	50	0.25	50	8.0	200	100	300	0.7	TO-105
6		PN3644	45	115/300	50	0.25	50	8.0	200	100	625	1.0	TO-92
7	PN3693		45	40/160	10	—	—	3.5	200	—	625	1.0	TO-92
8	PN3694		45	100/400	10	—	—	3.5	200	—	625	1.0	TO-92
9	BFY56		45	30/150	150	0.30	150	2.5	40	625	800	5.0	TO-39
10	2N3642		45	40/120	150	0.22	150	8.0	250	—	350	0.7	TO-105
11	PN3642		45	40/120	150	0.22	150	8.0	250	—	625	1.0	TO-92
12	2N2270		45	50/200	150	0.90	150	15	100	—	1000	5.0	TO-39
13	2N4409		50	60/400	1.0	0.20	1.0	12	60	—	625	—	TO-92
14	2N915		50	50/200	10	1.00	10	3.5	250	—	360	1.2	TO-18
15	2N718A		(50)	40/120	150	1.50	150	25	60	—	500	1.8	TO-18
16	2N1613		(50)	40/120	150	1.50	150	25	80	—	800	3.0	TO-39
17	2N3053		(50)	50/250	150	1.40	150	15	100	—	—	5.0	TO-39
18	2N1711		(50)	100/300	150	1.50	150	25	70	—	800	3.0	TO-39
19		BFX39	55	40/-	100	0.50	500	20	100	400	800	4.0	TO-39
20		2N4354	60	50/500	10	0.15	150	30	100	—	350	0.8	TO-105
21		2N3250A	60	50/150	10	0.25	10	6.0	250	225	360	1.2	TO-18
22		2N3251A	60	100/300	10	0.25	10	6.0	300	250	360	1.2	TO-18
23		2N4355	60	100/400	10	0.15	150	30	100	—	350	0.8	TO-105
24		PN4355	60	100/400	10	0.15	150	30	100	—	625	1.0	TO-92
25		2N3503	60	115/300	50	0.25	50	8.0	200	100	700	3.0	TO-39
26		2N3505	60	115/300	50	0.25	50	8.0	200	100	400	1.3	TO-18
27		2N3645	60	115/300	50	0.25	50	8.0	200	100	300	0.7	TO-105
28		PN3645	60	115/300	50	0.25	50	8.0	200	100	300	0.7	TO-105
29	BC537-6	BC527-6	60	40/100	100	0.50	1000	15	100	—	625	1.0	TO-92
30		2N4030	60	40/120	100	0.15	150	20	100	—	800	4.0	TO-39

# FAIRCHILD TRANSISTORS

## SMALL SIGNAL GENERAL PURPOSE AMPLIFIER AND SWITCHING TRANSISTORS (BY ASCENDING $V_{CE0}$ ) (Cont'd) (ALSO SEE LOW LEVEL AND HIGH VOLTAGE SECTION)

Item	DEVICE NO. Polarity		$V_{CE0}$ ( $V_{CER}$ ) V Min	$h_{FE}$ ( $h_{fe}$ ) Min/Max	@ $I_C$ mA	$V_{CE(sat)}$ V @ $I_C$		$C_{ob}$ pF Max	$f_T$ MHz Min	$t_{off}$ ns Max	PD		Package No.
	NPN	PNP				Max	mA				$T_A$ 25°C mW	$T_C$ 25°C W	
1	BC141-6	BC161-6	60	40/100	100	1.40	1000	25	50	—	800	5.0	TO-39
2	BC537	BC527	60	40/400	100	0.50	1000	15	100	—	625	1.0	TO-92
3	BC141	BC161	60	40/400	100	1.40	1000	25	50	—	800	5.0	TO-39
4		MPSA55	60	50/-	100	0.25	100	—	50	—	625	1.0	TO-92
5	BC537-10	BC527-10	60	63/160	100	0.50	1000	15	100	—	625	1.0	TO-92
6	BC141-10	BC161-10	60	63/160	100	1.40	1000	25	50	—	800	5.0	TO-39
7	BC537-16	BC527-16	60	100/250	100	0.50	1000	15	100	—	625	1.0	TO-92
8	BC141-16	BC161-16	60	100/250	100	1.40	1000	25	50	—	800	5.0	TO-39
9		2N4032	60	100/300	100	0.15	150	20	150	—	800	4.0	TO-39
10	BC141-25	BC161-25	60	150/400	100	1.40	1000	25	50	—	800	5.0	TO-39
11	BC537-25	BC527-25	60	160/400	100	0.50	1000	15	100	—	625	1.0	TO-92
12		2N2904A	60	40/120	150	0.40	150	8.0	200	110	600	3.0	TO-39
13		2N2906A	60	40/120	150	0.40	150	8.0	200	110	400	1.8	TO-18
14		2N2905A	60	100/300	150	0.40	150	8.0	200	110	600	3.0	TO-39
15		PN2905A	60	100/300	150	0.40	150	8.0	150	110	625	1.0	TO-92
16		2N2907A	60	100/300	150	0.40	150	8.0	200	110	400	1.8	TO-18
17		PN2907A	60	100/300	150	0.40	150	8.0	150	110	625	1.0	TO-92
18		BC143	60	20/-	200	0.60	200	—	—	—	700	3.0	TO-39
19		BC287	60	20/200	500	0.45	500	13(Typ)	200(Typ)	—	800	4.0	TO-39
20	2N3568		60	40/120	150	0.25	150	20	60	—	300	0.8	TO-105
21	PN3568		60	100/300	150	0.18	150	15	250	—	625	1.0	TO-92
22	PE6020		60	100/300	150	0.18	150	15	250	—	625	1.0	TO-92
23	SE6020		60	100/300	150	0.18	150	15	250	1000	300	0.8	TO-105
24	BC142		60	20/-	200	0.40	200	—	—	—	800	5.0	TO-39
25	BC286		60	20/180	500	0.40	500	12(Typ)	100(Typ)	—	800	4.0	TO-39
26		BFX41	75	40/-	100	0.50	500	20	100	400	800	4.0	TO-39
27		BFX40	75	60/-	500	0.50	500	20	150	—	800	4.0	TO-39
28		2N4356	80	50/250	10	0.15	150	30	100	—	350	0.8	TO-105
29		BC528-6	80	40/100	100	0.50	1000	15	100	—	625	1.0	TO-92
30	BC538	BC528	80	40/400	100	0.50	1000	15	100	—	625	1.0	TO-92

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# FAIRCHILD TRANSISTORS

## SMALL SIGNAL

### GENERAL PURPOSE AMPLIFIER AND SWITCHING TRANSISTORS

(BY ASCENDING  $V_{CE0}$ ) (Cont'd)

(ALSO SEE LOW LEVEL AND HIGH VOLTAGE SECTION)

Item	DEVICE NO. Polarity		$V_{CE0}$ ( $V_{CER}$ ) V Min	hFE ( $h_{fe}$ ) Min/Max	@ $I_C$ mA	$V_{CE(sat)}$ V @ $I_C$		$C_{ob}$ pF Max	$f_T$ MHz Min	$t_{off}$ ns Max	PD		Package No.
	NPN	PNP				Max	mA				$T_A$ 25°C mW	$T_C$ 25°C W	
1	MPSA06	MPSA56	80	50/-	100	0.25	100	—	50	—	625	1.0	TO-92
2	BC538-10	BC528-10	80	63/160	100	0.50	1000	15	100	—	625	1.0	TO-92
3		2N4033	80	100/300	100	0.15	150	20	150	—	800	4.0	TO-39
4	BC538-16	BC528-16	80	100/250	100	0.50	1000	15	100	—	625	1.0	TO-92
5	BC538-25	BC528-25	80	160/400	100	0.50	1000	15	100	—	625	1.0	TO-92
6	2N4410		80	60/400	10	0.20	1.0	12	60	—	625	—	TO-92
7	2N3020		80	40/120	150	0.20	150	12	80	—	800	5.0	TO-39
8	2N1893		80	40/120	150	5.00	150	15	50	—	800	3.0	TO-39
9	PE6021		80	100/300	150	0.18	150	15	250	1000	625	1.0	TO-92
10	SE6021		80	100/300	150	0.18	150	15	250	1000	300	0.8	TO-105
11	2N3019		80	100/300	150	0.20	150	12	100	—	800	5.0	TO-39
12	2N2405		90	60/200	150	0.50	150	15	200	—	800	2.4	TO-39

### LOW LEVEL, LOW NOISE AMPLIFIER TRANSISTORS (BY ASCENDING $V_{CE0}$ )

Item	DEVICE NO. Polarity		$V_{CE0}$ V Min	hFE Min/Max	@ $I_C$ mA	hFE @ $I_C$		NF @ f		NF @ f		Package No.
	NPN	PNP				Min	Max	dB Max	kHz	dB Max	kHz	
13	2N5133		18	60/1000	1.0	—	—	—	—	—	—	TO-106
14	BC208		20	90 (Typ)/-	0.01	110/800	2.0	10	1.0	—	—	TO-106
15	BC208A		20	90 (Typ)/-	0.01	110/220	2.0	10	1.0	—	—	TO-106
16	BC208B	BC205B	20	150 (Typ)/-	0.01	200/450	2.0	10	1.0	—	—	TO-106
17	BC208C		20	270 (Typ)/-	0.01	420/800	2.0	10	1.0	—	—	TO-106
18	BC209		20	150 (Typ)/-	0.01	200/800	2.0	4.0	1.0	4.0	WB	TO-106
19	BC209B		20	150 (Typ)/-	0.01	200/450	2.0	4.0	1.0	4.0	WB	TO-106
20	BC209C		20	270 (Typ)/-	0.01	420/450	2.0	4.0	1.0	4.0	WB	TO-106
21	BC319	BC322	20	150 (Typ)/-	0.01	200/800	2.0	4.0	1.0	4.0	WB	TO-92
22	BC319B	BC322B	20	150 (Typ)/-	0.01	200/450	2.0	4.0	1.0	4.0	WB	TO-92
23	BC319C	BC322C	20	270 (Typ)/-	0.01	420/800	2.0	4.0	1.0	4.0	WB	TO-92
24	BC522		20	—	—	400/2000	2.0	3.0	1.0	3.0	WB	TO-92
25	BC522C		20	—	—	400/800	2.0	3.0	1.0	3.0	WB	TO-92
26	BC522D		20	—	—	750/1550	2.0	3.0	1.0	3.0	WB	TO-92

# FAIRCHILD TRANSISTORS

## SMALL SIGNAL

### LOW LEVEL, LOW NOISE AMPLIFIER TRANSISTORS (BY ASCENDING $V_{CE0}$ ) (Cont'd)

Item	DEVICE NO. Polarity		$V_{CE0}$ V Min	hFE Min/Max	@ $I_C$ mA	hFE Min/Max	@ $I_C$ mA	NF dB Max	@ f kHz	NF dB Max	@ f kHz	Package No.
	NPN	PNP										
1	BC522E		20	—	—	1200/2200	2.0	3.0	1.0	3.0	WB.	TO-92
2	BC113		20	120/-	0.1	200/-	1.0	2.5(Typ)	1.0	—	—	TO-106
3		BC205	20	80 (Typ)/-	0.01	110/500	2.0	10	1.0	—	—	TO-106
4		BC205A	20	80 (Typ)/-	0.01	110/220	2.0	10	1.0	—	—	TO-106
5		BC205C	20	80 (Typ)/-	0.01	400/800	2.0	10	1.0	—	—	TO-106
6		BC179	20	120/460	2.0	—	—	4.0	1.0	4.0	WB	TO-18
7		BC179A	20	120/220	2.0	—	—	4.0	1.0	4.0	WB	TO-18
8		BC179B	20	180/460	2.0	—	—	4.0	1.0	4.0	WB	TO-18
9		BC178	25	70/460	2.0	—	—	10	1.0	—	—	TO-18
10		BC178VI	25	70/140	2.0	—	—	10	1.0	—	—	TO-18
11		BC178A	25	120/220	2.0	—	—	10	1.0	—	—	TO-18
12		BC178B	25	180/460	2.0	—	—	10	1.0	—	—	TO-18
13	BC114		25	120/-	0.1	200/-	10	3.0	1.0	—	—	TO-106
14	2N5089		25	400/1200	0.1	400/-	10	—	—	2.0	WB	TO-92
15	2N3565		25	70/-	0.1	150/600	1.0	—	—	—	—	TO-106
16	PN3565		25	70/-	0.1	150/600	1.0	—	—	—	—	TO-92
17	SE4010		25	200/1000	1.0	—	—	3.0	1.0	—	—	TO-106
18	SE4002		25	200/1000	1.0	—	—	—	—	—	—	TO-106
19	SE4001		25	60/300	1.0	—	—	—	—	—	—	TO-106
20	BC115		30	50/-	1.0	50/-	100	—	—	—	—	TO-105
21	BC318	BC321	30	90 (Typ)/-	0.01	110/800	2.0	6.0	1.0	—	—	TO-92
22	BC318A	BC321A	30	90 (Typ)/-	0.01	110/220	2.0	6.0	1.0	—	—	TO-92
23	BC318B	BC321B	30	150 (Typ)/-	0.01	200/450	2.0	6.0	1.0	—	—	TO-92
24	BC318C		30	270 (Typ)/-	0.01	420/800	2.0	6.0	1.0	—	—	TO-92
25	SE4023		30	900/-	0.01	1200/2200	10	3.0	1.0	8.0	0.01	TO-106
26	2N5088		30	300/900	0.1	300/-	10	—	—	3.0	WB	TO-92
27		BC321C	30	80(Typ)/-	0.01	400/800	2.0	6.0	1.0	—	—	TO-92
28		2N5138	30	50/800	0.10	50/-	1.0	—	—	—	—	TO-106
29		PN5138	30	50/800	0.10	50/-	1.0	—	—	—	—	TO-92
30		BC153	40	50/-	0.10	50/-	10	1.0	1.0	—	—	TO-106
31		BC154	40	160/-	0.10	160/-	10	2.5	1.0	—	—	TO-106
32		2N4250	40	250/700	0.10	250/-	1.0	2.0	1.0	2.0	WB	TO-106

# FAIRCHILD TRANSISTORS

## SMALL SIGNAL

### LOW LEVEL, LOW NOISE AMPLIFIER TRANSISTORS (BY ASCENDING $V_{CE0}$ ) (Cont'd)

Item	DEVICE NO. Polarity		$V_{CE0}$ V Min	$h_{FE}$ Min/Max	@ $I_C$ mA	$h_{FE}$ Min/Max	@ $I_C$ mA	NF dB Max	@ f kHz	NF dB Max	@ f kHz	Package No.
	NPN	PNP										
1		PN4250	40	250/700	0.10	250/-	1.0	2.0	1.0	2.0	WB	TO-92
2		2N4248	40	50/-	0.10	50/-	1.0	—	—	—	—	TO-106
3		PN4248	40	50/-	0.10	50/-	1.0	—	—	—	—	TO-92
4	BC207	BC204	45	90(Typ)/-	0.01	50/450	2.0	10	1.0	—	—	TO-106
5	BC207A	BC204A	45	90(Typ)/-	0.01	110/220	2.0	10	1.0	—	—	TO-106
6	BC207B	BC204B	45	150(Typ)/-	0.01	200/450	2.0	10	1.0	—	—	TO-106
7	BC317	BC320	45	90(Typ)/-	0.01	110/450	2.0	6.0	1.0	—	—	TO-92
8	BC317A	BC320A	45	90(Typ)/-	0.01	110/220	2.0	6.0	1.0	—	—	TO-92
9	BC317B	BC320B	45	150(Typ)/-	0.01	200/450	2.0	6.0	1.0	—	—	TO-92
10		BC177	45	70/220	2.0	—	—	10	1.0	—	—	TO-18
11		BC177VI	45	70/140	2.0	—	—	10	1.0	—	—	TO-18
12		BC177A	45	120/220	2.0	—	—	10	1.0	—	—	TO-18
13		BC177B	45	180/460	2.0	—	—	10	1.0	—	—	TO-18
14		2N3964	45	180/-	0.001	250/500	0.01	2.0	1.0	4.0	0.1	TO-18
15	2N930		45	100/300	0.01	600/-	10	—	—	3.0	WB	TO-18
16	2N5962		45	450/-	0.01	600/1400	10	3.0	1.0	3.0	WB	TO-92
17	SE4021		45	450/*	0.01	600/1400	10	3.0	1.0	3.0	WB	TO-106
18	BC523		45	180/800	2.0	100/-	0.01	—	—	—	—	TO-92
19	BC523B		45	180/400	2.0	100/-	0.01	—	—	—	—	TO-92
20	BC523C		45	380/800	2.0	100/-	0.01	—	—	—	—	TO-92
21	BC521		45	600/1400	10	350/-	0.01	3.0	1.0	—	—	TO-92
22	BC521C		45	380/800	2.0	350/-	0.01	3.0	1.0	3.0	WB	TO-92
23	BC521D		45	750/1500	2.0	350/-	0.01	3.0	1.0	3.0	WB	TO-92
24	2N5210		50	200/600	0.1	250/-	10	3.0	1.0	2.0	WB	TO-92
25	2N5209		50	100/300	0.1	150/-	10	4.0	1.0	3.0	WB	TO-92
26		2N5087	50	250/800	0.10	250/-	10	2.0	1.0	2.0	WB	TO-92
27		2N5086	50	150/500	0.10	150/-	10	3.0	1.0	3.0	WB	TO-92
28		BC526	50	40/-	0.01	(100/600)	2.0	—	—	—	—	TO-92
29		BC526A	50	40/-	0.01	(100/300)	2.0	—	—	10	WB	TO-92
30		EN3962	60	60/-	0.01	100/300	0.01	3.0	1.0	10	0.1	TO-106
31		2N4250A	60	250/700	0.10	250/-	1.0	2.0	1.0	2.0	WB	TO-106
32		2N4249	60	100/300	0.10	100/-	1.0	3.0	1.0	3.0	WB	TO-106

# FAIRCHILD TRANSISTORS

## SMALL SIGNAL

### LOW LEVEL, LOW NOISE AMPLIFIER TRANSISTORS (BY ASCENDING $V_{CE0}$ ) (Cont'd)

Item	DEVICE NO. Polarity		$V_{CE0}$ V Min	hFE Min/Max	@ $I_C$ mA	hFE Min/Max	@ $I_C$ mA	NF dB Max	@ f kHz	NF dB Max	@ f kHz	Package No.
	NPN	PNP										
1		PN4249	60	100/300	0.10	100/-	1.0	3.0	1.0	3.0	WB	TO-92
2		2N3965	60	180/-	0.001	250/500	0.01	2.0	1.0	4.0	0.1	TO-18
3		BFX37	60	70/300	0.01	100/-	1.0	3.0	1.0	3.0	WB	TO-18
4		2N3962	60	60/-	0.001	100/300	0.01	3.0	1.0	10	0.1	TO-18
5	2N5961		60	100/-	0.01	150/950	10	6.0	1.0	—	—	TO-92
6	SE4020		60	100/-	0.01	150/950	10	6.0	1.0	—	—	TO-106
7	2N2484		60	100/500	0.01	250/-	1.0	2.0	10	3.0	WB	TO-18
8	EN2484		60	100/500	0.01	250/-	1.0	2.0	10	3.0	WB	TO-106
9	PN2484		60	100/500	0.01	250/-	1.0	2.0	10	3.0	WB	TO-92
10	BC520		60	150/700	10	100/-	0.01	3.0	1.0	3.0	WB	TO-92
11	BC520B		60	180/460	2.0	100/-	0.01	3.0	1.0	3.0	WB	TO-92
12	BC520C		60	380/800	2.0	100/-	0.01	3.0	1.0	3.0	WB	TO-92
13	2N3117		60	250/500	0.01	400/-	1.0	1.0	1.0	1.0	10	TO-18

### HIGH VOLTAGE AMPLIFIER TRANSISTORS (BY ASCENDING $V_{CE0}$ )

Item	DEVICE NO. Polarity		$V_{CE0}$ V Min	hFE Min/Max	@ $I_C$ mA	$f_T$ MHz Min	$C_{ob}$ pF Max	$P_D$		Package No.
	NPN	PNP						$T_A$ 25°C mW	$T_C$ 25°C W	
14		MPSL51	100	40/250	50	60	8.0	625	1.0	TO-92
15	MPSL01		120	50/300	10	60	8.0	814	1.79	TO-92
16	2N5830		120	80/500	25	100	40	814	1.79	TO-92
17		BC530	120	40/180	10	100	6.0	625	1.0	TO-92
18		2N5400	120	40/180	10	100	6.0	625	1.0	TO-92
19	BFY57		125	30/150	30	40	12	800	5.0	TO-39
20	BC532		140	60/250	10	100	6.0	814	1.79	TO-92
21	2N5550		140	60/250	10	100	6.0	814	1.79	TO-92
22	2N3114		150	30/120	30	40	9.0	800	5.0	TO-39
23		BC531	150	60/240	10	100	6.0	625	1.0	TO-92
24		PN4888	150	40/400	10	30	4.0	625	1.0	TO-92
25		2N5401	150	60/240	10	100	6.0	625	1.0	TO-92
26		PN4889	150	80/300	10	40	4.0	625	1.0	TO-92
27	BF257		160	40/150	10	40	3.5	1000	7.0	TO-39



# FAIRCHILD TRANSISTORS

## SMALL SIGNAL

### HIGH VOLTAGE AMPLIFIER TRANSISTORS (BY ASCENDING V<sub>CEO</sub>) (Cont'd)

Item	DEVICE NO. Polarity		V <sub>CEO</sub> V Min	h <sub>FE</sub> Min/Max	@ I <sub>C</sub> mA	f <sub>T</sub> MHz Min	C <sub>ob</sub> pF Max	P <sub>D</sub>		Package No.
	NPN	PNP						T <sub>A</sub> 25°C mW	T <sub>C</sub> 25°C W	
1	BC533		160	80/250	10	100	6.0	814	1.79	TO-92
2	MPS5551M		160	80/250	10	100	6.0	814	1.79	TO-92
3	2N5831		160	80/250	10	100	4.0	814	1.79	TO-92
4	2N5832		160	175/500	10	100	4.0	814	1.79	TO-92
5	2N5833		180	50/250	10	100	4.0	814	1.79	TO-92
6	BF336		180	20/-	30	80	(3.5)	800	—	TO-39
7	BD115		180	22/-	50	—	3.5	—	6.0	TO-39
8	BF337		200	20/-	30	80	(3.5)	800	—	TO-39
9	2N4926		200	20/200	30	30	(6.0)	1000	7.0	TO-39
10	MPSA43		200	50/200	30	50	4.0	878	2.08	TO-92
11		MPSA93	200	30/150	30	50	8.0	625	1.0	TO-92
12	SE7055		220	40/150	10	40	(3.5)	1000	7.0	TO-39
13	PE7058		220	40/220	30	40	4.0	1230	4.17	TO-92
14	BF338		225	20/-	30	80	(3.5)	800	—	TO-39
15	BF258		250	40/150	10	40	3.5	1000	7.0	TO-39
16	2N4927		250	20/200	30	30	(6.0)	1000	7.0	TO-39
17	2N5059		250	30/150	30	30	10	1000	5.0	TO-39
18	2N5058		300	35/150	30	30	10	1000	5.0	TO-39
19	MPSA42		300	40/200	30	50	3.0	878	2.08	TO-92
20	PE7059		300	40/200	30	40	4.0	1230	4.17	TO-92
21	BF259		300	25/-	30	90 (Typ)	4.2	1000	7.0	TO-39
22		MPSA92	300	25/-	30	50	6.0	625	1.0	TO-92
23	SE7056		300	40/100	10	40	(3.0)	1000	7.0	TO-39

### NPN RF-IF AMPLIFIER AND OSCILLATOR TRANSISTORS (BY ASCENDING FREQUENCY)

Item	DEVICE NO.	PG [GMA] (OSC POWER) dB Min		V <sub>CEO</sub> V Min	f <sub>T</sub> MHz Min	C <sub>ob</sub> [C <sub>ce</sub> ] (C <sub>cb</sub> ) pF Max	NF dB Max	@ f MHz	P <sub>D</sub> T <sub>A</sub> 25°C mW	Package No.
		@ f MHz								
24	BF160	—	—	12	400	1.2	—	—	310	TO-106
25	BF152	28	10.7	12	600	1.2	—	—	310	TO-106

# FAIRCHILD TRANSISTORS

## SMALL SIGNAL

### NPN RF-IF AMPLIFIER AND OSCILLATOR TRANSISTORS (BY ASCENDING FREQUENCY) (Cont'd)

Item	DEVICE NO.	PG @ f [GMA] (OSC POWER)		V <sub>CEO</sub> V Min	f <sub>T</sub> MHz Min	C <sub>ob</sub> [C <sub>ce</sub> ] (C <sub>cb</sub> ) pF Max	NF dB Max	@ f MHz	P <sub>D</sub> T <sub>A</sub> 25°C mW	Package No.
		dB Min	MHz							
1	BF159	22	40	20	600	1.2	3.5 (Typ)	60	310	TO-106
2	BF163	22	40	40	400	0.8 (Typ)	3.0 (Typ)	40	310	TO-106
3	PE5025	25	45	30	300	(1.1)	—	—	425 (65°C)	TO-92
4	FTR118	27	45	20	300	(0.2) (Typ)	5.0	45	500	TO-92
5	BF167	27	45	30	300	0.22	3.0 (Typ)	45	175	TO-72
6	PE5030B	28	45	40	600	(0.4)	—	—	425 (65°C)	TO-92
7	BF222	20 (Typ)	100	50	400	0.4 (Typ)	5.0	0.1	310	TO-72
8	2N3563	14	200	12	600	1.7	—	—		TO-106
9	2N5179	15	200	12	900	(1.0)	4.5	200	250	TO-72
10	2N918	15	200	15	600	1.7	6.0	60	200	TO-72
11	PN918	15	200	15	600	1.7	6.0	60	625	TO-92
12	BF162	15	200	40	400	1.2	5.5	200	310	TO-106
13	PN3690	15	200	40	400	1.6	5.5	200	200	TO-92
14	FTR168	16	200	300	400	0.12 (Typ)	4.0	200	500	TO-92
15	2N5130	17	200	12	450	(1.7)	—	—	200	TO-106
16	SE5020	20	200	20	375	0.5	3.3	200	175	TO-18
17	FTR158	20	200	20	300	(0.20) (Typ)	3.3	200	500	TO-92
18	SE5035	22	200	30	600	0.3	—	—	200	TO-18
19	FTR129	22	200	30	600	(0.20) (Typ)	4.5	200	500	TO-92
20	PE5031	22	200	30	600	(0.4)	4.5	200	425 (65°C)	TO-92
21	2N2857	12.5	450	15	1000	(1.0)	4.5	450	250	TO-72
22	2N3839	12.5	450	15	1000	(1.0)	3.4	450	250	TO-72
23	2N3880	14	450	15	1200	(.75)	3.5	450	250	TO-72
24	2N5031	14	450	10	1000	(1.5)	2.5	450	250	TO-72
25	FMT1090	14 (Typ)	450	14	1400 (Typ)	(1.2)	4.0	450	600	TO-92
26	FMT1091	15 (Typ)	450	14	1400 (Typ)	(1.2)	3.5	450	600	TO-92
27	FMT1190	12.5 (Typ)	450	12	1400 (Typ)	(1.2)	5.0	450	600	TO-92
28	FMT2060	15 (Typ)	450	14	1000	(1.0)	2.8 (Typ)	450	240	TO-120
29	FMT2080	13.0 (Typ)	450	14	1400 (Typ)	(0.9)	2.0 (Typ)	450	200	TO-72
30	FMT2085	13.0 (Typ)	450	14	1400 (Typ)	(1.0)	2.0 (Typ)	450	400	TO-92

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# FAIRCHILD TRANSISTORS

## SMALL SIGNAL

### NPN RF-IF AMPLIFIER AND OSCILLATOR TRANSISTORS (BY ASCENDING FREQUENCY) (Cont'd)

Item	DEVICE NO.	PG [GMA] (OSC POWER) dB @ f MHz		V <sub>CEO</sub> V Min	f <sub>T</sub> MHz Min	C <sub>ob</sub> [C <sub>ce</sub> ] (C <sub>cb</sub> ) pF Max	NF dB Max	@ f MHz	P <sub>D</sub> T <sub>A</sub> 25°C mW	Package No.
		Min	MHz							
1	FMT2090	13.0 (Typ)	450	14	1400 (Typ)	(0.8)	2.0 (Typ)	450	240	TO-120
2	2N5770	15	500	15	900	—	6.0	60	625	TO-92
3	PN3563	(30)	500	12	600	1.7	6.0	60	625	TO-92
4	PN918	(30)	500	15	600	1.7	6.0	60	625	TO-92
5	SE3002	(3.0)	930	12	600	1.7	—	—	200	TO-106
6	FMT1061	—	—	14	1000	(1.0)	3.5	450	250	TO-72
7	FMT1061A	13.8 (Typ)	1000	14	1300	(1.0)	3.0	450	250	TO-72
8	FTR129A	—	—	35	1000 (Typ)	(0.40) (Typ)	—	—	500	TO-92
9	2N3570	—	—	15	1500	(0.75)	7.0	1000	250	TO-72
10	2N3571	—	—	15	1200	(0.85)	4.0	450	250	TO-72
11	2N3572	—	—	13	1000	(0.85)	6.0	450	250	TO-72
12	2N3683	—	—	12	1000	2.0	4.0	200	250	TO-72

### DUAL TRANSISTORS (BY ASCENDING V<sub>CEO</sub>)

Item	DEVICE NO. Polarity		V <sub>CEO</sub> V Min	hFE Min/Max	@ I <sub>C</sub> mA	Matching		Package No.
	NPN	PNP				hFE %	V <sub>BE</sub> mV	
13	MD2369A		15	40/120	10	10	5.0	TO-78
14	MD2369B		15	40/120	10	20	10	TO-78
15	MD918A		15	50/-	1.0	10	5.0	TO-78
16	MD918B		15	50/-	1.0	20	5.0	TO-78
17	MD2218A		40	40/120	150	—	—	TO-78
18	MD2219A		40	100/300	150	—	—	TO-78
19	2N2913		45	60/240	0.01	—	—	TO-78
20	2N2917		45	60/240	0.01	20	10	TO-78
21	2N2915		45	60/240	0.01	10	3.0	TO-78
22	2N2914		45	150/300	0.01	—	—	TO-78
23	2N2918		45	150/300	0.01	20	5.0	TO-78
24		2N4020	45	250/600	0.01	20	5.0	TO-78
25		2N4023	45	250/600	0.1	10	3.0	TO-78
26	*2N2919		60	60/240	0.01	10	3.0	TO-39

\*Also available in JAN, JTX and TXV.

# FAIRCHILD TRANSISTORS

## SMALL SIGNAL

### DUAL TRANSISTORS (BY ASCENDING V<sub>CEO</sub>) (Cont'd)

Item	DEVICE NO. Polarity		V <sub>CEO</sub> V Min	hFE Min/Max	@ I <sub>C</sub> mA	Matching		Package No.
	NPN	PNP				hFE %	V <sub>BE</sub> mV	
1	*2N2920		60	150/300	0.01	10	3.0	TO-78
2	*2N2920A		60	150/300	0.01	10	1.5	TO-78
3		2N3800	60	150/450	0.1	—	—	TO-71
4		2N3806	60	150/450	0.1	—	—	TO-78
5		2N3802	60	150/450	0.1	20	8.0	TO-71
6		2N3808	60	150/450	0.1	20	8.0	TO-78
7		2N3804	60	150/450	0.1	10	5.0	TO-71
8		2N3810	60	150/450	0.1	10	5.0	TO-78
9		2N4025	60	250/600	0.1	10	3.0	TO-78
10		2N3805	60	300/900	0.1	10	5.0	TO-71
11		2N3811	60	300/900	0.1	10	5.0	TO-78
12		2N4017	80	100/350	0.01	—	—	TO-78

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### UNMATCHED QUAD TRANSISTORS (BY ASCENDING V<sub>CEO</sub>)

Item	DEVICE NO. Polarity		V <sub>CEO</sub> V Min	hFE Min/Max	@ I <sub>C</sub> mA	V <sub>CE (sat)</sub> V Max	@ I <sub>C</sub> mA	Package No.
	NPN	PNP						
13	FPQ3724	FPQ3467	40	30/-	500	0.5	500	TO-116
14	FPQ2222	FPQ2907	40	100/-	150	0.4	150	TO-116
15	FPQ3725	FPQ3468	50	20/-	500	0.5	500	TO-116

### NPN DARLINGTON TRANSISTORS (BY ASCENDING V<sub>CEO</sub>)

Item	DEVICE NO.	V <sub>CEO</sub> V Min	hFE Min/Max	@ I <sub>C</sub> mA	V <sub>CE (sat)</sub> V Max	@ I <sub>C</sub> mA	Package No.
16	MPSA12	20	20000/-	10	1.0	10	TO-92
17	MPSA13	30	5000/-	10	1.5	100	TO-92
18	MPSA14	30	10000/-	10	1.5	100	TO-92
19	2N997	40	7000/70000	100	1.6	100	TO-18
20	2N2725	45	2000/10000	10	1.0	10	TO-72

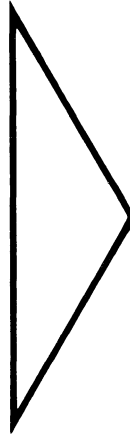
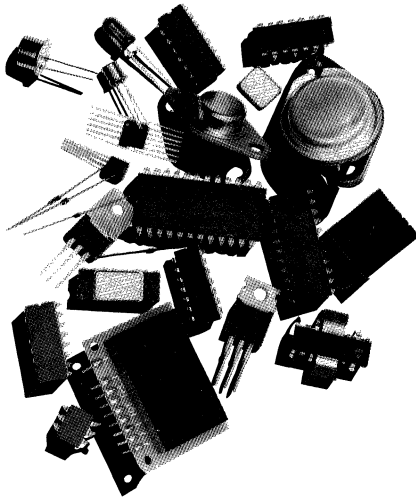
\*Also available in JAN, JTX and TXV.

# FAIRCHILD TRANSISTORS

## SMALL SIGNAL

### NPN AND PNP TRANSISTOR DICE (BY APPLICATION)

Item	DEVICE NO.	Pol.	Basic Standard Device	V <sub>CEO</sub> V Min	I <sub>CBO</sub> nA Max	@ V <sub>CB</sub> V	hFE Min/Max	@ I <sub>C</sub> mA	Chip Size Mils	Basic Application
1	DN2484	NPN	2N2484	60	20	45	250/-	1.0	17.5x17.5	Low Level, Low Noise Amp.
2	DN3962	PNP	2N3962	60	20	50	100/450	1.0	11x24	Low Level, Low Noise Amp.
3	DN918	NPN	2N918	15	20	15	20/-	3.0	9x14	R. F. Amp.
4	DN3904	NPN	2N3904	40	50	30	100/300	10	11x18	General Purpose Amp.
5	DN3906	PNP	2N3906	40	50	30	100/300	10	11x20	General Purpose Amp.
6	DN2222A	NPN	2N2222A	40	20	60	100/300	100	15x16.5	G. P. Amp. and Switch
7	DN2907	PNP	2N2907	40	20	50	100/300	100	19x19	G. P. Amp. and Switch
8	DN3019	NPN	2N3019	80	20	90	100/300	100	30x30	G. P. Amp. and Switch
9	DN4033	PNP	2N4033	80	50	60	100/300	100	24x30	G. P. Amp. and Switch
10	DN3930	PNP	2N3930	180	20	100	80/300	10	22x22	High Voltage Amp. and Switch
11	DN2369A	NPN	2N2369A	15	400	20	40/120	10	9x14	High Speed Sat. Switch
12	DN4209	PNP	2N4209	15	20	8.0	35/-	1.0	9.5x14.5	High Speed Sat. Switch
13	DN3014	NPN	2N3014	20	300	20	30/120	30	13.5x13.5	High Speed Sat. Switch
14	DN3725	NPN	2N3725	50	1700	60	60/150	100	27x27	High Speed Core Driver
15	DN3468	PNP	2N3468	50	100	30	25/-	100	27x33	High Speed Core Driver



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# FAIRCHILD OPTOELECTRONICS

## OPTO

### LED VISIBLE LAMPS

Item	DEVICE NO.	Lens Characteristic	I <sub>F</sub> mA Typ	Luminous Intensity I <sub>F</sub> = 20mA mcd Typ	V <sub>F</sub> I <sub>F</sub> = 20mA V Typ	Package No.
1	FLV104A	Clear	100	(4.0mW/sr)	2.0	Opto-8
2	FLV110	Red Diffused	20	2.0	1.7	Opto-5
3	FLV111	Clear Point Source	20	2.0	1.7	Opto-5
4	FLV112	Clear Diffused	20	2.0	1.7	Opto-5
5	FLV117	Red Diffused	50	1.0	1.9	Opto-5
6	FLV140	Red Diffused	20	2.0	1.7	Opto-4
7	FLV141	Red Point Source	20	2.0	1.7	Opto-4
8	FLV150	Red Diffused	20	2.0	1.7	Opto-4
9	FLV151	Red Point Source	20	2.0	1.7	Opto-4
10	FLV152	Red Point Source	20	3.0	1.7	Opto-4
11	FLV160	Red Diffused	20	2.0	1.7	Opto-7
12	FLV161	Red Point Source	20	2.0	1.7	Opto-7
13	FLV251	Red Point Source	10	5.0	2.1	Opto-4
14	FLV252	Red Point Source	10	8.0	2.1	Opto-4
15	FLV310	Green Diffused	20	3.2	2.3	Opto-5
16	FLV311	Green Point Source	20	3.2	2.3	Opto-5
17	FLV315	Green Diffused	20	2.5	3.0	Opto-5
18	FLV340	Green Diffused	20	3.2	2.3	Opto-4
19	FLV341	Green Point Source	20	3.2	2.3	Opto-4
20	FLV350	Green Diffused	20	3.2	2.3	Opto-6
21	FLV351	Green Point Source	20	3.2	2.3	Opto-6
22	FLV355	Green Diffused	20	2.5	3.0	Opto-6
23	FLV360	Green Diffused	20	3.2	2.3	Opto-7
24	FLV361	Green Point Source	20	3.2	2.3	Opto-7
25	FLV365	Green Diffused	20	2.5	3.0	Opto-7
26	FLV410	Yellow Diffused	20	3.2	2.3	Opto-5
27	FLV411	Yellow Point Source	20	3.2	2.3	Opto-5
28	FLV440	Yellow Diffused	20	3.2	2.3	Opto-4
29	FLV441	Yellow Point Source	20	3.2	2.3	Opto-4



# FAIRCHILD OPTOELECTRONICS

## OPTO

### LED VISIBLE LAMPS (Cont'd)

Item	DEVICE NO.	Lens Characteristic	I <sub>F</sub> mA Typ	Luminous Intensity I <sub>F</sub> = 20mA mcd Typ	V <sub>F</sub> V Typ	Package No.
1	FLV450	Yellow Diffused	20	3.2	2.3	Opto-6
2	FLV451	Yellow Point Source	20	3.2	2.3	Opto-6
3	FLV460	Yellow Diffused	20	3.2	2.3	Opto-7
4	FLV461	Yellow Point Source	20	3.2	2.3	Opto-7
5	FLV510	Red Diffused	10	3.0	1.9	Opto-5
6	FLV511	Red Point Source	10	3.0	1.9	Opto-5
7	FLV540	Red Diffused	10	3.0	1.9	Opto-4
8	FLV541	Red Point Source	10	3.0	1.9	Opto-4
9	FLV550	Red Diffused	10	3.0	1.9	Opto-6
10	FLV551	Red Point Source	10	3.0	1.9	Opto-6
11	FLV560	Red Diffused	10	3.0	1.9	Opto-7
12	FLV561	Red Point Source	10	3.0	1.9	Opto-7
13	MV5050	Clear Point Source	20	2.0	1.7	Opto-9
14	MV5051	Clear Diffused	20	1.6	1.7	Opto-9
15	MV5052	Red Point Source	20	2.0	1.7	Opto-9
16	MV5053	Red Diffused	20	1.6	1.7	Opto-9
17	MV5054-1	Red Semi-Diffused	20	2.0	1.7	Opto-10
18	MV5054-2	Red Semi-Diffused	20	3.0	1.7	Opto-10
19	MV5054-3	Red Semi-Diffused	20	4.0	1.7	Opto-10
20	MV5152	Amber Point Source	20	16.0	1.9	Opto-10
21	MV5153	Amber Diffused	20	4.0	1.9	Opto-9
22	MV5154	Amber Semi-Diffused	20	8.0	1.9	Opto-10
23	MV5252	Green Point Source	20	6.0	2.3	Opto-10
24	MV5253	Green Diffused	20	1.5	2.3	Opto-9
25	MV5254	Green Semi-Diffused	20	3.0	2.3	Opto-10
26	MV5352	Yellow Point Source	20	10.0	2.3	Opto-10
27	MV5353	Yellow Diffused	20	6.0	2.3	Opto-9
28	MV5354	Yellow Semi-Diffused	20	10.0	2.3	Opto-10
29	MV5752	Red Point Source	20	16.0	1.9	Opto-10
30	MV5753	Red Diffused	20	4.0	1.9	Opto-9

# FAIRCHILD OPTOELECTRONICS

## OPTO

### LED VISIBLE LAMPS (Cont'd)

Item	DEVICE NO.	Lens Characteristic	I <sub>F</sub> mA Typ	Luminous Intensity I <sub>F</sub> = 20mA mcd Typ	V <sub>F</sub> V Typ	Package No.
1	MV5754	Red Semi-Diffused	20	8.0	1.9	Opto-10
2	TIL209A	Red Diffused T-1	20	2.0	1.7	Opto-11
3	TIL211	Green Diffused T-1	20	0.5	1.7	Opto-11
4	TIL213	Yellow Diffused T-1	20	0.5	1.7	Opto-11

### LED LAMP MOUNTING HARDWARE

Item	DEVICE NO.	Panel Thickness	Panel Hole	Description	Package No.
5	FLS010	.060 to .250	.265 ±.002	Single-Part Construction (Flat Black Finish)	Opto-1
6	FLS011	0.187	.250 ±.003	3-Piece Construction: Hex Nut, Threaded Barrel and Bezel (Bezel in Silver Finish)	Opto-2
7	FLS012	0.187	.250 ±.003	3-Piece Construction: Hex Nut, Threaded Barrel and Bezel (Bezel in Black Finish)	Opto-2
8	MP52	0.125	.250 ±.003	Mounting Clip for MV Series Lamps	Opto-3

### 7-SEGMENT NUMERIC DISPLAYS

Item	DEVICE NO.	Character Height Inches	Polarity	Color	Description	Decimal Point	Peak Current/Seg Pulse = 100 $\mu$ s mA	V <sub>F</sub> I <sub>F</sub> = 20mA/Seg V	Luminous Intensity/Seg I <sub>F</sub> = 20mA $\mu$ cd	Logic/Connection Diagram	Package No.
9	FND350	0.362	CA	Red	7-Segment Display	RH	200	1.7	450	O1	Opto-12
10	FND351	0.362	CA	Red	Overflow $\pm$ 1 Digit	RH	200	1.7	450	O2	Opto-12
11	FND357	0.362	CC	Red	7-Segment Display	RH	200	1.7	450	O1	Opto-12
12	FND358	0.362	CC	Red	Overflow $\pm$ 1 Digit	RH	200	1.7	450	O2	Opto-12
13	FND360	0.362	CA	Red	7-Segment Display	RH	200	1.7	900	O1	Opto-12
14	FND361	0.362	CA	Red	Overflow $\pm$ Digit	RH	200	1.7	900	O2	Opto-12
15	FND367	0.362	CC	Red	7-Segment Display	RH	200	1.7	900	O1	Opto-12
16	FND368	0.362	CC	Red	Overflow $\pm$ 1 Digit	RH	200	1.7	900	O2	Opto-12
17	FND500	0.500	CC	Red	7-Segment Display	RH	200	1.7	600	O3	Opto-13
18	FND501	0.500	CC	Red	Overflow $\pm$ 1 Digit	RH	200	1.7	600	O4	Opto-13
19	FND507	0.500	CA	Red	7-Segment Display	RH	200	1.7	600	O3	Opto-13
20	FND508	0.500	CA	Red	Overflow $\pm$ 1 Digit	RH	200	1.7	600	O4	Opto-13

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# FAIRCHILD OPTOELECTRONICS

## OPTO

### 7-SEGMENT NUMERIC DISPLAYS (Cont'd)

Item	DEVICE NO.	Character Height Inches	Polarity	Color	Description	Decimal Point	Peak Current/Seg Pulse = 100 $\mu$ s mA	V <sub>F</sub> = 20mA/Seg V	Luminous Intensity/Seg IF = 20mA $\mu$ cd	Logic/Connection Diagram	Package No.
1	FND530	0.500	CC	Grn	7-Segment Display	RH	80	2.2	2000	O3	Opto-13
2	FND531	0.500	CC	Grn	Overflow $\pm$ 1 Digit	RH	80	2.2	2000	O4	Opto-13
3	FND537	0.500	CA	Grn	7-Segment Display	RH	80	2.2	2000	O3	Opto-13
4	FND538	0.500	CA	Grn	Overflow $\pm$ 1 Digit	RH	80	2.2	2000	O4	Opto-13
5	FND540	0.500	CC	Yel	7-Segment Display	RH	80	2.2	2000	O3	Opto-13
6	FND541	0.500	CC	Yel	Overflow $\pm$ Digit	RH	80	2.2	2000	O4	Opto-13
7	FND547	0.500	CA	Yel	7-Segment Display	RH	80	2.2	2000	O3	Opto-13
8	FND548	0.500	CA	Yel	Overflow $\pm$ Digit	RH	80	2.2	2000	O4	Opto-13
9	FND550	0.500	CC	Amb	7-Segment Display	RH	80	2.2	2000	O3	Opto-13
10	FND551	0.500	CC	Amb	Overflow $\pm$ 1 Digit	RH	80	2.2	2000	O4	Opto-13
11	FND557	0.500	CA	Amb	7-Segment Display	RH	80	2.2	2000	O3	Opto-13
12	FND558	0.500	CA	Amb	Overflow $\pm$ 1 Digit	RH	80	2.2	2000	O4	Opto-13
13	FND560	0.500	CC	Red	7-Segment Display	RH	200	2.2	1200	O3	Opto-13
14	FND561	0.500	CC	Red	Overflow $\pm$ 1 Digit	RH	200	1.7	1200	O4	Opto-13
15	FND567	0.500	CA	Red	7-Segment Display	RH	200	1.7	1200	O3	Opto-13
16	FND568	0.500	CA	Red	Overflow $\pm$ 1 Digit	RH	200	1.7	1200	O4	Opto-13
17	FND800	0.800	CC	Red	7-Segment Display	RH	200	1.7	600	O5	Opto-14
18	FND807	0.800	CA	Red	7-Segment Display	RH	200	1.7	600	O5	Opto-14
19	FND847	0.800	CA	Red	7-Segment Display	LH	200	1.7	600	O6	Opto-14
20	FND850	0.800	CC	Red	7-Segment Display	LH	200	1.7	600	O6	Opto-14
21	FND6710	0.560	CA	Red	Dual Digit Display	RH	200	1.7	500	O10	Opto-16
22	FND6730*	0.560	CA	Red	1 $\frac{1}{2}$ Digit $\pm$ 18 Display	RH	200	1.7	500	—	—
23	FND6740	0.560	CC	Red	Dual Digit Display	RH	200	1.7	500	O10	Opto-16
24	FND6750*	0.560	CC	Red	1 $\frac{1}{2}$ Digit $\pm$ 18 Display	RH	200	1.7	500	—	—
25	MAN71A	0.300	CA	Red	7-Segment Display	RH	200	1.7	450	O7	Opto-15
26	MAN72A	0.300	CA	Red	7-Segment Display	LH	200	1.7	450	O7	Opto-15
27	MAN73A	0.300	CA	Red	Overflow $\pm$ 1 Digit	None	200	1.7	450	O8	Opto-15
28	MAN74A	0.300	CC	Red	7-Segment Display	RH	200	1.7	450	O9	Opto-15

\* Available 2nd Half, 1978

# FAIRCHILD OPTOELECTRONICS

## OPTO

### 7-SEGMENT NUMERIC DISPLAY ARRAYS

Item	DEVICE NO.	Digits	AM/PM	V <sub>F</sub> I <sub>F</sub> = 8.0 mA V Typ	Luminous Intensity/Seg μcd Typ	@mA	Seg/Seg Match Typ	No. of Pins	Logic/ Connection Diagram	Package No.
1	FCS6400	4	No	1.7	200	10	±33%	34	O17	Opto-24
2	FCS6401	3 1/2	Yes	1.7	200	10	±33%	34	O18	Opto-25
3	FCS8000	3 1/2	Yes	1.65	350	8.0	±33%	34	O11	Opto-17
4	FCS8024	4	No	1.65	350	8.0	±33%	34	O12	Opto-18
5	FNA3420 <sup>(3)</sup>	4	No	1.7	600	20	±33%	13	—	—
6	FNA5420	4	No	1.7	600	20	±33%	13	O13	Opto-20
7	FNA5421	3 1/2	No	1.7	600	20	±33%	13	O14	Opto-21
8	FNA5427	4	No	1.7	600	20	±33%	13	O13	Opto-20
9	FNA5428	3 1/2	No	1.7	600	20	±33%	13	O14	Opto-21
10	FNA5520	5	No	1.7	600	20	±33%	14	O15	Opto-22
11	FNA5521	4 1/2	No	1.7	600	20	±33%	14	O16	Opto-23
12	FNA5527	5	No	1.7	600	20	±33%	14	O15	Opto-22
13	FNA5528	4 1/2	No	1.7	600	20	±33%	14	O16	Opto-23

### LIQUID CRYSTAL DISPLAYS

Item	DEVICE NO. (1,2)	Description	Digit Height Hr./Min	(mm) s	Logic/Connection Diagram	Package No.
14	FLC3503-1	Ladies 3 1/2 Digit	3.3	—	O19	Opto-38
15	FLC3505-1	Mens 3 1/2 Digit	4.6	—	O20	Opto-39
16	FLC3505-2	Mens 3 1/2 Digit	5.1	—	O21	Opto-40
17	FLC3507-1 <sup>(3)</sup>	Mens 3 1/2 Digit	6.7	—	—	—
18	FLC5505-1	Mens 5 1/2 Digit	5.1	3.6	O22	Opto-41
19	FLC5505-3 <sup>(3)</sup>	Mens 5 1/2 Digit	5.3	3.8	—	—
20	FLC6005-2	Mens 6 Digit	4.6	3.1	O23	Opto-42
21	FLC6005-3 <sup>(3)</sup>	Mens 6 Digit	4.5	3.1	—	—
22	FLC8004-1 <sup>(3)</sup>	8 Digit Calculator	3.5	—	—	—
23	FLC8006-1 <sup>(3)</sup>	8 Digit Calculator	6.0	—	—	—

1. With polarizers attached, device code is followed by -P.

2. Electrical Characteristics:

Operating voltage range	3V to 6V
Visual threshold voltage (90% on)	2.8V Max
Operating frequency range	25Hz to 1KHz
Operating temperature range	-10° to 80°C

3. Consult factory.

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# FAIRCHILD OPTOELECTRONICS

## OPTO

### COUPLERS—TRANSISTOR OUTPUT

Item	DEVICE NO.	MAX RATINGS @ T <sub>A</sub> = 25°C					
		P <sub>D</sub> mW	I <sub>C</sub> mA	V <sub>CEO</sub> V	V <sub>R</sub> V	I <sub>F</sub> mA	V <sub>ISO</sub> kV
1	FCD810 <sup>(1)</sup>	250	25	20	3.0	60	1.5ac
2	FCD810A <sup>(1)</sup>	250	25	20	3.0	60	1.5
3	FCD810B <sup>(1)</sup>	250	25	20	3.0	60	2.5
4	FCD810C <sup>(1)</sup>	250	25	20	3.0	60	5.0
5	FCD810D <sup>(1)</sup>	250	25	20	3.0	60	6.0
6	FCD820 <sup>(1,3)</sup>	250	25	30	3.0	60	1.5ac
7	FCD820A <sup>(1)</sup>	250	25	30	3.0	60	1.5
8	FCD820B <sup>(1)</sup>	250	25	30	3.0	60	2.5
9	FCD820C <sup>(1)</sup>	250	25	30	3.0	60	5.0
10	FCD820D <sup>(1)</sup>	250	25	30	3.0	60	6.0
11	FCD825 <sup>(1,5)</sup>	250	25	30	3.0	60	1.5ac
12	FCD825A <sup>(1,5)</sup>	250	25	30	3.0	60	1.5
13	FCD825B <sup>(1,5)</sup>	250	25	30	3.0	60	2.5
14	FCD825C <sup>(1,5)</sup>	250	25	30	3.0	60	5.0
15	FCD825D <sup>(1,5)</sup>	250	25	30	3.0	60	6.0
16	FCD830 <sup>(2,3)</sup>	250	25	30	3.0	60	1.5
17	FCD830A <sup>(2)</sup>	250	25	30	3.0	60	1.5ac
18	FCD830B <sup>(2)</sup>	250	25	30	3.0	60	2.5
19	FCD830C <sup>(2)</sup>	250	25	30	3.0	60	5.0

1. Standard transistor output
2. High speed transistor output  
guaranteed 2.0 μs max t<sub>r</sub> and t<sub>f</sub> with 100 Ω R<sub>L</sub>  
8.0 μs typ at 1K Ω R<sub>L</sub>
3. CTR guaranteed with transistor in saturation
4. JEDEC registered data and conditions
5. CTR typ at 1.0mA = 40%

# FAIRCHILD OPTOELECTRONICS

COUPLED CHARACTERISTICS				INPUT DIODE CHARACT.		OUTPUT TRANSISTOR CHARACT.			Logic/Connection Diagram	Package No.
Min Current Transfer Ratio I <sub>C</sub> /I <sub>F</sub> %	@ I <sub>F</sub> mA	@ V <sub>CE</sub> V	t <sub>r</sub> , t <sub>f</sub> μs Typ	V <sub>F</sub> V Max	@ I <sub>F</sub> mA	V <sub>CE(sat)</sub> V Max	@ I <sub>C</sub> mA	@ I <sub>F</sub> mA		
10	10	10	4.0	1.5	10	0.7	2.6	50	O24	Opto-37
10	10	10	4.0	1.5	10	0.7	2.6	50	O24	Opto-37
10	10	10	4.0	1.5	10	0.7	1.6	50	O24	Opto-37
10	10	10	4.0	1.5	10	0.7	2.6	50	O24	Opto-37
10	10	10	4.0	1.5	10	0.7	2.6	50	O24	Opto-37
20	10	0.4	2.5	1.5	60	0.4	2.0	10	O24	Opto-37
20	10	10	2.5	1.5	60	0.4	2.2	15	O24	Opto-37
20	10	10	2.5	1.5	60	0.4	2.2	15	O24	Opto-37
20	10	10	2.5	1.5	60	0.4	2.2	15	O24	Opto-37
20	10	10	2.5	1.5	60	0.4	2.2	15	O24	Opto-37
50	10	10	3.0	1.5	60	0.4	2.0	10	O24	Opto-37
50	10	10	3.0	1.5	60	0.4	2.0	10	O24	Opto-37
50	10	10	3.0	1.5	60	0.4	2.0	10	O24	Opto-37
50	10	10	3.0	1.5	60	0.4	2.0	10	O24	Opto-37
50	10	10	3.0	1.5	60	0.4	2.0	10	O24	Opto-37
20	10	0.4	1.6	1.5	60	0.4	2.0	10	O24	Opto-37
20	10	10	1.6	1.5	60	0.4	2.2	15	O24	Opto-37
20	10	10	1.6	1.5	60	0.4	2.2	15	O24	Opto-37
20	10	10	1.6	1.5	60	0.4	2.2	15	O24	Opto-37

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# FAIRCHILD OPTOELECTRONICS

## OPTO

### COUPLERS—TRANSISTOR OUTPUT (Cont'd)

Item	DEVICE NO.	MAX RATINGS @ T <sub>A</sub> = 25°C					V <sub>ISO</sub> kV
		P <sub>D</sub> mW	I <sub>C</sub> mA	V <sub>CEO</sub> V	Diode		
					V <sub>R</sub> V	I <sub>F</sub> mA	
1	FCD830D <sup>(2)</sup>	250	25	30	3.0	60	6.0
2	FCD831 <sup>(2)</sup>	250	25	30	3.0	60	1.5ac
3	FCD831A <sup>(2)</sup>	250	25	30	3.0	60	1.5
4	FCD831B <sup>(2)</sup>	250	25	30	3.0	60	2.5
5	FCD831C <sup>(2)</sup>	250	25	30	3.0	60	5.0
6	FCD831D <sup>(2)</sup>	250	25	30	3.0	60	6.0
7	FCD836 <sup>(2)</sup>	250	25	20	3.0	60	1.5ac
8	FCD836C <sup>(2)</sup>	250	25	20	3.0	60	5.0
9	FCD836D <sup>(2)</sup>	250	25	20	3.0	60	6.0
10	4N25 <sup>(4)</sup>	250	—	30	3.0	80	2.5
11	4N26 <sup>(4)</sup>	250	—	30	3.0	80	1.5
12	4N27 <sup>(4)</sup>	250	—	30	3.0	80	1.5
13	4N28 <sup>(4)</sup>	250	—	30	3.0	80	0.5
14	4N35 <sup>(4)</sup>	400	—	30	6.0	60	3.5
15	4N36 <sup>(4)</sup>	400	—	30	6.0	60	2.5
16	4N37 <sup>(4)</sup>	400	—	30	6.0	60	1.5
17	IL1	200	—	30	3.0	150	2.5
18	IL12	200	—	30	3.0	150	1.0
19	IL15	200	—	30	3.0	150	1.5

1. Standard transistor output
2. High speed transistor output  
guaranteed 2.0 μs max t<sub>r</sub> and t<sub>f</sub> with 100 Ω R<sub>L</sub>  
8.0 μs typ at 1K Ω R<sub>L</sub>
3. CTR guaranteed with transistor in saturation
4. JEDEC registered data and conditions
5. CTR typ at 1.0mA = 40%

**FAIRCHILD OPTOELECTRONICS**

COUPLED CHARACTERISTICS				INPUT DIODE CHARACT.		OUTPUT TRANSISTOR CHARACT.			Logic/Connection Diagram	Package No.	
	Min Current Transfer Ratio I <sub>C</sub> /I <sub>F</sub> %	@I <sub>F</sub> mA	@V <sub>CE</sub> V	t <sub>r</sub> , t <sub>f</sub> μs Typ	V <sub>F</sub> V Max	@I <sub>F</sub> mA	V <sub>CE(sat)</sub> V Max	@I <sub>C</sub> mA			@I <sub>F</sub> mA
	20	10	10	1.6	1.5	60	0.4	2.2	15	O24	Opto-37
	10	10	10	1.6	1.5	60	0.5	2.0	50	O24	Opto-37
	10	10	10	1.6	1.5	60	0.5	2.0	50	O24	Opto-37
	10	10	10	1.6	1.5	60	0.5	2.0	50	O24	Opto-37
	10	10	10	1.6	1.5	60	0.5	2.0	50	O24	Opto-37
	10	10	10	1.6	1.5	60	0.5	2.0	50	O24	Opto-37
	6.0	10	10	1.6	1.5	20	0.7	2.0	50	O24	Opto-37
	6.0	10	10	1.6	1.5	20	0.7	2.0	50	O24	Opto-37
	6.0	10	10	1.6	1.5	20	0.7	2.0	50	O24	Opto-37
	20	10	10	2.5	1.5	50	0.5	2.0	50	O24	Opto-37
	20	10	10	2.5	1.5	50	0.5	2.0	50	O24	Opto-37
	10	10	10	2.5	1.5	50	0.5	2.0	50	O24	Opto-37
	10	10	10	2.5	1.5	50	0.5	2.0	50	O24	Opto-37
	100	10	10	8.0	1.5	10	0.3	0.5	10	O24	Opto-37
	100	10	10	8.0	1.5	10	0.3	0.5	10	O24	Opto-37
	100	10	10	8.0	1.5	10	0.3	0.5	10	O24	Opto-37
	20	10	10	2.0	1.5	60	0.5	1.6	16	O24	Opto-37
	10	10	5.0	2.0	1.5	10	0.5	2.0	50	O24	Opto-37
	6.0	10	10	2.0	1.5	60	0.5	2.0	50	O24	Opto-37

**4**



**FAIRCHILD OPTOELECTRONICS**

**OPTO**

**COUPLERS—TRANSISTOR OUTPUT (Cont'd)**

Item	DEVICE NO.	MAX RATINGS @ T <sub>A</sub> = 25°C					
		P <sub>D</sub> mW	I <sub>C</sub> mA	V <sub>CEO</sub> V	V <sub>R</sub> V	I <sub>F</sub> mA	V <sub>ISO</sub> kV
1	<b>IL16</b>	200	—	30	3.0	150	1.5
2	<b>IL74</b>	150	—	20	3.0	150	1.5
3	<b>H11A1</b>	250	100	30	3.0	60	2.5
4	<b>H11A2</b>	250	100	30	3.0	60	1.5
5	<b>H11A3</b>	250	100	30	3.0	60	2.5
6	<b>H11A4</b>	250	100	30	3.0	60	1.5
7	<b>MCT2</b>	250	—	30	3.0	60	1.5
8	<b>MCT2E</b>	250	—	30	3.0	60	2.5
9	<b>MCT26</b>	250	—	30	3.0	60	1.5
10	<b>TIL111</b> <sup>(3)</sup>	250	—	30	3.0	100	1.5
11	<b>TIL112</b>	250	—	20	3.0	100	1.5
12	<b>TIL114</b> <sup>(3)</sup>	250	—	30	3.0	100	2.5
13	<b>TIL115</b>	250	—	20	3.0	100	2.5
14	<b>TIL116</b>	250	—	30	3.0	100	2.5
15	<b>TIL117</b>	250	—	30	3.0	100	2.5
16	<b>TIL118</b>	250	—	20	3.0	100	1.5
17	<b>MOC1000</b>	250	—	30	3.0	80	1.5
18	<b>MOC1001</b>	250	—	30	3.0	80	2.5
19	<b>MOC1002</b>	250	—	30	3.0	80	1.5
20	<b>MOC1003</b>	250	—	30	3.0	80	0.5

1. Standard transistor output
2. High speed transistor output  
guaranteed 2.0 μs max t<sub>r</sub> and t<sub>f</sub> with 100 Ω R<sub>L</sub>  
8.0 μs typ at 1K Ω R<sub>L</sub>
3. CTR guaranteed with transistor in saturation
4. JEDEC registered data and conditions
5. CTR typ at 1.0mA = 40%

# FAIRCHILD OPTOELECTRONICS

COUPLED CHARACTERISTICS				INPUT DIODE CHARACT.		OUTPUT TRANSISTOR CHARACT.			Logic/ Connection Diagram	Package No.	
	Min Current Transfer Ratio I <sub>C</sub> /I <sub>F</sub> %	@ I <sub>F</sub> mA	@ V <sub>CE</sub> V	t <sub>r</sub> , t <sub>f</sub> μs Typ	V <sub>F</sub> V Max	@ I <sub>F</sub> mA	V <sub>CE(sat)</sub> V Max	@ I <sub>C</sub> mA			@ I <sub>F</sub> mA
	6.0	10	10	2.0	1.5	60	0.5	1.6	50	O24	Opto-37
	12.5	16	5.0	25.0	—	—	0.5	2.0	16	O24	Opto-37
	50	10	10	2.0	1.5	10	0.4	0.5	10	O24	Opto-37
	20	10	10	2.0	1.5	10	0.4	0.5	10	O24	Opto-37
	20	10	10	2.0	1.5	10	0.4	0.5	10	O24	Opto-37
	10	10	10	2.0	1.5	10	0.4	0.5	10	O24	Opto-37
	20	10	10	2.5	1.5	20	0.4	2.0	16	O24	Opto-37
	20	10	10	2.5	1.5	20	0.4	2.0	16	O24	Opto-37
	6.0	10	10	2.0	1.5	20	0.5	1.6	60	O24	Opto-37
	12	16	0.4	5.0	1.4	16	0.4	2.0	16	O24	Opto-37
	2.0	10	5.0	15.0	1.5	10	0.5	2.0	50	O24	Opto-37
	12	16	0.4	5.0	1.4	16	0.4	2.0	16	O24	Opto-37
	2.0	10	5.0	15.0	1.5	10	0.5	2.0	50	O24	Opto-37
	20	10	10	7.0	1.5	60	0.4	2.2	15	O24	Opto-37
	50	10	10	9.0	1.4	16	0.4	0.5	10	O24	Opto-37
	10	10	5.0	15.0	1.5	10	0.5	2.0	50	O24	Opto-37
	20	10	10	2.8	1.5	50	0.5	2.0	50	O24	Opto-37
	20	10	10	2.8	1.5	50	0.5	2.0	50	O24	Opto-37
	10	10	10	2.8	1.5	50	0.5	2.0	50	O24	Opto-37
	10	10	10	2.8	1.5	50	0.5	2.0	50	O24	Opto-37

# FAIRCHILD OPTOELECTRONICS

## OPTO

### COUPLERS—DARLINGTON OUTPUT

Item	DEVICE NO.	MAX RATINGS @ T <sub>A</sub> = 25°C					
		P <sub>D</sub> mW	Transistor		Diode		V <sub>ISO</sub> kV
			I <sub>C</sub> mA	V <sub>CEO</sub> V	V <sub>R</sub> V	I <sub>F</sub> mA	
1	FCD850	250	125	30	3.0	80	1.5ac
2	FCD850C	250	125	30	3.0	80	5.0
3	FCD850D	250	125	30	3.0	80	6.0
4	FCD855	250	125	55	3.0	80	1.5ac
5	FCD855C	250	125	55	3.0	80	5.0
6	FCD855D	250	125	55	3.0	80	6.0
7	FCD860 <sup>(3)</sup>	250	125	30	3.0	80	1.5ac
8	FCD860C <sup>(3)</sup>	250	125	30	3.0	80	5.0
9	FCD860D <sup>(3)</sup>	250	125	30	3.0	80	6.0
10	FCD865 <sup>(3)</sup>	250	125	30	3.0	80	1.5ac
11	FCD865C <sup>(3)</sup>	250	125	30	3.0	80	5.0
12	FCD865D <sup>(3)</sup>	250	125	30	3.0	80	6.0
13	4N29 <sup>(4)</sup>	250	125	30	3.0	80	2.5
14	4N30 <sup>(4)</sup>	250	125	30	3.0	80	1.5
15	4N31 <sup>(4)</sup>	250	125	30	3.0	80	1.5
16	4N32 <sup>(4)</sup>	250	125	30	3.0	80	2.5
17	4N33 <sup>(4)</sup>	250	125	30	3.0	80	1.5
18	H11B1	250	100	25	3.0	60	2.5
19	H11B2	250	100	25	3.0	60	1.5
20	TIL113 <sup>(3)</sup>	250	—	30	3.0	100	1.5
21	TIL119	250	—	30	3.0	100	1.5
22	MCA230	250	—	30	3.0	60	1.5
23	MCA231 <sup>(3)</sup>	250	50	30	3.0	60	1.5
24	MCA255	250	—	55	3.0	60	1.5

1. Standard transistor output
2. High speed transistor output  
guaranteed 2 μs max t<sub>r</sub> and t<sub>f</sub> with 100Ω R<sub>L</sub>  
8μs typ at 1KΩ R<sub>L</sub>
3. CTR guaranteed with transistor in saturation
4. JEDEC registered data and conditions
5. CTR typ at 1.0mA = 40%

# FAIRCHILD OPTOELECTRONICS

COUPLED CHARACTERISTICS						INPUT DIODE CHARACT.		OUTPUT DARLINGTON CHARACT.		Logic/ Connection Diagram	Package No.
	Min Current Transfer Ratio			$t_r$ $\mu s$ Typ	$t_f$ $\mu s$ Typ	$V_F$ V Max	@ $I_F$ mA	$I_{CEO}$ $\mu A$ Max	@ $V_{CE}$ V		
	100	10	5.0	15	150	1.5	20	0.1	10	O24	Opto-37
	100	10	5.0	15	150	1.5	20	0.1	10	O24	Opto-37
	100	10	5.0	15	150	1.5	20	0.1	10	O24	Opto-37
	100	10	5.0	15	150	1.5	20	0.1	10	O24	Opto-37
	100	10	5.0	15	150	1.5	20	0.1	10	O24	Opto-37
	100	10	5.0	15	150	1.5	20	0.1	10	O24	Opto-37
	200	1.0	1.0	80	150	1.5	20	0.1	10	O24	Opto-37
	200	1.0	1.0	80	150	1.5	20	0.1	10	O24	Opto-37
	200	1.0	1.0	80	150	1.5	20	0.1	10	O24	Opto-37
	400	0.5	1.0	80	150	1.5	20	0.1	10	O24	Opto-37
	400	0.5	1.0	80	150	1.5	20	0.1	10	O24	Opto-37
	400	0.5	1.0	80	150	1.5	20	0.1	10	O24	Opto-37
	100	10	10	10	45	1.5	50	0.1	10	O24	Opto-37
	100	10	10	10	45	1.5	50	0.1	10	O24	Opto-37
	50	10	10	10	45	1.5	50	0.1	10	O24	Opto-37
	500	10	10	10	120	1.5	50	0.1	10	O24	Opto-37
	500	10	10	10	120	1.5	50	0.1	10	O24	Opto-37
	500	1.0	5.0	125	100	1.5	10	0.1	10	O24	Opto-37
	200	1.0	5.0	125	100	1.5	10	0.1	10	O24	Opto-37
	300	10	1.0	50	50	1.5	10	0.1	10	O24	Opto-37
	300	10	2.0	50	50	1.5	10	0.1	10	O24	Opto-37
	100	10	5.0	5.0	35	1.5	20	0.1	10	O24	Opto-37
	200	5.0	1.0	5.0	35	1.5	10	0.1	10	O24	Opto-37
	100	10	5.0	5.0	35	1.5	20	0.1	10	O24	Opto-37

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# FAIRCHILD OPTOELECTRONICS

## OPTO

### PHOTO TRANSISTORS

Item	DEVICE NO.	Description	V <sub>CEO</sub> I <sub>C</sub> = 1.0mA V		I <sub>CE(It)</sub> V <sub>CE</sub> = 5.0V mA			V <sub>CE(sat)</sub> H = 20mW/cm <sup>2</sup> V			t <sub>r</sub> /t <sub>f</sub> μs Typ	Package No.
			Min	Typ	Min	Typ	Max	Min	Typ	Max		
1	FPT100	Plastic, Dome Lens General Purpose	30	50	H = 5.0mW/cm <sup>2</sup> 0.2	1.4	—	I <sub>C</sub> = 500μA —	0.16	0.3	2.8	Opto-26
2	FPT100A	Plastic, Dome Lens 1:3 Sensitivity	30	50	H = 5.0mW/cm <sup>2</sup> 1.0	1.4	3.0	I <sub>C</sub> = 500μA —	0.16	0.3	2.8	Opto-26
3	FPT100B	Plastic, Dome Lens 1:2 Sensitivity	30	50	H = 5.0mW/cm <sup>2</sup> 1.3	1.4	2.6	I <sub>C</sub> = 500μA —	0.16	0.3	2.8	Opto-26
4	FPT101	Miniature, .080" Dia. Hermetic Package	I <sub>C</sub> = 0.1mA, H ≤ 0.1μW/cm <sup>2</sup> 30	60	H = 20mW/cm <sup>2</sup> 0.8	3.5	—	I <sub>C</sub> = 0.4mA —	0.25	0.3	2.8	Opto-27
5	FPT102	Photodiode Hermetic Package	I <sub>R</sub> = 5.0μA, H ≤ 0.1μW/cm <sup>2</sup> 50	120	V <sub>R</sub> = -10.0V, H ≤ 0.1μW/cm <sup>2</sup> —	0.1nA	25nA	V <sub>R</sub> = -10V 12μA	20μA	—	0.2	Opto-27
6	FPT110	Plastic Flat Lens General Purpose	30	50	H = 5.0mW/cm <sup>2</sup> 0.2	0.88	—	I <sub>C</sub> = 500μA —	0.16	0.33	2.8	Opto-28
7	FP110A	Plastic Flat Lens 1:3 Sensitivity	30	50	H = 5.0mW/cm <sup>2</sup> 0.6	0.88	1.8	I <sub>C</sub> = 500μA —	0.16	0.33	2.8	Opto-28
8	FPT110B	Plastic Flat Lens 1:2 Sensitivity	30	50	H = 5.0mW/cm <sup>2</sup> 0.8	0.88	1.6	I <sub>C</sub> = 500μA —	0.16	0.33	2.8	Opto-28
9	FPT120	Plastic, Dome Lens High Sensitivity	20	50	H = 1.0mW/cm <sup>2</sup> 0.4	1.5	—	I <sub>C</sub> = 1.0mA —	0.25	0.55	18	Opto-26
10	FPT120A	Plastic, Dome Lens 1:3 Sensitivity	15	30	H = 1.0mW/cm <sup>2</sup> 1.5	2.4	4.5	I <sub>C</sub> = 1.0mA —	0.25	0.55	18	Opto-26
11	FPT120B	Plastic, Dome Lens 1:1.5 Sensitivity	15	30	H = 1.0mW/cm <sup>2</sup> 2.0	2.4	4.0	I <sub>C</sub> = 1.0mA —	0.25	0.55	18	Opto-26
12	FPT120C	Plastic Cup, Dome Lens	11	20	H = 5.0mW/cm <sup>2</sup> 16	—	25	I <sub>C</sub> = 1.0mA —	0.35	0.55	18	Opto-26
13	FPT130	Plastic, Flat Lens High Sensitivity	20	50	H = 1.0mW/cm <sup>2</sup> 0.4	0.9	—	I <sub>C</sub> = 1.0mA —	0.25	0.55	18	Opto-28
14	FPT130A	Plastic, Flat Lens 1:3 Sensitivity	15	30	H = 1.0mW/cm <sup>2</sup> 0.9	1.5	2.7	I <sub>C</sub> = 1.0mA —	0.25	0.55	18	Opto-28
15	FPT130B	Plastic, Flat Lens 1:2 Sensitivity	15	30	H = 1.0mW/cm <sup>2</sup> 1.2	1.5	2.4	I <sub>C</sub> = 1.0mA —	0.25	0.55	18	Opto-28
16	FPT131	Plastic, Dome Lens	15	50	H = 5.0mW/cm <sup>2</sup> 0.1	1.4	—	I <sub>C</sub> = 500μA —	0.16	0.7	2.8	Opto-26
17	FPT132	Plastic, Dome Lens	10	30	H = 1.0mW/cm <sup>2</sup> 0.2	1.5	—	I <sub>C</sub> = 1.0mA —	0.15	0.7	18	Opto-26
18	FPT136	Plastic, Flat Lens	15	50	H = 5.0mW/cm <sup>2</sup> 0.1	0.88	—	I <sub>C</sub> = 500μA —	0.16	0.7	2.8	Opto-28

# FAIRCHILD OPTOELECTRONICS

## OPTO

### PHOTO TRANSISTORS (Cont'd)

Item	DEVICE NO.	Description	V <sub>CEO</sub> I <sub>C</sub> = 1.0mA V		I <sub>CE</sub> (It) V <sub>CE</sub> = 5.0V mA			V <sub>CE</sub> (sat) H = 20mW/cm <sup>2</sup> V			t <sub>r</sub> /t <sub>f</sub> μs Typ	Package No.
			Min	Typ	Min	Typ	Max	Min	Typ	Max		
1	FPT137	Plastic, Flat Lens	10	30	H = 1.0mW/cm <sup>2</sup> 0.2	0.9	—	I <sub>C</sub> = 1.0mA —	0.15	0.7	18	Opto-28
2	FPT220	Plastic, Dome Lens 1:2 Sensitivity	20	50	H = 1.0mW/cm <sup>2</sup> 1.0	1.5	2.0	I <sub>C</sub> = 1.0mA —	0.25	0.55	18	Opto-26
3	FPT230	Plastic Flat Lens 1:2 Sensitivity	20	50	H = 1.0mW/cm <sup>2</sup> 0.6	0.9	1.2	I <sub>C</sub> = 1.0mA —	0.25	0.55	18	Opto-28
4	FPT320	Plastic, Dome Lens 1:3 Sensitivity	20	50	H = 1.0mW/cm <sup>2</sup> 0.75	1.5	2.25	I <sub>C</sub> = 1.0mA —	0.25	0.55	18	Opto-26
5	FPT330	Plastic, Flat Lens 1:3 Sensitivity	20	50	H = 1.0mW/cm <sup>2</sup> 0.45	0.9	1.35	I <sub>C</sub> = 1.0mA —	0.25	0.55	18	Opto-28
6	FPT400	Plastic, Dome Lens Photo Darlington	30	50	H = 1.0mW/cm <sup>2</sup> 7.5	12	—	—	0.9	1.0	100	Opto-26
7	FPT410	Plastic, Flat Lens Photo Darlington	30	50	H = 1.0mW/cm <sup>2</sup> 5.0	8.0	—	—	0.9	1.0	100	Opto-28
8	FPT500	TO-18, Dome Lens	45	60	H = 1.0mW/cm <sup>2</sup> 1.0	—	—	—	0.2	0.33	3.0	Opto-29
9	FPT500A	TO-18, Dome Lens 1:3 Sensitivity	45	60	H = 1.0mW/cm <sup>2</sup> 2.0	—	6.0	—	0.2	0.33	3.0	Opto-29
10	FPT510	TO-18, Flat Lens	45	60	H = 5.0mW/cm <sup>2</sup> 0.5	—	—	—	0.2	0.33	3.0	Opto-30
11	FPT510A	TO-18, Flat Lens 1:3 Sensitivity	45	60	H = 5.0mW/cm <sup>2</sup> 1.0	—	3.0	—	0.2	0.33	3.0	Opto-30
12	FPT520	TO-18, Dome Lens	30	50	H = 1.0mW/cm <sup>2</sup> 5.0	—	—	—	0.2	0.33	10	Opto-29
13	FPT520A	TO-18, Dome Lens 1:3 Sensitivity	30	50	H = 1.0mW/cm <sup>2</sup> 6.0	—	18	—	0.2	0.33	10	Opto-29
14	FPT530	TO-18, Flat Lens	30	50	H = 5.0mW/cm <sup>2</sup> 3.0	—	—	—	0.2	0.33	10	Opto-30
15	FPT530A	TO-18, Flat Lens 1:3 Sensitivity	30	50	H = 5.0mW/cm <sup>2</sup> 4.0	—	12	—	0.2	0.33	10	Opto-30
16	FPT540	TO-18, Dome Lens	12	20	H = 1.0mW/cm <sup>2</sup> 8.0	—	—	—	0.35	0.55	18	Opto-29
17	FPT540A	TO-18, Dome Lens 1:3 Sensitivity	12	20	H = 1.0mW/cm <sup>2</sup> 10	—	30	—	0.35	0.55	18	Opto-29
18	FPT550	TO-18, Flat Lens	12	20	H = 5.0mW/cm <sup>2</sup> 8.0	—	—	—	0.35	0.55	18	Opto-30

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# FAIRCHILD OPTOELECTRONICS

## OPTO

### PHOTO TRANSISTORS (Cont'd)

Item	DEVICE NO.	Description	V <sub>CEO</sub> I <sub>C</sub> = 1.0mA V		I <sub>CE(It)</sub> V <sub>CE</sub> = 5.0V mA			V <sub>CE(sat)</sub> H = 20mW/cm <sup>2</sup> V			t <sub>r</sub> /t <sub>f</sub> μs Typ	Package No.
			Min	Typ	Min	Typ	Max	Min	Typ	Max		
1	FPT550A	TO-18, Flat Lens 1:3 Sensitivity	12	20	H = 5.0mW/cm <sup>2</sup> 8.0	—	24	—	0.35	0.55	18	Opto-30
2	FPT560	TO-18, Dome Lens Photo Darlington	30	50	H = 0.5mW/cm <sup>2</sup> 10	15	—	—	0.9	1.0	100	Opto-29
3	FPT570	TO-18, Flat Lens Photo Darlington	30	50	H = 0.5mW/cm <sup>2</sup> 1.0	6.0	—	—	0.9	1.0	100	Opto-30
4	FPT610	Miniature, .085" x .150"	30	50	H = 5.0mW/cm <sup>2</sup> 0.2	1.4	—	I <sub>C</sub> = 500μA —	0.16	0.3	2.8	Opto-31
5	FPT630	X .095" Tall Flat Lens	20	50	H = 1.0mW/cm <sup>2</sup> 0.4	0.9	—	I <sub>C</sub> = 1.0mA —	0.25	0.55	18	Opto-31

### INFRARED EMITTERS

Item	DEVICE NO.	Description	I <sub>F</sub> mA Max	V <sub>F</sub> I <sub>F</sub> = 100mA V Typ	Wave Length @ Peak Emission nm Typ	Axial Intensity I <sub>F</sub> = 100mA mW/sr Typ	Package No.
6	FPE100	Metal Header Package Wide Beam	100	1.35	890	0.3	Opto-32
7	FPE104	Lead Frame Package Narrow Beam	100	1.35	890	10	Opto-8
8	FPE106	Miniature .085" x .150" x .095" Tall Flat Lens	100	1.35	890	0.4	Opto-31
9	FPE500	TO-18, Dome Lens	250	1.35	890	10.0	Opto-29
10	FPE510	TO-18, Flat Lens	250	1.35	890	1.0	Opto-30
11	FPE520	TO-18, Dome Lens	250	1.35	940	50	Opto-29
12	FPE530	TO-18, Flat Lens	250	1.35	940	5.0	Opto-30

**FAIRCHILD OPTOELECTRONICS**

**OPTO**

**SOURCE/SENSOR ARRAYS**

Item	DEVICE NO.	Description	Source		Sensor		Matching Factor		Package No.
			$I_F$ mA/cell Max	$V_F$ $I_F = 50\text{mA}$ V Typ	$I_{CE(I)}$ H = 1.0mW/cm <sup>2</sup> (GaAs) VCE = 5.0V mA Typ	$V_{CE(sat)}$ $I_C = 4.0\text{mA}$ V Typ	$\frac{I_{OUT(Min)}}{I_{OUT(Max)}}$ $I_F = 50\text{mA}, V_{CE} = 5.0\text{V}$ distance = 0.05" Min Typ		
1	FPA100	9-Element Source/Sensor Array 0.100" Centers	75	1.25	4.5	0.4	0.5	0.65	Opto-33 (2 pcs.)
2	FPA101	12-Element Source/Sensor Array 0.250" Centers	75	1.25	4.5	0.4	0.5	0.65	Opto-34 (2 pcs.)
3	FPA102	10-Element Source/Sensor Array 0.087" Centers	75	1.25	4.5	0.4	0.5	0.65	Opto-35 (2 pcs.)

**SENSOR ARRAYS**

Item	DEVICE NO.	Description	$I_{CE}$ mA Max	$V_{CEO}$ $I_C = 1.0\text{mA}$ V Typ	$I_{CE(I)}$ H = 10mW/cm <sup>2</sup> Tung. @ 2854°K mA Typ	$V_{CE(sat)}$ H = 20mW/cm <sup>2</sup> $I_C = 500\text{mA}$ V Typ	Matching Factor		Package No.
							$\frac{I_{OUT(Min)}}{I_{OUT(Max)}}$ $I_F = 50\text{mA}, V_{CE} = 5.0\text{V}$ distance = 0.05" Min Typ		
4	FPA700	9-Element Sensor Array 0.100" Centers	25	20	1.75	0.16	0.5	0.65	Opto-33
5	FPA700A	9-Element Sensor Array 0.100" Centers	25	20	1.75	0.16	0.75	0.85	Opto-33
6	FPA710	12-Element Sensor Array 0.250" Centers	25	20	1.75	0.16	0.5	0.65	Opto-34
7	FPA710A	12-Element Sensor Array 0.250" Centers	25	20	1.75	0.16	0.75	0.85	Opto-34
8	FPA720	10-Element Sensor Array 0.087" Centers	25	20	1.75	0.16	0.5	0.65	Opto-35
9	FPA720A	10-Element Sensor Array 0.87" Centers	25	20	1.75	0.16	0.75	0.85	Opto-35

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# FAIRCHILD OPTOELECTRONICS

## OPTO

### REFLECTIVE SENSORS

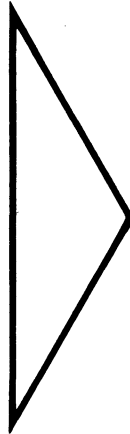
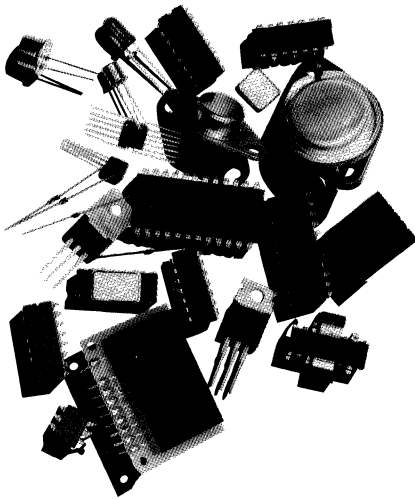
Item	DEVICE NO. (1)	Description	Diode		Photo-Transistor	Combined I <sub>OUT</sub>		Package No.
			I <sub>F</sub> mA Max	V <sub>F</sub> I <sub>F</sub> = 20mA V Typ	V <sub>CEO</sub> I <sub>CE</sub> = 1.0mA V Min	I <sub>F</sub> = 50mA, V <sub>CE</sub> = 5V distance = .40" μA Min	μA Max	
1	FPA103/106	Light Reflective Transducer	75	1.25	12	20	—	Opto-36
2	FPA104/107	Light Reflective Transducer	75	1.25	12	60	180	Opto-36
3	FPA105/108	Light Reflective Transducer	75	1.25	12	80	160	Opto-36

### DICE

Item	DEVICE NO.	Die Size Inches	Description
4	FLX2121	.015 x .015	A high-efficiency, long life red GaAsP LED. Typical luminous intensity = 0.7 mcd @ V <sub>F</sub> = 1.7 V and I <sub>F</sub> = 20 mA.
5	FNX8019	.116 x .070	GaAsP monolithic 7/9 segment display with a 5° slant. Dimensions given are digit sizes—die is larger by .008" vertical and no more than .016" in horizontal direction. Half digits (numeral-one) are available for the 0.100", and 0.116" display. The FNX8019, 8009 and 8039 are 9-segment and can be used as 7-segment. The other is 7-segment only.
6	FNX8009	.100 x .062	
7	FNX8039	.080 x .049	
8	FNX8041	.040 x .026	
9	FNX8209	.050 x .063	A current-sinking digit driver for common-cathode LED displays. The monolithic chip contains four independent npn transistors, each capable of sinking 63 mA with I <sub>B</sub> = 1.0 mA.
10	FPX1010	.040 x .040	An npn Planar (2) phototransistor, h <sub>FE</sub> = 100 Min; V <sub>CEO</sub> = 30 V Min; V <sub>CBO</sub> = 50 V Min; I <sub>CE(It)</sub> = 0.3 mA Min @ H = 5.0 mW/cm <sup>2</sup> (tungsten @ 2854° K); typical t <sub>r</sub> and t <sub>f</sub> = 3.0 μs @ I <sub>CE</sub> = 4.0 mA and R <sub>L</sub> = 100 Ω; V <sub>CE(sat)</sub> = 0.4 V Max @ I <sub>C</sub> = 500 μA.
11	FPX1011	.040 x .040	An npn Planar phototransistor with high illumination sensitivity h <sub>FE</sub> = 500 Min; V <sub>CEO</sub> = 12 V Min; V <sub>CBO</sub> = 30 V Min; I <sub>CE(It)</sub> = 0.3 mA Min @ H = 1.0 mW/cm <sup>2</sup> (tungsten @ 2854° K), typical t <sub>r</sub> and t <sub>f</sub> = 18 μs @ I <sub>CE</sub> = 4.0 mA and R <sub>L</sub> = 100 Ω; V <sub>CE(sat)</sub> = 0.5 V Max @ I <sub>C</sub> = 500 μA.

1. FPA 106, 107, 108 have infrared filters.

2. Planar is a patented Fairchild process.



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# FAIRCHILD CHARGE-COUPLED DEVICES

## CCD

### LINEAR IMAGE SENSORS

A typical linear image sensor is composed of a row of image sensing elements (photosites), two analog transport registers, and an output amplifier (Figure 1). Light energy falls on the photosites and generates charge packets proportional to the light intensity. These charge packets are then transferred in parallel to two analog transport registers, which are clocked by 2-phase clocks. The packets are next delivered to an on-chip output amplifier where they are converted to proportional voltage levels. A series of pulses, amplitude modulated with the optical information, appear at the output.

Table 1 summarizes the features of the CCD110F 256-element, CCD131 1024-element and CCD121H 1728-element linear image sensors. The CCD110F and CCD121H have similar cell size and number of output amplifiers. The CCD131 has two separate output amplifiers, one for each 512-stage analog transport register, which permit higher total output data rate. The linear image sensors are packaged in hermetically sealed ceramic packages with a high quality optical glass window.

Linear sensors find applications ranging from simple optical character recognition (OCR) using the 256 x 1 device to high speed facsimile sensing using the 1728 x 1. The precise location of the photosites on the sensors allows the device to be used in high precision non-contact measurement applications such as dimensional measurements of objects, shape recognition and sorting, defect detection and so on. The three linear sensors have the same sensing element center-to-center spacing; selection is determined by the user's resolution requirement.

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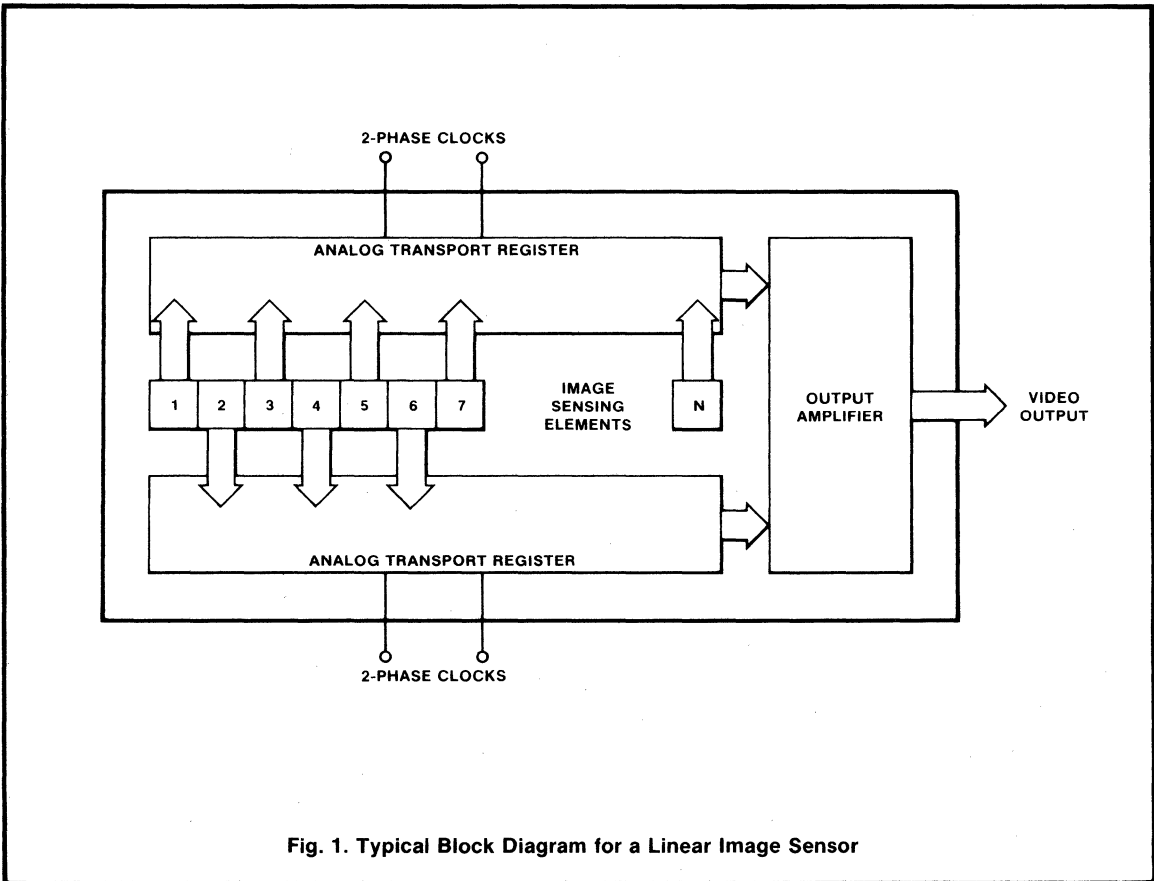
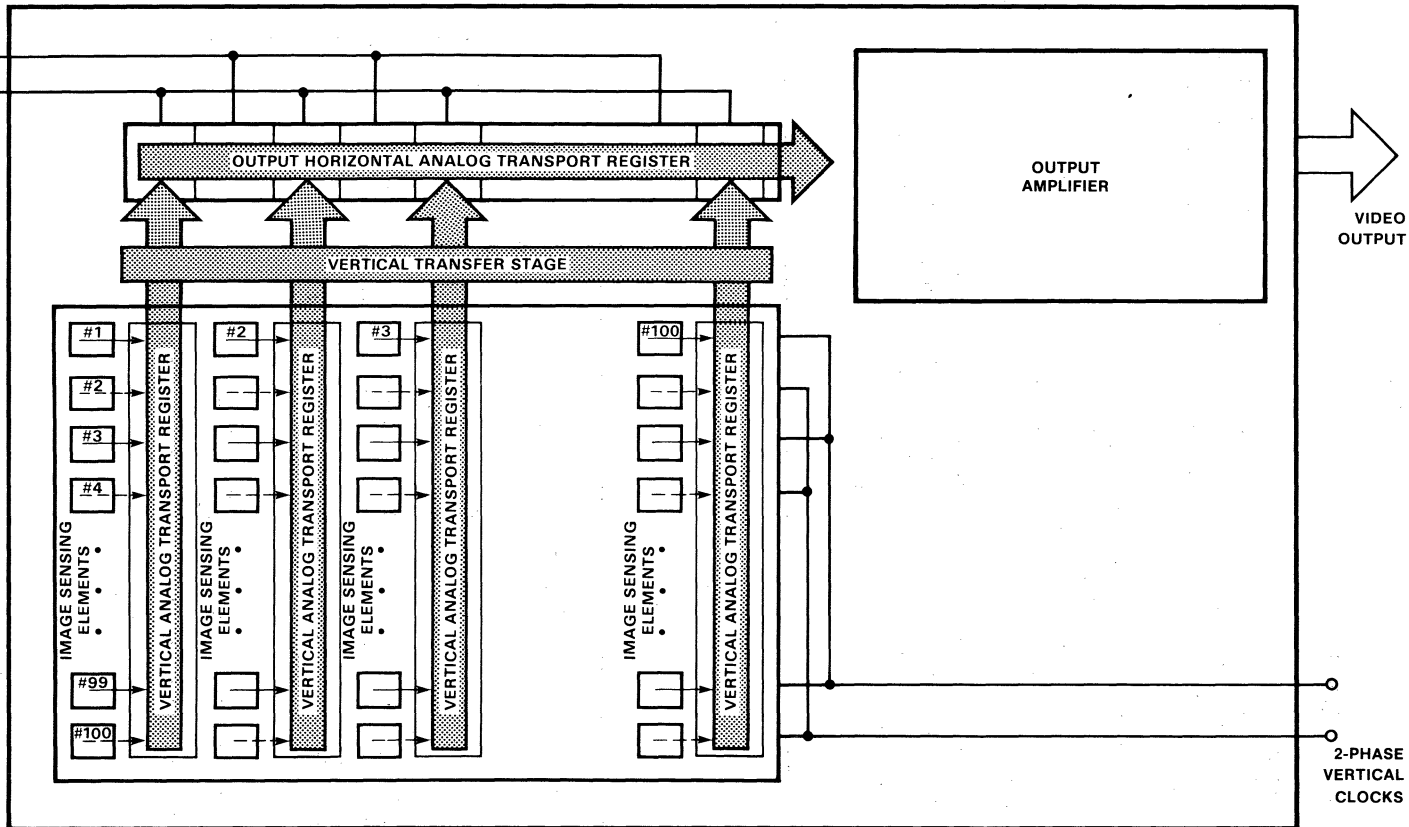


Fig. 1. Typical Block Diagram for a Linear Image Sensor

2-PHASE HORIZONTAL CLOCKS



FAIRCHILD CHARGE-COUPLED DEVICES

Fig. 2. Typical Block Diagram of an Area Image Sensor

## FAIRCHILD CHARGE-COUPLED DEVICES

PARAMETERS	CCD110F	CCD131	CCD121H
Number of Elements	256	1024	1728
Dynamic Range	500:1	500:1	500:1
Number of Output Amplifiers	1	2	1
Package Type	Non-Hermetic	Hermetic	Hermetic
Number of Pins	18	24	24
Saturation Exposure	1.0 $\mu\text{J}/\text{cm}^2$	1.0 $\mu\text{J}/\text{cm}^2$	1.0 $\mu\text{J}/\text{cm}^2$
Saturation Output Voltage	150 mV	750 mV	750 mV
Photo Element Dimensions	13 $\mu\text{m}$ X 17 $\mu\text{m}$	13 $\mu\text{m}$ X 13 $\mu\text{m}$	13 $\mu\text{m}$ X 17 $\mu\text{m}$
Video Data Rate	10 MHz	24 MHz	10 MHz
Design Development Board	<b>CCD110FB</b>	<b>CCD131DB</b>	<b>CCD121HB</b>

**Table 1. Linear Image Sensors**

PARAMETERS	CCD202	CCD211
Number of Elements	100 X 100	244 X 190
Dynamic Range	300:1	300:1
Package Type	Hermetic	Hermetic
Number of Pins	24	24
Saturation Exposure	0.4 $\mu\text{J}/\text{cm}^2$	0.2 $\mu\text{J}/\text{cm}^2$
Saturation Output Voltage	1,600 mV	200 mV
Photoelements Dimensions	18 $\mu\text{m}$ X 30 $\mu\text{m}$	14 $\mu\text{m}$ X 18 $\mu\text{m}$
Video Data Rate	2 MHz	7 MHz
Design Development Boards	<b>CCD202DB</b>	—

**Table 2. Area Image Sensors**

### AREA IMAGE SENSORS

Area arrays are similar to the linear sensors except that the photosites are arranged in a matrix format and the opaque transport registers are located between the photosite columns (*Figure 2*). The charge packets are transferred to the output amplifier in two separate fields, line by line. This technique is called the interline transfer approach.

*Table 2* summarizes the features of the CCD202 100 x 100 element and CCD211 244 x 190 element devices. The x-y format of the area sensors was selected to provide a 4 x 3 image aspect ratio. The highly precise location of the photosites allows precise identification of each component of the image signal, an important feature for applications requiring exact dimensional measurements. The devices are also well suited for use in video cameras that require low power, small size, high sensitivity and high reliability. Both devices are packaged in a hermetically sealed package with a high quality optical glass window.

### ANALOG SHIFT REGISTERS

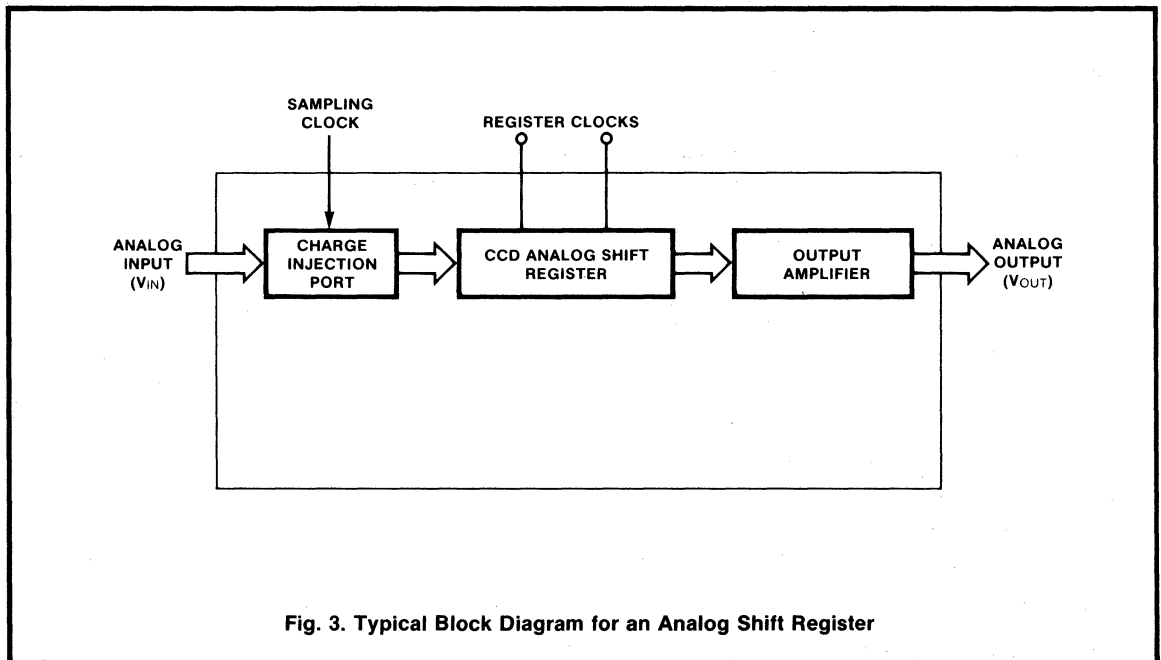
The capability to manipulate information in the form of charge packets makes CCD technology ideal for analog signal processing. In a CCD analog shift register, electrical inputs are applied to the charge-injection port which samples the input signal at a rate determined by the input signal bandwidth.

This signal is then transformed into a charge packet and injected into the register. The clocks shift the charge packet through the register to the output amplifier for conversion to an output signal voltage. A filtering or sample-and-hold technique is usually required to recover the analog information. The time delay between the input and output signals is equal to the number of elements in the CCD register (N) divided by the clock rate frequency. Since N is fixed, varying the clock rate provides a variable delay that makes the CCD shift register a powerful device for applications requiring highly precise delay of analog information.

## FAIRCHILD CHARGE-COUPLED DEVICES

Figure 3 shows a typical block diagram for a CCD analog shift register. Table 3 summarizes the features of the CCD311 130/260-element device and the CCD321A 455/910-element device. The CCD321A is capable of storing one full horizontal line of video information (1H) at a 14.3 MHz data rate. The device finds applications in a wide number of video applications as replacement for glass delay lines. Such systems include comb filters, signal-to-noise enhancers and drop-out compensators for videotape recorders. Other types of applications include time-base compression and expansion systems where data can be fed to the device at one speed and fed out of the device at a different speed. Pre-processing the analog data through a CCD321A eliminates the need for expensive high speed A-to-D converters in these applications. Finally, the device can also be used in audio systems for echo-effect simulations, reverberation systems, etc.

The CCD321A comes in four different classes—the CCD321A-1 for high quality video applications, the CCD321A-2 for medium quality video applications, the CCD321A-3 for general purpose time-base compression and expansion applications and the CCD321A-4 for audio applications.



**Fig. 3. Typical Block Diagram for an Analog Shift Register**

PARAMETERS	CCD311	CCD321A
Number of Elements	130 or 260	455 or 910 (Dual 455)
Number of Charge Injection Ports	2	2
Number of Outputs	1	2
Range of Clock Rates	20 KHz - 10 MHz	20 KHz - 40 MHz
Number of Pins	18	16
Signal to Noise Ratio	50 db	58 db
Video Signal Bandwidth	4.2 MHz	5.0 MHz
Differential Gain	3%	1% to 3%
Differential Phase	3°	1° to 3°
Total Harmonic Distortion	3%	<1%

**Table 3. Analog Shift Registers**

## FAIRCHILD CHARGE-COUPLED DEVICES

### DESIGN DEVELOPMENT BOARDS AND MODULES

Fairchild offers a series of printed circuit boards for use as construction aids for experimental systems using CCD linear and area image sensors. These design development boards are fully assembled and tested, and require only power supplies and an oscilloscope to display the video information corresponding to the image positioned in front of the sensor. A typical board (Figure 4) includes an on-board variable-frequency clock generator that can be overrun by an external input, logic circuitry for timing drive signals, drivers to interface the TTL logic to CCD levels, a socket for mounting the device at 90° on the edge of the board, video buffer circuits and simple video processing electronics. Design development boards are available for the CCD110F, CCD131, CCD121H and the CCD202.

To operate the board, supply +5 V, +15 V and -15 V through a 22-pin standard edge connector to the pc board. Video information, typically 1.0 V peak-to-peak, as well as synchronization pulses are supplied to the connector for display on an oscilloscope. The CCD202 board also includes sweep waveform generators for driving an x-y monitor.

In addition, Fairchild offers the CCD321VM video delay module which includes the CCD321A-2 analog shift register plus driver electronics package with VCO, drivers, device socket, video amplifiers and filters. A 1.0 V peak-to-peak input comes out 1.0 V peak-to-peak, delayed by 455 or 910 divided by the clock frequency. The CCD321VM module is capable of storing a full video line (1H) at a 14.3 MHz clock rate with a 58 dB signal-to-noise ratio and excellent linearity. Assembled and thoroughly tested, the module requires only a single power supply. Also available is the CCD321AM audio module which includes the CCD321A-4 plus driver package and processing electronics.

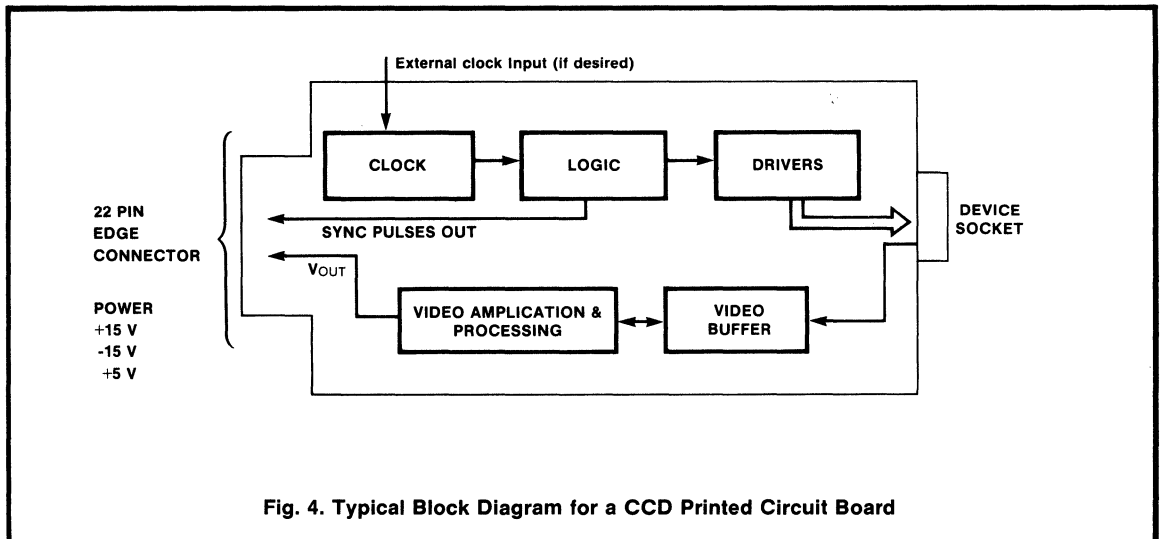


Fig. 4. Typical Block Diagram for a CCD Printed Circuit Board

### LINE-SCAN CAMERA SUBSYSTEMS

There are presently three models of the line-scan camera sub-systems—the 256-element CCD1100, the 1024-element CCD1300 and the 1728-element CCD1400. The choice among them is determined primarily by resolution requirements, since each camera model offers essentially equivalent performance in other respects. The line-scan camera can be ordered with a C-mount lens with a focal length to meet the specific application.

Each camera subsystem includes a line-scan camera, a camera-control unit and interconnecting cables. Within the camera is a CCD image sensor, a logic board to provide clock signals for controlling sensor operation, and a video processing assembly to generate an analog-video and a binary-video output signal. The analog-video signal is a continuous analog representation of the spacial distribution of image brightness, obtained by sample-and-hold processing of the raw sensor output. The binary-video output, provided by a comparator, is a digital version of the analog video waveform and corresponds to black-to-white and white-to-black transitions of the analog-video signal across the threshold. The threshold adjustment can be varied across the full dynamic range of the camera.



## FAIRCHILD CHARGE-COUPLED DEVICES

The camera-control unit provides the power supply voltages and interface connections for the subsystem input and output signals. It also contains the adjustment controls for camera exposure time, video data rate, the threshold voltage for the binary-video comparator, and an AGC off-on switch. The camera-to-control interconnection cable permits complete remote control of the camera by the control unit. Emulation of the control unit signals permits camera control by microcomputer.

CCD line-scan camera subsystems are being used for non-contact measurement, inspection, defect detection, shape and pattern recognition, color sorting, and for a wide variety of quality process-control industrial applications.

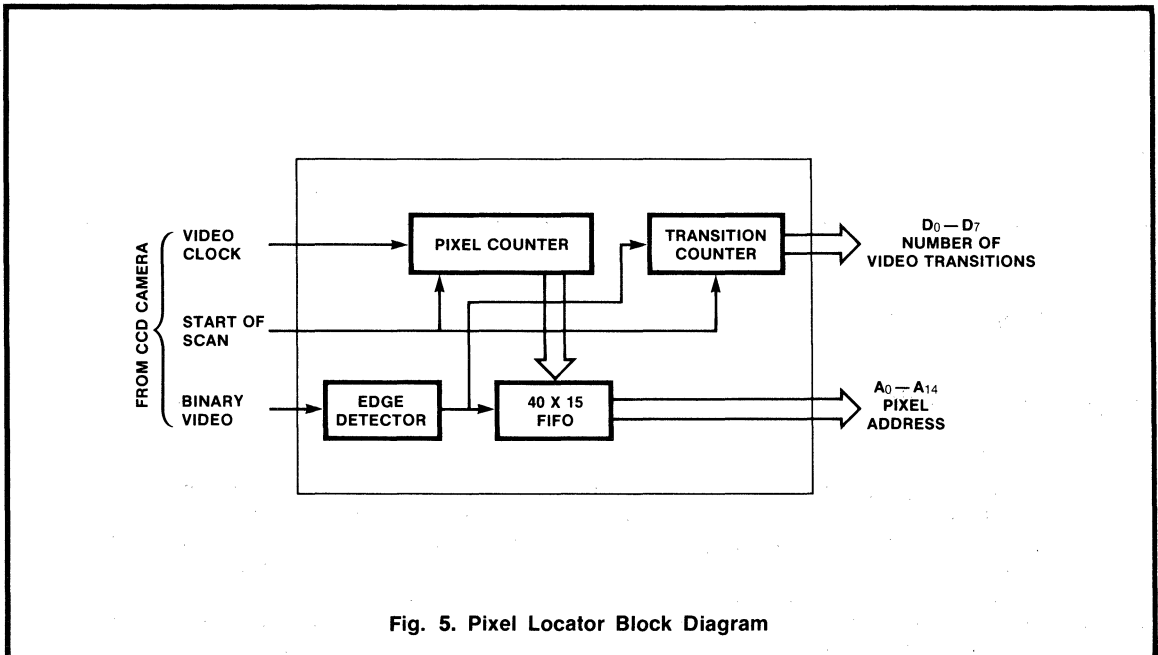
### PIXEL LOCATOR

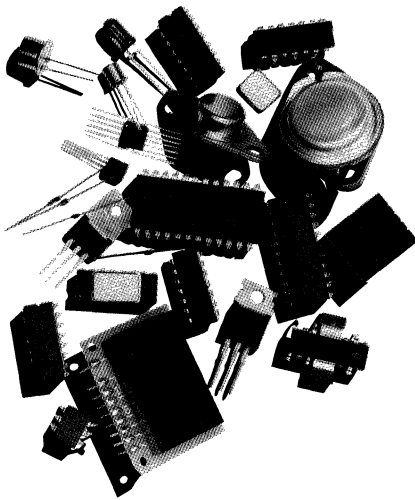
The pixel locator is an optional accessory for use with any of the Fairchild standard product line-scan camera subsystems; the 256-element CCD1100, the 1024-element CCD1300 or the 1728-element CCD1400. It is a single printed circuit board which is installed in a 3" x 6" x 10" enclosure designed as a companion to the line-scan camera control unit. All required bias-voltage and camera-signal input connections are made by a single 15-wire cable which is provided for interconnection between the pixel locator and control unit. A mating 50-pin connector is provided to allow user construction of a cable for accessing of the pixel locator I/O ports.

The primary electrical function of the pixel locator is generation of a set of digit output data words which indicate the pixel address locations where white-to-black and black-to-white transitions occur in the binary video signal from the associated line-scan camera. A pixel is a "picture element," which physically corresponds to a discrete photosite in the CCD image sensor in the camera. There are 256 pixels (hence 256 corresponding pixel addresses) in the CCD1100 camera, 1024 pixels in the CCD1300 and 1728 pixels in the CCD1400.

First-in first-out buffer memory storage provided for the set of address words detected by the pixel locator allows the users system to access address data at any rate up to 2M words per second. The sequentially available set of digital address output words permits many non-contract measurement application problems to be resolved with simple binary subtraction or digital display circuitry.

As a secondary function, the pixel locator also provides an 8-bit output word to indicate the number of video signal transitions detected in a proceeding camera line-scan readout.





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# FAIRCHILD HYBRIDS

## INTERFACE

### HIGH CURRENT DRIVERS

Item	DEVICE NO.	Description	Function	Input Compatibility	Output Current A (Max)	Output Standoff Voltage-V	Drivers per Package	Logic/Connection Diagram	Package(s)
1	SH2001	High Voltage, High Current	NAND	DTL,TTL	1.0	50	1	H5	TO-100
2	SH2002	High Voltage, High Current	NAND	DTL,TTL	1.0	40	1	H5	TO-100
3	SH2200	High Voltage, High Current	NAND	DTL,TTL	2.0	50	1	H5	TO-100
4	SH2201	High Voltage, High Current	NAND	DTL,TTL	2.0	100	1	H5	TO-100
5	SH3011*	Dual Hammer	Non- Inverting	TTL	5.0	80	2	H8	8-pin TO-3

### ANALOG SWITCHES

Item	DEVICE NO.	Description	Input Logic	Channel Resistance $\Omega$ (Max)	Supply Voltage V	Logic/Connection Diagram	Package(s)
6	SH3002	SPDT Analog Switch	TTL	200	$\pm 12$	H6	TO-100
7	SH3003	DPST Analog Switch	TTL	200	$\pm 12$	H7	TO-100

## CONSUMER

### RADIO-AUDIO/TV CIRCUITS

Item	DEVICE NO.	Description	Logic/Connection Diagram	Package(s)
4	SH1549	Memory Control Hybrid	H4	1"x2" Single In-line
5	SH1552	Ladder Network for Signal Conversion	H3	1"x2" Single In-line
6	SH3006*	Wideband Amplifier/Prescaler	—	—

\*To be announced

# FAIRCHILD HYBRIDS

## VOLTAGE REGULATORS

### VOLTAGE REGULATORS

Item	DEVICE NO.	Description	Input Voltage Range-V	Output Voltage Range-V	Output Current A (Max)	Output Current Peak A (Typ)
1	SH123	3 Term. Pos. VR	7.5 to 25	5.0	3.0	8.0
2	SH223	3 Term. Pos. VR	7.5 to 25	5.0	3.0	8.0
3	SH323	3 Term. Pos. VR	7.5 to 25	5.0	3.0	8.0
4	$\mu$ A78H05	3 Term. Pos. VR	7.5 to 25	5.0	5.0	8.0
5	$\mu$ A78H05A	3 Term. Pos. VR	7.0 to 40	5.0	5.0	8.0
6	$\mu$ A78P05	3 Term. Pos. VR	7.0 to 40	5.0	10	12
7	$\mu$ A78H12	3 Term. Pos. VR	15.5 to 25	12	5.0	8.0
8	$\mu$ A78H15	3 Term. Pos. VR	18.5 to 25	15	5.0	8.0
9	SH1605*	Switching Regulator	5.0 to 40	2.0 to 20	5.0	10
10	$\mu$ A78HG	4 Term. Pos. VR	7.5 to 40	5.0 to 24	5.0	8.0
11	$\mu$ A79HG	4 Term. Neg. VR	7.0 to -40	-2.2 to -24	5.0	8.0

## AMPLIFIERS

### OPERATIONAL AMPLIFIER

Item	DEVICE NO.	Description	Input Offset Voltage mV	Input Offset Voltage Drift $\mu$ V/ $^{\circ}$ C	Input Offset Current nA
12	SH2714	Dual Instrumentation Amplifier	0.5	0.7	2.8

### SERVO AMPLIFIER

Item	DEVICE NO.	Description	Input Offset Voltage mV	Input Offset Voltage Drift $\mu$ V/ $^{\circ}$ C	Input Offset Current-nA
13	SH3015*	Servo Amplifier	6.0	—	200

### CURRENT AMPLIFIER

Item	DEVICE NO.	Function	Voltage Gain (Typ)	AC Current Gain-A/mA	Input Impedance K $\Omega$ (Typ)
14	SH0002	Current Amplifier	0.97	40	400

\*To be announced

## FAIRCHILD HYBRIDS

Line Regulation %	Quiescent Current mA	Ripple Rejection dB	Dropout Voltage V	Logic/Connection Diagram	Package(s)
1	10	60	2.5	H12	TO-3
1	10	60	2.5	H12	TO-3
1	10	60	2.5	H12	TO-3
1	10	60	2.5	H12	TO-3
1	10	60	1.75	H12	TO-3
1	10	60	2.0	H12	TO-3
1	10	60	3.5	H9	TO-3
1	10	60	3.5	H9	TO-3
—	30	—	—	—	—
1	10	60	2.5	H10	4-pin TO-3
1	5	50	3.5	H11	4-pin TO-3

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Input Bias Current nA	Common Mode Range V	Diff. Input Voltage V	Voltage Gain V/V	Bandwidth $A_V = \text{MHz}$	Output Current A	Logic/Connection Diagram	Package(s)
3.0	$\pm 30$	0.3	20K	1.0	—	H2	TO-116

Input Bias Current nA	Common Mode Range V	Diff. Input Voltage V	Voltage Gain V/V	Bandwidth $A_V = \text{MHz}$	Output Current A	Logic/Connection Diagram	Package(s)
500	$\pm 12$	—	—	—	6.0	—	—

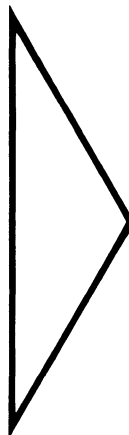
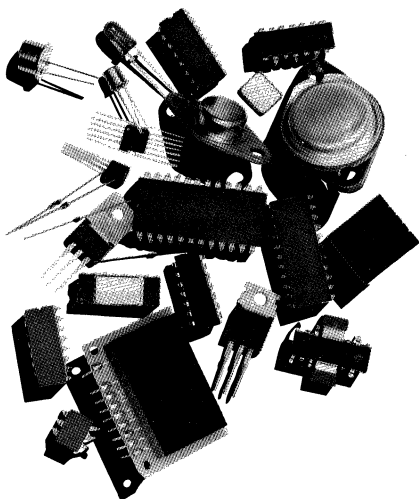
Output Impedance $\Omega$ (Typ)	Output Voltage Swing (Typ)	DC Offset Voltage mV (Typ)	Bandwidth MHz (Typ)	Logic/Connection Diagram	Package(s)
6.0	$\pm 11$	30	50	H1	TO-99

# FAIRCHILD HYBRIDS

## AUTOMOTIVE

### IGNITION MODULES

Item	DEVICE NO.	Description	Input Capability	Output Current A	Package(s)
1	SH4240	Ignition Module	Magnetic Pickup	2.0 to 7.0	Module A,B
2	SH4241	Ignition Module	Magnetic Pickup	2.0 to 7.0	Module A,B
3	SH4242	Ignition Module	Logic	2.0 to 7.0	Module A,B
4	SH4243	Ignition Module	Logic	2.0 to 7.0	Module A,B
5	SH4244	Ignition Module	Opto, Logic, Hall Effect	2.0 to 7.0	Module C
6	SH4245	Ignition Module	Opto, Logic, Hall Effect	2.0 to 7.0	Module C



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FAIRCHILD LINEAR

VOLTAGE REGULATORS

VOLTAGE REGULATORS (BY OUTPUT CURRENT)

Item	DEVICE NO.	Output Voltage V (Typ)	Temperature *	Line Regulation mV (Max)	Load Regulation mV (Max)	Ripple Rejection dB (Min)	Quiescent Current mA	Input Voltage Range V	Dropout Voltage V (Typ)	Logic/Connection Diagram(s)	Package(s)
<b>Fixed Positive 100 mA</b>											
1	$\mu$ A78L26	2.6	C, V	100	50	43	5.5	4.8 to 35	2.2	L-VR1,2	TO-39,TO-92
2	$\mu$ A78L05	5.0	C, V	150	60	41	5.5	7.2 to 35	2.2	L-VR1,2	TO-39,TO-92
3	$\mu$ A78L62	6.2	C, V	175	80	40	5.5	8.4 to 35	2.2	L-VR1,2	TO-39,TO-92
4	$\mu$ A78L82	8.2	C, V	175	80	39	5.5	10.4 to 35	2.2	L-VR1,2	TO-39,TO-92
5	$\mu$ A78L09	9.0	C, V	188	90	38	5.5	11.2 to 35	2.2	L-VR1,2	TO-39,TO-92
6	$\mu$ A78L12	12	C, V	250	100	37	6.0	14.2 to 35	2.2	L-VR1,2	TO-39,TO-92
7	$\mu$ A78L15	15	C, V	300	150	34	6.0	17.2 to 35	2.2	L-VR1,2	TO-39,TO-92
8	$\mu$ A78L18	18	C, V	300	170	33	6.0	20.2 to 40	2.2	L-VR1,2	TO-39,TO-92
9	$\mu$ A78L24	24	C, V	300	200	31	6.0	26.2 to 40	2.2	L-VR1,2	TO-39,TO-92
<b>Fixed Positive 500 mA</b>											
10	$\mu$ A78M05	5.0	M	50	50	62	6.0	8.0 to 35	2.5	L-VR2	TO-39
11	$\mu$ A78M05	5.0	C	100	100	62	6.0	7.5 to 35	2.5	L-VR2,6	TO-39,TO-220
12	$\mu$ A78C05	5.0	M	100	50	62	6.0	8.0 to 35	3.0	L-VR6	TO-220
13	$\mu$ A78M06	6.0	M	60	60	59	6.0	9.0 to 35	2.5	L-VR2	TO-39
14	$\mu$ A78M06	6.0	C	100	120	59	6.0	8.5 to 35	2.5	L-VR2,6	TO-39,TO-220
15	$\mu$ A78C06	6.0	C, V	100	60	59	6.0	9.0 to 35	3.0	L-VR6	TO-220
16	$\mu$ A78M08	8.0	M	60	80	56	6.0	11 to 35	2.5	L-VR2	TO-39
17	$\mu$ A78M08	8.0	C	100	160	56	6.0	10.5 to 35	2.5	L-VR2,6	TO-39,TO-220
18	$\mu$ A78C08	8.0	C, V	100	80	46	6.0	11 to 35	3.0	L-VR6	TO-220
19	$\mu$ A78C10	10	C	100	100	55	6.0	13 to 35	3.0	L-VR6	TO-220
20	$\mu$ A78M12	12	M	60	120	55	6.0	15 to 35	2.5	L-VR2	TO-39
21	$\mu$ A78M12	12	C, V	100	240	55	6.0	14.5 to 35	2.5	L-VR2,6	TO-39,TO-220
22	$\mu$ A78C12	12	C	100	120	46	6.0	15 to 35	3.0	L-VR6	TO-220
23	$\mu$ A78M15	15	M	60	150	54	6.0	18 to 35	2.5	L-VR2	TO-39
24	$\mu$ A78M15	15	C	100	300	54	6.0	17.5 to 35	2.5	L-VR2,6	TO-39,TO-220

\* Operating junction temperature range:

C = Commercial temperature range, 0°C to +125°C; V = Vehicular & Industrial temperature range, -40°C to +125°C; M = Extended Military, -55°C to +150°C.

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# FAIRCHILD LINEAR

## VOLTAGE REGULATORS

### VOLTAGE REGULATORS (BY OUTPUT CURRENT) (Cont'd)

Item	DEVICE NO.	Output Voltage V (Typ)	Temperature *	Line Regulation mV (Max)	Load Regulation mV (Max)	Ripple Rejection dB (Min)	Quiescent Current mA	Input Voltage Range V	Dropout Voltage V (Typ)	Logic/Connection Diagram(s)	Package(s)
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#### Fixed Positive 500 mA (Cont'd)

1	$\mu$ A78C15	15	C	100	150	46	6.0	18 to 35	3.0	L-VR6	TO-220
2	$\mu$ A78C17	17	C	100	170	52	6.0	20 to 35	3.0	L-VR6	TO-220
3	$\mu$ A78C18	18	C	100	180	46	6.0	21 to 35	3.0	L-VR6	TO-220
4	$\mu$ A78M20	20	M	60	200	53	6.0	23 to 40	2.5	L-VR2	TO-39
5	$\mu$ A78M20	20	C	100	400	53	6.0	22.5 to 40	2.5	L-VR2,6	TO-39,TO-220
6	$\mu$ A78C20	20	C	100	200	46	6.0	23 to 40	3.0	L-VR6	TO-220
7	$\mu$ A78C22	22	C	100	220	53	6.0	24.5 to 40	2.5	L-VR6	TO-220
8	$\mu$ A78M24	24	M	60	240	50	6.0	27 to 40	2.5	L-VR2	TO-39
9	$\mu$ A78M24	24	C	100	480	50	6.0	26.5 to 40	2.5	L-VR2,6	TO-39,TO-220
10	$\mu$ A78C24	24	C	100	240	46	6.0	27 to 40	3.0	L-VR6	TO-220

#### Fixed Negative 500 mA

11	$\mu$ A79M05	-5.0	M	50	100	54	2.0	-7.5 to -35	2.5	L-VR3	TO-39
12	$\mu$ A79M05	-5.0	C	50	100	54	2.0	-7.3 to -35	2.3	L-VR3,7	TO-39
13	$\mu$ A79M06	-6.0	M	60	120	54	2.0	-8.5 to -35	2.5	L-VR3	TO-39,TO-220
14	$\mu$ A79M06	-6.0	C	60	120	54	2.0	-8.3 to -35	2.3	L-VR3,7	TO-220
15	$\mu$ A79M08	-8.0	M	80	160	54	2.0	-10.5 to -35	2.5	L-VR3	TO-39
16	$\mu$ A79M08	-8.0	C	80	160	54	2.0	-10.3 to -35	2.3	L-VR3,7	TO-39,TO-220
17	$\mu$ A79M12	-12	M	80	240	54	3.0	-14.5 to -35	2.5	L-VR3	TO-39
18	$\mu$ A79M12	-12	C	80	240	54	3.0	-14.3 to -35	2.3	L-VR3,7	TO-39,TO-220
19	$\mu$ A79M15	-15	M	80	240	54	3.0	-17.5 to -35	2.5	L-VR3	TO-39
20	$\mu$ A79M15	-15	C	80	240	54	3.0	-17.3 to -35	2.3	L-VR3,7	TO-39,TO-220
21	$\mu$ A79M20	-20	M	80	300	54	3.5	-22.5 to -40	2.5	L-VR3	TO-39
22	$\mu$ A79M20	-20	C	80	300	54	3.5	-22.3 to -40	2.3	L-VR3,7	TO-39,TO-220
23	$\mu$ A79M24	-24	M	80	300	54	3.5	-26.5 to -40	2.5	L-VR3	TO-39
24	$\mu$ A79M24	-24	C	80	300	54	3.5	-26.3 to -40	2.3	L-VR3,7	TO-39,TO-220

\* Operating junction temperature range:

C = Commercial temperature range, 0°C to +125°C; V = Vehicular & Industrial temperature range, -40°C to +125°C; M = Extended Military, -55°C to +150°C.

# FAIRCHILD LINEAR

## VOLTAGE REGULATORS

### VOLTAGE REGULATORS (BY OUTPUT CURRENT) (Cont'd)

Item	DEVICE NO.	Output Voltage V (Typ)	Temperature *	Line Regulation mV (Max)	Load Regulation mV (Max)	Ripple Rejection dB (Min)	Quiescent Current mA	Input Voltage Range V	Dropout Voltage V (Typ)	Logic/Connection Diagram(s)	Package(s)
<b>Fixed Positive 1.0 A</b>											
1	$\mu$ A7805	5.0	M	50	50	68	6.0	8.0 to 35	3.0	L-VR10	TO-3
2	$\mu$ A7805	5.0	C	100	100	62	8.0	7.5 to 35	2.5	L-VR6,10	TO-3,TO-220
3	$\mu$ A309	5.0	C	50	100	—	10	—	—	L-VR10	TO-3
4	$\mu$ A109	5.0	M	50	100	—	10	—	—	L-VR10	TO-3
5	$\mu$ A209	5.0	V	50	100	—	10	—	—	L-VR10	TO-3
6	$\mu$ A7806	6.0	M	60	60	65	6.0	9.0 to 35	3.0	L-VR10	TO-3
7	$\mu$ A7806	6.0	C	120	120	59	8.0	8.5 to 35	2.5	L-VR6,10	TO-3,TO-220
8	$\mu$ A7808	8.0	M	80	80	62	6.0	11 to 35	3.0	L-VR6,10	TO-3,TO-220
9	$\mu$ A7808	8.0	C	160	160	56	8.0	10.5 to 35	2.5	L-VR6,10	TO-3,TO-220
10	$\mu$ A7885	8.5	M	85	85	60	6.0	11.5 to 35	3.0	L-VR10	TO-3
11	$\mu$ A7885	8.5	C	170	170	54	8.0	11 to 35	2.5	L-VR6,10	TO-3,TO-220
12	$\mu$ A7812	12	M	120	120	61	6.0	15 to 35	3.0	L-VR10	TO-3
13	$\mu$ A7812	12	C	240	240	55	8.0	14.5 to 35	2.5	L-VR6,10	TO-3,TO-220
14	$\mu$ A7815	15	M	150	150	60	6.0	18 to 35	3.0	L-VR10	TO-3
15	$\mu$ A7815	15	C	300	300	54	8.0	17.5 to 35	2.5	L-VR6,10	TO-3,TO-220
16	$\mu$ A7818	18	M	180	180	59	6.0	21 to 35	3.0	L-VR10	TO-3
17	$\mu$ A7818	18	C	360	360	53	8.0	20.5 to 35	2.5	L-VR6,10	TO-3,TO-220
18	$\mu$ A7824	24	M	240	240	56	6.0	27 to 40	3.0	L-VR10	TO-3
19	$\mu$ A7824	24	C	480	480	50	8.0	26.5 to 40	2.5	L-VR6,10	TO-3,TO-220
<b>Fixed Negative 1.0 A</b>											
20	$\mu$ A7905	-5.0	M	50	50	54	2.0	-7.8 to -35	2.8	L-VR11	TO-3
21	$\mu$ A7905	-5.0	C	100	100	54	2.0	-7.3 to -35	2.3	L-VR7,11	TO-3,TO-220
22	$\mu$ A7906	-6.0	M	60	60	54	2.0	-8.8 to -35	2.8	L-VR11	TO-3
23	$\mu$ A7906	-6.0	C	120	120	54	2.0	-8.3 to -35	2.3	L-VR7,11	TO-3,TO-220
24	$\mu$ A7908	-8.0	M	80	80	54	2.0	-10.8 to -35	2.8	L-VR11	TO-3

\*Operational junction temperature range:

C = Commercial temperature range, 0°C to +125°C; V = Vehicular & Industrial temperature range, -40°C to +125°C; M = Extended Military, -55°C to +150°C.

# FAIRCHILD LINEAR

## VOLTAGE REGULATORS

### VOLTAGE REGULATORS (BY OUTPUT CURRENT) (Cont'd)

Item	DEVICE NO.	Output Voltage V (Typ)	Temperature (1)	Line Regulation mV (Max)	Load Regulation mV (Max)	Ripple Rejection dB (Min)	Quiescent Current mA	Input Voltage Range V	Dropout Voltage V (Typ)	Logic/Connection Diagram(s)	Package(s)
<b>Fixed Negative 1.0 A (Cont'd)</b>											
1	$\mu$ A7908	-8.0	C	160	160	54	2.0	-10.3 to -35	2.3	L-VR7,11	TO-3,TO-220
2	$\mu$ A7912	-12	M	120	120	54	3.0	-14.8 to -35	2.8	L-VR11	TO-3
3	$\mu$ A7912	-12	C	240	240	54	3.0	-14.3 to -35	2.3	L-VR7,11	TO-3,TO-220
4	$\mu$ A7915	-15	M	150	150	54	3.0	-17.8 to -35	2.8	L-VR11	TO-3
5	$\mu$ A7915	-15	C	300	300	54	3.0	-17.3 to -35	2.3	L-VR7,11	TO-3,TO-220
6	$\mu$ A7918	-18	M	180	180	54	3.0	-20.8 to -35	2.8	L-VR11	TO-3
7	$\mu$ A7918	-18	C	360	360	54	3.0	-20.3 to -35	2.3	L-VR7,11	TO-3,TO-220
8	$\mu$ A7924	-24	M	240	240	54	3.0	-26.8 to -40	2.8	L-VR11	TO-3
9	$\mu$ A7924	-24	C	480	480	54	3.0	-26.3 to -40	2.3	L-VR7,11	TO-3,TO-220
<b>Fixed Positive 2.0 A</b>											
10	$\mu$ A78CB	13.8	C	150	150	50	8.0	17 to 25	2.5	L-VR6,10	TO-3,TO-220
<b>Fixed Positive 3.0 A</b>											
11	SH123	5.0	M	25	100	—	20	7.5 to 20	2.5	H12	TO-3
12	SH223	5.0	M	25	100	—	20	7.5 to 20	2.5	H12	TO-3
13	SH323	5.0	C	25	100	—	20	7.5 to 20	2.5	H12	TO-3
<b>Fixed Positive 5.0 A</b>											
14	$\mu$ A78H05	5.0	C, M	120	50	60	10	8.5 to 25	3.5	H12	TO-3
15	$\mu$ A78H05 <sup>(2)</sup>	5.0	C, M	25	50	60	10	7.8 to 2.5	2.3	H12	TO-3
16	$\mu$ A78H12	12	C	—	120	60	10	15.5 to 25	3.5	H9	TO-3
17	$\mu$ A78H15	15	C	30	30	60	10	18.5 to 25	—	H9	TO-3
<b>Fixed Positive 10 A</b>											
18	$\mu$ A78P05 <sup>(2)</sup>	5.0	C	25	50	60	10	7.5 to 40	2.5	H12	TO-3

1. Operating junction temperature range:

C = Commercial temperature range, 0°C to +125°C; V = Vehicular & Industrial temperature range, -40°C to +125°C; M = Extended Military, -55°C to +150°C.

2. To be announced

VOLTAGE REGULATORS

VOLTAGE REGULATORS (BY OUTPUT CURRENT) (Cont'd)

Item	DEVICE NO.	Output Current (mA)	Output Voltage Range V	Temperature (1)	Line Regulation %V <sub>OUT</sub>	Load Regulation %V <sub>OUT</sub>	Ripple Rejection dB	Quiescent Current mA	Input Voltage Range V	Dropout Voltage V	Logic/Connection Diagram(s)	Package(s)
<b>Positive Adjustable</b>												
1	μA105	12	4.5 to 30	M	0.06	0.1	1.0	2.0	8.5 to 50	3.0	L-VR14	TO-99
2	μA305	12	4.5 to 30	C	0.06	0.1	1.0	2.0	8.5 to 40	3.0	L-VR14	TO-99
3	μA376	25	5.0 to 37	C	0.1	0.5	1.0	2.5	9.0 to 40	3.0	L-VR20	9T
4	μA305A	45	4.5 to 40	C	0.06	0.4	—	2.0	8.5 to 50	3.0	L-VR14	TO-99
5	μA723	150	2.0 to 37	M	0.3	0.15	58	3.5	9.5 to 40	3.0	L-VR15,17	TO-100,6A
6	μA723	150	2.0 to 37	C	0.5	0.2	58	4.0	9.5 to 40	3.0	L-VR15,17	TO-100,6A,9A
7	μA78MG	500	5.0 to 30	M	1.0	1.0	62	5.0	7.5 to 40	3.0	L-VR4	TO-39
8	μA78MG	500	5.0 to 30	C	1.0	1.0	62	5.0	7.5 to 40	2.5	L-VR4,8,18	TO-39,8Z,9V
9	μA78G	1000	5.0 to 30	M	1.0	1.0	68	5.0	7.5 to 40	2.5	L-VR12	TO-3
10	μA78G	1000	5.0 to 30	C	1.0	1.0	62	5.0	7.5 to 40	3.0	L-VR8,12	TO-3,8Z
11	μA78HG	5000	5.0 to 24	C	1.0	1.0	60	10	8.5 to 25	3.5	H10	TO-3
<b>Negative Adjustable</b>												
12	μA104	25	-0.015 to -40	M	0.1	5mV	1.0	5.0	-8.0 to -50	2.0	L-VR16	TO-100
13	μA304	25	-0.035 to -30	C	0.1	5mV	1.0	5.0	-8.0 to -40	2.0	L-VR16	TO-100
14	μA79MG	500	-2.23 to -30	M	1.0	1.0	50	2.5	-7.0 to -30	2.5	L-VR5	TO-39
15	μA79MG	500	-2.23 to -30	C	1.0	1.0	50	2.5	-7.0 to -30	2.3	L-VR5,9,19	TO-39,8Z,9V
16	μA79G	1000	-2.23 to -30	M	1.0	2.0	50	2.0	-7.0 to -40	2.8	L-VR13	TO-3
17	μA79G	1000	-2.23 to -30	C	1.0	2.0	50	2.0	-7.0 to -40	2.3	L-VR9,13	TO-3,8Z
18	μA79HG	5000	-2.25 to -24	C,M	1.0	1.0	50	5.0	-7.0 to -40	2.0	H11	TO-3
<b>Adjustable Switching Regulator</b>												
19	μA78S	1500	-1.3 to -40	M	—	—	100	2.0	-2.5 to -40	—	L-VR21	6B
20	μA78S	1500	-1.3 to -40	C	—	—	100	2.0	-2.5 to -40	—	L-VR21	6B,9B
21	SH1605 <sup>(2)</sup>	5000	2.0 to 20	C	—	—	—	30	5.0 to 40	—	—	—

- Operating junction temperature range:  
C = Commercial temperature range, 0°C to +125°C; V = Vehicular & Industrial temperature range, -40°C to +125°C; M = Extended Military, -55°C to +150°C.
- To be announced

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FAIRCHILD LINEAR

OPERATIONAL AMPLIFIERS

OPERATIONAL AMPLIFIERS—COMMERCIAL (0°C TO +70°C)

Item	DEVICE NO. *	Description	Input Offset Voltage mV (Max)	Input Offset Voltage Drift $\mu\text{V}/^\circ\text{C}$ (Max)	Input Offset Current nA (Max)	Input Bias Current nA (Max)	Common Mode Range V
1	$\mu\text{A301A}$	General Purpose Op Amp	7.5	30	50	250	$\pm 12$
2	$\mu\text{A302}$	Voltage Follower	15	30	—	30	$\pm 10$
3	$\mu\text{A307}$	General Purpose Op Amp	7.5	30	50	250	$\pm 15$
4	$\mu\text{A308}$	Super Beta Op Amp	7.5	30	1.0	7.0	$\pm 13.5$
5	$\mu\text{A308A}$	Super Beta Op Amp	0.5	5.0	1.0	7.0	$\pm 13.5$
6	$\mu\text{A310}$	Voltage Follower	7.5	—	—	7.0	$\pm 10$
7	$\mu\text{A318}$	High Speed Op Amp	10	—	200	500	$\pm 11.5$
8	$\mu\text{A324}$	Quad Op Amp	7.0	—	50	250	+13, -V <sub>S</sub>
9	$\mu\text{A348}$	Quad Op Amp	6.0	—	50	200	$\pm 12$
10	$\mu\text{AF355}$	FET Input Op Amp	10	—	0.05	0.2	$\pm 10$
11	$\mu\text{AF356}$	FET Input Op Amp	10	—	0.05	0.2	$\pm 10$
12	$\mu\text{A702C}$	WideBand dc Amp	5.0	10	2000	7500	-4, +0.5
13	$\mu\text{A709C}$	High Perf Op Amp	7.5	—	500	1500	$\pm 8$
14	$\mu\text{A714C}$	High Perf Op Amp	0.15	1.8	6.0	7.0	$\pm 13$
15	$\mu\text{A714E}$	High Perf Op Amp	0.075	1.3	3.8	4.0	$\pm 13$
16	$\mu\text{A714L}$	High Perf Op Amp	0.25	3.0	20	30	$\pm 13$
17	$\mu\text{A715C}$	High Speed Op Amp	7.5	—	250	1500	$\pm 10$
18	$\mu\text{A725C}$	Instr Op Amp	2.5	—	35	125	$\pm 13.5$
19	$\mu\text{A725E}$	Instr Op Amp	0.5	2.0	5.0	75	$\pm 13.5$
20	$\mu\text{A727C}$	Temp Controlled Diff Amp	10	1.5	25	75	$\pm 12$
21	$\mu\text{A730C}$	Differential Amp	5.0	—	3.0	16	$\pm 3.5$
22	$\mu\text{A740E}$	FET Input Op Amp	100	—	0.3	2.0	$\pm 10$
23	$\mu\text{A741C}$	Freq Comp Op Amp	6.0	—	200	500	$\pm 12$
24	$\mu\text{A741E}$	Freq Comp Op Amp	3.0	15	30	80	$\pm 12$
25	$\mu\text{A747C}$	Dual Freq Comp Op Amp	6.0	—	200	500	$\pm 12$
26	$\mu\text{A747E}$	Dual Freq Comp Op Amp	3.0	—	200	500	$\pm 12$
27	$\mu\text{A748C}$	High Perf Op Amp	6.0	—	200	500	$\pm 12$
28	$\mu\text{A776C}$	Multi-Purpose Prog Op Amp (I <sub>SET</sub> = 15 $\mu\text{A}$ )	6.0	—	25	50	$\pm 10$

\* Military, automotive and industrial range devices are available. Please request specific data.

## FAIRCHILD LINEAR

	Differential Input Voltage V	Voltage Gain V/V	Bandwidth AV = 1 MHz	Output Current mA (Max)	Slew Rate AV = 1 V/ $\mu$ s	Supply Voltage		Supply Current mA (max)	Compensation Components	Logic/Connection Diagram	Package(s)
						Min V (Typ)	Max V (Typ)				
	$\pm 30$	25K	1.0	5.0	0.5	$\pm 3$	$\pm 18$	3.0	1	L-OA9,22	TO-99,6A,9T
	—	0.9985	10	1.0	10	$\pm 12$	$\pm 18$	5.5	0	L-OA1	TO-99
	$\pm 30$	25K	1.0	5.0	0.5	$\pm 3$	$\pm 18$	3.0	0	L-OA2	TO-99,9T
	$\pm 0.5$	15K	1.0	1.0	0.3	$\pm 5$	$\pm 18$	0.8	1	L-OA3,27	TO-99,9T
	$\pm 0.5$	80K	1.0	1.0	0.3	$\pm 2$	$\pm 20$	0.8	1	L-OA3,27	TO-99,9T
	—	0.999	20	1.0	30	$\pm 5$	$\pm 18$	5.5	0	L-OA1	TO-99
	$\pm 10$	25K	15	6.0	50	$\pm 5$	$\pm 18$	10	0	L-OA8	TO-99
	$\pm 32$	25K	1.0	1.2	0.5	+5	+32	2.0	0	L-OA25	6A,9A
	$\pm 36$	25K	1.0	5.0	0.5	$\pm 5$	$\pm 18$	4.5	0	L-OA25	6A,9A
	$\pm 30$	50K	2.5	—	5.0	$\pm 5$	$\pm 18$	4.0	0	L-OA8	TO-99,9T
	$\pm 30$	50K	5.0	—	12	$\pm 5$	$\pm 18$	10	0	L-OA8	TO-99,9T
	$\pm 5$	2K	30	3.5	3.5	+6,-3	+14,-7	6.7	2	L-OA4,17	TO-99,6A
	$\pm 5$	15K	1.0	5.0	0.3	$\pm 9$	$\pm 18$	2.9	0	L-OA5,18	TO-99,6A,9A,9T
	$\pm 30$	—	1.2	5.5	0.25	$\pm 3$	$\pm 22$	5.0	0	L-OA1	TO-99
	$\pm 30$	—	1.2	6.0	0.25	$\pm 3$	$\pm 22$	4.0	0	L-OA1	TO-99
	$\pm 30$	—	1.2	5.0	0.25	$\pm 3$	$\pm 18$	6.0	0	L-OA1	TO-99
	$\pm 15$	10K	65	5.0	100	$\pm 6$	$\pm 18$	10	3	L-OA12,19	TO-100,6A
	$\pm 22$	250K	1.0	5.0	—	$\pm 3$	$\pm 22$	3.0	4	L-OA6	TO-99
	$\pm 22$	1000K	1.0	5.0	—	$\pm 3$	$\pm 22$	3.0	4	L-OA6	TO-99
	$\pm 15$	0.06K	1.0	0.001	—	$\pm 9$	$\pm 18$	5.7	2	L-OA13	TO-100
	$\pm 5$	0.1K	1.5	—	—	+6	+14	13	0	L-OA7	TO-99
	$\pm 30$	25K	3.0	5.0	6.0	$\pm 5$	$\pm 22$	8.0	0	L-OA8	TO-99
	$\pm 30$	20K	1.0	5.0	0.5	$\pm 5$	$\pm 18$	2.8	0	L-OA8,20	TO-99,6A,9A,9T
	$\pm 30$	50K	1.0	5.0	0.7	$\pm 5$	$\pm 22$	3.75	0	L-OA8,20	TO-99,6A,9T
	$\pm 30$	20K	1.0	5.0	0.5	$\pm 5$	$\pm 18$	5.6	0	L-OA14,21	TO-100,6A,9A
	$\pm 30$	20K	1.0	5.0	0.5	$\pm 5$	$\pm 18$	4.25	0	L-OA14,21	TO-100,6A
	$\pm 30$	20K	1.0	5.0	0.5	$\pm 5$	$\pm 18$	2.8	1	L-OA9,22	TO-99,6A,6T,9T
	$\pm 30$	50K	1.0	2.0	0.8	$\pm 1.2$	$\pm 18$	0.19	1	L-OA10,23	TO-99,6A,9T



# FAIRCHILD LINEAR

## OPERATIONAL AMPLIFIERS

### OPERATIONAL AMPLIFIERS—COMMERCIAL (0°C TO +70°C) (Cont'd)

Item	DEVICE NO.	Description	Input Offset Voltage mV (Max)	Input Offset Voltage Drift $\mu\text{V}/^\circ\text{C}$ (Max)	Input Offset Current nA (Max)	Input Bias Current nA (Max)	Common Mode Range V
1	$\mu\text{A776C}$	Multi-Purpose Prog Op Amp ( $I_{\text{SET}} = 1.5 \mu\text{A}$ )	6.0	—	6.0	10	$\pm 10$
2	$\mu\text{A777C}$	Precision Op Amp	7.5	—	50	250	$\pm 12$
3	$\mu\text{A791C}$	Power Operational Amp	6.0	—	200	500	$\pm 12$
4	$\mu\text{A798C}$	Dual Op Amp	6.0	—	50	250	$+36, -V_S$
5	$\mu\text{A1458C}$	Internally Comp, High Perf Dual Mono Op Amp	6.0	—	200	500	$\pm 12$
6	$\mu\text{A3401}$	Quad Single Supply Amp	—	—	—	300	—
7	$\mu\text{A3403}$	Quad Op Amp	8.0	—	50	-500	$+13, -V_S$
8	$\mu\text{A4136}$	Quad Op Amp	6.0	—	200	500	$\pm 12$
9	$\mu\text{A4558}$	Dual Op Amp	6.0	—	200	500	$\pm 12$
10	SH0002 <sup>(2)</sup>	Current Amp	30	—	—	10K	—
11	SH2714 <sup>(2)</sup>	Dual Instrumentation Amp	0.25	3.0	20	30	$\pm 18$
12	SH3006 <sup>(2,3)</sup>	1.0 GHz Preamp	—	—	—	—	—
13	SH3015 <sup>(2,3)</sup>	Servo Amp	6.0	—	200	500	$\pm 12$

1. Military, automotive and industrial range devices are available. Please request specific data.
2. Also see Hybrid Section
3. To be announced

### VOLTAGE COMPARATORS

Item	DEVICE NO.	Description	Input Bias Current <sup>(1)</sup> $\mu\text{A}$ (Max)	Input Offset Current <sup>(1)</sup> $\mu\text{A}$ (Max)	Input Offset Voltage <sup>(1)</sup>	Voltage Gain (Typ)
14	$\mu\text{AF111}$	Voltage Comparator (FET Front End Inputs)	0.05	0.000025	4.0	200K
15	$\mu\text{AF211}$	Voltage Comparator (FET Front End Inputs)	0.05	0.000025	4.0	200K
16	$\mu\text{AF311}$	Voltage Comparator (FET Front End Inputs)	0.15	0.000075	10	200K

Notes on following pages.

## FAIRCHILD LINEAR

	Differential Input Voltage V	Voltage Gain V/V	Bandwidth A <sub>V</sub> = 1 MHz	Output Current mA (Max)	Slew Rate A <sub>V</sub> = 1 V/μs	Supply Voltage		Supply Current mA (max)	Compensation Components	Logic/Connection Diagram	Package(s)
						Min V (Typ)	Max V (Typ)				
	±30	50K	0.2	0.12	0.1	±1.2	±18	0.03	1	L-OA10,23	TO-99,6A,9T
	±30	25K	1.0	5.0	0.5	±5	±20	2.8	1	L-OA9,22	TO-99,6A,9T
	±30	20K	1.0	1080	0.5	±5	±18	25	4	L-OA15,16	TO-100,9W
	±30	20K	1.0	6.0	0.5	+5	+36	4.0	0	L-OA11	TO-99,6T,9T
	±30	20K	1.0	5.0	0.5	±5	±18	2.9	0	L-OA11	TO-99,9T
	—	1K	5.0	10	0.6	+5	±9	10	0	L-OA24	9A
	±30	25K	1.0	5.0	0.6	+5	+18	7.0	0	L-OA25	6A,9A
	±36	20K	3.0	5.0	1.2	±5	±18	10	0	L-OA26	6A,9A
	±36	20K	3.0	5.0	1.2	±5	±18	5.0	0	L-OA11	TO-99,9T
	—	0.97	50	100	200	±5	±20	±10	0	H1	TO-99
	30	150	1.2	5.0	0.25	±3	±10	12	0	H2	6A
	—	200	>1K	—	—	+12	+18	—	0	—	—
	—	—	—	10K	1.0	±12	±40	30	0	—	—

	Supply Voltage V (Typ)	Response Time <sup>(2)</sup> ns (Typ)	DTL/TTL Fanout	Temperature Range <sup>(3)</sup>	Logic/Connection Diagram	Package(s)
	+36	200	2	M	L-OA28,29	TO-99
	+36	200	2	A	L-OA28,29	TO-99
	+36	200	2	C	L-OA28,29	TO-99

OPERATIONAL AMPLIFIERS

VOLTAGE COMPARATORS (Cont'd)

Item	DEVICE NO.	Description	Input Bias Current <sup>(1)</sup> μA (Max)	Input Offset Current <sup>(1)</sup> μA (Max)	Input Offset Voltage <sup>(1)</sup>	Voltage Gain (Typ)
1	μA111	Voltage Comparator (Strobed Inputs, Single Supply, Low I <sub>B</sub> )	0.1	0.04	0.7	200K
2	μA211	Voltage Comparator (Strobed Inputs, Single Supply, Low I <sub>B</sub> )	0.1	0.04	0.7	200K
3	μA311	Voltage Comparator (Strobed Inputs, Single Supply, Low I <sub>B</sub> )	0.25	0.06	2.0	200K
4	μA139	Quad Comparator (Single Supply, MRR incl. gnd)	0.1	0.025	5.0	200K
5	μA139A	Quad Comparator (Single Supply, MRR incl. gnd)	0.1	0.025	2.0	200K
6	μA239	Quad Comparator (Single Supply, MRR incl. gnd)	0.25	0.05	5.0	200K
7	μA239A	Quad Comparator (Single Supply, MRR incl. gnd)	0.25	0.05	2.0	200K
8	μA339	Quad Comparator (Single Supply, MRR incl. gnd)	0.25	0.05	5.0	200K
9	μA339A	Quad Comparator (Single Supply, MRR incl. gnd)	0.25	0.05	2.0	200K
10	μA710	Voltage Comparator	20/25	3.0/5.0	2.0/5.0	1.75K
11	μA711	Dual Comparator	75/100	10/15	3.5/5.0	1.5K
12	μA734	Precision Comparator (Low Drift -3.5μV/°C)	0.15	0.025/0.05	5.0/3.0	25K
13	μA760	High Speed Differential Comparator	60	7.5	6.0	5K
14	μA775	Quad Comparator (Single Supply, MRR incl. gnd)	0.3	0.07	9.0	200K
15	μA2901	Quad Comparator (Single Supply, MRR incl. gnd)	0.25	0.05	7.0	200K
16	μA7302	Quad Comparator (Single Supply, MRR incl. gnd)	0.1	0.03	5.0	200K

1. Measured at T<sub>A</sub> = 25°C
2. Response time is specified for 100 mV step input with 5.0 mV overdrive.
3. M = Military temperature range, -55°C to +125°C; A = Automotive temperature range, -40°C to +85°C; C = Commercial temperature range, 0°C to +70°C.

# FAIRCHILD LINEAR

Supply Voltage V (Typ)	Response Time <sup>(2)</sup> ns (Typ)	DTL/TTL Fanout	Temperature Range <sup>(3)</sup>	Logic/Connection Diagram	Package(s)
0, +5 to $\pm 15$	200	5	M	L-OA28,29	TO-99,6T
0, +5 to $\pm 15$	200	5	A	L-OA28,29	TO-99,6T
0, +5 to $\pm 15$	200	5	C	L-OA28,29	TO-99,6T
$\pm 1$ to $\pm 18$ , gnd to +2 or gnd to +36	1300	1	M	L-OA30	6A
$\pm 1$ to $\pm 18$ , gnd to +2 or gnd to +36	1300	1	M	L-OA30	6A
$\pm 1$ to $\pm 18$ , gnd to +2 or gnd to +36	1300	1	A	L-OA30	6A,9A
$\pm 1$ to $\pm 18$ , gnd to +2 or gnd to +36	1300	1	A	L-OA30	6A,9A
$\pm 1$ to $\pm 18$ , gnd to +2 or gnd to +36	1300	1	C	L-OA30	6A,9A
$\pm 1$ to $\pm 18$ , gnd to +2 or gnd to +36	1300	1	C	L-OA30	6A
+12,-6	40	1	M,C	L-OA31,32,33	TO-99,3F,6A,9A
+12,-6	40	1	M,C	L-OA34,35,36	TO-100,3F,6A,9A
$\pm 5$ to $\pm 15$	200	2	M,C	L-OA37,38	TO-100,6A
$\pm 4.5$ to $\pm 6.5$	25	2	M,C	L-OA39,40	TO-99,6A
$\pm 1$ to $\pm 18$ , gnd to +2 or gnd to +36	1300	1	M,C	L-OA30	6A,9A
$\pm 1$ to $\pm 18$ , gnd to +2 or gnd to +36	1300	1	A	L-OA30	9A
$\pm 1$ to $\pm 18$ , gnd to +2 or gnd to +36	1300	1	C	L-OA30	6A,9A

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# FAIRCHILD LINEAR

## CONSUMER CIRCUITS

### AUDIO POWER AMPLIFIERS

Item	DEVICE NO.	Features	Power Supply Voltage V	Speaker Impedance $\Omega$	Power Output W	Logic/Connection Diagram	Package(s)
1	TBA641A12	High current capability	9.0	4.0	2.2	L-C12	9H (Quil)
2	TBA641B11	High current capability	14	4.0	4.5	L-C12	9J (Quil)
3	TBA800	Suitable for 24 V supply operation; eg: TV	24	16	5.0	L-C11	9W-P3
4	TBA800A	Suitable for 24 V supply operation; eg: TV	24	16	5.0	L-C11	9W-P4
5	TBA810S	Thermal shutdown	14.4	4.0	6.0	L-C10	9W-P3
6	TBA810AS	Thermal shutdown	14.4	4.0	6.0	L-C10	9W-P4
7	TBA810DS	Thermal shutdown over voltage protection	14.4	4.0	6.0	L-C10	9W-P3
8	TBA810DAS	Thermal shutdown over voltage protection	14.4	4.0	6.0	L-C10	9W-P4
9	TBA820	Low power supply operation-suitable for battery operation	12 9.0 6.0 3.5	8.0 8.0 4.0 4.0	2.0 1.2 0.75 0.22	L-C29	9A (Quil)
10	TBA820L	Low power supply operation-suitable for battery operation	12 9.0 6.0 3.5	8.0 8.0 4.0 4.0	2.0 1.2 0.75 0.22	L-C29	9A
11	TDA2002	Thermal shutdown, over voltage protection, short circuit protection	16 14.4 14.4	2.0 2.0 4.0	10 8.0 5.0	L-C1	GO (TO-220 type)
12	TDA2002A	Thermal shutdown, short circuit protection	16 14.4 14.4	2.0 2.0 4.0	10 8.0 5.0	L-C1	GO (TO-220 type)
13	$\mu$ A706A	High current capability	9.0	4.0	2.2	L-C12	9H
14	$\mu$ A706B	High current capability	14	4.0	5.5	L-C12	9J
15	$\mu$ A783	Thermal shutdown (operation from 4.0 to 30 V)	24	8.0	9.0	L-C10	9W-P3,P4

### TELEVISION CIRCUITS

Item	DEVICE NO.	Description	Useful for		Logic/Connection Diagram(s)	Package(s)
			NTSC	PAL		
16	TAA630S	Chroma Demodulator		X	L-C33	9B
17	TBA510	Chroma Processor		X	L-C44	9B
18	TBA520	Chroma Demodulator		X	L-C45	9B

**FAIRCHILD LINEAR**

**CONSUMER CIRCUITS**

**TELEVISION CIRCUITS (Cont'd)**

Item	DEVICE NO.	Description	Useful for		Logic/Connection Diagram(s)	Package(s)
			NTSC	PAL		
1	<b>TBA530</b>	RGB Matrix Preamplifier	X	X	L-C43	9B
2	<b>TBA540</b>	Reference Combination		X	L-C31	9B
3	<b>TBA560C</b>	Luma & Chroma Control Combination		X	L-C32	9B
4	<b>TBA920</b>	Horizontal Oscillator	X	X	L-C34	9B
5	<b>TBA920S</b>	Horizontal Oscillator	X	X	L-C34	9B
6	<b>TBA970</b>	Video Amplifier	X	X	L-C35	9B
7	<b>TBA990</b>	Chroma Demodulator		X	L-C36	9B
8	<b>TDA1190</b>	TV Sound System	X	X	L-C8	9W
9	<b>TDA1190Z</b>	TV Sound System	X	X	L-C8	9W
10	<b>TDA2510</b>	Chroma Combination	X	X	L-C47	9B
11	<b>TDA2521</b>	Chroma Demodulator		X	L-C46	9B
12	$\mu$ <b>A746</b>	Chroma Demodulator	X		L-C17	TO-100, 9A
13	$\mu$ <b>A780</b>	PLL Chroma Subcarrier Regenerator	X		L-C39	9B
14	$\mu$ <b>A781</b>	Gain Controlled Chroma Amplifier	X		L-C21	9A
15	$\mu$ <b>A787</b>	Chroma Processor	X		L-C40	9B
16	$\mu$ <b>A788</b>	Chroma Demodulator— DC Tint Control	X		L-C41	9B
17	$\mu$ <b>A796</b>	Double Balanced Modulator/ Demodulator	X	X	L-C4, 22	TO-100, 9A
18	$\mu$ <b>A1391</b>	Horizontal Processor (+ Flyback)	X	X	L-C7	9T
19	$\mu$ <b>A1394</b>	Horizontal Processor ( - Flyback)	X	X	L-C7	9T
20	$\mu$ <b>A3064</b>	Automatic Fine Tuning	X		L-C25	TO-100, 9A
21	$\mu$ <b>A3065</b>	Sound IF	X	X	L-C26	9A

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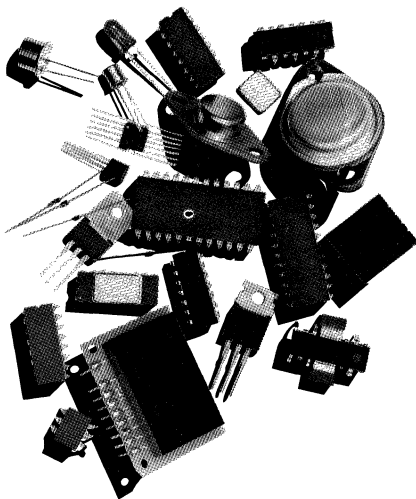
**FAIRCHILD LINEAR**

**CONSUMER CIRCUITS**

**RADIO-AUDIO CIRCUITS**

Item	DEVICE NO.	Description	Logic/Connection Diagram(s)	Package(s)
<b>IF, RF Amplifiers, Gain Blocks, Detectors, Decoders</b>				
1	$\mu$ A703	IF, RF Amplifier	L-C2	TO-99
2	$\mu$ A720	AM Radio Circuit (RF, Converter, IF)	L-C13	6A,9A
3	$\mu$ A721	AM/FM IF Amplifier, FM Limiter, Detector	L-C37	9B
4	$\mu$ A732	Stereo Decoder	L-C14	9A
5	$\mu$ A753	FM Gain Block	L-C5	9T
6	$\mu$ A757	Gain Controlled IF Amplifier	L-C19	6A
7	$\mu$ A758	PLL Stereo Decoder	L-C38	9B
8	$\mu$ A767	Stereo Decoder	L-C20	9A
9	$\mu$ A1310	PLL Stereo Decoder	L-C23	9A
10	$\mu$ A2136	FM IF Limiter Detector	L-C24	9A
11	$\mu$ A3075	FM IF Limiter Detector	L-C27	9A
12	$\mu$ A3089	FM IF Limiter Detector	L-C42	9B
<b>Preamplifiers</b>				
13	$\mu$ A739	Dual Audio Preamplifier	L-C15	6A,9A
14	$\mu$ A749	Dual Audio Preamplifier	L-C3, 18	TO-99,6A,9A
<b>Dolby</b>				
15	$\mu$ A7300	Dolby "B" Noise Reduction	L-C48	9B
<b>Special Functions</b>				
16	SH1549*	Station Memory Control Hybrid	H4	1" x 2" Single In-line
17	SH1552*	Ladder Network for Signal Conversion	H3	1" x 2" Single In-line
18	$\mu$ A742	Zero Crossing ac Trigger Trigac	L-C16	6A
19	$\mu$ A7390	Ground Fault Detector	L-C6	9T
20	$\mu$ A7391	2.0 A Motor Speed Control	L-C9	9W-P6
21	$\mu$ A7392	300 mA Motor Speed Control	L-C30	6A, 9A

\* For further information contact Hybrid Marketing



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# FAIRCHILD INTERFACE

## LINE DRIVERS/RECEIVERS/TRANSCEIVERS

### LINE DRIVERS

Item	DEVICE NO. <sup>(1)</sup>	Function <sup>(2)</sup>	Companion Receiver	Input Compatibility	Type Output	Output Configuration	Output Current mA (Typ)	$t_{pd-ns}$ (Typ)	Supply Voltage V	Power Dissipation mW (Typ)	Drivers per Package	Logic/Connection Diagram(s)	Package(s)
1	$\mu$ A1488	Quad	$\mu$ A1489	TTL	Volt	Single Ended	$\pm 10$	220	$\pm 15$	—	4	I49	6A,9A
2	54/7437	Quad 2-NAND	Any TTL	TTL	Volt	Single Ended	48	10	+5.0	108	4	D2	3I, 6A,9A
3	54/7438	Quad 2-NAND	96106	TTL	Volt	Single Ended	48	13	+5.0	98	4	D2	3I, 6A,9A
4	54/7440	Dual 2-NAND	Any TTL	TTL	Volt	Single Ended	48	11	+5.0	52	2	D5	3I, 6A,9A
5	54H/74H40	Dual 2-NAND	Any TTL	TTL	Volt	Single Ended	48	7.0	+5.0	88	2	D5	3I, 6A,9A
6	54S/74S40	Dual 2-NAND	Any TTL	TTL	Volt	Single Ended	48	4.0	+5.0	88	2	D5	3I, 6A,9A
7	8T13	Dual	8T14	TTL	Volt	Single Ended	250 <sup>(3)</sup>	20	+5.0	280	2	I21	4L 6B,9B
8	8T23	Dual IBM-370	8T24	TTL	Volt	Single Ended	250 <sup>(3)</sup>	20	+5.0	280	2	I21	6B,9B
9	9009	Dual 2-NAND	Any TTL	TTL	Volt	Single Ended	48	10	+5.0	54	2	D5	3I,6A
10	9612	Dual	9613	TTL	Volt	Diff	50	14	+5.0	150	2	I23	6T,9T
11	9614	Dual	9615	TTL	Volt	Diff or Single	40	16	+5.0	170	2	I2	4L 6B,9B
12	9616	Triple RS232	9617, 9627	TTL	Volt	Single Ended	17	300	$\pm 12$	250	3	I4	3I 6A,9A
13	9621	Dual	9622	TTL	Volt	Diff or Single	20	10	+5.0, +15	100	2	I7	3I,6A
14	9634	Dual	9637A	TTL, CMOS	Volt	Diff	$\pm 50$	10	+5.0	200	2	I33	4L 6B,9B
15	9636	Dual	9637A	TTL, CMOS	Volt	Single Ended	$\pm 75$	—	$\pm 9.0$ to $\pm 15$	200	2	I34	6T,9T
16	9638	Dual	9637A	TTL	Volt	Diff	$\pm 50$	10	+5.0	—	2	I36	6T,9T
17	10123/ 10523 <sup>(4)</sup>	Triple Bus Dvr	All 10K ECL	ECL	Volt	Single Ended	20	3.0	-5.2	312	3	E78	4L, 6B,9B

1. In some cases, only commercial temperature range devices are listed. Please request specific information for military versions.

2. OC = open collector, 3S = 3-state

3. Foldback current limited

4. 105XX and 106XX denote military temperature range

# FAIRCHILD INTERFACE

## LINE DRIVERS/RECEIVERS/TRANSCIEVERS

### LINE DRIVERS (Cont'd)

Item	DEVICE NO. <sup>(1)</sup>	Function <sup>(2)</sup>	Companion Receiver	Input Compatibility	Type Output	Output Configuration	Output Current mA (Typ)	t <sub>pd</sub> -ns (Typ)	Supply Voltage V	Power Dissipation mW (Typ)	Drivers per Package	Logic/Connection Diagram(s)	Package(s)
1	10192/ 10592 <sup>(4)</sup>	Quad	All ECL Logic	ECL	Volt	Single Ended	16	3.0	-5.2	510	4	E105	4L,6B
2	54S/ 74S140	Dual 2-NAND	Any TTL	TTL	Volt	Single Ended	40	4.0	+5.0	88	2	D5	3I, 6A,9A
3	54LS/ 74LS240	Octal Inverting Bus Dvr	Any TTL	TTL	Volt	Single Ended	40	12	+5.0	175	8	D73	9Z
4	54LS/ 74LS241	Octal Bus Dvr	Any TTL	TTL	Volt	Single Ended	40	12	+5.0	180	8	D74	9Z
5	54LS/ 74LS244	Octal Bus Dvr	Any TTL	TTL	Volt	Single Ended	40	12	+5.0	180	8	D77	9Z
6	54LS/ 74LS540	Octal 3S Inverting	Any TTL	TTL	Volt	Single Ended	40	12	+5.0	175	8	D80	9Z
7	54LS/ 74LS541	Octal 3S	Any TTL	TTL	Volt	Single Ended	40	12	+5.0	180	8	D81	9Z
8	55/75109	Dual	75107, 75108	TTL	Curr	Diff	6.0	9.0	±5.0	180	2	I14	3I 6A,9A
9	55/75110	Dual	75107, 75108	TTL	Curr	Diff	12	9.0	±5.0	285	2	I14	3I 6A,9A
10	55/75121	Dual	75122	TTL	Volt	Single Ended	250 <sup>(3)</sup>	20	+5.0	280	2	I21	6B,9B
11	75123	Dual IBM-370	75124	TTL	Volt	Single Ended	250 <sup>(3)</sup>	20	+5.0	280	2	I21	6B,9B
12	75150	Quad	75154	TTL DTL	Volt	Single Ended	15	20	±12	100	2	I51, 52	6A,6T, 9A,9T
13	96101	Quad 2-NAND OC	96106	TTL	Volt	Single Ended	80	13	+5.0	98	4	D3	TO-86 6A,9A
14	100123	Hex Bus Dvr	All 95K and 100K ECL	ECL	Volt	Single Ended	20	1.8	-4.5	730	6	E14	4Q
15	100194	Quint Duplex Bus Dvr	All 100K ECL	ECL	Volt	—	—	2.0	-4.5	—	—	E110	4Q,6Q

1. In some cases, only commercial temperature range devices are listed. Please request specific information for military versions.

2. OC = open collector, 3S = 3-state

3. Foldback current limited

4. 105XX and 106XX denote military temperature range

# FAIRCHILD INTERFACE

## LINE DRIVERS/RECEIVERS/TRANSCEIVERS

### LINE RECEIVERS

Item	DEVICE NO. <sup>(1)</sup>	Function	Companion Driver	Output Compatibility	Input Threshold Sensitivity V <sub>TH-V</sub>	Common Mode V	Hysteresis Capability	tpd-ns (Typ)	Supply Voltage V	Power Dissipation mW (Typ)	Receivers per Package	Logic/Connection Diagram	Package(s)
1	<b>μA1489</b>	Quad RS232	μA1488	TTL	+0.5	±30	0.25V	220	—	—	4	I50	6A,9A
2	<b>μA1489A</b>	Quad RS232	μA1488	TTL	+0.5	±30	1.0V	25	—	—	4	I50	6A,9A
3	<b>8T14</b>	Triple	8T13	TTL	—	+5.0	Yes	20	+5.0	315	3	I22	6B,9B
4	<b>8T24</b>	Triple IBM-370	8T23	TTL	—	+5.0	Yes	20	+5.0	315	3	I22	6B,9B
5	<b>9582</b>	Triple	All ECL Logic	ECL	V <sub>REF</sub>	±1.0	No	2.2	-5.2	250	3	E22	6B
6	<b>9613</b>	Dual Diff	9612	TTL	±0.5	±15	No	25	+5.0	143	2	I24	6T,9T
7	<b>9615</b>	Dual Diff	9614	TTL	±1.0	±15	No	30	+5.0	150	2	I3	4L,6B,9B
8	<b>9617</b>	Triple RS232	9616	TTL	+1.5	±25	Yes	60	+5.0	60	3	I5	6A
9	<b>9620</b>	Dual Diff	9621	TTL	±0.5	±15	No	35	+5.0 -12	110	2	I6	3I,6A
10	<b>9622</b>	Dual	9621	TTL	+1.5	±10	No	38	+5.0 -12	140	2	I8	3I,6A
11	<b>9627</b>	Dual RS232/ mil. std. 188	9616	TTL	+0.45	±25	No	70	±12	234	2	I11	4L 6B,9B
12	<b>9637A</b>	Dual RS422/423	9634, 9636, 9638	TTL	+0.2	±15	0.3V	17	+5.0	—	2	I35	6T,9T
13	<b>10014</b>	Active Terminator	All ECL Logic	ECL	V <sub>REF</sub>	—	No	—	-5.2	65	14	E18	4L 6B,9B
14	<b>10114/ 10514<sup>(2)</sup></b>	Triple	All ECL Logic	ECL	V <sub>REF</sub>	±1.0	No	2.2	-5.2	145	3	E24	4L 6B,9B
15	<b>10115/ 10515<sup>(2)</sup></b>	Quad	All ECL Logic	ECL	V <sub>REF</sub>	+2.0	No	1.9	-5.2	95	4	E23	4L 6B,9B
16	<b>10116</b>	Triple	All ECL Logic	ECL	V <sub>REF</sub>	+2.0	No	1.9	-5.2	75	3	E24	4L 6B,9B
17	<b>55/75107</b>	Dual	75109 75110	TTL	±25	±3.0	No	17	±5.0	130	2	I13	3I 6A,9A
18	<b>55/75108</b>	Dual	75109 75110	TTL	±25	±3.0	No	19	±5.0	130	2	I13	3I 6A,9A

1. In some cases, only commercial temperature range devices are given. Please request specific information for military versions.
2. 105XX and 106XX denote military temperature range.

# FAIRCHILD INTERFACE

## LINE DRIVERS/RECEIVERS/TRANSCIEVERS

### LINE RECEIVERS (Cont'd)

Item	DEVICE NO. <sup>(1)</sup>	Function	Companion Driver	Output Compatibility	Input Threshold Sensitivity V <sub>TH</sub> -V	Common Mode V	Hysteresis Capability	t <sub>pd</sub> -ns (Typ)	Supply Voltage V	Power Dissipation mW (Typ)	Receivers per Package	Logic/Connection Diagram	Package(s)
1	55/75122	Triple	75121	TTL	—	+5.0	Yes	20	+5.0	315	3	I22	6B,9B
2	75124	Triple IBM-370	75123	TTL	—	+5.0	Yes	20	+5.0	315	3	I22	6B,9B
3	75154	Quad RS232	75150	TTL, DTL	2.2	±15	Yes	22	+5.0 +12	200	4	I38	6A,9A
4	75207	Dual	75109 75110	TTL	±10	±3.0	No	17	±5.0	130	2	I13	6A,9A
5	75208	Dual	75109 75110	TTL	±10	±3.0	No	19	±5.0	130	2	I13	6A,9A
6	95115	Quad	All ECL Logic	ECL	V <sub>REF</sub>	+2.0	No	1.9	-5.2	95	4	E23	6B
7	95116	Triple	All ECL Logic	ECL	V <sub>REF</sub>	+2.0	No	1.9	-5.2	75	3	E24	6B
8	96106	Quad 2-NOR Bus	96101	TTL	1.5	—	No	20	+5.0	90	4	D39	TO-86 6A,9A
9	100114	Quint	All ECL Logic	ECL	V <sub>REF</sub>	±1.0	No	1.2	-4.5	380	5	E25	4Q

### TRANSCIEVERS

Item	DEVICE NO.	Function <sup>(2)</sup>	Driver Output Current-mA	Receiver Output Current-mA	Hysteresis Capability	Receiver t <sub>pd</sub> -ns	Driver t <sub>pd</sub> -ns	Transceivers per Package	Logic/Connection Diagram	Package(s)
10	8T26	Quad 3S	40	16	—	13	16	4	I53	6B,9B
11	8T28	Quad 3S	40	16	—	13	16	4	I54	6B,9B
12	9640/26S10	Quad OC Inverting	100	20	—	15	18	4	I37	6B,9B
13	9641/26S11	Quad OC	100	20	—	15	20	4	I55	6B,9B
14	9642	Quad OC Inverting	100	20	0.6V	15	18	4	I56	6B,9B

1. In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

2. OC = open collector, 3S = 3-state

# FAIRCHILD INTERFACE

## LINE DRIVERS/RECEIVERS/TRANSCIVERS

### TRANSCIVERS (Cont'd)

Item	DEVICE NO.	Function (2)	Driver Output Current-mA	Receiver Output Current-mA	Hysteresis Capability	Receiver t <sub>pd</sub> -ns	Driver t <sub>pd</sub> -ns	Transceivers per Package	Logic/Connection Diagram	Package(s)
1	54LS/74LS242	Quad Inverting 3S	40	40	0.4V	12	12	4	D75	3I,6A,9A
2	54LS/74LS243	Quad 3S	40	40	0.4V	12	12	4	D76	3I,6A,9A
3	54LS <sup>(1)</sup> /74LS245	Octal 3S	40	40	0.4V	12	12	8	D79	9Z
4	100194 <sup>(1)</sup>	Duplex	—	—	—	2.0	1.1	5	E110	4Q,6Q

## DISPLAY DRIVERS

### DISPLAY DRIVERS

Item	DEVICE NO.	Function (2)	Input Compatibility	BCD Decoder	Ripple Blanking	Blanking Above BCD 9 Input	Output Current mA	Output Standoff Voltage-V (Max)	Active HIGH/LOW	Display Type	Standby Power Dissipation-mW	Logic/Connection Diagram	Package(s)
5	4511B	7-Seg Latch/Decoder/Dvr	CMOS	Yes	No	Yes	25	—	H	LED	0.015	C111	4L,6B,9B
6	4734B	7-Seg Latch/Decoder/Dvr	CMOS	Yes	Yes	Yes	25	—	H	LED	0.015	C114	7D,9M
7	4543B	7-Seg Latch/Decoder/Dvr	CMOS	Yes	No	Yes	—	—	H	LCD	0.015	C112	4L,6B,9B
8	54/7441	1-of-10 Cold Cathode	TTL	Yes	No	No	7.0	55	L	Gas Discharge	145	D140	4L,6B,9B
9	54/7445	1-of-10 OC Dvr	TTL	Yes	No	Yes	80	30	L	Common Anode	215	D135	4L,7B,9B
10	54/7446	7-Seg Decoder/Dvr	TTL	Yes	Yes	No	40	30	L	Common Anode	320	D143	4L,7B,9B
11	54/7447	7-Seg Decoder/Dvr	TTL	Yes	Yes	No	40	15	L	Common Anode	320	D143	4L,7B,9B
12	54LS/74LS47	7-Seg Decoder/Dvr	TTL	Yes	Yes	No	12	15	L	Common Anode	35	D143	4L,6B,9B
13	54/7448	7-Seg Decoder	TTL	Yes	Yes	No	8.0	5.5	H	—	265	D141	4L,7B,9B

1. To be announced
2. OC = open collector, 3S = 3-state

# FAIRCHILD INTERFACE

## DISPLAY DRIVERS

### DISPLAY DRIVERS (Cont'd)

Item	DEVICE NO.	Function *	Input Compatibility	BCD Decoder	Ripple Blanking	Blanking Above BCD 9 Input	Output Current mA	Output Standoff Voltage-V (Max)	Active HIGH/LOW	Display Type	Standby Power Dissipation-mW	Logic/Connection Diagram	Package(s)
1	54LS/ 74LS48	7-Seg Decoder/Dvr	TTL	Yes	Yes	No	1.3	5.5	H	—	125	D141	4L,6B, 9B
2	5449	7-Seg Decoder	TTL	Yes	Yes	No	9.6	5.5	H	—	165	D142	3I
3	54LS/ 74LS49	7-Seg Decoder/ Dvr OC	TTL	Yes	Yes	No	1.3	5.5	H	—	40	D142	3I,6A, 9A
4	9302	1-of-10 OC Dvr	TTL	Yes	No	Yes	16	5.5	L	—	145	D133	4L,6B, 9B
5	9307	7-Seg Decoder	TTL	Yes	Yes	No	11	5.5	H	LED, Com Cathode	165	D141	4L,7B, 9B
6	9315	1-of-10 Cold Cathode	TTL	Yes	No	No	7.0	55	L	Gas Discharge	145	D140	4L,6B, 9B
7	9317B	7-Seg Decoder/Dvr	TTL	Yes	Yes	Yes	40	20	L	LED, Com Anode	220	D143	4L,7B, 9B
8	9317C	7-Seg Decoder/Dvr	TTL	Yes	Yes	Yes	20	30	L	LED, Com Anode	220	D143	4L,7B, 9B
9	9368	7-Seg LED Dvr	TTL	Yes	Yes	No	20	1.7	H	LED, Com Cathode	320	D144	7B,9B
10	9370	7-Seg LED Dvr	TTL	Yes	Yes	No	25	5.5	L	LED, Com Anode	350	D145	6B,9B
11	9374	7-Seg LED Dvr	TTL, CMOS	Yes	Yes	No	15	10	L	LED, Com Anode	175	D145	6B,9B
12	9664	Hex Digit Dvr	MOS, TTL, CMOS	No	No	No	150	20	L	LED	Neg	I26	6A,9A
13	9665	7-Darlington Dvr	DTL, TTL MOS, CMOS	No	No	No	350	50	L	LED, Gas Discharge	0	I39	6B,9B
14	9666	7-Darlington Dvr	PMOS	No	No	No	350	50	L	LED, Gas Discharge	0	I39	6B,9B
15	9667	7-Darlington Dvr	TTL, CMOS	No	No	No	350	50	L	LED, Gas Discharge	0	I39	6B,9B
16	9668	7-Darlington Dvr	CMOS, PMOS	No	No	No	350	50	L	LED, Gas Discharge	0	I39	6B,9B

\*OC = open collector, 3S = 3-state

# FAIRCHILD INTERFACE

## DISPLAY DRIVERS

### DISPLAY DRIVERS (Cont'd)

Item	DEVICE NO.	Function*	Input Compatibility	BCD Decoder	Ripple Blanking	Blanking Above BCD 9 Input	Output Current mA	Output Standoff Voltage-V (Max)	Active HIGH/LOW	Display Type	Standby Power Dissipation-mW	Logic/Connection Diagram	Package(s)
1	54/ 74141	1-of-10 Cold Cathode	TTL	Yes	No	No	7.0	55	L	Gas Discharge	80	D140	4L,7B, 9B
2	54/ 74145	1-of-10 OC Dvr	TTL	Yes	No	Yes	80	15	L	Common Anode	215	D135	4L,7B, 9B
3	54LS/ 74LS247	7-Seg Decoder/Dvr	TTL	Yes	Yes	No	12	15	L	LED, Com Anode	30	D143	4L,6B, 9B
4	54LS/ 74LS248	7-Seg Decoder/Dvr	TTL	Yes	Yes	No	1.3	5.5	H	—	125	D141	4L,6B, 9B
5	54LS/ 74LS249	7-Seg OC Decoder/Dvr	TTL	Yes	Yes	No	1.3	5.5	H	—	40	D141	4L,6B, 9B
6	75491	Quad Digit Seg Dvr	MOS, TTL, CMOS	No	No	No	50	20	L	LED	Neg	I25	TO-99, 6T,9A, 9T
7	75492	Hex Digit Dvr	MOS, TTL, CMOS	No	No	No	250	20	L	LED	Neg	I26	TO-99, 6T,9A, 9T

\*OC = open collector, 3S = 3-state

## AUXILIARY DRIVERS

### HIGH SPEED BUFFERS AND PERIPHERAL DRIVERS

Item	DEVICE NO.	Function	Input Compatibility	Gate Function	Circuit Function	Transistor Connection Mode	Output Current mA	Output Voltage V	Latchup Voltage mV (Min)	t <sub>pd</sub> -ns (Typ)	Drivers per Package	Logic/Connection Diagram	Package(s)
8	55/75430	Dual Drivers	TTL	AND	AND	External	300	15	15	15	2	I16	3I,6A,9A
9	55/75431	Dual Drivers	TTL	AND	AND	Internal	300	15	15	10	2	I17	TO-99 6T,9T
10	55/75432	Dual Drivers	TTL	NAND	NAND	Internal	300	15	15	15	2	I18	TO-99 6T,9T
11	55/75433	Dual Drivers	TTL	OR	OR	Internal	300	15	15	10	2	I19	TO-99 6T,9T



# FAIRCHILD INTERFACE

## AUXILIARY DRIVERS

### HIGH SPEED BUFFERS AND PERIPHERAL DRIVERS (Cont'd)

Item	DEVICE NO.	Function	Input Compatibility	Gate Function	Circuit Function	Transistor Connection Mode	Output Current mA	Output Voltage V	Latchup Voltage mV (Min)	$t_{pd}$ -ns (Typ)	Drivers per Package	Logic/Connection Diagram	Package(s)
1	55/75434	Dual Drivers	TTL	NOR	NOR	Internal	300	15	15	13	2	I20	TO-99 6T,9T
2	55/75450	Dual Drivers	TTL	AND	AND	External	300	30	20	30	2	I16	3I,6A,9A
3	55/75451	Dual Drivers	TTL	AND	AND	Internal	300	30	20	25	2	I17	TO-99 6T,9T
4	55/75452	Dual Drivers	TTL	AND	NAND	Internal	300	30	20	35	2	I18	TO-99 6T,9T
5	55/75453	Dual Drivers	TTL	NOR	OR	Internal	300	30	20	25	2	I19	TO-99 6T,9T
6	55/75454	Dual Drivers	TTL	OR	NOR	Internal	300	30	20	35	2	I20	TO-99 6T,9T

### HIGH CURRENT, HIGH VOLTAGE BUFFERS AND PERIPHERAL DRIVERS

Item	DEVICE NO.	Function	Input Compatibility	Gate Function	Circuit Function	Output Current mA (Max)	Output Voltage-V	Latchup Voltage V (Min)	$t_{pd}$ -ns (Typ)	Drivers per Package	Logic/Connection Diagram	Package(s)
7	SH2001	High Current, High Voltage	DTL, TTL	—	NAND	1000	50	—	70	1	H5	TO-100
8	SH2002	High Current, High Voltage	DTL, TTL	—	NAND	1000	40	—	70	1	H5	TO-100
9	SH2200	High Current, High Voltage	DTL, TTL	—	NAND	2000	50	—	80	1	H5	TO-100
10	SH2201	High Current High Voltage	DTL, TTL	—	NAND	2000	100	—	—	1	H5	TO-100
11	SH3011*	Dual Hammer	TTL	—	Non- Inverting	5000	80	—	—	2	H8	8-pin TO-3
12	9664	Hex Driver	TTL, MOS, CMOS	—	—	150	20	—	600	6	I26	6A,9A
13	55/75450	Dual Drivers	TTL	NAND	—	300	30	20	30	2	I16	3I,6A,9A

\*To be announced

**FAIRCHILD INTERFACE**

**AUXILIARY DRIVERS**

**HIGH CURRENT, HIGH VOLTAGE BUFFERS AND PERIPHERAL DRIVERS (Cont'd)**

Item	DEVICE NO.	Function	Input Compatibility	Gate Function	Circuit Function	Output Current mA (Max)	Output Voltage-V	Latchup Voltage V (Min)	t <sub>pd</sub> -ns (Typ)	Drivers per Package	Logic/Connection Diagram	Package(s)
1	55/75451	Dual Drivers	TTL	—	AND	300	30	20	30	2	I17	TO-99 6T,9T
2	55/75452	Dual Drivers	TTL	—	NAND	300	30	20	35	2	I18	TO-99 6T,9T
3	55/75453	Dual Drivers	TTL	—	OR	300	30	20	25	2	I19	TO-99 6T,9T
4	55/75454	Dual Drivers	TTL	—	NOR	300	30	20	35	2	I20	TO-99 6T,9T
5	55/75460	Dual Drivers	TTL	NAND	—	300	35	30	35	2	I16	3I,6A,9A
6	55/75461	Dual Drivers	TTL	—	AND	300	35	30	35	2	I17	TO-99 6T,9T
7	55/75462	Dual Drivers	TTL	—	NAND	300	35	30	35	2	I18	TO-99 6T,9T
8	55/75463	Dual Drivers	TTL	—	OR	300	35	30	35	2	I19	TO-99 6T,9T
9	55/75464	Dual Drivers	TTL	—	NOR	300	35	30	35	2	I20	TO-99 6T,9T
10	55/75471	Dual Drivers	TTL	—	AND	300	80	55	30	2	I17	TO-99 6T,9T
11	55/75472	Dual Drivers	TTL	NAND	NAND	300	80	55	45	2	I18	TO-99 6T,9T
12	55/75473	Dual Drivers	TTL	—	OR	300	80	55	30	2	I19	TO-99 6T,9T
13	55/75474	Dual Drivers	TTL	—	NOR	300	80	55	40	2	I20	TO-99 6T,9T
14	75491	Quad Driver	TTL, MOS, CMOS	—	—	50	20	—	600	4	I25	TO-99 6T,9A,9T
15	75492	Hex Driver	TTL, MOS, CMOS	—	—	250	20	—	600	6	I26	TO-99 6T,9A,9T

## FAIRCHILD INTERFACE

### AUXILIARY DRIVERS

#### MOS, CCD AND CORE MEMORY DRIVERS

Item	DEVICE NO.	Function	Input Compatibility	Output Current (Capacitive Drive Capability) mA (pF)	t <sub>pd</sub> -ns (Typ)	Supply Voltage V	Logic/Connection Diagram(s)	Package(s)
1	9643	Dual TTL to CCD/MOS Dvr	TTL	(300)	8.0	+5.0	I57,58	6A,6T,9A,9T
2	9644	Dual TTL to CCD/MOS Dvr	TTL	(300)	8.0	+5.0	I57	6T,9T
3	9645	Quad TTL to CCD/MOS Dvr	TTL	(300)	8.0	+5.0	I59	6B,9B
4	9646	Dual MOS Clock Dvr	TTL	(1000)	30	-22 to +22	I60,61	6A,9A,9T
5	55/75325	Core Memory Dvr	TTL	600	25	+5.0, +24	I15	4L,7B,9B
6	55/75326	Core Memory Dvr	TTL	600	30	+5.0	I68	4L,7B,9B
7	55/75327	Core Memory Dvr	TTL	600	35	+5.0 or +4.5 to +24	I69	4L,7B,9B

### LEVEL TRANSLATORS

#### LEVEL TRANSLATORS

Item	DEVICE NO. <sup>(1,2)</sup>	Function	Supply Voltage V <sup>+</sup> (Typ)	Supply Voltage V <sup>-</sup> (Typ)	VOH-V (Min)	VOL-V (Max)	t <sub>pd</sub> -ns (Typ)	Power Dissipation mW	Logic/Connection Diagram (s)	Package(s)
8	4049B	Hex Inverting Buffer	+3.0 to +15	0.0	-2.5 <sup>(3)</sup>	+16 <sup>(4)</sup>	—	—	C12	4L, 6B,9B
9	4050B	Hex Non-Inverting Buffer	+3.0 to +15	0.0	-2.5 <sup>(3)</sup>	+16 <sup>(4)</sup>	—	—	C13	4L, 6B,9B
10	4104B	TTL to Logic HIGH MOS	+3.0 to +15	0.0	+9.95	+0.05	85	1.4	C62	4L, 6B,9B
11	9109	HLDTL-TTL Hex	+12 to +20	0.0	OC	+0.4	120	380	G12	6A

1. In some cases, only commercial temperature range devices are given. Please request specific information for military versions.
2. 105XX and 106XX denote military temperature range.
3. IOH-mA
4. IOL-mA

# FAIRCHILD INTERFACE

## LEVEL TRANSLATORS

### LEVEL TRANSLATORS (Cont'd)

Item	DEVICE NO. <sup>(1,2)</sup>	Function	Supply Voltage V <sup>+</sup> (Typ)	Supply Voltage V <sup>-</sup> (Typ)	VOH-V (Min)	VOL-V (Max)	t <sub>pd</sub> -ns (Typ)	Power Dissipation mW	Logic/Connection Diagram(s)	Package(s)
1	9112	TTL-HLDTL Hex	+12 to +20	0.0	(+V)-2.0	+0.4	90	440	G12	6A
2	9595	Dual ECL-TTL	+5.0	-5.2	+2.4	+0.4	6.0	375	E15	6B
3	9624	TTL-MOS	+5.0	0.0 to -30	V <sub>TAP</sub> -1.0	(-V)+2.0	120	40	I9	3I,6A,9A
4	9625	MOS-TTL Dual	+5.0	0.0 to -30	+3.2	+0.4	70	60	I10	3I,6A,9A
5	9643	Dual TTL to MOS Driver	+5.0 to +12	0.0	V <sub>CC</sub> -0.5	+0.3	8.0	—	I57, 58	6A,6T, 9A,9T
6	9644	Dual TTL to MOS Driver	+5.0 to +12	0.0	V <sub>CC</sub> -0.5	+0.3	8.0	—	I57	6T,9T
7	9645	Quad TTL to MOS Driver	+5.0	0.0	V <sub>CC</sub> -0.5	+0.3	8.0	—	I59	6B,9B
8	9646	Dual MOS Clock Driver	-22 to +22	0.0	V <sub>CC</sub> -0.5	+1.0	30	—	I60, 61	6A,9A 9T
9	11C24	Dual TTL Voltage Controlled Multivibrator	+5.0	—	+2.5	+0.5	30	160	E19	6A
10	11C44	Phase-Freq Detector	+5.0	—	+2.5	+0.5	—	165	E20	6A
11	11C58	ECL Voltage Controlled Multivibrator	+5.0	-5.2	-0.96	-1.62	—	260	E21	6B
12	10124/ 10524	TTL-ECL Quad Diff Driver	+5.0	-5.2	-0.96	-1.65	3.0	265	E16	4L,6B, 9B
13	10125/ 10525	ECL-TTL Quad Buffer	+5.0	-5.2	+2.5	+0.5	3.0	410	E17	4L,6B 9B
14	10177	ECL to MOS	+5.0 or +6.0	-5.2	+3.0 or +4.0	+0.5 or +0.6	6.0	430	E106	4L,6B 9B
15	95124	TTL-ECL Quad Diff Driver	+5.0	-5.2	-1.05	-1.595	3.0	295	E16	6B

1. In some cases, only commercial temperature range devices are given. Please request specific information for military versions.
2. 105XX and 106XX denote military temperature range.

# FAIRCHILD INTERFACE

## CONVERTERS

### CONVERTERS

Item	DEVICE NO.	Function	Input Compatibility	Output Current MSB-mA (Max)	Non-Linearity % (Full Scale)	Output Current Settling Time ns	Logic/Connection Diagram	Package(s)
1	$\mu$ A0801/ DAC-08	8-Bit High Speed Digital-to-Analog Converter	TTL, CMOS, ECL, HTL, MOS	2.0	$\pm 0.1$	85	I62	6B,9B
2	$\mu$ A0802/ 1408	8-Bit Multiplying Digital-to-Analog Converter	TTL, CMOS	2.0	$\pm 0.19$	250	I63	6B,9B
3	$\mu$ A4151	Voltage-to-Frequency Converter	TTL, CMOS	—	—	—	I64	5S,6T,9T
4	$\mu$ A7151	Voltage-to-Frequency Converter w/Op Amp	TTL, CMOS	—	—	—	I65	6A,9A
5	9650	4-Bit Current Source	TTL	2.0	$\pm 0.1$	—	I12	6B
6	9706 <sup>(1)</sup>	8-Channel, 6-Bit Microprocessor, Digital-to-Analog Converter	TTL	—	—	—	I66	6A,9A
7	9708 <sup>(1)</sup>	6-Channel, 8-Bit Microprocessor, Analog-to-Digital Converter	TTL	—	$\pm 0.2$	—	I67	6B,9B
8	9710 <sup>(1)</sup>	10-Bit High Speed Digital-to-Analog Converter	TTL, CMOS, ECL	8.0	$\pm 0.25$	200	—	6N,9N
9	9712 <sup>(1)</sup>	12-Bit High Speed Digital-to-Analog Converter	TTL, CMOS, ECL	8.0	$\pm 0.25$	300	—	6N,9N

## AMPLIFIERS

### CORE SENSE AMPLIFIERS

Item	DEVICE NO. <sup>(2)</sup>	Function	Differential Threshold Voltage Range VREF = 15mV mV	Common Mode Range V	Gate Function	Output Configuration	t <sub>pd</sub> -ns (Typ)	Logic/Connection Diagram	Package(s)
10	7524	Dual Sense Amp	11 to 19	$\pm 2.5$	AND	Com Collector	25	I30	6B,9B
11	7525	Dual Sense Amp	8.0 to 22	$\pm 2.5$	AND	Com Collector	25	I30	6B,9B
12	7528	Dual Sense Amp	11 to 19	$\pm 2.5$	AND	Com Collector	25	I31	6B,9B
13	7529	Dual Sense Amp	8.0 to 22	$\pm 2.5$	AND	Com Collector	25	I31	6B,9B

1. To be announced

2. In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

# FAIRCHILD INTERFACE

## AMPLIFIERS

### CORE SENSE AMPLIFIERS

Item	DEVICE NO.*	Function	Differential Threshold Voltage-mV	Common Mode Range V	Gate Function	Output Configuration	t <sub>pd</sub> -ns (Typ)	Logic/Connection Diagram	Package(s)
1	7534	Dual Sense Amp	11 to 19	±2.5	NAND	Uncom Collector	25	I32	6B,9B
2	7535	Dual Sense Amp	8.0 to 22	±2.5	NAND	Uncom Collector	25	I32	6B,9B
3	75234	Dual Sense Amp	11 to 19	±2.5	NAND	Com Collector	25	I32	6B,9B
4	75235	Dual Sense Amp	8.0 to 22	±2.5	NAND	Com Collector	25	I32	6B,9B

### TAPE/DISC PREAMPLIFIERS

Item	DEVICE NO.	Function	Voltage Gain V/V (Typ)	Bandwidth Unity Gain MHz (Typ)	Input Offset Current μA (Typ)	Input Offset Voltage mV (Typ)	Output Voltage Swing V (Typ)	Logic/Connection Diagram	Package(s)
5	μA733	Diff Video Amp	400	120	0.4	0.6	2.5	I1	TO-91 5B,6A,9A
6	μA739	Dual Low Noise Preamp	20	1.0	0.05	1.0	+12,-14	I48	6A,9A

\* In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

# FAIRCHILD INTERFACE

## SWITCHES

### ANALOG SWITCHES

Item	DEVICE NO.	Description	Input Logic	Channel Resistance $\Omega$ (Max)	Supply Voltage V	Logic/Connection Diagram	Packages
1	<b>SH3002</b>	SPDT Analog Switch	TTL	200	$\pm 12$	H6	TO-100
2	<b>SH3003</b>	DPST Analog Switch	TTL	200	$\pm 12$	H7	TO-100
3	<b>4016B</b>	Quad Bilateral SPST Switch	CMOS	1080	3.0 to 15	C63	3I,6A,9A
4	<b>4051B</b>	8-Chan Analog Multiplexer	CMOS	340	3.0 to 15	C65	4L,6B,9B
5	<b>4052B</b>	Dual 4-Chan Analog Multiplexer	CMOS	340	3.0 to 15	C64	4L,6B,9B
6	<b>4053B</b>	Triple 2-Chan Analog Multiplexer	CMOS	340	3.0 to 15	C96	4L,6B,9B
7	<b>4066B</b>	Quad Bilateral SPST Switch	CMOS	300	3.0 to 15	C63	3I,6A,9A
8	<b>4067B</b>	16-Chan Analog Multiplexer	CMOS	340	3.0 to 15	C97	4M,6N,9N
9	<b>4741B</b>	4x4 Crosspoint Switch	CMOS	340	3.0 to 15	C98	4L,6B,9B

## SPECIAL FUNCTIONS

### TIMERS AND COUNTERS

Item	DEVICE NO.*	Function	Time Delay Hrs	Free Running Frequency KHz	Output Compatibility	Output Current mA	Supply Voltage V (Max)	Timing Error %	Logic/Connection Diagram	Package(s)
10	$\mu$ <b>A555</b>	Single Timer	1.0	100	TTL	200	18	1.0	I28	5B,9T
11	$\mu$ <b>A556</b>	Dual Timer	1.0	100	TTL	200	18	1.0	I29	7B,9B
12	$\mu$ <b>A2240</b>	Programmable Timer-Counter	120	—	TTL	5.0	18	0.5	I27	7B,9B

\*In some cases, only commercial temperature range devices are given. Please request specific information for military versions.

# FAIRCHILD INTERFACE

## SPECIAL FUNCTIONS

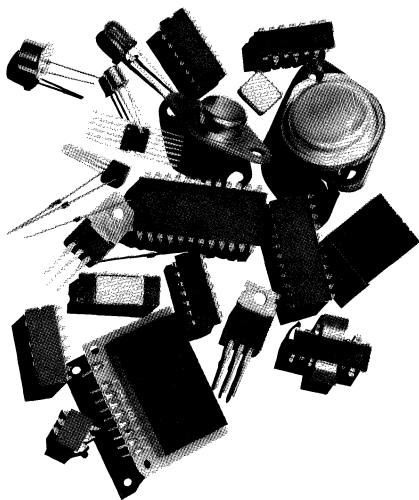
### ARRAYS

Item	DEVICE NO.*	Function	Balanced Input	Balanced Output	Low Noise	AGC Capability	Multiple Unit	Wideband	Switching Application	VCBO-V	VCEO-V	VEBO-V	IC-mA	Diode Matching mV	Reverse Recovery Time-ns	Logic/Connection Diagram	Package(s)
1	$\mu$ A726	Temp Controlled Diff Pair	•	•	•	—	—	—	—	40	30	5.0	5.0	—	—	I40	5U
2	$\mu$ A3018	Matched Transistor Array	•	•	—	•	•	•	—	20	15	5.0	50	—	—	I41	5G
3	$\mu$ A3018A	Matched Transistor Array	•	•	—	•	•	•	—	20	15	5.0	50	—	—	I41	5G
4	$\mu$ A3019	Diode Array	—	—	—	—	—	—	•	—	—	—	—	1.0	—	I47	5E
5	$\mu$ A3026	Dual Diff Amp Transistor Array	—	—	—	—	—	—	—	20	15	5.0	50	—	—	I44	5G
6	$\mu$ A3036	Dual Darlington Transistor Array	•	•	•	—	•	—	—	30	15	5.0	50	—	—	I42	5E
7	$\mu$ A3039	Quad Plus Two Diodes	—	—	—	—	—	—	•	—	—	—	—	1.0	1.0	I46	5G
8	$\mu$ A3045	Diff Pair Plus Three Transistors	•	•	—	—	•	•	—	20	15	5.0	50	—	—	I43	6A
9	$\mu$ A3046	Diff Pair Plus Three Transistors	•	•	—	—	•	•	—	20	15	5.0	50	—	—	I43	6A, 9A
10	$\mu$ A3054	Dual Diff Amp Transistor Array	—	—	—	—	•	—	—	20	15	5.0	50	—	—	I45	6A 9A
11	$\mu$ A3086	Diff Pair Plus Three Transistors	•	•	—	—	•	•	—	20	15	5.0	50	1.0	—	I43	6A

\*Military grade available.







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# FAIRCHILD DIGITAL

## TTL

### SSI FUNCTIONS

Item	Function <sup>(1)</sup>	9000 Series 8 ns/10 mW	Low Power Schottky 54LS/74LS 5 ns/2 mW	Std. TTL 54/74 10 ns/10 mW	High Speed 54H/74H 6 ns/22 mW	High Speed Schottky 54S/74S 3 ns/19 mW	Logic/Connection Diagram <sup>(2)</sup>	Packages <sup>(3)</sup>
<b>NAND Gates</b>								
1	Hex Inverters	9016	54LS/74LS04	54/7404	54H/74H04	54S/74S04 9S04A	D1	3I,6A,9A
2	Hex Inverts (OC)	9017	54LS/74LS05	54/7405	54H/74H05	54S/74S05 9S05A	D1	3I,6A,9A
3	Hex Inverter (15 V)	—	—	54/7416	—	—	D1	3I,6A,9A
4	Hex Inverter (30 V)	—	—	54/7406	—	—	D1	3I,6A,9A
5	Hex Schmitt Trigger	—	54LS/74LS14	54/7414	—	—	D1	3I,6A,9A
6	Quad 2-Input	9002	54LS/74LS00	54/7400	54H/74H00	54S/74S00	D2	3I,6A,9A
7	Quad 2-Input (OC)	9012	54LS/74LS03	54/7403	54H/74H01	54S/74S03	D2	3I,6A,9A
8	Quad 2-Input (OC)	—	—	54/7401	—	—	D3	3I,6A,9A
9	Quad 2-Input (12 V)	—	54LS/74LS26	7426	—	—	D2	3I,6A,9A
10	Quad 2-Input (48 mA)	—	54LS/74LS37	54/7437	—	—	D2	3I,6A,9A
11	Quad 2-Input (OC/48 mA)	—	74LS38	54/7438	—	—	D2	3I,6A,9A
12	Quad 2-Input Line Dvr	96101	—	54/7439	—	—	D3	3I,6A,9A
13	Quad 2-Input Schmitt	—	74LS132	54/74132	—	54S/74S132	D2	3I,6A,9A
14	Triple 3-Input	9003	54LS/74LS10	54/7410	54H/74H10	54S/74S10	D4	3I,6A,9A
15	Triple 3-Input (OC)	—	—	54/7412	—	—	D4	3I,6A,9A
16	Dual 4-Input	9004	54LS/74LS20	54/7420	54H/74H20	74S20	D5	3I,6A,9A
17	Dual 4-Input Schmitt	—	54LS/74LS13	54/7413	—	—	D65	3I,6A,9A
18	Dual 4-Input (OC)	—	54LS/74LS22	54/7422	54H/74H22	74S22	D5	3I,6A,9A
19	Dual 4-Input Buffer	9009	54LS/74LS40	54/7440	54H/74H40	54S/74S40	D5	3I,6A,9A
20	Dual 4-Input Line Dvr	—	—	—	—	54S/74S140	D5	3I,6A,9A
21	8-Input	9007	—	—	—	—	D6	3I,6A
22	8-Input	—	54LS/74LS30	54/7430	54H/74H30	54S/74S30	D7	3I,6A,9A
23	13-Input	—	54LS/74LS133	—	—	54S/74S133	D8	4L,6B,9B
24	12-Input (3S)	—	—	—	—	54S/74S134	D9	4L,6B,9B

Notes on following pages.

# FAIRCHILD DIGITAL

## TTL

### SSI FUNCTIONS (Cont'd)

Item	Function <sup>(1)</sup>	9000 Series 8 ns/10 mW	Low Power Schottky 54LS/74LS 5 ns/2 mW	Std. TTL 54/74 10 ns/10 mW	High Speed 54H/74H 6 ns/22 mW	High Speed Schottky 54S/74S 3 ns/19 mW	Logic/Connection Diagram <sup>(2)</sup>	Packages <sup>(3)</sup>
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#### NOR Gates

1	Quad 2-Input	—	54LS/74LS02	54/7402	—	54S/74S02	D10	3I,6A,9A
2	Quad 2-Input	9015	—	—	—	—	D11	4L,6B
3	Triple 3-Input	—	54LS/74LS27	54/7427	—	—	D12	3I,6A,9A
4	Dual 4-Input w/Strobe	—	—	54/7425	—	—	D13	3I,6A,9A
5	Dual 4-Input (Exp)	—	—	54/7423	—	—	D14	4L,6B,9B
6	Dual 5-Input	—	54LS/74LS260	—	—	—	D72	3I,6A,9A
7	Quad 2-Input	—	54LS/74LS28	—	—	—	D10	3I,6A,9A
8	Quad 2-Input (OC)	—	74LS33	—	—	—	D10	6A,9A

#### AND Gates

9	Hex Buffer (OC/15 V)	—	—	54/7417	—	—	D15	3I,6A,9A
10	Hex Buffer (OC/30 V)	—	—	54/7407	—	—	D15	3I,6A,9A
11	Quad 2-Input	—	54LS/74LS08	54/7408	54H/74H08	54S/74S08	D16	3I,6A,9A
12	Quad 2-Input (OC)	—	54LS/74LS09	54/7409	—	54S/74S09	D16	3I,6A,9A
13	Quad 2-2-3-3 Input	—	—	—	—	9S41	D17	4L,6B,9B
14	Triple 3-Input	—	54LS/74LS11	54/7411	54H/74H11	54S/74S11	D18	3I,6A,9A
15	Triple 3-Input (OC)	—	54LS/74LS15	—	—	54S/74S15	D18	3I,6A,9A
16	Dual 4-Input	—	54LS/74LS21	54/7421	54H/74H21	—	D19	3I,6A,9A

#### OR Gates

17	Quad 2-Input	—	54LS/74LS32	54/7432	—	54S/74S32	D20	3I,6A,9A
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#### Exclusive OR Gates

18	Quad 2-Input	—	54LS/74LS86	54/7486	—	54S/74S86	D21	3I,6A,9A
19	Quad 2-Input (OC)	—	54LS/74LS136	—	—	—	D21	3I,6A,9A
20	Quad 2-Input OR/NOR	9014	—	—	—	—	D22	4L,6B
21	Quad 2-Input OR/NOR	—	—	—	—	54S/74S135	D23	4L,6B,9B
22	Quad 2-Input	—	54LS/74LS386	—	—	—	D94	3I,6A,9A

Notes on following pages.

# FAIRCHILD DIGITAL

## TTL

### SSI FUNCTIONS (Cont'd)

Item	Function <sup>(1)</sup>	9000 Series 8 ns/10 mW	Low Power Schottky 54LS/74LS 5 ns/2 mW	Std. TTL 9N 54/74 10 ns/10 mW	High Speed 54H/74H 6 ns/22 mW	High Speed Schottky 54S/74S 3 ns/19 mW	Logic/Connection Diagram <sup>(2)</sup>	Packages <sup>(3)</sup>
<b>Exclusive NOR Gate</b>								
1	Quad 2-Input (OC)	—	74LS266	9386 (8242)	—	—	D94	3I,6A,9A
<b>AND-OR Gates</b>								
2	Dual 4-2 Input	—	—	—	—	9S42	D25	4L,6B,9B
3	2-2-2-3 Input (Exp)	—	—	—	54H/74H52	—	D26	3I,6A,9A
<b>AND-OR-INVERT Gates</b>								
4	Dual 2-2 Input (Exp)	9005	—	54/7450	54H/74H50	—	D27	3I,6A,9A
5	Dual 2-2 Input	—	54LS/74LS51	54/7451	54H/74H51	54S/74S51	D28	3I,6A,9A
6	2-2-2-3 Input (Exp)	9008	—	54/7453	54H/74H53	—	D29	3I,6A,9A
7	2-2-2-3 Input	—	—	54/7454	54H/74H54	—	D30	3I,6A,9A
8	2-2-3-3 Input	—	54LS/74LS54	—	—	—	D31	3I,6A,9A
9	2-2-3-4 Input	—	—	—	—	74S64	D32	6A,9A
10	2-2-3-4 Input (OC)	—	—	—	—	74S65	D32	6A,9A
11	4-4 Input (Exp)	—	—	—	54H/74H55	—	D33	3I,6A,9A
12	4-4 Input	—	54LS/74LS55	—	—	—	D34	3I,6A,9A
<b>Gate Expanders</b>								
13	Triple 3-Input	—	—	—	54H/74H61	—	D35	3I,6A,9A
14	Dual 4-Input	9006	—	54/7460	54H/74H60	—	D36	3I,6A,9A
15	2-2-3-3 AND-OR	—	—	—	54H/74H62	—	D37	3I,6A,9A
<b>Buffer Gates and Drivers</b>								
16	Quad Buffer (3S)	—	54LS/74LS125	54/74125	—	—	D66	3I,6A,9A
17	Quad Buffer (3S)	—	54LS/74LS126	54/74126	—	—	D67	3I,6A,9A
18	Hex (3S)	—	54LS/74LS365	—	—	—	D68	4L,6B,9B
19	Hex Inverter (3S)	—	54LS/74LS366	—	—	—	D69	4L,6B,9B
20	Hex (3S)	—	54LS/74LS367	—	—	—	D70	4L,6B,9B
21	Hex Inverter (3S)	—	54LS/74LS368	—	—	—	D71	4L,6B,9B

1. OC = open collector, 3S = 3-state.

2. The logic symbols located in the Logic/Connection Diagram Section are for the DIP version.

3. For specific availability or delivery information on a given package and temperature grade, consult the Fairchild O.E.M. Price List or call the local sales representative or distributor.

# FAIRCHILD DIGITAL

## TTL

### TTL SINGLE AND DUAL FLIP-FLOPS

Item	Function	DEVICE NO.	Inputs	Clock Edge	Direct Set	Direct Clear	Clock Frequency MHz (Typ)	Clock to Output Delay-ns (Typ)	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
1	Single JK	9000	3J, 3K, JK		X	X	20	16	100	D50	3I, 6A
2	Single JK	9001	2J, 2K, J, K, JK		X	X	50	16	115	D51	3I, 6A
3	Single JK	54H/74H71	(AOI) (2+2)J, (2+2)K		X	—	30	22	95	D52a	3I, 6A, 9A
4	Single JK	54H/74H101	(AOI) (2+2)J, (2+2)K		X	—	50	16	100	D52b	3I, 6A, 9A
5	Single JK	54/7472	3J, 3K		X	X	20	25	50	D53a	3I, 6A, 9A
6	Single JK	54H/74H72	3J, 3K		X	X	30	22	80	D53a	3I, 6A, 9A
7	Single JK	54H/74H102	3J, 3K		X	X	50	16	100	D53b	3I, 6A, 9A
8	Single JK	54/7470	2J, 2K, $\bar{J}$ , $\bar{K}$		X	X	35	27	65	D54	3I, 6A, 9A
9	Dual D	54/7474	D		X	X	25	20	85	D61	3I, 6A, 9A
10	Dual D	54H/74H74	D		X	X	43	13	150	D61	3I, 6A, 9A
11	Dual D	54S/74S74	D		X	X	100	7.0	150	D61	3I, 6A, 9A
12	Dual D	54LS/74LS74	D		X	X	50	15	20	D61	3I, 6A, 9A
13	Dual JK	9020	J, K, $\bar{J}$ , $\bar{K}$ , JK		—	X	50	16	210	D55	4L, 6B
14	Dual JK	9022	J, $\bar{K}$ , JK		X	X	15	16	210	D56	4L, 6B
15	Dual JK	54/7473	J, K		—	X	20	25	100	D57a	3I, 6A, 9A
16	Dual JK	54/74107	J, K		—	X	20	25	100	D57a	3I, 6A, 9A
17	Dual JK	54H/74H73	J, K		—	X	30	22	160	D57a	3I, 6A, 9A
18	Dual JK	54H/74H103	J, K		—	X	50	16	200	D57b	3I, 6A, 9A
19	Dual JK	54S/74S113	J, K		X	—	125	5.0	150	D63	3I, 6A, 9A
20	Dual JK	54LS/74LS113	J, K		X	—	60	12	20	D63	3I, 6A, 9A
21	Dual JK	54/7476	J, K		X	X	20	25	100	D58	4L, 6B, 9B
22	Dual JK	54H/74H76	J, K		X	X	30	22	150	D58	4L, 6B, 9B
23	Dual JK	54H/74H106	J, K		X	X	50	16	200	D58	4L, 6B, 9B
24	Dual JK	54S/74S112	J, K		X	X	125	5.0	150	D62	4L, 6B, 9B
25	Dual JK	54LS/74LS112	J, K		X	X	60	12	20	D62	4L, 6B, 9B
26	Dual JK	54H/74H78	J, K		X	X	30	22	160	D59a	3I, 6A, 9A
27	Dual JK	54H/74H108	J, K		X	X	50	16	200	D59b	3I, 6A, 9A

# FAIRCHILD DIGITAL

## TTL

### TTL SINGLE AND DUAL FLIP-FLOPS (Cont'd)

Item	Function	DEVICE NO.	Inputs	Clock Edge	Direct Set	Direct Clear	Clock Frequency MHz (Typ)	Clock to Output Delay ns (Typ)	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
1	Dual JK	54S/74S114	J,K		X	X	125	5.0	150	D64	31,6A,9A
2	Dual JK	54LS/74LS114	J,K		X	X	60	12	20	D64	31,6A,9A
3	Dual JK	9024,54/74109	J,K		X	X	25	22	90	D60	4L,6B,9B
4	Dual JK	54S/74S109	J,K		X	X	100	7.0	160	D60	4L,6B,9B
5	Dual JK	54LS/74LS109	J,K		X	X	50	15	20	D60	4L,6B,9B
6	Dual JK	54LS/74LS76	J,K		X	X	60	12	20	D58	4L,6B,9B
7	Dual JK	54LS/74LS107	J,K		—	X	60	12	20	D57a	31,6A,9A
8	Dual JK	54LS/74LS78	J,K		X	X	45	16	20	D82	31,6A,9A

### LATCHES/FLIP-FLOPS

Item	Function	DEVICE NO.	Data Inputs	Common Clear	Enable/Clock Inputs (Level)	Required Enable/Clock Pulse Width-ns (Typ)	Enable/Clock to Q Delay-ns (Typ)	Data to Q Delay ns (Typ)	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
9	4-Bit RS Latch	9314	4x( $\bar{R}_1\bar{S}_1$ )	L	1(L)	12	18	18	175	D146	4L,7B,9B
10	4-Bit RS Latch	93L14	4x( $\bar{R}_1\bar{S}_1$ )	L	1(L)	30	51	45	50	D146	4L,7B,9B
11	4-Bit RS Latch	54/74279	4x( $\bar{R}\bar{S}$ )	—	—	—	—	14	90	D147	4L,6B,9B
12	4-Bit RS Latch	54LS/74LS279	4x( $\bar{R}\bar{S}$ )	—	—	—	—	14	19	D147	4L,6B,9B
13	4-Bit D Latch	9314	4xD	L	1(L)	12	18	18	175	D146	4L,7B,9B
14	4-Bit D Latch	93L14	4xD	L	1(L)	30	51	45	50	D146	4L,7B,9B
15	4-Bit D Latch	54/7475	4xD	—	2(H)	20	16	16	160	D148	4L,6B,9B
16	4-Bit D Latch	5477	4xD	—	2(H)	20	16	16	160	D149	3I
17	4-Bit D Latch	54/74196	4xD	L	1(L)	20	23	20	240	D125	31,6A,9A
18	4-Bit D Latch	54LS/74LS196	4xD	L	1(L)	20	28	24	60	D125	31,6A,9A
19	4-Bit D Latch	54/74197	4xD	L	1(L)	20	23	20	240	D125	31,6A,9A
20	4-Bit D Latch	54LS/74LS197	4xD	L	1(L)	20	28	24	60	D125	31,6A,9A
21	4-Bit D Latch	54LS/74LS75	4xD	—	2(H)	20	10	10	32	D148	4L,6B,9B
22	4-Bit D Latch	54LS/74LS77	4xD	—	2(H)	20	10	10	32	D149	4L,6B,9B



# FAIRCHILD DIGITAL

## TTL

### LATCHES/FLIP-FLOPS (Cont'd)

Item	Function <sup>(1)</sup>	DEVICE NO.	Data Inputs	Common Clear	Enable/Clock Inputs (Level)	Required Enable/Clock Pulse Width-ns (Typ)	Enable/Clock to Q Delay-ns (Typ)	Data to Q Delay ns (Typ)	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
1	4-Bit D Latch	54LS/74LS375	4xD	—	2(H)	20	10	10	32	D190	4L,6B,9B
2	4-Bit D Flip-Flop	54/74175	4xD	L	1(L)	20	20	—	150	D150	4L,6B,9B
3	4-Bit D Flip-Flop	54LS/74LS175	4xD	L	1(L)	20	21	—	55	D150	4L,6B,9B
4	4-Bit D Flip-Flop	54S/74S175	4xD	L	1(L)	7.0	10	—	300	D150	4L,6B,9B
5	4-Bit D Flip-Flop	54/74298	4x2	—	1(L)	20	20	—	195	D156	4L,7B,9B
6	4-Bit D Flip-Flop	54LS/74LS298	4x2	—	1(L)	20	20	—	65	D156	4L,6B,9B
7	Dual 4-Bit D Latch	9308	8xD	2xL	2x2 AND	15	19	12	300	D151	4M,6N,9N
8	Dual 4-Bit D Latch	93L08	8xD	2xL	2x2 AND	30	32	32	100	D151	4M,6N,9N
9	Dual 4-Bit D Latch	54/74116	8xD	2xL	2x2 AND	15	19	12	300	D151	4M,6N,9N
10	Dual 4-Bit Addr. Latch	54LS/74LS256	8xD	X	2(L)	12	20	20	100	D87	4L,6B,9B
11	6-Bit D Flip-Flop	54/74174	6	L	1(L)	20	20	—	225	D152	4L,6B,9B
12	6-Bit D Flip-Flop	54S/74S174	6	L	1(L)	7.0	10	—	450	D152	4L,6B,9B
13	6-Bit D Flip-Flop	54LS/74LS174	6	L	1(L)	20	21	—	80	D152	4L,6B,9B
14	8-Bit D Flip-Flop(3S)	54LS <sup>(2)</sup> /74LS374	8xD	—	1(L)	10	23	23	135	D86	9Z
15	8-Bit D Latch	54LS <sup>(2)</sup> /74LS373	8xD	—	1(H)	15	24	16	120	D85	9Z
16	8-Bit D Latch	54LS <sup>(2)</sup> /74LS573	8xD	—	1(L)	—	—	—	—	D179	9Z
17	8-Bit Addr Latch	9334	1xD	L	1(L) 3 addr bits	11	18	28	280	D134	4L,7B,9B
18	8-Bit Addr Latch	93L34	1xD	L	1(L) 3 addr bits	18	30	37	70	D134	4L,6B,9B
19	8-Bit Addr Latch	54LS/74LS259	1xD	L	1(L) 3 addr bits	11	18	28	70	D134	4L,6B,9B
20	8-Bit Multi Port Reg	9338	1xD	—	1(L) 9 addr bits	7.0	24	35	425	D153	4L,7B,9B
21	8-Bit Multi Port Reg	93L38	1xD	—	1(L) 9 addr bits	19	38	52	105	D153	4L,7B,9B
22	4x4 Register File	54/74170	4xD	—	2	25	—	25	635	D154	4L,7B,9B
23	4x4 Register File	54LS/74LS170	4xD	—	2	25	—	26	125	D154	4L,7B,9B
24	4x4 Register File(3S)	54LS/74LS670	4xD	—	2	25	—	24	150	D154	4L,7B,9B

1. 3S = 3-state    2. To be announced

# FAIRCHILD DIGITAL

## TTL

### MULTIPLEXERS

Item	Function	DEVICE NO.	Enable Inputs	True Output <sup>(1)</sup>	Complement Output <sup>(1)</sup>	Select Delay ns (Typ)	Enable Delay ns (Typ)	Data Delay ns (Typ)	Power Dissipation mW (Typ)	Fan-Out (UL) <sup>(2)</sup>	Logic/Connection Diagram	Package(s)
1	Quad 2-Input	9322	1	X	—	18	14	9.0	150	10	D157	4L,7B,9B
2	Quad 2-Input	93L22	1	X	—	23	20	14	45	5.0	D157	4L,7B,9B
3	Quad 2-Input	54/74157	1	X	—	18	14	9.0	150	10	D157	4L,7B,9B
4	Quad 2-Input	54LS/74LS157	1	X	—	18	14	9.0	49	5.0	D157	4L,6B,9B
5	Quad 2-Input	54S/74S157	1	X	—	10	8.0	5.0	250	12.5	D157	4L,6B,9B
6	Quad 2-Input	54LS/74LS158	1	—	X	16	12	7.0	24	5.0	D157	4L,6B,9B
7	Quad 2-Input	54S/74S158	1	—	X	8.0	7.0	4.0	195	12.5	D157	4L,6B,9B
8	Quad 2-Input	54LS/74LS257	1	3S	—	14	16	12	50	5.0	D157	4L,6B,9B
9	Quad 2-Input	54S/74S257	1	3S	—	10	13	5.0	320	12.5	D157	4L,6B,9B
10	Quad 2-Input	54LS/74LS258	1	—	3S	12	16	10	35	5.0	D157	4L,6B,9B
11	Quad 2-Input	54S/74S258	1	—	3S	8.0	13	4.0	280	12.5	D157	4L,6B,9B
12	Quad 2-Input	54/74298	Clocked (edge-trigger)	X Latched	—	—	20	—	195	10	D156	4L,7B,9B
13	Quad 2-Input	54LS/74LS298	Clocked (edge-trigger)	X Latched	—	—	20	—	65	5.0	D156	4L,6B,9B
14	Dual 4-Input	9309	—	X	X	15	—	10	150	10	D155	4L,6B,9B
15	Dual 4-Input	93L09	—	X	X	45	—	30	38	5.0	D155	4L,6B,9B
16	Dual 4-Input	54/74153	2	X	—	22	19	15	180	10	D158	4L,6B,9B
17	Dual 4-Input	54LS/74LS153	2	X	—	18	16	10	31	5.0	D158	4L,6B,9B
18	Dual 4-Input	54S/74S153	2	X	—	12	10	6.0	225	12.5	D158	4L,6B,9B
19	Dual 4-Input	54LS/74LS253	2	3S	—	18	16	10	43	5.0	D158	4L,6B,9B
20	Dual 4-Input	54S/74S253	2	3S	—	12	13	6.0	325	12.5	D158	4L,6B,9B
21	Dual 4-Input	54LS/74LS352	2	—	X	17	15	8.0	31	5.0	D180	4L,6B,9B
22	Dual 4-Input	54LS/74LS353	2	3S	3S	20	12	10	42	5.0	D181	4L,6B,9B
23	8-Input	9312	1	X	X	18	15	10	135	10	D159	4L,7B,9B
24	8-Input	93L12	1	X	X	54	45	30	36	5.0	D159	4L,7B,9B
25	8-Input	93S12	1	X	X	12	10	7.0	190	12.5	D159	4L,7B,9B
26	8-Input	9313	1	X	OC	25	22	18	135	10	D159	4L,7B,9B

1. OC = open collector, 3S = 3-state
2. Unit Load (UL) = 40  $\mu$ A HIGH/1.6 mA LOW

# FAIRCHILD DIGITAL

## TTL

### MULTIPLEXERS (Cont'd)

Item	Function	DEVICE NO.	Enable Inputs	True Output <sup>(1)</sup>	Complement Output <sup>(1)</sup>	Select Delay ns (Typ)	Enable Delay ns (Typ)	Data Delay ns (Typ)	Power Dissipation mW (Typ)	Fan-Out (UL) <sup>(2)</sup>	Logic/Connection Diagram	Packages (s)
1	8-Input	54/74151A	1	X	X	25	21	16	145	10	D160	4L,7B,9B
2	8-Input	54LS/74LS151	1	X	X	28	25	18	30	5.0	D160	4L,6B,9B
3	8-Input	54S/74S151	1	X	X	12	11	8.0	225	12.5	D160	4L,6B,9B
4	8-Input	54LS/74LS251	1	3S	3S	29	21	18	33	5.0	D160	4L,6B,9B
5	8-Input	54S/74S251	1	3S	3S	12	12	8.0	275	12.5	D160	4L,6B,9B
6	8-Input	74152A	1	—	X	18	—	8.0	130	10	D161	7A,9A
7	8-Input	54LS/74LS152	—	—	X	22	—	11	28	5.0	D161	4L,6B,9B
8	16-Input	54/74150	1	—	X	22	21	13	200	10	D162	4M,6N,9N

### DECODERS/DEMULTIPLEXERS

Item	Function	DEVICE NO.	Address Inputs	Active LOW Enable	Active LOW Outputs	Open Collector Output Voltage V	Address Delay ns (Typ)	Enable Delay ns (Typ)	Power Dissipation mW (Typ)	Fan-Out (UL) <sup>(2)</sup>	Logic/Connection Diagram	Package(s)
9	Dual 1-of-4	9321	2+2	1+1	4+4	—	14	12	150	10	D131	4L,6B,9B
10	Dual 1-of-4	93L21	2+2	1+1	4+4	—	43	34	45	5.0	D131	4L,6B,9B
11	Dual 1-of-4	54LS/74LS139	2+2	1+1	4+4	—	22	19	34	5.0	D131	4L,6B,9B
12	Dual 1-of-4	54S/74S139	2+2	1+1	4+4	—	7.5	6.0	300	12.5	D131	4L,6B,9B
13	Dual 1-of-4	54/74155	2	2+2	4+4	—	21	18	125	10	D132	4L,6B,9B
14	Dual 1-of-4	54LS/74LS155	2	2+2	4+4	—	18	15	30	5.0	D132	4L,6B,9B
15	Dual 1-of-4	54/74156	2	2+2	4+4	5.5	23	20	125	10	D132	4L,6B,9B
16	Dual 1-of-4	54LS/74LS156	2	2+2	4+4	5.5	33	26	31	5.0	D132	4L,6B,9B
17	1-of-8	9301	3	1	8	—	22	22	145	10	D133	4L,6B,9B
18	1-of-8	93L01	3	1	8	—	36	36	45	5.0	D133	4L,6B,9B
19	1-of-8	9302	3	1	8	5.5	30	30	145	10	D133	4L,6B,9B
20	1-of-8	9334	3	1	8	—	30	19	280	6.0	D134	4L,7B,9B

1. OC = open collector, 3S = 3-state

2. Unit Load (UL) = 40 $\mu$ A HIGH/1.6mA LOW

# FAIRCHILD DIGITAL

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### DECODERS/DEMULTIPLIPLEXERS (Cont'd)

Item	Function	DEVICE NO.	Address Inputs	Active LOW Enable	Active LOW Outputs	Open Collector Output Voltage <sup>y</sup>	Address Delays (Typ)	Enable Delays (Typ)	Power Dissipation mW (Typ)	Fan-Out (UL)*	Logic/Connection Diagram	Package(s)
1	1-of-8	93L34	3	1	8	—	46	30	70	5.0	D134	4L,7B,9B
2	1-of-8	54LS/74LS259	3	1	8	—	30	19	60	5.0	D134	4L,6B,9B
3	1-of-8	54/7445	3	1	8	30	40	40	215	80mA	D135	4L,7B,9B
4	1-of-8	54/7442	3	1	8	—	26	26	140	10	D135	4L,6B,9B
5	1-of-8	54LS/74LS42	3	1	8	—	17	17	35	5.0	D135	4L,6B,9B
6	1-of-8	54LS/74LS138	3	3	8	—	22	21	34	5.0	D136	4L,6B,9B
7	1-of-8	54S/74S138	3	3	8	—	8.0	7.0	225	12.5	D136	4L,6B,9B
8	1-of-8	54/74145	3	1	8	15	40	40	215	80mA	D135	4L,7B,9B
9	1-of-8 w/ Input Latches	93S137	3	2	8	—	14	8.0	310	12.5	D137	4L,6B,9B
10	1-of-10	9301	4 (BCD)	—	10	—	22	—	145	10	D133	4L,7B,9B
11	1-of-10	93L01	4 (BCD)	—	10	—	36	—	45	5.0	D133	4L,7B,9B
12	1-of-10	9302	4 (BCD)	—	10	5.5	30	—	145	10	D133	4L,7B,9B
13	1-of-10	54/7445	4 (BCD)	—	10	30	40	—	215	80mA	D135	4L,7B,9B
14	1-of-10	54/7442	4 (BCD)	—	10	—	26	—	140	10	D135	4L,6B,9B
15	1-of-10	54LS/74LS42	4 (BCD)	—	10	—	17	—	35	5.0	D135	4L,6B,9B
16	1-of-10	54/7443	4 Excess-3	—	10	—	26	—	140	10	D135	4L,6B,9B
17	1-of-10	54/7444	4 Excess-3 (Gray)	—	10	—	26	—	140	10	D135	4L,6B,9B
18	1-of-10	54/74145	4 (BCD)	—	10	15	40	—	215	80mA	D135	4L,7B,9B
9	1-of-16	9311	4	2	16	—	21	17	175	10	D138	4M,6N,9N
20	1-of-16	93L11	4	2	16	—	70	48	58	5.0	D138	4M,6N,9N
21	1-of-16	54/74154	4	2	16	—	22	19	180	10	D138	4M,6N,9N
22	1-of-10 Sequential (Decade Sequencer)	9319		Clock	10			25	300	10	D139	4L,7B,9B
23	1-of-10 Sequential (Decade Sequencer)	9320		Clock	10	3K Pull- up		25	310	10	D139	4L,7B,9B

\*Unit Load (UL) = 40 $\mu$ A HIGH/1.6mA LOW

# FAIRCHILD DIGITAL

## TTL

### REGISTERS

Item	Function	DEVICE NO.	No. of Bits	Serial Entry	Parallel Entry No. of Bits *	Clock Edge	Max Clock Freq MHz (Typ)	Clock to Output Delay ns (Typ)	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
1	Parallel-in/Parallel-out Shift Right	9300	4	J, $\bar{K}$	4S		38	16	300	D163	4L,7B,9B
2	Parallel-in/Parallel-out Shift Right	93H00	4	J, $\bar{K}$	4S		55	12	325	D163	4L,7B,9B
3	Parallel-in/Parallel-out Shift Right	93L00	4	J, $\bar{K}$	4S		17	28	75	D163	4L,7B,9B
4	Parallel-in/Parallel-out Shift Right	93S00	4	J, $\bar{K}$	4S		105	10	350	D163	4L,7B,9B
5	Parallel-in/Parallel-out Shift Right	93H72	4	D	4S		60	12	475	D164	4L,7B,9B
6	Parallel-in/Parallel-out Shift Right	54/7494	4	D	4S		20	25	175	D165	4L,7B,9B
7	Parallel-in/Parallel-out Shift Right	54/7495	4	D	4S		36	20	195	D166	3I,7A,9A
8	Parallel-in/Parallel-out Shift Right	54LS/74LS95	4	D	4S		36	20	65	D166	3I,6A,9A
9	Parallel-in/Parallel-out Shift Right	54/7496	5	D	5A		10	25	240	D167	4L,7B,9B
10	Parallel-in/Parallel-out Shift Right	54/74178	4	D	4A		39	23	230	D168	3I,7A,9A
11	Parallel-in/Parallel-out Shift Right	54/74179	4	D	4A		39	23	230	D169	4L,7B,9B
12	Parallel-in/Parallel-out Shift Right	54/74195	4	J, $\bar{K}$	4S		39	17	195	D163	4L,7B,9B
13	Parallel-in/Parallel-out Shift Right	54LS/74LS195	4	J, $\bar{K}$	4S		39	17	70	D163	4L,6B,9B
14	Parallel-in/Parallel-out Shift Right	54/74199	8	J, $\bar{K}$	8S		35	20	360	D170	4M,6N,9N
15	Parallel-in/Parallel-out Shift Right	54LS/74LS295	4	D	4S		28	40	75	D171	3I,6A,9A
16	Parallel-in/Parallel-out Bi-Directional	54/74194	4	DR, DL	4S		36	16	195	D172	4L,7B,9B
17	Parallel-in/Parallel-out Bi-Directional	54S/74S194	4	DR, DL	4S		105	10	425	D172	4L,7B,9B

\* A = asynchronous, S = synchronous

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REGISTERS (Cont'd)

Item	Function	DEVICE NO.	No. of Bits	Serial Entry	Parallel Entry No. of Bits <sup>(1)</sup>	Clock Edge	Max Clock Freq MHz (Typ)	Clock to Output Delay-ns (Typ)	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
1	Parallel-in/Parallel-out Bi-Directional	54LS/74LS194	4	DR, DL	4S		36	16	75	D172	4L,6B,9B
2	Parallel-in/Parallel-out Bi-Directional	54/74198	8	DR, DL	8S		35	19	360	D173	4M,6N,9N
3	Parallel-in/Parallel-out Bi-Directional	54LS <sup>(2)</sup> /74LS299	8	D	4S		40	15	175	D88	9Z
4	Parallel-in/Parallel-out Bi-Directional	54LS <sup>(2)</sup> /74LS323	8	D	8S		40	15	175	D89	9Z
5	Serial-in/Parallel-out	54/74164	8	2D	—		36	19	185	D174	3I,7A,9A
6	Serial-in/Parallel-out	54LS/74LS164	8	2D	—		18	50	95	D174	3I,6A,9A
7	Parallel-in/Parallel-out	54/74174	6	—	6S		35	21	230	D152	4L,7B,9B
8	Parallel-in/Parallel-out	54S/74S174	6	—	6S		110	11	450	D152	4L,7B,9B
9	Parallel-in/Parallel-out	54LS/74LS174	6	—	6S		40	21	65	D152	4L,6B,9B
10	Parallel-in/Parallel-out	54/74175	4	—	4S		35	21	150	D150	4L,7B,9B
11	Parallel-in/Parallel-out	54S/74S175	4	—	4S		110	11	300	D150	4L,7B,9B
12	Parallel-in/Parallel-out	54LS/74LS175	4	—	4S		40	21	45	D150	4L,6B,9B
13	Parallel-in/Parallel-out	54/74298	4	—	2D Mux		30	21	195	D156	4L,7B,9B
14	Parallel-in/Parallel-out	54LS/74LS298	4	—	2D Mux		30	21	65	D156	4L,6B,9B
15	Parallel-in/Parallel-out	54LS <sup>(2)</sup> /74LS395	4	D	4S		35	21	75	D196	4L,7B,9B
16	Parallel-in/Parallel-out	54LS <sup>(2)</sup> /74LS273	8	—	8S		45	18	85	D90	9Z
17	Parallel-in/Parallel-out	54LS <sup>(2)</sup> /74LS374	8	—	8S		55	20	135	D86	9Z
18	Parallel-in/Parallel-out	54LS <sup>(2)</sup> /74LS377	8	—	8S		45	18	85	D91	9Z
19	Parallel-in/Parallel-out	54LS/74LS378	6	—	6S		45	20	65	D92	4L,6B,9B
20	Parallel-in/Parallel-out	54LS/74LS379	4	—	4S		45	15	75	D93	4L,6B,9B
21	Parallel-in/Parallel-out	54LS <sup>(2)</sup> /74LS398	4	—	2D Mux		35	20	37	D95	9Z

1. A = asynchronous, S = synchronous

2. To be announced

# FAIRCHILD DIGITAL

## TTL

### REGISTERS (Cont'd)

Item	Function	DEVICE NO.	No. of Bits	Serial Entry	Parallel Entry No. of Bits <sup>(1)</sup>	Clock Edge	Max Clock Freq MHz (Typ)	Clock to Output Delay-ns (Typ)	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
1	Parallel-in/Parallel-out	<b>54LS/74LS399</b>	4	—	2D Mux		35	20	37	D96	4L,6B,9B
2	Parallel-in/Parallel-out	<b>54LS<sup>(3)</sup>/74LS574</b>	8	—	8S		55	20	135	D97	9Z
3	Parallel-in/Serial-out	<b>54/7494</b>	4	D	4S		10	25	175	D165	4L,7B,9B
4	Parallel-in/Serial-out	<b>54/74165</b>	8	D	8A		26	19	210	D175	4L,7B,9B
5	Parallel-in/Serial-out	<b>54/74166</b>	8	D	8S		35	20	360	D176	4L,7B,9B
6	Parallel-in/Serial-out	<b>54LS/74LS165</b>	8	D	8A		40	19	105	D175	4L,7B,9B
7	Parallel-in/Parallel-out Shift Right	<b>54LS/74LS95B</b>	4	D	4S		35	20	65	D166	3I,6A,9A
8	Parallel-in/Parallel-out Shift Right	<b>54LS/74LS195</b>	4	J,K	4S		39	17	70	D163	4L,6B,9B
9	Parallel-in/Parallel-out Shift Right	<b>54LS/74LS295A</b>	4	D	4S		28	40	75	D171	3I,6A,9A
10	Serial-in/Serial-out	<b>9328</b>	16	2x2D Mux	—		30	17	300	D177	4L,7B,9B
11	Serial-in/Serial-out	<b>93L28</b>	16	2x2D Mux	—		15	42	80	D177	4L,7B,9B
12	Serial-in/Serial-out	<b>54/7491</b>	8	2D	—		18	25	175	D178	3I,7A,9A
13	Multiport Registers	<b>9338</b>	8	D	—		25	23	425	D153	4L,7B,9B
14	Multiport Registers	<b>93L38</b>	8	D	—		20	38	105	D153	4L,7B,9B
15	Multiport Registers	<b>54/74170</b>	16	—	4A		—	25	635	D154	4L,7B,9B
16	Multiport Registers	<b>54LS/74LS170</b>	16	—	4A		—	25	125	D154	4L,7B,9B
17	Multiport Registers	<b>54LS/74LS670</b>	16	—	4A		—	30	150	D154	4L,7B,9B
18	Quad D (3S) <sup>(2)</sup>	<b>54/74173</b>	4	—	4S		35	28	250	D189	4L,7B,9B
19	Quad D (3S) <sup>(2)</sup>	<b>54LS/74LS173</b>	4	—	4S		30	18	35	D189	4L,7B,9B
20	Successive Approx Register	<b>54LS/74LS502</b>	8	D	—		25	18	325	D98	4I,6B,9B

1. A = asynchronous, S = synchronous
2. 3S = 3-state
3. To be announced

# FAIRCHILD DIGITAL

## TTL

### COUNTERS

Item	Function	DEVICE NO.	Modulo	Parallel Load *	Clock Transition	Max Clock Rate MHz (Typ)	Clock to Q Output Delay-ns (Typ)	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
1	Asynchronous	54/74290	2x5	—	⌋	40	33	160	D120	3I,6A,9A
2	Asynchronous	54/7490A	2x5	—	⌋	40	33	160	D121	3I,6A,9A
3	Asynchronous	54LS/74LS90	2x5	—	⌋	50	33	45	D121	3I,6A,9A
4	Asynchronous	54/7492	2x6	—	⌋	40	33	160	D122	3I,6A,9A
5	Asynchronous	74LS92	2x6	—	⌋	50	40	45	D122	6A,9A
6	Asynchronous	54/74293	2x8	—	⌋	40	46	160	D123	3I,6A,9A
7	Asynchronous	54/7493A	2x8	—	⌋	40	46	160	D124	3I,6A,9A
8	Asynchronous	54LS/74LS93	2x8	—	⌋	50	46	45	D124	3I,6A,9A
9	Asynchronous	54/74176	2x5	A	⌋	50	34	150	D125	3I,6A,9A
10	Asynchronous	54/74177	2x8	A	⌋	50	50	150	D125	3I,6A,9A
11	Asynchronous	54/74196	2x5	A	⌋	70	38	240	D125	3I,6A,9A
12	Asynchronous	54LS/74LS196	2x5	A	⌋	60	48	60	D125	3I,6A,9A
13	Asynchronous	54/74197	2x8	A	⌋	70	52	240	D125	3I,6A,9A
14	Asynchronous	54LS/74LS197	2x8	A	⌋	70	60	60	D125	3I,6A,9A
15	Asynchronous	54LS/74LS290	2x5	—	⌋	42	12	45	D120	3I,6A,9A
16	Asynchronous	54LS/74LS293	2x8	—	⌋	42	12	45	D123	3I,6A,9A
17	Asynchronous	54LS/74LS390	2x5	—	⌋	60	36	64	D194	4L,6B,9B
18	Asynchronous	54LS/74LS393	2x8	—	⌋	60	36	64	D195	4L,6B,9B
19	Asynchronous	54LS/74LS490	2x5	—	⌋	50	6.0	100	D84	4L,6B,9B
20	Variable Modulo	9305	2x5,6,7,8	—	⌋	26	44	210	D126	3I,7A,9A
21	Variable Modulo	93S05	2x5,6,7,8	—	⌋	100	20	300	D126	3I,7A,9A
22	Synchronous	9310	10 Presetable	S	⌋	45	15	325	D127	4L,7B,9B
23	Synchronous	93L10	10 Presetable	S	⌋	23	26	85	D127	4L,7B,9B
24	Synchronous	93S10	10 Presetable	S	⌋	90	9.0	410	D127	4L,7B,9B
25	Synchronous	9316	16 Presetable	S	⌋	45	15	325	D127	4L,7B,9B

\*A = asynchronous, S = synchronous



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## TTL

### COUNTERS (Cont'd)

Item	Function	DEVICE NO.	Modulo	Parallel Load*	Clock Transition	Max Clock Rate MHz (Typ)	Clock to Q Output Delay-ns (Typ)	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
1	Synchronous	93L16	16 Presettable	S	┌	23	26	85	D127	4L,7B,9B
2	Synchronous	93S16	16 Presettable	S	┌	90	9.0	410	D127	4L,7B,9B
3	Synchronous	54/74160	10 Presettable	S	┌	32	17	315	D127	4L,7B,9B
4	Synchronous	54LS/74LS160	10 Presettable	S	┌	45	15	95	D127	4L,7B,9B
5	Synchronous	54/74161	16 Presettable	S	┌	32	17	315	D127	4L,7B,9B
6	Synchronous	54LS/74LS161	16 Presettable	S	┌	45	15	95	D127	4L,7B,9B
7	Synchronous	54/74162	10 Presettable	S	┌	32	17	315	D128	4L,7B,9B
8	Synchronous	54LS/74LS162	10 Presettable	S	┌	45	15	95	D128	4L,7B,9B
9	Synchronous	54/74163	16 Presettable	S	┌	32	17	315	D128	4L,7B,9B
10	Synchronous	54LS/74LS163	16 Presettable	S	┌	45	15	95	D128	4L,7B,9B
11	Up/Down	54LS/74LS168	10 Presettable	—	┌	32	15	100	D83	4L,6B,9B
12	Up/Down	54LS/74LS169	16 Presettable	—	┌	32	15	100	D83	4L,6B,9B
13	Up/Down	54/74192	10	A	┌	30	30	325	D129	4L,7B,9B
14	Up/Down	54LS/74LS192	10	A	┌	40	30	85	D129	4L,7B,9B
15	Up/Down	54/74193	16	A	┌	30	30	325	D129	4L,7B,9B
16	Up/Down	54LS/74LS193	16	A	┌	40	30	85	D129	4L,7B,9B
17	Up/Down	54/74190	10	A	┌	25	20	325	D130	4L,7B,9B
18	Up/Down	74LS190	10	A	┌	40	20	90	D130	7B,9B
19	Up/Down	54/74191	16	A	┌	25	20	325	D130	4L,7B,9B
20	Up/Down	74LS191	16	A	┌	40	20	90	D130	7B,9B

\*A = asynchronous, S = synchronous

# FAIRCHILD DIGITAL

## TTL

### COUNTERS (Cont'd)

Item	Function	DEVICE NO.	Modulo	Parallel Load <sup>(1)</sup>	Clock Transition	Max Clock Rate MHz (Typ)	Clock to Q Output Delay ns (Typ)	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
1	Up/Down	54LS <sup>(2)</sup> /74LS568	10 Presettable	S	┘	—	—	—	D99	9Z
2	Up/Down	54LS <sup>(2)</sup> /74LS569	16 Presettable	S	┘	—	—	—	D99	9Z
3	Rate Multiplier	54/7497	M.f./64	—	┘	32	20	400	D187	4L,7B,9B
4	Rate Multiplier	54/74167	M.f./10	—	┘	32	20	325	D188	4L,7B,9B

### MONOSTABLES (ONE-SHOTS)

Item	Function	DEVICE NO.	Pulse Width Variation (%)		No. of Inputs		Resettable	Min Output (I <sub>w</sub> ) ns	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
			vs. Temp	vs. VCC	Positive	Negative					
5	Single Retriggerable	9600	±1.5	±1.5	3	2	X	75	125	D40	3I,6A
6	Single Retriggerable	9601	±2.7	±1.0	2	2	—	50	125	D41	3I,6A,9A
7	Dual Retriggerable	9602	±1.5	±1.5	1	1	X	72	250	D42	4L,6B,9B
8	Dual Retriggerable	96L02	±0.4	±1.5	1	1	X	110	50	D42	4L,6B,9B
9	Dual Retriggerable	96S02	±0.2	±0.2	1	1	X	27	250	D42	4L,6B,9B
10	Single Non-Retriggerable	9603,54/74121	±0.2	±0.15	1	2	—	40	90	D43	3I,6A,9A
11	Single Retriggerable	54/74122	±2.7	±1.0	2	2	X	45	115	D44	3I,6A,9A
12	Dual Retriggerable	54/74123	±2.7	±1.0	1	1	X	45	230	D45	4L,6B,9B
13	Dual Retriggerable	96LS02	±0.5	±0.7	1	1	X	35	175	D42	4L,6B,9B

1. A = asynchronous, S = synchronous
2. To be announced

FAIRCHILD DIGITAL

TTL

LINE AND BUS DRIVERS

Item	Function (1)	DEVICE NO.	Companion Receiver	Supply Voltages V	V <sub>OH</sub> V	V <sub>OL</sub> V	t <sub>pd</sub> ns (Typ)	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
1	Quad 2 NAND Driver	54/7437	Any TTL	5.0	2.4	0.4	10	108	D2	3I,6A,9A
2	Quad 2 NAND Driver	54/7438	96106	5.0	5.5	0.4	13	98	D2	3I,6A,9A
3	Quad 2 NAND Driver (OC)	96101	96106	5.0	5.5	0.6	13	98	D3	3I,6A,9A
4	Dual 2 NAND Driver	9009	Any TTL	5.0	2.4	0.4	10	54	D5	3I,6A
5	Dual 2 NAND Driver	54/7440	Any TTL	5.0	2.4	0.4	11	52	D5	3I,6A,9A
6	Dual 2 NAND Driver	54H/74H40	Any TTL	5.0	2.4	0.4	7.0	88	D5	3I,6A,9A
7	Dual 2 NAND Driver	54S/ 74S40	Any TTL	5.0	2.7	0.5	4.0	88	D5	3I,6A,9A
8	Dual 2 NAND 50Ω Driver	54S/ 74S140	Any TTL	5.0	2.0	0.5	4.0	88	D5	3I,6A,9A
9	Quad Inverting Bus Transceiver	54LS/ 74LS242	Any TTL	5.0	2.4	0.4	12	175	D75	3I,6A,9A
10	Quad Non-inverting Bus Transceiver	54LS/ 74LS243	Any TTL	5.0	2.4	0.4	12	180	D76	3I,6A,9A
11	Octal Inverting Bus Driver (3S)	54LS <sup>(2)</sup> / 74LS240	Any TTL	5.0	2.4	0.4	12	175	D73	9Z
12	Octal Non-inverting Bus Driver (3S)	54LS <sup>(2)</sup> / 74LS241	Any TTL	5.0	2.4	0.4	12	180	D74	9Z
13	Octal Non-inverting Bus Driver (3S)	54LS <sup>(2)</sup> / 74LS244	Any TTL	5.0	2.4	0.4	12	180	D77	9Z
14	Octal Bus Transceiver	54LS <sup>(2)</sup> / 74LS245	Any TTL	5.0	2.4	0.4	12	375	D78	9Z
15	Octal Inverting Bus Transceiver	54LS <sup>(2)</sup> / 74LS540	Any TTL	5.0	2.4	0.4	12	175	D80	9Z
16	Octal Non-inverting Bus Transceiver	54LS <sup>(2)</sup> / 74LS541	Any TTL	5.0	2.4	0.4	12	180	D81	9Z

1. OC = open collector, 3S = 3-state

2. To be announced

# FAIRCHILD DIGITAL

## TTL

### DISPLAY DECODER/DRIVERS

Item	Function *	DEVICE NO.	Output Current mA	Output Voltage V	Active HIGH/LOW	Ripple Blanking	Blanking Above BCD 9-Input	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
1	1-of-10 Cold Cathode	<b>54/7441</b>	7.0	55	L	—	—	145	D140	4L,6B,9B
2	1-of-10-Cold Cathode	<b>54/74141</b>	7.0	55	L	—	X	80	D140	4L,7B,9B
3	1-of-10 Driver (OC)	<b>9302</b>	16	5.5	L	—	X	145	D133	4L,6B,9B
4	1-of-10 Driver (OC)	<b>54/7445</b>	80	30	L	—	X	215	D135	4L,7B,9B
5	1-of-10 Driver (OC)	<b>54/74145</b>	80	15	L	—	X	215	D135	4L,7B,9B
6	7-Seg Decoder	<b>9307</b>	11	5.5	H	X	—	165	D141	4L,7B,9B
7	7-Seg Decoder	<b>54/7448</b>	8.0	5.5	H	X	—	265	D141	4L,7B,9B
8	7-Seg Decoder	<b>5449</b>	9.6	5.5	H	X	—	165	D142	3I
9	1-of-10 Cold Cathode	<b>9315</b>	7.0	55	L	—	—	145	D140	4L,6B,9B
10	7-Seg Decoder/Driver	<b>9317B</b>	40	20	L	X	X	220	D143	4L,7B,9B
11	7-Seg Decoder/Driver	<b>9317C</b>	20	30	L	X	X	220	D143	4L,7B,9B
12	7-Seg Decoder/Driver	<b>54/7446</b>	40	30	L	X	—	320	D143	4L,7B,9B
13	7-Seg Decoder/Driver	<b>54/7447</b>	40	15	L	X	—	320	D143	4L,7B,9B
14	7-Seg Decoder/Driver	<b>54LS/74LS47</b>	12	15	L	X	—	35	D143	4L,6B,9B
15	7-Seg Decoder/Driver	<b>54LS/74LS48</b>	1.3	5.5	H	X	—	125	D141	4L,6B,9B
16	7-Seg Decoder/Driver	<b>54LS/74LS49</b>	1.3	5.5	H	X	—	40	D142	3I,6A,9A
17	7-Seg Decoder/Driver	<b>54LS/74LS247</b>	12	15	L	X	—	30	D143	4L,6B,9B
18	7-Seg Decoder/Driver	<b>54LS/74LS248</b>	1.3	5.5	H	X	—	125	D141	4L,6B,9B
19	7-Seg Decoder/Driver	<b>54LS/74LS249</b>	1.3	5.5	H	X	—	40	D141	4L,6B,9B
20	7-Seg LED Driver Common Cathode	<b>9368</b>	20	1.7	H	X	—	225	D144	6B,9B
21	7-Seg LED Driver Common Anode (OC)	<b>9370</b>	25	5.5	L	X	—	350	D145	6B,9B
22	7-Seg LED Driver Common Anode	<b>9374</b>	15	10	L	X	—	175	D145	6B,9B

\* OC = open collector

# FAIRCHILD DIGITAL

## TTL

### ARITHMETIC OPERATORS

Item	Function	DEVICE NO.	Description *	No. of Bits	t <sub>pd</sub> ns	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
1	Adder	54/7480	Gated 1-Bit with Carry	1	47	105	D100	3I,6A,9A
2	Adder	9304	Dual 1-Bit with Carry	2	26	150	D101	3I,6A,9A
3	Adder	93H183 54H/74H183	Dual 1-Bit with Carry	2	12	250	D102	3I,6A,9A
4	Adder	54/7482	Full 2-Bit with Carry	2	38	176	D103	3I,6A,9A
5	Adder	54/7483A	Full Binary 4-Bit w/Carry	4	16	330	D104	4L,6B,9B
6	Adder	54LS/74LS83	Full Binary 4-Bit w/Carry	4	15	95	D104	4L,6B,9B
7	Adder	54/74283	Full Binary 4-Bit w/Carry	4	16	330	D105	4L,6B,9B
8	Adder	54LS/74LS283	Full Binary 4-Bit w/Carry	4	15	95	D105	4L,6B,9B
9	Arithmetic Logic Unit	9340	ALU with Internal CLA	4	24	400	D106	4M,6N,9N
10	Arithmetic Logic Unit	54/74181	ALU with External CLA	4	27	450	D107	4M,6N,9N
11	Arithmetic Logic Unit	93L41	ALU with External CLA	4	35	120	D107	4M,6N,9N
12	Arithmetic Logic Unit	74LS181	ALU with External CLA	4	20	105	D107	6N,9N
13	Arithmetic Logic Unit	93S41	ALU with External CLA	4	12	500	D107	4M,6N,9N
14	Carry Lookahead	54/74182	CLA generator for 9341	—	12	180	D108	4L,6B,9B
15	Carry Lookahead	54S/74S182	CLA generator for 93S41/9405	—	7.0	260	D108	4L,6B,9B
16	Carry Lookahead	54LS/74LS182	CLA for 74LS181	4	20	60	D108	4L,6B,9B
17	Comparator	9386 (8242)	4-Bit Ident Excl NOR	4	18	170	D24	3I,6A,9A
18	Comparator	54/7485	4-Bit Magnitude w/Exp	4	21	275	D109	4L,7B,9B
19	Comparator	54LS/74LS85	4-Bit Magnitude w/Exp	4	21	52	D109	4L,7B,9B
20	Comparator	9324	5-Bit Magnitude	5	20	210	D110	4L,7B,9B
21	Comparator	93L24	5-Bit Magnitude	5	55	55	D110	4L,7B,9B
22	Comparator	93S46	6-Bit Identity w/Exp	6	9.0	225	D111	4L,6B,9B
23	Comparator	93S47	6-Bit Identity (OC)	6	10	175	D112	4L,6B,9B
24	Encoder	9318	Priority 8-Bit w/Exp	8	13	250	D113	4L,6B,9B
25	Encoder	93L18	Priority 8-Bit w/Exp	8	24	75	D113	4L,6B,9B

\* CLA = carry lookahead, OC = open collector

# FAIRCHILD DIGITAL

## TTL

### ARITHMETIC OPERATORS (Cont'd)

Item	Function	DEVICE NO.	Description	No. of Bits	$t_{pd}$ ns	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
1	Multiplier	9344	Binary 4x2-Bit	4x2	30	550	D114	4M,6N,9N
2	Multiplier	93S43	2s Complement	4x2	20	490	D115	4M,6N,9N
3	Parity Generator/Check	54/74180	8-Bit Parity Gen/Check	8	40	170	D116	3I,6A,9A
4	Parity Generator/Check	93S62	9-Bit Parity Gen/Check	9	20	225	D117	3I,6A,9A
5	Parity Generator/Check	9348	12-Bit Parity Gen/Check	12	40	235	D118	4L,6B,9B
6	True/Complement	54H/74H87	4-Bit True/Complement Zero/One Element	4	14	270	D119	3I,6A,9A
7	True/Complement	54S/74S135	Dual 2-Bit Exclusive OR/NOR	4	9	325	D23	4L,6B,9B

## ECL

### SSI FUNCTIONS

Item	Function	DEVICE NO.*	$t_{pd}$ ns (Typ)	Power Dissipation mW (Typ)	Logic/ Connection Diagram	Package(s)
<b>OR Gates</b>						
8	Dual 3/3 OR	95110	2.5	145	E81	6B
9	Dual 3/3 OR	10110/10510	2.4	145	E81	4L,6B,9B
10	Dual 3/3 OR	10210/10610	1.5	160	E81	4L,6B
11	Quad OR	95103	2.0	100	E76	6B
12	Quad OR	10103/10503	2.0	100	E76	4L,6B,9B
13	Quad Exc OR	10113/10513	3.0	170	E84	4L,6B,9B
<b>Quad AND Gates</b>						
14	Quad AND	10104/10504	2.4	145	E83	4L,6B,9B
<b>NOR Gates</b>						
15	Dual 3/3 NOR	95111	2.5	145	E82	6B
16	Dual 3/3 NOR	10111/10511	2.4	145	E82	4L,6B,9B
17	Dual 3/3 NOR	10211/10611	1.5	160	E82	4L,6B

\*105XX and 106XX = Military temperature range

# FAIRCHILD DIGITAL

## ECL

### SSI FUNCTIONS (Cont'd)

Item	Function	DEVICE NO.*	t <sub>pd</sub> ns (Typ)	Power Dissipation mW (Typ)	Logic/ Connection Diagram	Package(s)
<b>NOR Gates (Cont'd)</b>						
1	Triple NOR	95106	2.0	75	E78	6B
2	Triple NOR	10106/10506	2.0	75	E78	4L,6B,9B
3	Quad NOR	9504	2.3	280	E68	6B
4	Quad NOR	95H04	1.6	250	E68	6B
5	Quad NOR	95H24	1.6	210	E68	6B
6	Quad NOR	95L24	2.0	80	E68	6B
7	Quad NOR	95004	2.0	90	E73	6B
8	Quad NOR	95102	2.0	100	E75	6B
9	Quad NOR	10100/10500	2.0	100	E96	4L,6B,9B
10	Quad NOR	10102/10502	2.0	100	E75	4L,6B,9B
<b>OR/NOR Gates</b>						
11	Dual OR/NOR	9502	2.3	180	E66	6B
12	Dual OR/NOR	95H02	1.6	170	E66	6B
13	Dual OR/NOR	95H22	1.6	130	E66	6B
14	Dual OR/NOR	95L22	2.0	55	E66	6B
15	Dual OR/NOR	95002	2.0	50	E71	6B
16	Dual OR/NOR	95109	2.0	50	E80	6B
17	Dual OR/NOR	10109/10509	2.0	50	E80	4L,6B,9B
18	Dual OR/NOR	11C01	0.7	125	E94	4L,6B
19	Triple OR/NOR	9503	2.3	250	E67	6B
20	Triple OR/NOR	95H03	1.6	225	E67	6B
21	Triple OR/NOR	95H23	1.6	165	E67	6B
22	Triple OR/NOR	95L23	2.0	65	E67	6B
23	Triple OR/NOR	95003	2.0	75	E72	6B
24	Triple OR/NOR	95105	2.0	75	E77	6B
25	Triple OR/NOR	10105/10505	2.0	75	E77	4L,6B,9B
26	Triple OR/NOR	100101	0.7	120	F89	4Q,6Q
27	Triple Exc OR/NOR	95107	2.4	115	E79	6B
28	Triple Exc OR/NOR	10107/10507	2.4	115	E79	4L,6B,9B
29	Quad OR/NOR	95101	2.0	100	E74	6B

\*105XX and 106XX = Military temperature range

# FAIRCHILD DIGITAL

## ECL

### SSI FUNCTIONS (Cont'd)

Item	Function	DEVICE NO.*	t <sub>pd</sub> ns (Typ)	Power Dissipation mW (Typ)	Logic/ Connection Diagram	Package(s)
<b>OR/NOR Gates (Cont'd)</b>						
1	Quad OR/NOR	10101/10501	2.0	100	E74	4L,6B,9B
2	Quint OR/NOR	100102	0.7	230	E90	4Q,6Q
3	Quint Exc OR/NOR	100107	0.7	300	E91	4Q,6Q
<b>OR/AND Gates</b>						
4	2-Wide OA	10118/10518	2.3	105	E86	4L,6B,9B
5	4-Wide OA	9505	2.6	315	E69	6B
6	4-Wide OA	10119/10519	2.3	105	E87	4L,6B,9B
<b>OR/AND/Invert Gates</b>						
7	Triple 2-Wide OA/OAI	100117	0.7	240	E92	4Q,6Q
8	5-Wide OA/OAI	100118	0.7	175	E93	4Q,6Q
9	Dual 2-Wide OAI	10117/10517	2.3	105	E85	4L,6B,9B
10	4-Wide OAI	10121/10521	2.3	105	E88	4L,6B,9B
<b>AND/NAND Gates</b>						
11	Quad AND/NAND	9507	3.2	315	E70	6B

### LATCHES/FLIP-FLOPS

Item	Function	DEVICE NO.*	Data Inputs	Direct Set/Clear or Common Clear	Enable/Clock Inputs (Level)	Required Enable/Clock Pulse Width-ns (Typ)	Enable /Clock to Q Delay-ns (Typ)	Data to Q Delay ns (Typ)	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
12	750 MHz D Flip-Flop	11C06	2	No	┌	0.7	1.0	1.0	210	E43	6B
13	Dual D Flip-Flop	9528	2	Yes	┌	3.0	3.6	3.6	330	E26	6B
14	Dual D Flip-Flop	95H28	2	Yes	┌	2.0	3.0	3.0	330	E26	6B
15	Dual D Flip-Flop	95231	2	Yes	┌	2.5	2.8	2.8	245	E31	6B
16	Dual D Flip-Flop	10131/10531	2	Yes	┌	3.0	3.0	2.2	235	E31	4L,6B,9B
17	Dual D Flip-Flop	10231/10631	2	Yes	┌	2.5	2.8	2.8	245	E31	4L,6B,9B
18	Triple D Flip-Flop	100131	3	Yes	┌	1.0	1.3	0.85	475	E46	4Q,6Q
19	Hex D Flip-Flop	10176/10576	6	No	┌	3.0	3.0	5.0	455	E40	4L,6B,9B

\*105XX and 106XX = Military temperature range



# FAIRCHILD DIGITAL

## ECL

### LATCHES/FLIP-FLOPS (Cont'd)

Item	Function	DEVICE NO.*	Data Inputs	Direct Set/Clear or Common Clear	Enable/Clock Inputs (Level)	Required Enable/Clock Pulse Width-ns (Typ)	Enable /Clock to Q Delay-ns (Typ)	Data to Q Delay ns (Typ)	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
1	Hex D Flip-Flop	10186/10586	6	Yes	⌋	3.0	3.0	5.0	455	E41	4L,6B,9B
2	Hex D Flip-Flop	100151	6	Yes	⌋	1.4	1.1	0.75	550	E48	4Q,6Q
3	Master/Slave D Flip-Flop	11C70	1	Yes	⌋	0.7	1.0	1.0	210	E44	6B
4	JK Flip-Flop	95H29	1	Yes	⌋	2.0	3.0	3.0	180	E27	6B
5	JK Flip-Flop	95029	3	Yes	⌋	2.0	2.8	2.8	185	E29	6B
6	Dual JK Flip-Flop	10135/10535	2	No	⌋	2.5	3.0	3.0	235	E35	4L,6B,9B
7	Dual D Latch	95130	2	Yes	H	2.5	2.7	2.5	135	E30	6B
8	Dual D Latch	10130/10530	2	Yes	H	2.5	2.7	2.5	135	E30	4L,6B,9B
9	Triple D Latch	100130	3	Yes	H	1.0	1.3	0.85	400	E45	4Q,6Q
10	Quad Latch	9534	4	Yes	L	2.2	5.6	4.3	415	E28	6B
11	Quad Latch	10133/10533	4	No	L	4.0	4.0	4.0	310	E33	4L,6B,9B
12	Quad Latch	10153/10553	4	No	H	4.0	4.0	4.0	310	E36	4L,6B,9B
13	Quad Latch	10168/10568	4	No	L	4.0	4.0	4.0	310	E39	4L,6B,9B
14	Quint Latch	10175/10575	5	Yes	H	3.3	3.3	2.5	405	E49	4L,6B,9B
15	Hex D Latch	100150	6	Yes	H	1.4	1.1	0.75	420	E37	4Q,6Q
16	Dual Mux/Latch	10132/10532	4	Yes	H	4.5	4.5	3.5	230	E32	4L,6B,9B
17	Dual Mux/Latch	10134/10534	4	No	H	4.6	4.5	3.0	230	E34	4L,6B,9B
18	Quad Mux/Latch	10173/10573	8	No	H	4.5	4.5	2.5	310	E38	4L,6B,9B
19	Quad Mux/Latch	100155	4+4	Yes	H	1.2	1.2	0.85	430	E47	4Q,6Q

\*105XX and 106XX = Military temperature range

FAIRCHILD DIGITAL

ECL

MULTIPLEXERS

Item	Function	DEVICE NO.*	Enable Inputs	True Output	Complement Output	Select Delay ns (Typ)	Enable Delay ns (Typ)	Data Delay ns (Typ)	Power Dissipation mW (Typ)	Fan-Out	Logic/Connection Diagram	Package(s)
1	Dual Multiplexer	10174/10574	1	2	0	4.0	2.0	3.0	210	50 Ω Line	E54	4L,6B,9B
2	Triple Multiplexer	100171	1	3	3	1.7	2.0	0.8	360	50 Ω Line	E55	4Q,6Q
3	Triple Multiplexer	9580	1	3	0	3.2	3.2	2.6	300	50 Ω Line	E51	6B
4	Quad Multiplexer	9579	0	4	0	4.0	—	2.6	260	50 Ω Line	E50	6B
5	Quad Multiplexer	10158/10558	0	4	0	3.2	—	2.5	200	50 Ω Line	E98	4L,6B,9B
6	Quad Multiplexer	10159/10559	1	0	4	3.2	2.5	2.5	220	50 Ω Line	E97	4L,6B,9B
7	8-to-1 Multiplexer	9581	1	1	0	5.5	3.5	3.2	260	50 Ω Line	E52	6B
8	8-to-1 Multiplexer	10164/10564	1	1	0	4.0	2.0	3.0	285	50 Ω Line	E53	4L,6B,9B
9	16-to-1 Multiplexer	100164	0	1	0	2.1	—	1.6	315	50 Ω Line	E99	4Q,6Q
10	Dual 8 Multiplexer	100163	0	2	0	1.95	—	1.3	500	50 Ω Line	E112	4Q,6Q

DECODERS/DEMULTIPLEXERS

Item	Function	DEVICE NO.*	Address Inputs	Active LOW Enable	Active LOW Outputs	Active HIGH Outputs	Select Delay ns (Typ)	Enable Delay ns (Typ)	Power Dissipation mW (Typ)	Fan-Out	Logic/Connection Diagram	Package(s)
11	1-of-8 Decoder	9538	3	2	8	0	3.0	5.0	275	50 Ω Line	E7	6B
12	1-of-8 Demux/Decoder	10161/10561	3	2	8	0	4.0	4.0	285	50 Ω Line	E8	4L,6B,9B
13	1-of-8 Demux/Decoder	10162/10562	3	2	0	8	4.0	4.0	285	50 Ω Line	E9	4L,6B,9B
14	Dual 1-of-4 Demux/Decoder	10171/10571	2	2+1	4+4	0	4.0	4.0	320	50 Ω Line	E10	4L,6B,9B
15	Dual 1-of-4 Demux/Decoder	10172/10572	2	2+1	0	4+4	4.0	4.0	320	50 Ω Line	E11	4L,6B,9B
16	Multipurpose Demux/Decoder	100170	5	2+2	4or8	4or8	1.7	1.2	565	50 Ω Line	E12	4Q,6Q

\*105XX and 106XX = Military temperature range

# FAIRCHILD DIGITAL

## ECL

### REGISTERS

Item	Function	DEVICE NO.*	No. of Bits	Serial Entry	Parallel Entry No. of Bits	Max Clock Freq. MHz (Typ)	Clock To Output Delay-ns (Typ)	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
1	4-Bit Shift Register	95H00	4	D	4S	150	3.2	395	E63	6B
2	4-Bit Shift Register	95000	4	D	4S	200	3.2	345	E64	6B
3	4-Bit Shift Register	10000	4	D	4S	200	3.2	345	E64	4L,6B,9B
4	4-Bit Left/Right Shift Register	10141/10541	4	D <sub>L</sub> ,D <sub>R</sub>	4S	350	2.2	400	E65	4L,6B,9B
5	8-Bit Left/Right Shift Register	100141	8	D <sub>R</sub>	8	500	1.6	765	E100	4Q,6Q
6	16x4 Register File	100145A	64	D <sub>R</sub>	—	—	—	765	E101	4Q,6Q
7	8-Bit Shift Matrix	100158	8	—	8	—	—	630	E102	4Q,6Q

### COUNTERS/PRESCALERS

Item	Function	DEVICE NO.*	Modulo	Parallel Load	Max Clock Rate MHz (Typ)	Clock to Q Output Delay ns (Typ)	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
8	Binary Counter	95H16	2,4,8 or 16	4	200	3.6	470	E1	6B
9	Binary Counter	95016	2,4,8 or 16	4	200	3.6	415	E3	6B
10	Binary Counter	10016	2,4,8 or 16	4	200	3.6	415	E3	4L,7B,9B
11	Binary Counter	10136/10536	2,4,8 or 16	4	200	—	520	E4	4L,7B
12	Binary Counter/Register	100136	2,4,8 or 16	4	450	1.4	765	E103	4Q,6Q
13	Decade Counter	95010	10	4	200	3.6	415	E3	6B
14	Decade Counter	10010	10	4	200	3.6	415	E3	4L,7B,9B
15	Decade Counter	10137/10537	10	4	200	—	520	E4	4L,7B
16	÷ 4 Prescaler	11C05	4	—	1100	—	340	E5	6B
17	÷ 5/6 Prescaler	95H91	5 or 6	MS	320	5.1	390	E2	6B
18	÷ 5/6 Prescaler	11C91	5 or 6	MS	600	—	300	E6	6B
19	÷ 10/11 Prescaler	95H90	10 or 11	MS	320	5.1	440	E2	6B
20	÷ 10/11 Prescaler	11C90	10 or 11	MS	600	—	300	E6	6B
21	÷ 248/256 Prescaler	11C83	248 or 256	MS	1100	—	520	E104	6A

\*105XX and 106XX = Military temperature range

# FAIRCHILD DIGITAL

## ECL

### ARITHMETIC OPERATORS

Item	Function	DEVICE NO.*	No. of Input Bits	t <sub>pd</sub> ns (Typ)	Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
1	Adder/Subtractor	95H84	2x2	4.6	485	E58	6B
2	Dual Adder/Subtractor	10180/10580	2x2	2.2	340	E62	4L,6B,9B
3	Carry Lookahead	10179/10579	4x2	3.0	305	E61	4L,6B,9B
4	Carry Lookahead	100179	16	2.1	742	E111	4Q,6Q
5	4-Bit ALU	10181/10581	4x2	6.0	600	E95	4M,6N
6	4-Bit Binary/Decimal ALU	100181	4x2	4.5	765	E107	4Q,6Q
7	4-Bit Comparator	9578	4x2	3.2	275	E57	6B
8	5-Bit Comparator	95H55	5x2	6.0	440	E56	6B
9	5-Bit Comparator	10166/10566	5x2	5.5	312	E42	4L,6B,9B
10	9-Bit Comparator	100166	9	—	—	E114	4Q,6Q
11	8-Input Priority Encoder	10165/10565	8	6.0	520	E13	4L,6B,9B
12	Universal Priority Encoder	100165	8	3.0	540	E108	4Q,6Q
13	Dual 9-Bit Parity Generator	100160	9x2	3.0	370	E109	4Q,6Q
14	11-Bit Parity Generator	10170/10570	11	4.0	275	E60	4L,6B
15	12-Bit Parity Generator	10160/10560	12	4.0	240	E59	4L,6B,9B
16	8-Bit Shift Matrix	100158	8	2.2	630	E102	4Q,6Q

\*105XX and 106XX = Military temperature range

## CMOS

### SSI FUNCTIONS

Item	Function	DEVICE NO.	Logic/Connection Diagram	Package(s)
<b>NAND Gates</b>				
17	Quad 2-Input NAND	4011B	C1	31,6A,9A
18	Triple 3-Input NAND	4023B	C2	31,6A,9A
19	Dual 4-Input NAND	4012B	C3	31,6A,9A
20	8-Input NAND	4068B	C4	31,6A,9A

# FAIRCHILD DIGITAL

## CMOS

### SSI FUNCTIONS (Cont'd)

Item	Function	DEVICE NO.	Logic/Connection Diagram	Package(s)
<b>NOR Gates</b>				
1	Quad 2-Input NOR	4001B	C5	31,6A,9A
2	Triple 3-Input NOR	4025B	C6	31,6A,9A
3	Dual 4-Input NOR	4002B	C7	31,6A,9A
4	8-Input NOR	4078B	C8	31,6A,9A
<b>AND Gates</b>				
5	Quad 2-Input AND	4081B	C9	31,6A,9A
6	Triple 3-Input AND	4073B	C87	31,6A,9A
7	Dual 4-Input AND	4082B	C88	31,6A,9A
<b>OR Gates</b>				
8	Quad 2-Input OR	4071B	C10	31,6A,9A
9	Dual 4-Input OR	4072B	C85	31,6A,9A
10	Triple 3-Input OR	4075B	C86	31,6A,9A
<b>Inverters and Buffers</b>				
11	Hex Inverter	4069UB	C11	31,6A,9A
12	Hex Inverting Buffer	4049B	C12	4L,6B,9B
13	Hex Non-Inverting Buffer	4050B	C13	4L,6B,9B
14	3-State Hex Inverting Buffer	40098B	C14	4L,6B,9B
15	3-State Hex Non-Inverting Buffer	40097B	C15	4L,6B,9B
16	Quad True/Complement Buffer	4041B	C81	31,6A,9A
<b>Complex Gates</b>				
17	Quad Exclusive OR	4030B	C16	31,6A,9A
18	Quad Exclusive OR	4070B	C16	31,6A,9A
19	Quad Exclusive NOR	4077B	C17	31,6A,9A
20	Dual 2-Wide, 2-Input AND-OR-Invert	4085B	C18	31,6A,9A
21	4-Wide, 2-Input AND-OR-Invert	4086B	C19	31,6A,9A
22	Dual Complementary Pair Plus Inverter	4007UB	C20	31,6A,9A
<b>Schmitt Triggers</b>				
23	Quad 2-Input NAND Schmitt Trigger	4093B	C82	31,6A,9A
24	Dual Schmitt Trigger	4583B	C83	4L,6B,9B
25	Hex Schmitt Trigger	40014B	C84	31,6A,9A

**FAIRCHILD DIGITAL**

**CMOS**

**LATCHES/FLIP-FLOPS**

Item	Function	DEVICE NO.	Data Inputs	Common Clear	Enable/Clock Inputs (Level)	Required Enable/Clock Pulse Width-ns (Typ) VDD = 10V	Enable/Clock to Q Delay-ns (Typ) VDD = 10V	Logic/Connection Diagram	Package(s)
1	Dual JK Flip-Flop	<b>4027B</b>	JK	RS	H	35	45	C21	4L,6B,9B
2	Dual D Flip-Flop	<b>4013B</b>	D	RS	H	30	38	C22	3I,6A,9A
3	Quad D Flip-Flop	<b>40175B</b>	D	X	H	10	35	C23	4L,6B,9B
4	Quad D Flip-Flop w/3-State Ouptuts	<b>4076B</b>	D	MR	L	35	35	C110	4L,6B,9B
5	Hex D Flip-Flop	<b>40174B</b>	D	X	H	10	35	C24	4L,6B,9B
6	4-Bit Latch	<b>4042B</b>	D	—	H	16	66	C25	4L,6B,9B
7	4-Bit Latch	<b>4043B</b>	RS	RS	H	14	30	C26	4L,6B,9B
8	4-Bit Latch	<b>4044B</b>	RS	RS	H	14	30	C27	4L,6B,9B
9	Dual 4-Bit Address Latch	<b>4723B</b>	D	X	L	20	50	C28	4L,6B,9B
10	8-Bit Address Latch	<b>4724B</b>	D	X	L	20	40	C29	4L,6B,9B
11	BCD-to-7-Seg Latch/Decoder/Dvr	<b>4511B</b>	D	X	L	14	90	C111	4L,6B,9B
12	BCD-to-7-Seg Latch/Decoder/Dvr for Liquid Crystal	<b>4543B</b>	D	X	H	40	200	C112	4L,6B,9B
13	BCD-to-7-Seg Latch/Decoder Dvr w/Ripple Blanking	<b>4734B</b>	D	X	L	14	90	C114	7D,9M

**MULTIPLEXERS**

Item	Function	DEVICE NO.	Enable Inputs	True Output	Select Delay ns (Typ) VDD = 10V	Enable Delay ns (Typ) VDD = 10V	Data Delay ns (Typ) VDD = 10V	Logic/Connection Diagram	Package(s)
14	Quad 2-Input	<b>4019B</b>	—	X	37	—	37	C30	4L,6B,9B
15	Quad 2-Input	<b>4519B</b>	—	X	50	—	50	C31	4L,6B,9B
16	Dual 4-Input	<b>4539B</b>	X	X	88	53	71	C32	4L,6B,9B
17	Single 8-Input	<b>4512B</b>	X	3-State	85	45	75	C33	4L,6B,9B

**FAIRCHILD DIGITAL**

**CMOS**

**REGISTERS**

Item	Function	DEVICE NO.	No. of Bits	Serial Entry	Parallel Entry No. of Bits	Clock Edge	Max Clock Frequency MHz (Typ) VDD = 10V	Clock To Output Delay-ns (Typ) VDD = 10V	Logic/Connection Diagram	Package(s)
1	Parallel-In/Parallel-Out	<b>4035B</b>	4	J $\bar{K}$	4	L→H	17	90	C39	4L,6B,9B
2	Parallel-In/Parallel-Out Bidirectional	<b>40194B</b>	4	D	4	L→H	14	45	C40	4L,6B,9B
3	Parallel-In/Parallel-Out	<b>40195B</b>	4	J $\bar{K}$	4	L→H	14	45	C41	4L,6B,9B
4	Serial-In/Parallel-Out	<b>4015B</b>	8	D	—	L→H	14	85	C42	4L,6B,9B
5	Parallel-In/Serial-Out	<b>4014B</b>	8	D	8	L→H	14.7	68	C43	4L,6B,9B
6	Parallel-In/Serial-Out	<b>4021B</b>	8	D	8	L→H	18.1	74	C44	4L,6B,9B
7	Serial-In/Serial-Out	<b>4006B</b>	18	D	—	H→L	30	37	C45	3I,6A,9A
8	Serial-In/Serial-Out	<b>4731B</b>	256	D	—	H→L	8.0	95	C46	3I,6A,9A
9	Serial-In/Serial-Out	<b>4031B</b>	64	D	—	L→H	8.0	60	C78	4L,6B,9B
10	Serial-In/Serial-Out Variable	<b>4557B</b>	1 to 64	D	—	2- H→L or L→H	10	150	C80	4L,6B,9B
11	Parallel/Serial- Input/Output	<b>4034B</b>	8	D	8	L→H	8.0	155	C79	4M,6N,9N

**DECODERS/DEMULTIPLEXERS**

Item	Function	DEVICE NO.	Address Inputs	Active LOW Enable	Output Configuration	Select Delay ns (Typ) VDD = 10V	Enable Delay ns (Typ) VDD = 10V	Logic/Connection Diagram	Package(s)
12	Dual 1-of-4 Decoder	<b>4555B</b>	2x2	2	H	60	60	C34	4L,6B,9B
13	Dual 1-of-4 Decoder	<b>4556B</b>	2x2	2	L	68	58	C35	4L,6B,9B
14	1-of-10 Decoder	<b>4028B</b>	4	—	H	66	—	C36	4L,6B,9B
15	1-of-16 Decoder	<b>4514B</b>	4	1	H	95	95	C37	4M,6N,9N,9U
16	1-of-16 Decoder	<b>4515B</b>	4	1	L	95	95	C38	4M,6N,9N,9U
17	Dual 4-Channel Demultiplexer	<b>4052B</b>	2	1	H	125	105	C64	4L,6B,9B

# FAIRCHILD DIGITAL

## CMOS

### DECODERS/DEMULTIPLEXERS (Cont'd)

Item	Function	DEVICE NO.	Address Inputs	Active LOW Enable	Output Configuration	Select Delay ns (Typ) $V_{DD} = 10V$	Enable Delay ns (Typ) $V_{DD} = 10V$	Logic/Connection Diagram	Package(s)
1	8-Channel Demultiplexer	4051B	3	1	H	125	105	C65	4L,6B,9B
2	BCD-to-7-Segment Latch/Decoder/Dvr	4511B	4	1	H	90	98	C111	4L,6B,9B
3	BCD-to-7-Segment Latch/Decoder/Dvr for Liquid Crystals	4543B	4	—	H or L	200	200	C112	4L,6B,9B
4	BCD-to-7-Segment Latch/Decoder/Dvr w/Ripple Blanking	4734B	4	1	H	90	98	C114	7D,9M

### COUNTERS

Item	Function	DEVICE NO.	Modulo	Parallel Load <sup>(1)</sup>	Clock Transition	Max Clock Rate MHz (Typ) $V_{DD} = 10V$	Clock to Q Output Delay ns (Typ) $V_{DD} = 10V$	Logic/Connection Diagram	Package(s)
5	4-Bit Sync Count Up	40160B	Decade	S	L→H	12	55	C47	4L,6B,9B
6	4-Bit Sync Count Up	40161B	Binary	S	L→H	12	55	C47	4L,6B,9B
7	4-Bit Sync Count Up	40162B	Decade	S	L→H	12	55	C48	4L,6B,9B
8	4-Bit Sync Count Up	40163B	Binary	S	L→H	12	55	C48	4L,6B,9B
9	4-Bit Sync Count Down	4522B <sup>(2)</sup>	Decade	A	L→H or H→L	10	95	C49	4L,6B,9B
10	4-Bit Sync Count Down	4526B <sup>(2)</sup>	Binary	A	L→H or H→L	10	95	C49	4L,6B,9B
11	4-Bit Sync Count Up/Down	4510B	Decade	A	L→H	12	62	C50	4L,6B,9B
12	4-Bit Sync Count Up/Down	4516B	Binary	A	L→H	12	62	C50	4L,6B,9B
13	4-Bit Sync Count Up/Down	40192B	Decade	A	L→H	8.0	105	C51	4L,6B,9B

1. A = Asynchronous, S = Synchronous

2. To be announced



# FAIRCHILD DIGITAL

## CMOS

### COUNTERS (Cont'd)

Item	Function	DEVICE NO.	Modulo	Parallel Load <sup>(1)</sup>	Clock Transition	Max Clock Rate MHz (Typ) V <sub>DD</sub> = 10V	Clock to Q Output Delay ns (Typ) V <sub>DD</sub> = 10V	Logic/Connection Diagram	Package(s)
1	4-Bit Sync Count Up/Down	<b>40193B</b>	Binary	A	L→H	8.0	105	C51	4L,6B,9B
2	4-Bit Sync Count Up/Down	<b>4029B</b>	Decade or Binary	A	L→H	12	62	C52	4L,6B,9B
3	Dual 4-Bit Sync Count Up	<b>4518B</b>	Decade	—	L→H or H→L	10	95	C53	4L,6B,9B
4	Dual 4-Bit Synchronous Count Up	<b>4520B</b>	Binary	—	L→H or H→L	10	95	C53	4L,6B,9B
5	7-Bit Ripple Count Up	<b>4024B</b>	Binary	—	H→L	30	45	C54	31,6A,9A
6	12-Bit Ripple Count Up	<b>4040B</b>	Binary	—	H→L	25	55	C55	4L,6B,9B
7	14-Bit Ripple Count Up	<b>4020B</b>	Binary	—	H→L	25	55	C56	4L,6B,9B
8	4-Bit Johnson Counter	<b>4022B<sup>(2)</sup></b>	1-of-8	—	L→H or H→L	16	95	C57	4L,6B,9B
9	5-Bit Johnson Counter	<b>4017B</b>	1-of-10	—	L→H or H→L	13.8	114	C58	4L,6B,9B
10	5-Bit Johnson Counter	<b>4018B<sup>(2)</sup></b>	—	—	L→H	10	115	C59	4L,6B,9B
11	Bit Rate Generator	<b>4702B</b>	14-Bit Rates	—	L→H	6.5	40	C60	4L,6B,9B
12	21-Stage Binary Counter	<b>4045B</b>	Binary	—	L→H	25	900	C89	31,6A,9A
13	24-Stage Binary Counter	<b>4521B</b>	Binary	—	H→L	12	3200	C90	4L,6B,9B
14	Real Time 5-Decade Counter	<b>4534B</b>	Decade (x5)	—	L→H	4.5	1000	C91	4M,6N,9N
15	3-Digit BCD Counter	<b>4553B</b>	Decade (x3)	—	L→H or H→L	6.0	300	C92	4L,6B,9B
16	7-Stage Counter	<b>4727B</b>	Binary	—	L→H	8.0	90	C93	31,6A,9A
17	7-Stage Counter	<b>4737B</b>	Binary	—	L→H	8.0	90	C95	31,6A,9A
18	Programmable Timer/Counter	<b>4722B</b>	Binary	—	H→L	6.0	1000	C94	4L,6B,9B
19	Industrial Time Base Generator	<b>4566B</b>	Decade	—	H→L	3.2	400	C99	4L,6B,9B

1. A = Asynchronous, S = Synchronous  
 2. To be announced

# FAIRCHILD DIGITAL

## CMOS

### MONOSTABLES

Item	Function	DEVICE NO.	Typical Pulse Width Variation (%) V <sub>DD</sub> = 15V	No. of Inputs		Resetable	Output (tpw)-ns V <sub>DD</sub> = 5.0V	Logic/Connection Diagram	Package(s)
				Positive	Negative				
1	Dual Retriggerable Resetable Monostable Multivibrator	<b>4528B</b>	±3%	1	1	X	300	C61	4L,6B,9B
2	Low Power Monostable/Astable Multivibrator	<b>4047B</b>	—	1	1	X	—	C115	3I,6A,9A
3	Dual Precision Monostable Multivibrator	<b>4538B</b>	±0.5%	1	1	X	200	C116	4L,6B,9B
4	Micro Power Phase Locked Loop	<b>4046B</b>	—	—	—	—	—	C117	4L,6B,9B

### ANALOG DEVICES

Item	Function	DEVICE NO.	Enable Input	Max ON Resistance-Ω V <sub>DD</sub> = V <sub>IS</sub> = 10V	Max OFF State Leakage Current-nA V <sub>DD</sub> = 10V	Signal Capability V	Logic/Connection Diagram	Package(s)
5	Quad Bilateral Switch	<b>4016B</b>	X	840	125	0-15 ±7.5	C63	3I,6A,9A
6	Quad Bilateral Switch	<b>4066B</b>	X	520	100	0-15 ±7.5	C63	3I,6A,9A
7	Dual 4-Channel Multiplex/Demultiplex	<b>4052B</b>	X	600	100	0-15 ±7.5	C64	4L,6B,9B
8	8-Channel Multiplexer/Demultiplexer	<b>4051B</b>	X	600	100	0-15 ±7.5	C65	4L,6B,9B
9	Triple 2-Channel Multiplex/Demultiplexer	<b>4053B</b>	X	600	100	0-15 ±7.5	C96	4L,6B,9B
10	16 Channel Mux/Demux	<b>4067B</b>	X	600	100	0-15 ±7.5	C97	4M,6Q,9U
11	4x4 Cross Point Switch	<b>4741B</b>	X	840	100	0-15 ±7.5	C98	4L,6B,9B

# FAIRCHILD DIGITAL

## CMOS

### ARITHMETIC OPERATORS

Item	Function	DEVICE NO.	Description	No. of Bits	Logic/Connection Diagram	Package(s)
1	Adder	<b>4008B</b>	Binary Adder	4	C66	4L,6B,9B
2	Adder	<b>4560B</b>	BCD Adder	4x2	C106	4L,6B,9B
3	Carry Lookahead	<b>4582B</b>	Carry Lookahead Block	4	C68	4L,6B,9B
4	Comparator	<b>40085B</b>	Magnitude Comparator	4	C69	4L,6B,9B
5	Data Path Switch	<b>4704B</b>	Data Path Switch	4	C70	4M,6Q,9U
6	Arithmetic Logic Register Stack	<b>4705B</b>	Arith Logic Register Stack	4	C71	4M,6Q,9U
7	Data Access Register	<b>4707B</b>	Data Access Register	4	C72	4M,6Q,9U
8	Register Unit	<b>4581B</b>	4-Bit Arithmetic Logic Register Unit	4x2	C108	4M,6N,9N
9	Rate Multiplier	<b>4527B</b>	BCD Rate Multiplier	4	C103	4L,6B,9B
10	Parity Checker/Generator	<b>4531B</b>	13-Input Parity Checker/Generator	13	C104	4L,6B,9B
11	Parity Encoder	<b>4532B</b>	8-Input Parity Encoder	8	C105	4L,6B,9B
12	Complementer	<b>4561B</b>	9's Complementer	4	C107	3I,6A,9A
13	Sequencer	<b>4708B</b>	10-Bit Microprocessor Sequencer	10	C109	6I,8P

### TIMEKEEPING CIRCUITS

Item	DEVICE NO. (1)	No. of Digits	Digit Drive	LED	LCD	Calendar	Backup Osc	Alarm	Timer	24 Hr Options	Radio Off/On	Voltage	Special Features	Logic/Connection Diagram	Package(s) (2)
14	<b>FWA6003/ FWA6103</b>	4	Dir	No	Yes	Yes	Yes	No	No	No	No	1.5	Seconds and date on command	C119 C118	—
15	<b>FWA6005/ FWA6105</b>	4	Dir	No	Yes	Yes	Yes	No	No	No	No	1.5	6003 w/on-board voltage quadrupler	C120 C121	—
16	<b>FWA6004</b>	4	Mux	Yes	No	Yes	Yes	No	No	No	No	3.0	Seconds, ideal car clock	C122	—
17	<b>FWX6107</b>	4	Dir	No	Yes	Yes	Yes	No	No	No	No	1.5	6105 w/24 hr and European calendar	—	—
18	<b>FWX6109</b>	6	Dir	No	Yes	Yes	Yes	No	No	No	No	1.5	5-function w/day flags	—	—
19	<b>FWX6111</b>	6	Dir	No	Yes	Yes	Yes	No	No	No	No	1.5	6-function w/alpha day	—	—

1. FWXXXX products are available both encapsulated, FWBXXXX, & unencapsulated, FWXXXXX.

2. Consult factory for package type

# FAIRCHILD DIGITAL

## MOS

### RANDOM LOGIC FUNCTIONS (For Other MOS Circuits—See Fairchild Memories)

Item	Function	DEVICE NO.	Temperature (1)	No. of Pins	Logic/Connection Diagram	Packages (s) (4)
1	TV Sync Generator	<b>3262A</b>	C	16	S1	6Z
2	TV Sync Generator with Generator Lock	<b>3262B</b>	C	16	S2	6Z
3	8-Channel Multiplex Switch	<b>3708</b>	C, L, M	16	S3	4A,6Z,8K 8U,9B
4	Digital Voltmeter	<b>3814</b>	C	24	S4	7M
5	5-Decade Counter	<b>3815</b>	C	24	S5	7M
6	Programmable Counter 3 thru 262,145	<b>3816</b>	C	16	S6	6Z,8K,9B
7	USART	<b>F3843</b>	C	28	S8	8E
8	Synchronous Protocol Communications Controller	<b>F3846</b> (3)	C	40	—	—

### TIMEKEEPING CIRCUITS

Item	DEVICE NO.	No. of Digits	Digit Drive	LED	LCD	Calendar	Backup Osc	Alarm	Timer	24 Hr Options	Radio Off/On	Voltage	Special Features	Logic/Connection Diagram	Package (s) (4)
9	<b>FCM7001</b>	6	Mux	Yes	Yes	Yes	Yes	Yes	9:59	Yes	Yes	10-17	Use for very large digits; high drive circuit.	S9	
10	<b>FCM7002</b>	6	Mux	—	—	Yes	Yes	Yes	9:59	Yes	Yes	10-17	BCD outputs	S10	
11	<b>FCM7003</b>	6	Mux	Yes	Yes	Yes	Yes	Yes	9:59	Yes	Yes	10-17	Direct drive for gas discharge	S11	
12	<b>FCM7004</b>	6	Mux	Yes	Yes	Yes	Yes	Yes	9:59	Yes	Yes	10-17	7001 w/European calendar format	S9	
13	<b>FCM7010</b>	4	Dir	Yes	Yes	Yes	Yes	Yes	2:50	Yes	Yes	7.0-17	12 mA direct drive, pulsing colon	S12	
14	<b>FCM7015</b>	4	Dir	Yes	Yes	Yes	Yes	Yes	2:50	Yes	Yes	7.0-17	12 mA direct static drive, colon, slew set	S12	
15	<b>FCM7030</b> (2)	4	Dir	Yes	Yes	No	No	Yes	:59	Yes	Yes	8.0-18	Seconds on command, 15 mA drive	S13	
16	<b>FCM7040</b>	4	Dup	Yes	No	No	Yes	Yes	99:59	Yes	Yes	7.0-11	Key BD entry appliance control	S14	

1. C = Commercial temperature range; L = Limited military temperature range; M = Military temperature range.

2. Replaces FMC3817 for new designs

3. To be announced    4. Consult factory for package types.



**FAIRCHILD DIGITAL**

**RTL/CTL**

**FAIRCHILD RTL MICROLOGIC AND CTL COUNTING MICROLOGIC ELEMENTS**

Item	DEVICE NO.	Description	Logic/Connection Diagram	Package(s)	Item	DEVICE NO.	Description	Logic/Connection Diagram	Package(s)
1	900	Buffer	F8	3F,5B	14	913	D Flip-Flop	F6	3F,5B
2	901	Counter Adapter	F18	3F,5B	15	914	Dual 2-NOR	F13	3F,5B
3	902	Flip-Flop	F19	3F,5B	16	915	Dual 3-NOR	F14	3F,5F
4	903	3-Input NOR	F9	3F,5B	17	921	Dual 2-Expander	F7	3F,5B
5	904	Half Adder	F10	3F,5B	18	923	JK Flip-Flop	F15	5B
6	905	Half Shift	F11	3F,5B	19	926	JK Flip-Flop	F16	3F,5F
7	906	Half Shift	F20	3F,5B	20	927	Quad Inverter	F17	3F,5F
8	907	4-Input NOR	F12	3F,5B	21	958	Decade Counter	F21	5B,6A
9	908	Adder	F1	3F,5B	22	959	4-Bit Latch	F22	6B
10	909	Buffer	F2	3F,5B	23	960	BCD Decoder/Dvr	F23	6B
11	910	Dual 2-NOR	F3	3F,5B	24	974	JK Flip-Flop	F15	5B
12	911	4-Input NOR	F4	3F,5B	25	989	Binary Counter	F21	5B,6A
13	912	Half Adder	F5	3F,5B					

**DTL**

**DTL MICROLOGIC**

Item	DEVICE NO.	Description	Logic/Connection Diagram	Package(s)
26	930	Dual 4-Input Extendable NAND Gate	G1	3I,5F,6A,9A
27	932	Dual 4-Input Extendable NAND Buffer Gate	G1	3I,5F,6A,9A
28	933	Extender	G9	5F,9A
29	935	Extendable Hex Inverter	G12	3I,6A,9A
30	936	Hex Inverter	G12	3I,6A,9A
31	937	Hex Inverter	G12	3I,6A,9A
32	941	Monostable Multivibrator	G17	3I,6A
33	944	Dual 4-Input Extendable NAND Buffer Gate (Open Collector)	G1	3I,5F,6A,9A
34	945	RS Flip-Flop	G18	3I,5F,6A,9A
35	946	Quad 2-Input NAND Gate	G10	3I,5F,6A,9A

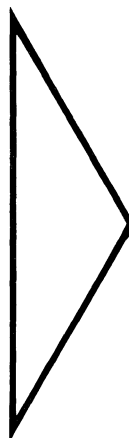
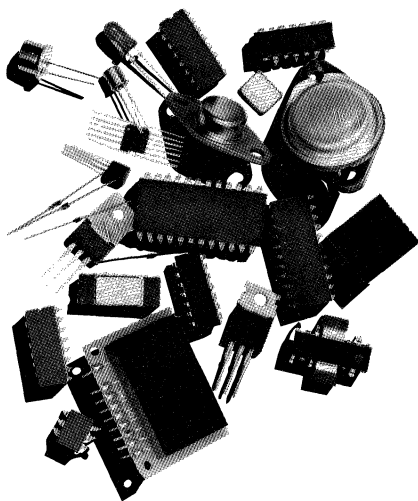
# FAIRCHILD DIGITAL

## DTL

### DTL MICROLOGIC (Cont'd)

Item	DEVICE NO.	Description	Logic/Connection Diagram	Package(s)
1	948	RS Flip-Flop	G18	3I,5F,6A,9A
2	949	Quad 2-Input NAND Gate	G10	3I,5F,6A,9A
3	950	A-C Coupled RS Flip-Flop	G19	3I,5F,6A,9A
4	951	Monostable Multivibrator	G17	3I,5F,6A,9A
5	961	Dual 4-Input Extendable NAND Gate	G1	3I,5F,6A,9A
6	962	Triple 3-Input NAND Gate	G11	3I,5F,6A,9A
7	963	Triple 3-Input NAND Gate	G11	3I,5F,6A,9A
8	1800	Dual 5-Input NAND Gate	G1	9A
9	1801	Dual 5-Input NAND Gate	G1	9A
10	1802	Single 8-Input NAND Gate	G2	9A
11	1803	Single 8-Input NAND Gate	G2	9A
12	1804	Single 10-Input NAND Gate	G3	9A
13	1805	Single 10-Input NAND Gate	G3	9A
14	1806	Quad 2-Input AND Gate	G4	9A
15	1807	Quad 2-Input AND Gate	G4	9A
16	1808	Quad 2-Input OR Gate	G5	9A
17	1809	Quad 2-Input OR Gate	G5	9A
18	1810	Quad 2-Input NOR Gate	G6	9A
19	1811	Quad 2-Input NOR Gate	G6	9A
20	1812	Quad 2-Input Exclusive OR Gate	G7	9A
21	1813	Quad Latch	G13	9B
22	1814	Quad Latch	G14	9A
23	9093	Dual JK Flip-Flop	G15	3I,6A,9A
24	9094	Dual JK Flip-Flop	G15	3I,6A,9A
25	9097	Dual JK Flip-Flop	G16	3I,6A,9A
26	9099	Dual JK Flip-Flop	G16	3I,6A,9A
27	9109	High Voltage Hex Inverter	G12	6A
28	9110	High Voltage Hex Inverter	G12	6A
29	9111	RS Flip-Flop	G20	3I,6A
30	9112	High Voltage Hex Inverter	G12	6A
31	9135	Hex Inverter (Open Collector)	G12	3I,6A,9A
32	9157	Quad 2-Input Buffered NAND Gate	G8	3I,6A,9A
33	9158	Quad 2-Input Power NAND Gate	G8	6A,9A





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# FAIRCHILD MEMORIES

## RANDOM ACCESS MEMORIES

### BIPOLAR RAMs

Item	Organization	DEVICE NO.	Description <sup>(1)</sup>	Address Access Time ns (Typ)	Chip Select Access Time ns (Typ)	Read/Write Cycle Time		Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
						Comm 0°C to +70°C ns (Max)	-55°C to +125°C ns (Max)			
<b>TTL</b>										
1	16x4	54LS/74LS89 <sup>(4)</sup>	OC	—	—	—	—	—	M1	4L,7B,9B
2	16x4	54LS/74LS189 <sup>(4)</sup>	3S	—	—	—	—	—	M1	4L,7B,9B
3	16x4	54LS/74LS289 <sup>(4)</sup>	OC	—	—	—	—	—	M1	7B,9B
4	16x4	7489	OC	30	30	60/55	60/55	—	M1	4L,7B,9B
5	16x4	9410	3S	35	25	50 <sup>(2)</sup>	—	375	M50	7D,9M
6	256x1	93410	OC	45	25	60/45	70/55	450	M2	4B,6F,9B
7	256x1	93410A	OC	35	20	45	—	450	M2	6D,9B
8	256x1	93411	OC	45	25	55/45	65/55	475	M3	4B,6D,9B
9	256x1	93411A	OC	40	25	45	—	475	M3	6D,9B
10	256x1	93L420	3S	40	20	45	55	250	M3	4B,6D,9B
11	256x1	93L421	3S	45	30	90/75	100/90	275	M3	4B,6D,9B
12	256x1	93421	3S	35	20	50/35	60/45	475	M3	4B,6D,9B
13	256x1	93421A	3S	30	20	40/35	—	475	M3	6D,9B
14	64x9	93419	OC	35	15	45	60	725	M4	7Y
15	256x4	93412	OC	30	20	45	60/55	475	M5	4K,4R,8T
16	256x4	93L412	OC	45	20	60	75/70	250	M5	4K,4R,8T
17	256x4	93422	3S	30	20	45	60/55	475	M5	4K,4R,8T
18	256x4	93L422	3S	45	20	60	75/70	250	M5	4K,4R,8T
19	1024x1	93415	OC	30	15	45	60	475	M6	4B,6D,9B
20	1024x1	93L415	OC	35	20	60	70	200	M6	4B,6D,9B
21	1024x1	93415A	OC	25	15	30	—	475	M6	6D,9B

1. OC = open collector, 3S = 3-state
2. Measured @ TA = 25°C
3. Typical Data In to Match Out
4. To be announced

# FAIRCHILD MEMORIES

## RANDOM ACCESS MEMORIES

### BIPOLAR RAMs (Cont'd)

Item	Organization	DEVICE NO.	Description (1)	Address Access Time ns (Typ)	Chip Select Access Time ns (Typ)	Read/Write Cycle Time		Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
						0°C to +70°C ns (Max)	-55°C to +125°C ns (Max)			

#### TTL

1	1024x1	<b>93425</b>	3S	30	15	45	60	475	M6	4B,6D,9B
2	1024x1	<b>93L425</b>	3S	35	20	60	70	200	M6	4B,6D,9B
3	1024x1	<b>93425A</b>	3S	25	15	30	—	475	M6	6D,9B
4	4096x1	<b>93470</b>	OC	30	15	50/55	60/70	800	M15	7D,9M
5	4096x1	<b>93471</b>	3S	30	15	50/55	60/70	800	M15	7D,9M
6	4096x1	<b>93481</b>	Dynamic, 3S	90	35	120	—	45/350	M16	4B,6E,9B
7	4096x1	<b>93481A</b>	Dynamic, 3S	80	35	100	—	45/350	M16	4B,6E,9B

#### ECL

8	4x4	<b>100142</b>	—	2.7	—	3.3 <sup>(3)</sup>	—	730	M40	4Q,6Q
9	16x4	<b>95400</b>	—	14	6.5	17.5/25.5 <sup>(2)</sup>	—	435	M13	6B
10	16x4	<b>10145A</b>	—	6.5	4.5	9.0/10 <sup>(2)</sup>	—	500	M14	4L,6B,9B
11	16x4	<b>100145A</b>	—	4.8	—	—	—	765	M41	4Q,6Q
12	128x1	<b>10405</b>	—	12	5.0	15 <sup>(2)</sup>	—	475	M7	4B,6D
13	256x1	<b>10410</b>	—	18	7.0	30/38 <sup>(2)</sup>	—	475	M8	4B,6D,9B
14	256x1	<b>10411</b>	—	20	7.0	35/47 <sup>(2)</sup>	—	360	M8	6D,9B
15	256x1	<b>10414</b>	—	7.0	4.0	—	—	450	M8	4B,6D
16	256x1	<b>100414</b>	—	7.0	4.0	—	—	500	M8	4B,6D
17	1024x1	<b>10415</b>	—	25	7.0	35/38 <sup>(2)</sup>	—	475	M9	4B,6D
18	1024x1	<b>10415A</b>	—	12	5.0	20/27 <sup>(2)</sup>	—	475	M9	4B,6D
19	1024x1	<b>100415</b>	—	12	5.0	20/30 <sup>(2)</sup>	—	500	M9	4Q
20	4096x1	<b>10470</b>	—	25	10	—	—	900	M15	7D

1. OC = open collector, 3S = 3-state

2. Measured @ T<sub>A</sub> = 25°C

3. Typical Data In to Match Out

4. To be announced

# FAIRCHILD MEMORIES

## RANDOM ACCESS MEMORIES

### MOS/CMOS RAMs

Item	Organization	DEVICE NO.	Description	Access Time ns (Max)	Cycle Time ns (Min)	Power Dissipation mW (Max)	Temperature <sup>(1)</sup>	No. of Pins	Logic/Connection Diagram	Package(s)
<b>MOS</b>										
1	1024x1	<b>21L02H</b>	Static	250	250	158/24 <sup>(4)</sup>	C	16	M22	6Z,8K,8U,9B
2	1024x1	<b>21L02F</b>	Static	350	350	158/24 <sup>(4)</sup>	C	16	M22	6Z,8K,8U,9B
3	1024x1	<b>21L021</b>	Static	450	450	158/24 <sup>(4)</sup>	C	16	M22	6Z,8K,8U,9B
4	1024x1	<b>21L022</b>	Static	650	650	158/24 <sup>(4)</sup>	C	16	M22	6Z,8K,8U,9B
5	1024x1	<b>2102LH</b>	Static	250	250	158 <sup>(2)</sup> /220 <sup>(3)</sup>	C,L,M	16	M22	6Z,8K,8U,9B
6	1024x1	<b>2102LF</b>	Static	350	350	158 <sup>(2)</sup> /220 <sup>(3)</sup>	C,L,M	16	M22	6Z,8K,8U,9B
7	1024x1	<b>2102L1</b>	Static	450	450	158 <sup>(2)</sup> /220 <sup>(3)</sup>	C,L,M	16	M22	6Z,8K,8U,9B
8	1024x1	<b>2102L2</b>	Static	650	650	158 <sup>(2)</sup> /220 <sup>(3)</sup>	C,L,M	16	M22	6Z,8K,8U,9B
9	1024x1	<b>2102H</b>	Static	250	250	289 <sup>(2)</sup> /385 <sup>(3)</sup>	C,L,M	16	M22	6Z,8K,8U,9B
10	1024x1	<b>2102F</b>	Static	350	350	289 <sup>(2)</sup> /385 <sup>(3)</sup>	C,L,M	16	M22	6Z,8K,8U,9B
11	1024x1	<b>21021</b>	Static	450	450	289 <sup>(2)</sup> /385 <sup>(3)</sup>	C,L,M	16	M22	6Z,8K,8U,9B
12	1024x1	<b>21022</b>	Static	650	650	289 <sup>(2)</sup> /385 <sup>(3)</sup>	C,L,M	16	M22	6Z,8K,8U,9B
13	1024x1	<b>3542/2102S</b>	Static	150	150	289	C	16	M22	6Z,8K,8U,9B
14	1024x1	<b>3542A/2102R</b>	Static	200	200	289	C	16	M22	6Z,8K,8U,9B
15	256x8	<b>3539</b>	Static	650	650	500	C	22	M23	6V
16	256x8	<b>35392</b>	Static	500	500	500	C	22	M23	6V

1. C = Commercial temperature range; L = Limited military temperature range; M = Military temperature range

2. Commercial temperature range

3. Military and limited military temperature range

4. Standby power

5. To be announced

6. Typical value @  $V_{DD} = 10V$

# FAIRCHILD MEMORIES

## RANDOM ACCESS MEMORIES

### MOS/CMOS RAMs (Cont'd)

Item	Organization	DEVICE NO.	Description	Access Time ns (Max)	Cycle Time ns (Min)	Power Dissipation mW (Max)	Temperature (1)	No. of Pins	Logic/Connection Diagram	Package(s)
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#### MOS

1	1024x4	<b>F2114</b> <sup>(7)</sup>	Static	200	200	350	C	18	M24	—
2	4096x1	<b>M40272</b>	Dynamic	150	320	470/36 <sup>(4)</sup>	C,L	16	M25	8K,8R
3	4096x1	<b>M40273</b>	Dynamic	200	375	470/36 <sup>(4)</sup>	C,L	16	M25	8K,8R
4	4096x1	<b>M40274</b>	Dynamic	250	375	470/36 <sup>(4)</sup>	C,L	16	M25	8K,8R
5	4096x1	<b>M40275</b>	Dynamic	300	430	470/36 <sup>(4)</sup>	C,L	16	M25	8K,8R
6	16,384x1	<b>F16K3</b>	Dynamic	200	375	465/20 <sup>(4)</sup>	C	16	M26	6Z,8K,8R
7	16,384x1	<b>F16K4</b>	Dynamic	250	410	465/20 <sup>(4)</sup>	C	16	M26	6Z,8K,8R
8	16,384x1	<b>F16K5</b>	Dynamic	300	500	465/20 <sup>(4)</sup>	C	16	M26	6Z,8K,8R

#### CMOS

9	16x4	<b>4710B</b>	Static	95 <sup>(6)</sup>	—	0.4	C,M	18	M42	7D,9M
10	16x4	<b>4725B</b>	Static	100 <sup>(6)</sup>	—	0.4	C,M	16	M43	4L,6B,9B
11	256x1	<b>4720B</b>	Static	95 <sup>(6)</sup>	—	0.4	C,M	16	M44	4L,6B,9B
12	256x4	<b>4721B</b>	Static	240 <sup>(6)</sup>	—	0.7	C,M	22	M45	4K,4M,6V,7I
13	1024x1	<b>4736B</b> <sup>(5)</sup>	Static	320 <sup>(6)</sup>	—	0.7	C,M	16	M46	4L,6B,9B

1. C = Commercial temperature range; L = Limited military temperature range; M = Military temperature range
2. Commercial temperature range
3. Military and limited military temperature range
4. Standby power
5. To be announced
6. Typical value @  $V_{DD} = 10V$
7. Consult factory for package information

# FAIRCHILD MEMORIES

## READ ONLY MEMORIES

### BIPOLAR ROMs AND PROMs

Item	Organization	DEVICE NO.	Description <sup>(1)</sup>	Address Access Time ns (Typ)	Chip Select Access Time ns (Typ)	Read Cycle Time		Power Dissipation mW (Typ)	Logic/Connection Diagram	Package(s)
						0°C to +70°C ns (Max)	-55°C to +125°C ns (Max)			
<b>TTL</b>										
1	16x48x8	93458	FPLA,OC	25	15	—	—	750	M20	8E,9Y
2	16x48x8	93459	FPLA,3S	25	15	—	—	750	M20	8E,9Y
3	256x4	93457	ROM,OC	25	12	45	60	425	M17	3D,6D,9B
4	256x4	93467	ROM,3S	25	12	45	60	425	M17	3D,6D,9B
5	256x4	93417	PROM,OC	25	12	45	60	425	M17	3D,6D,9B
6	256x4	93427	PROM,3S	25	12	45	60	425	M17	3D,6D,9B
7	512x4	93436	PROM,OC	30	15	50	60	475	M10	3D,6D,9B
8	512x4	93446	PROM,3S	30	15	50	60	475	M10	3D,6D,9B
9	512x4	93431	ROM,OC	30	15	50	60	475	M10	4B,6D,9B
10	512x4	93441	ROM,3S	30	15	50	60	475	M10	4B,6D,9B
11	512x8	93432	ROM,OC	35	15	55	70	650	M11	4R,6M,7L,9N
12	512x8	93442	ROM,3S	35	15	55	70	650	M11	4R,6M,7L,9N
13	512x8	93438	PROM,OC	35	15	55	70	650	M11	4R,6M,7L,9N
14	512x8	93448	PROM,3S	35	15	55	70	650	M11	4R,6M,7L,9N
15	1024x4	93452	PROM,OC	30	15	55	70	650	M18	8F,9M
16	1024x4	93453	PROM,3S	30	15	55	70	650	M18	8F,9M
17	1024x8	93450	PROM,OC	30	20	45	60	550	M21	4R,6M,9N
18	1024x8	93451	PROM,3S	30	20	45	60	550	M21	4R,7L,9N
19	1024x8	93454	ROM,OC	30	20	45	60	550	M12	4R,6M,7L,9N
20	1024x8	93464	ROM,3S	30	20	45	60	550	M12	4R,6M,7L,9N
<b>ECL</b>										
21	256x4	10416	PROM	15	4.0	25 <sup>(2)</sup>	—	650	M19	4B,6D
22	256x4	100416	PROM	15	4.0	25 <sup>(2)</sup>	—	650	M19	4B,6D

1. OC = open collector, 3S = 3-state

2. -30°C to +85°C

# FAIRCHILD MEMORIES

## READ ONLY MEMORIES

### MOS/CMOS ROMs, EPROMs AND CHARACTER GENERATORS

Item	Organization	DEVICE NO.	Description	Access Times (Max)	Power Dissipation mW (Max)	Temperature (1)	No. of Pins	Logic/Connection Diagram	Package(s)
<b>MOS</b>									
1	64x5x7	<b>3257</b>	Character Generator	1000	715	C	24	M28	7M
2	64x7x5	<b>3258</b>	Character Generator	800	500	C	16	M29	6Z
3	64x9x7	<b>3260</b>	Character Generator	1000	660	C	24	M30	7M
4	512x8	<b>35141</b>	ROM	850	580	C	24	M33	7M
5	512x8	<b>35142</b>	ROM	1000	580	C	24	M33	7M
6	512x8	<b>35151</b>	ROM	600	510	C	24	M33	7M
7	512x8	<b>35152</b>	ROM	700	510	C	24	M33	7M
8	1024x8	<b>F2708</b>	EPROM	450	800	C,L,M	24	M31	QA
9	1024x8	<b>F27081</b>	EPROM	350	800	C,L	24	M31	QA
10	1024x8	<b>F3508</b>	ROM	450	330	C	24	M32	7M
11	2048x8	<b>F3516E</b>	ROM	450	330	C	24	M34	7M
<b>CMOS</b>									
12	256x8	<b>4735B</b>	ROM	152 <sup>(3)</sup>	0.7 <sup>(3)</sup>	C,M	24	M47	4M,6Q,9U

1. C = Commercial temperature range; L = Limited military temperature range; M = Military temperature range
2. To be announced
3. Typical value at  $V_{DD} = 10V$

# FAIRCHILD MEMORY

## SERIAL MEMORY

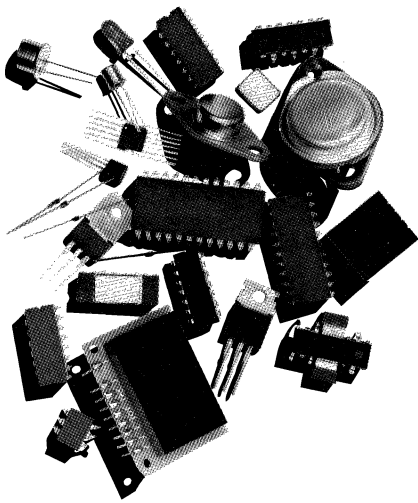
### FIFOs, LIFOs AND SHIFT REGISTERS

Item	Organization	DEVICE NO.	Description	Frequency MHz (Max)	Power Dissipation mW (Max)	Temperature <sup>(1)</sup>	No. of Pins	Logic/Connection Diagram	Package(s)
<b>MOS</b>									
1	32x6	<b>3348</b>	Static Shift Register	1.0	150	C	24	M36	7M
2	32x6	<b>3349</b>	Static Shift Register	1.0	150	C	16	M37	6Z,8K,9B
3	64x4	<b>3341</b>	FIFO	0.7	450/625 <sup>(2)</sup>	C,L,M	16	M38	6Z,8K
4	64x4	<b>3341A</b>	FIFO	1.0	450	C	16	M38	6Z,8K
5	64x4	<b>3342</b>	Static Shift Register	1.5	380	C	16	M35	6Z,8K,9B
6	80x4	<b>3347</b>	Static Shift Register	1.5	380	C	16	M35	6Z,8K,9B
7	80x4	<b>33571</b>	Static Shift Register	4.0	375	C	16	M35	6Z
8	80x4	<b>33572</b>	Static Shift Register	2.0	285	C	16	M35	6Z
9	40x9	<b>33511</b>	FIFO	2.0	420	C	28	M39	8E
10	40x9	<b>35512</b>	FIFO	1.0	520	C,L,M	28	M39	8E
11	16x4Kx1	<b>F464-2</b>	CCD Dynamic Shift Register	1.0 <sup>(4)</sup> -5.0	336/66 <sup>(3)</sup>	C	16	M27	QB
12	16x4Kx1	<b>F464-3</b>	CCD Dynamic Shift Register	1.0 <sup>(4)</sup> -4.0	336/66 <sup>(3)</sup>	C	16	M27	QB
13.	16x4Kx1	<b>F464-4</b>	CCD Dynamic Shift Register	1.0 <sup>(4)</sup> -2.0	336/66 <sup>(3)</sup>	C	16	M27	QB
<b>CMOS</b>									
14	16x4	<b>4703B</b>	FIFO	5.3	0.5	C,M	24	M48	4M,6Q,9U
15	16x4	<b>4706B</b>	LIFO	5.3	0.5	C,M	24	M49	4M,6Q,9U
<b>TTL</b>									
16	16x4	<b>9403</b>	FIFO	10	850	C,M	24	M51	6Q,9U
17	16x4	<b>9406</b>	LIFO	10	800	C,M	24	M52	6Q,9U

1. C = Commercial temperature range; L = Limited military temperature range; M = Military temperature range
2. Military and limited military temperature range
3. Standby power
4. Minimum frequency specification







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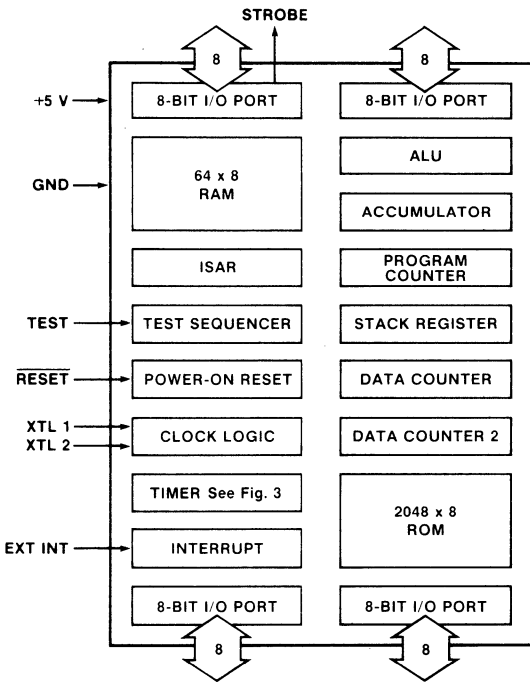
MICROMACHINE™ SERIES

MICROMACHINE™

MicroMachine™ devices are complete 8-bit microcomputers on single MOS integrated circuits. The family can execute the F8 instruction set of more than 70 commands, allowing expansion into multi-chip configurations with software compatibility. The devices feature read only memory, 64 bytes of scratchpad RAM, a programmable binary timer, 32 bits of I/O, and a single +5 V power supply requirement.

Members of the family differ in memory type and size. The F3870 has 2048 bytes of mask programmed ROM while the F38E70 has 2048 bytes of PROM. The F3872 has 3K bytes of masked ROM plus 64 bytes of RAM. The additional RAM is addressed from the program and data counters, not the ISAR. The F3874 contains 4096 bytes of masked programmed ROM.

Utilizing ion-implanted, n-channel silicon-gate technology and advanced circuit design techniques, Fairchild's single-chip microcomputers offer maximum cost effectiveness in a wide range of control and logic replacement applications.



DEVELOPMENT SUPPORT

The Formulator family of development equipment supports the F3870, the one-chip micromachine manufactured by Fairchild. The Formulator Operating System, Utility Programs, and the Fairbug Monitor are totally compatible with the F3870, since it shares the same instruction set with the Formulator. A Simulation (Quad I/O) Module and an In-Circuit Emulation (ICE) cable are available to extend the Formulator features to the user's prototype or production breadboard. This creates a powerful design tool for creating the user's own F3870 software. In addition, the F3870 Emulator, a single stand-alone module for emulating the final F3870 software in PROMs, is available for building prototype systems.

F3870 SIMULATION

The non-microprocessor elements of the user's hardware configuration can be assembled on a breadboard and connected to Mark I, II, IIFD, III or IIIFD via the ICE cable plugged into a 40-pin socket on the user's board.

The cable connector on the Processor Module in the Formulator provides I/O ports 0 and 1, while the Simulation (Quad I/O) Module provides I/O ports 4 and 5. This system provides real-world simulation of the user's components in their actual environment with the vital microprocessor signals, including the complete software debugging features of the Formulator, cabled to the external breadboard.

F3870 EMULATOR

After F3870 ROM codes are frozen, a smaller, easier-to-handle and less expensive tool is required. To accomplish this design-in task, Fairchild has developed the F3870 Emulator. The F3870 Emulator contains sockets for two 2708s or two 2716 EROMs in place of the F3870 on-chip ROM so ROM codes can be verified and easily changed. The F3870 Emulator plugs directly into the F3870 40-pin socket in the production prototype using a short Emulator cable. The printed circuit module is approximately 5" by 7".

# FAIRCHILD MICROCOMPUTERS

## MICROMACHINE™ SERIES

### FEATURES

FUNCTION	F3870 Micro- Machine	F38E70* Micro- Machine	F3872* Micro- Machine	F3874* Micro- Machine
Arithmetic Unit	Yes	Yes	Yes	Yes
Accumulator	Yes	Yes	Yes	Yes
64-byte Scratchpad RAM	Yes	Yes	Yes	Yes
Power On Detect	Yes	Yes	Yes	Yes
Clock Circuits	Yes	Yes	Yes	Yes
Interrupt Logic	Yes	Yes	Yes	Yes
Instruction Register	Yes	Yes	Yes	Yes
I/O Ports (8 lines each)	4	4	4	4
ROM (K bytes)	2K	—	3K	4K
EROM (K bytes)	—	2K	—	—
64-byte RAM	—	—	Yes	—
Program Counter	Yes	Yes	Yes	Yes
Stack Register	Yes	Yes	Yes	Yes
Data Counters	2	2	2	2
Programmable Timer	Yes	Yes	Yes	Yes
External Interrupt	Yes	Yes	Yes	Yes
Pulse Width Measure	Yes	Yes	Yes	Yes
Event Counter	Yes	Yes	Yes	Yes
Vectored Interrupts	Yes	Yes	Yes	Yes
+5V required	Yes	Yes	Yes	Yes
Power mW (Typ)	275	325	310	285
Maximum # in system	1	1	1	1
Logic/Connection Diagram	P9	P9	P9	P9
Package(s)	61,8P	—	61,8P	61,8P

\*To be announced

Note: The F3872 has an optional power down feature that allows the 64 byte RAM to be saved with a +2 V. Supply that will dissipate 2.5 mW. Two I/O port pins are traded for this function.

# FAIRCHILD MICROCOMPUTERS

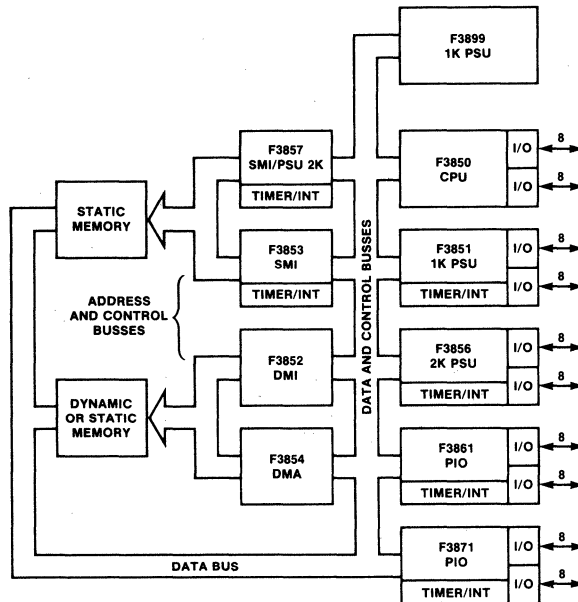
## MICROCOMPUTER TRAINING COURSES

Fairchild offers training courses which are aimed at the design engineer who must learn to design the microprocessor into a working system. Both software (instruction sets) and hardware related instruction is given. Emphasis is placed on "hands-on" instruction with microprocessor development systems.

To achieve this understanding, the courses cover the details of I/O ports, use of subroutines and interrupts, where and how the ROM and RAMs are attached to the CPU and how to interface with static or dynamic memories.

Two separate four day courses are offered. One covers the F8 device family and the Micromachine series hardware and software design. The other course covers the F6800 device family in the same manner. An optional fifth day allows instruction in the alternate microprocessor.

## F8 MICROPROCESSOR FAMILY



# FAIRCHILD MICROCOMPUTERS

## F8 MICROPROCESSOR FAMILY

### FEATURES

FUNCTION	F3850 CPU	F3851 PSU	F3852 DMI	F3853 SMI	F3854 DMA	F3856 PSU	F3857 PSU/SMI	F3861 PIO	F3871 PIO	F3899 ROM
Arithmetic Unit	Yes									
Accumulator	Yes									
64-byte Scratchpad RAM	Yes									
Power on Detect	Yes									
Clock Circuits	Yes									
Interrupt Logic	Yes	Yes		Yes		Yes	Yes	Yes	Yes	
Instruction Register	Yes									
I/O Ports (8 lines each)	2	2				2		2	2	
ROM (K bytes)		1K				2K	2K			1K
Data Bus (8 lines)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Address Bus (16 lines)			Yes	Yes	Yes		Yes			
Control Bus (5 lines)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Program Counter		Yes	Yes	Yes		Yes	Yes			Yes
Stack Register		Yes	Yes	Yes		Yes	Yes			Yes
Data Counters		1	2	2		2	2			1
Programmable Timer		Yes		Yes		Yes	Yes	Yes	Yes	
External Interrupt		Yes		Yes		Yes	Yes	Yes	Yes	
Pulse Width Measure						Yes	Yes		Yes	
Event Counter						Yes	Yes		Yes	
Vectored Interrupts		Yes		Yes		Yes	Yes	Yes	Yes	
Memory Refresh Control			Yes							
DMA Control			Yes		Yes					
+5V required	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
+12V required	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Power mW (Typ)	330	270	330	330	280	785	785	270	270	270
Maximum # in System	1	63	1	1	4	31	1	62	62	63
Logic/Connection Diagram	P1	P2	P3	P4	P5	P6	P7	P2	P6	P8
Package(s)	6I,8P	6I,8P	6I,8P	6I,8P	6I,8P	6I,8P	6I,8P	6I,8P	6I,8P	6I,8P

Number of ports in System is limited by addressing. The maximum is 256 Port Addresses (each F8 device uses 4 Port Addresses). Maximum memory is 64K bytes RAM/ROM/PROM.

The F38T56 and F38T57 incorporate the F3871-type of timer logic and strobe logic. These devices will be available 3rd quarter 1978.

**PORT ADDRESSING**

**F8 MICROPROCESSOR FAMILY**

Item	DEVICE NO.	PORT A		PORT B		PORT C		PORT D		TIMER INTERRUPT VECTOR ADDRESS	PORT TYPES
		ADDR.	FUNC.	ADDR.	FUNC.	ADDR.	FUNC.	ADDR.	FUNC.		
1	F3850	0	I/O	1	I/O						Standard
2	F3851	XXXXXX00	I/O	XXXXXX01	I/O	XXXXXX10	Control	XXXXXX11	Timer	Mask Option	Mask Option
3	F3851A	4	I/O	5	I/O	6	Control	7	Timer	H'0020'	Standard
4	F3852	H'OC'		H'OD'	Control	H'OE'		H'OF'			
5	F3852/ SL31116	H'EC'		H'ED'	Control	H'EE'		H'EF'			
6	F3853	H'OC'	Interrupt Vector Addr. Lo	H'OD'	Interrupt Vector Addr. Hi	H'OE'	Control	H'OF'	Timer	Software Programmable	
7	F3854	1111YY00	DMA Mem. Addr. Lo	1111YY01	DMA Mem. Addr. Hi	1111YY10	Control Hi Count	1111YY11	Lo Count		
8	F3856	XXXXXX00	I/O	XXXXXY01	I/O	XXXXXX10	Control	XXXXXX11	Timer	Mask Option	Mask Option
9	F38T56	XXXXXX00	I/O	XXXXXY01	I/O	XXXXXX10	Control	XXXXXX11	Timer	Mask Option	Mask Option
10	F3856A	8	I/O	9	I/O	H'OA'	Control	H'OB'	Timer	H'0024'	Standard
11	F3857					XXXXXX10	Control	XXXXXX11	Timer	Mask Option	Mask Option
12	F3861A	4	I/O	5	I/O	6	Control	7	Timer	H'0600'	Standard
13	F3861B	8	I/O	9	I/O	H'A'	Control	H'B'	Timer	H'0340'	Standard
14	F3861C	H'20'	I/O	H'21'	I/O	H'22'	Control	H'23'	Timer	H'0320'	Standard
15	F3861D	H'24'	I/O	H'25'	I/O	H'26'	Control	H'27'	Timer	H'0360'	Standard
16	F3861E	4	I/O	5	I/O	6	Control	7	Timer	H'0020'	Standard
17	F3871E	4	I/O	5	I/O	6	Control	7	Timer	H'0020'	Standard
18	F3871F	4	I/O	5	I/O	6	Control	7	Timer	H'0020'	Direct Drive
19	F3871G	4	I/O	5	I/O	6	Control	7	Timer	H'0020'	Open Drain
20	F3871H	4	I/O	5	I/O	6	Control	7	Timer	H'0420'	Standard

- XXXXXX is a Mask Option
- YY is a Pin Strap Option (1111YY00)
- The External Interrupt Address Vector is the Timer Address + H'0080'
- Three different types of timers and control ports exist. For further detail see Figures 1, 2, and 3.
- F38T56 and F38T57 have F3871-type timer and strobe logic.



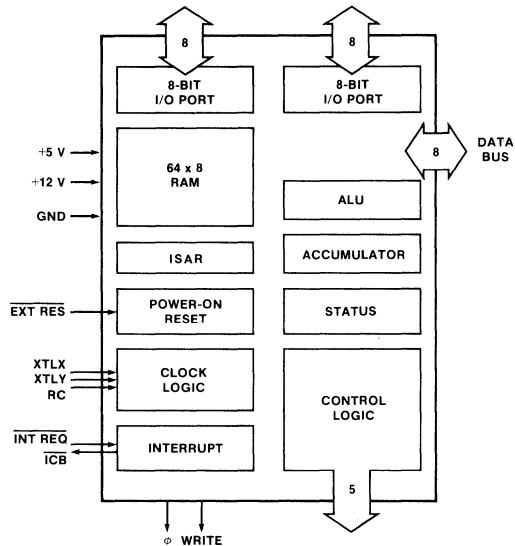
# FAIRCHILD MICROCOMPUTERS

## F8 MICROPROCESSOR FAMILY

### F3850 CENTRAL PROCESSING UNIT (CPU)

The CPU is an 8-bit arithmetic device with 70 instructions. It contains a 64-byte RAM, an instruction register, an accumulator, two parallel I/O ports, an interrupt control, power on reset and clock generation logic. The CPU provides communication control lines to the other members of the family.

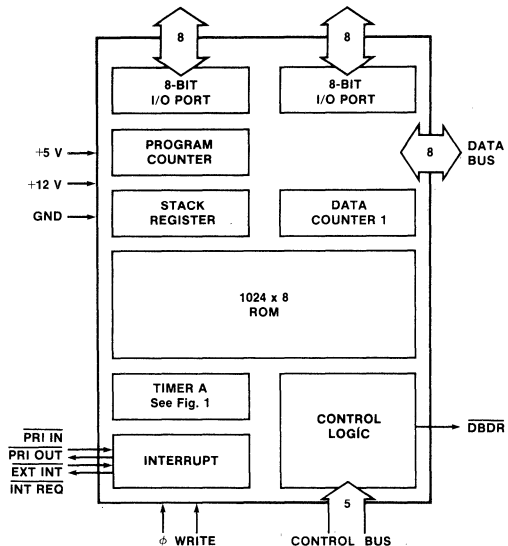
The F8 offers several alternatives for connecting memory to the system. These may be used individually, or in various combinations, depending upon the requirements.



F3850 CPU

### F3851 PROGRAM STORAGE UNIT (PSU)

The F3851 PSU contains 1024 bytes of mask programmable ROM, a program counter and a data counter. It also has two parallel I/O ports, an 8-bit data port, a stack register, an incrementer/adder, a programmable timer and an interrupt control. Several F3851 circuits may be put in one system, thus increasing the ROM, I/O, and interrupt capability of the system. The F3851 program storage unit may be used alone, or in combination with one of the memory interface circuits.

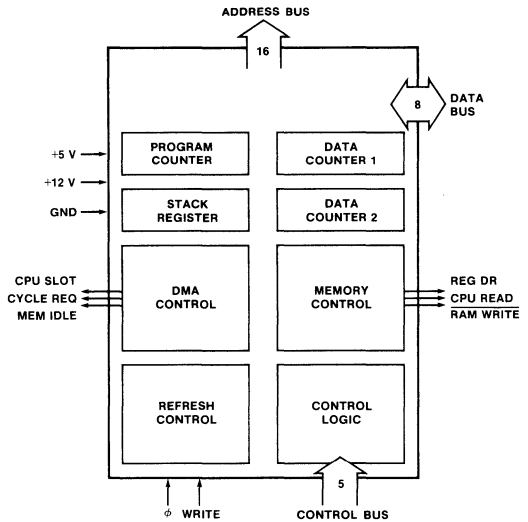


F3851 PSU

F8 MICROPROCESSOR FAMILY

**F3852 DYNAMIC MEMORY INTERFACE (DMI)**

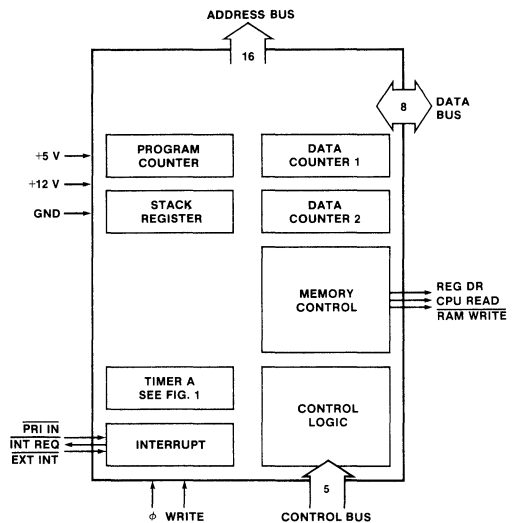
The DMI provides an appropriate interface for either static or dynamic memory components. When dynamic RAM circuits are used the DMI provides the necessary refresh controls required to maintain memory integrity. Another function of the DMI is to provide control for the F3854 DMA circuit. The dynamic memory refresh cycles and the DMA transfers are performed without slowing the central processor. The DMI also contains a program counter, data counter, an auxiliary data counter, stack register, incrementer/adder, an 8-bit data bus and a 16-bit address bus for communication with external memory. The DMI may be used solely with the CPU, or in conjunction with the F3851 PSU device.



F3852 DMI

**F3853 STATIC MEMORY INTERFACE (SMI)**

The SMI is the second of three alternative devices in the F8 family which may be used with the 3850 CPU for memory interface. The SMI provides the necessary control for static memory components such as the 2102 RAM, 2708 EPROM, or 93448 PROM. The SMI also contains a program counter, data counter, an auxiliary data counter, stack register, incrementer/adder, a programmable timer, an 8-bit data bus and a 16-bit address bus for communication with external memory. The F3853 may be used solely with the CPU, or in conjunction with F8 PSU devices.

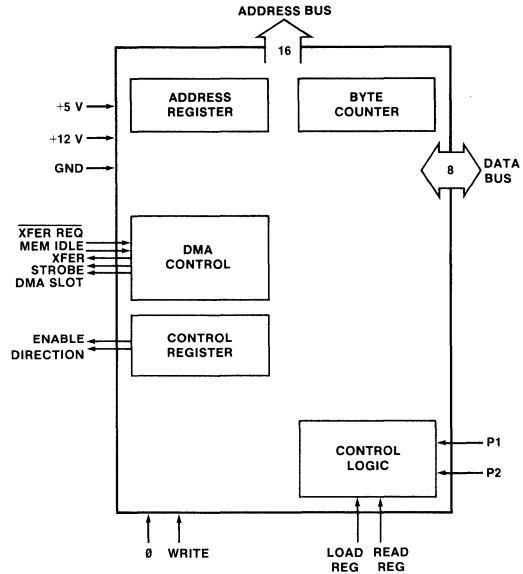


F3853 SMI

F8 MICROPROCESSOR FAMILY

**F3854 DIRECT MEMORY ACCESS UNIT (DMA)**

The DMA circuit allows memory access from an external device during periods when the CPU is not using the memory. The F3852 DMI provides a control line which indicates periods when the memory is idle. During these periods the DMA transfers data between an external device and the memory. This operation is performed without slowing the central processor. In addition, the DMA contains a 16-bit memory address bus, an 8-bit data bus, programmable address vector and data length counter.



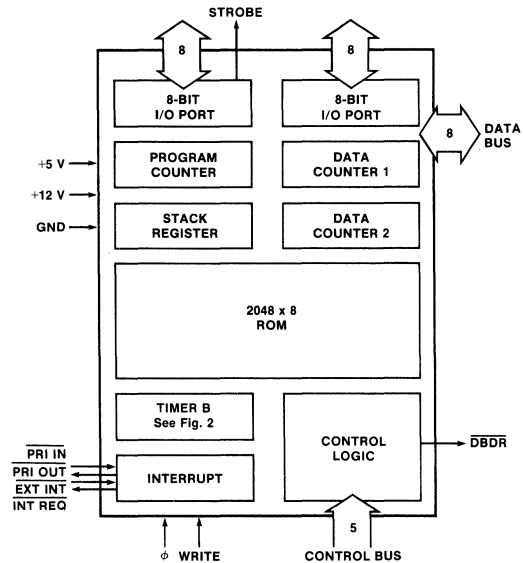
F3854 DMA

**F3856 PROGRAM STORAGE UNIT (PSU)**

It is important to note that Fairchild's program storage unit is not just a conventional read only memory. In addition to containing 2048 bytes of mask programmable ROM for program and constant storage, the F3856 includes the addressing logic for memory referencing, a program counter, an indirect address register (the data counter) and a stack register. A complete vectored interrupt level, including an external interrupt line to alert the central processor, is provided. All of the logic necessary to request, acknowledge and reset the interrupt is on the F3856. The 8-bit programmable timer is especially useful for generating real time delays. The PSU has an additional 16 bits of TTL compatible, bidirectional, fully latched I/O lines.

Systems requiring more program storage may be expanded by adding more PSU circuits. For example, one F3850 and two F3856 PSUs will produce a microprocessor system complete with 64 bytes of RAM, 4096 bytes of ROM, 48 I/O bits, two interrupt levels, and two programmable timers. This complete system will require only three IC packages.

The F38T56 incorporates the F3871-type timer and strobe logic.



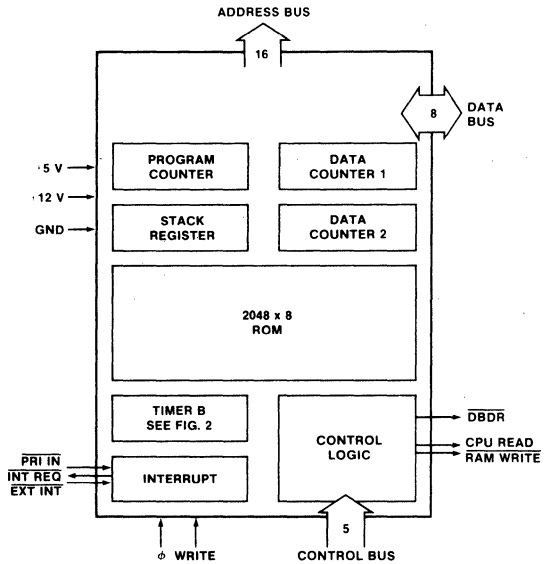
F3856 PSU

F8 MICROPROCESSOR FAMILY

**F3857 PROGRAM STORAGE UNIT/STATIC MEMORY INTERFACE (PSU/SMI)**

The F3857 is the third alternative device in the F8 family which may be used with the F3850 CPU for memory interface. The PSU/SMI provides the necessary control for static memory components such as the 2102 RAM or F2708 EPROM. The PSU/SMI also contains a program counter, data counter, an auxiliary data counter, stack register, incrementer/adder, a programmable timer, an 8-bit data bus and a 16-bit address bus for communication with external memory. The F3857 may be used solely with the CPU, or in conjunction with other members of the F8 family. The F3857 differs from the F3853 in that a 2048 byte mask programmable ROM is also included.

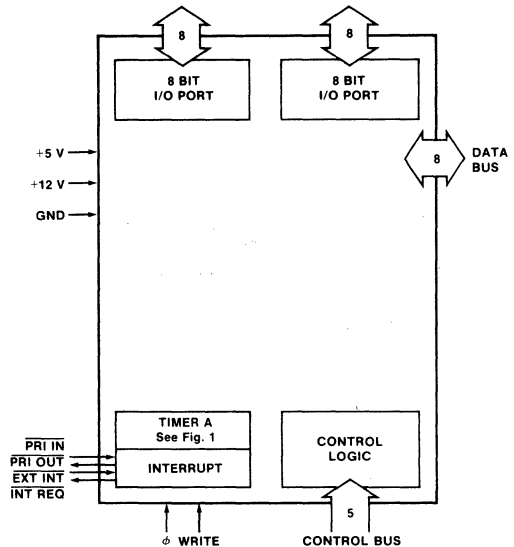
The F38T57 incorporates the F3871-type timer and strobe logic.



F3857 PSU/SMI

**F3861 PERIPHERAL I/O DEVICE (PIO)**

The PIO is an expansion unit for I/O ports, interrupts and timers. It contains two 8-bit I/O ports, one interrupt control, and one programmable timer. Depending on the application requirements, multiple PIOs may be added to the system to expand the functions at low cost.

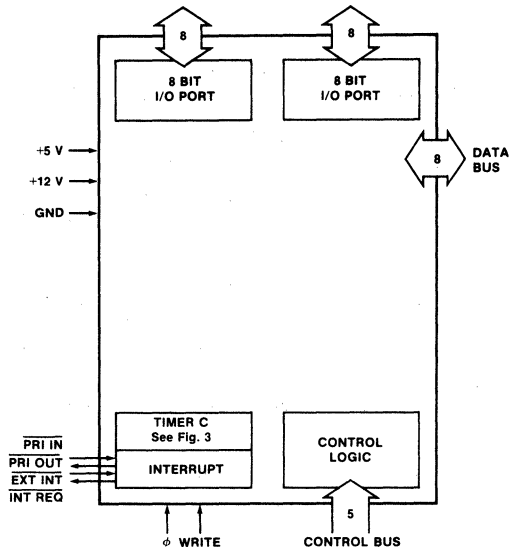


F3861 PIO

F8 MICROPROCESSOR FAMILY

**F3871 PERIPHERAL I/O DEVICE (PIO)**

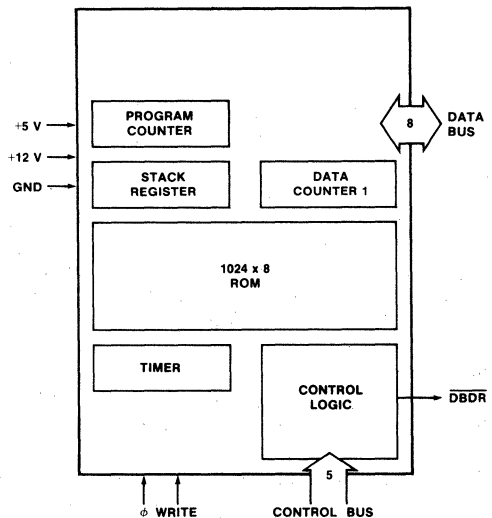
The PIO is an expansion unit for I/O ports, interrupts and timers. It contains two 8-bit I/O ports, one interrupt control, and one programmable timer. Depending on the application requirements, multiple PIOs may be added to the system to expand the functions at low cost. The versatile timer/interrupt circuit has the ability to measure external pulse widths, or count external pulses in addition to providing a timer with resolution of 1.0μs at 2.0MHz.



F3871 PIO

**F3899 PROGRAM STORAGE UNIT (PSU)**

The F3899 PSU contains 1024 bytes of mask programmable ROM, a program counter, stack register, and a data counter. The F3899 provides a low cost ROM memory to augment the F8 family.



F3899 PSU

MICROMACHINE™ SERIES AND F8 FAMILY TIMERS

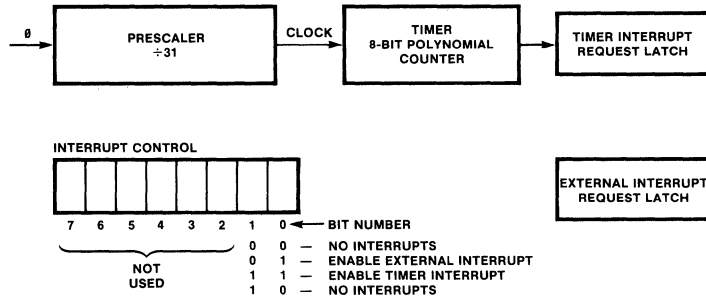


Fig. 1 Timer and Interrupt Control for F3851, F3853 and F3861

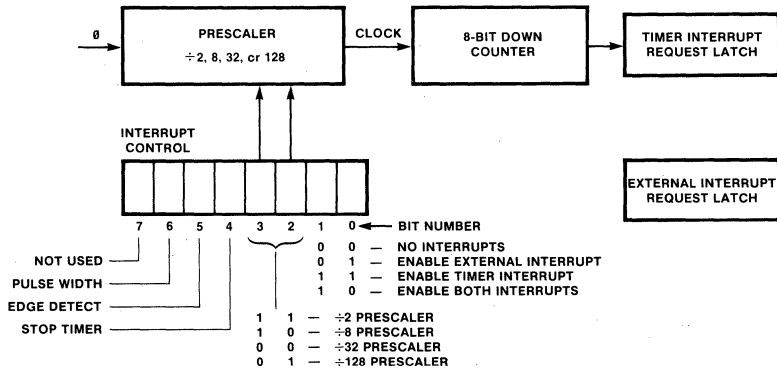


Fig. 2 Timer and Interrupt Control for F3856 and F3857

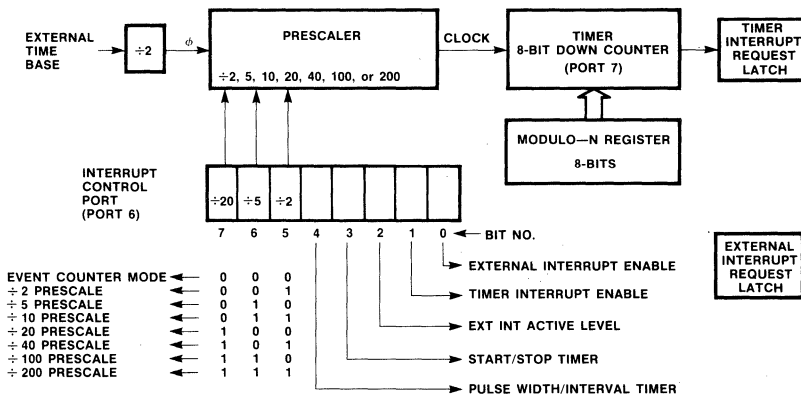


Fig. 3 Timer and Interrupt Control for F3870 and F3871

## MICROMACHINE™ SERIES AND F8 FAMILY DESIGN AIDS

The microprocessor system designer can now create his own hardware and software development systems by selecting modular subassemblies from Fairchild's Formulator design aids. He may start development with a Mark I singleboard system, then expand to more sophisticated Mark II or Mark IIFD development systems that can handle both software and hardware development. Or, he may graduate to a complete Formulator Mark III with intelligent front panel, power supply, and accessories or to the top of the line Formu-

lator Mark IIIFD with floppy disk drives.

Three growth packages plus a selection of optional modules provide a practical method for upgrading the single-board Mark I to either the Mark II or Mark IIFD or to the maximum system configuration Mark III or Mark IIIFD. Using the growth packages, the designer can begin sophisticated system application programs at very low cost and then upgrade his development tools in relatively inexpensive steps.

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### FORMULATOR MARK I

The first member of the Formulator family, the Formulator Mark I, is a basic microcomputer development tool providing the hardware necessary to build prototype systems. Included in the basic system is the Formulator Processor Module with the F8 CPU, Static Memory Interface, Dynamic Memory Interface, and Program Storage Unit devices. The Fairbug debug program, a 1K-byte monitor debug package, is included in the Program Storage Unit on the Processor Module. Fairbug provides the Mark I with sufficient debug capability to load a program, examine registers, monitor and alter memory locations, store a program on an external file, and generate a tape suitable for burning PROM memory devices. The Mark I also comes equipped with a 13-slot card cage and motherboard for attaching the modular Formulator printed circuit boards. Cables and documentation are also included in the F8 Formulator Mark I system, including a peripheral interface cable which can connect the Mark I to a Teletype ASR33 or TI Silent 733 for external communication.

#### Hardware

- Formulator Processor Module
- Formulator Card Cage and Motherboard
- Processor Module to Peripheral Cable
- Power Cable
- Cable Kit

#### Software

- Fairbug Debug Program

#### Documentation

- Formulator User's Guide
- Formulator Hardware Reference Manual
- Formulator Mark I Systems Coverage Manual
- Formulator Utilities Manual

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### FORMULATOR MARK II

The second member is the Formulator Mark II. This unit is a low cost microcomputer software and hardware development tool. It includes the basic hardware required to develop a system, as well as the necessary software tools to develop object code. The Mark II consists of all the components of the Mark I, namely the Processor Module, card cage and motherboard, cable kit, and the Fairbug debug program, as well as an additional 16K-byte RAM module. Also a part of the Mark II is the Formulator Operating System, including the editor, relocating assembler, and debug package to allow the generation of source code and to create and check out object code. Peripheral interfaces are also available to connect the Mark II to a TI Silent 733 or Teletype ASR33.

#### Hardware

- Formulator Processor Module
- 16K-Byte RAM Module
- Formulator Card Cage and Motherboard
- Processor Module to Peripheral Cable
- Power Cable
- Cable Kit

#### Software

- Formulator Operating System

#### Documentation

- Formulator User's Guide
- Formulator Hardware Reference Manual
- Formulator Mark II Systems Coverage Manual
- Formulator Utilities Manual

**MICROMACHINE™ SERIES AND F8 FAMILY DESIGN AIDS**

**FORMULATOR MARK IIFD**

The third member is the Formulator Mark IIFD, a floppy-disk based low-cost microcomputer software and hardware development tool. It includes the basic hardware required to develop a system, as well as the necessary software tools to develop programs. The Mark IIFD consists of all the components of the Mark I, namely the Processor Module, card cage and motherboard, cable kit, and the Fairbug debug program, as well as an additional 16K-byte RAM Module. The F8-DOS-III is also a part of the Mark IIFD. It includes a floppy-disk file manager, editor, relocating assembler, and debug package to generate source code and to create and check out object code. The Mark IIFD can communicate with teletype ASR33 and other standard RS232 CRT or printing terminals.

**Hardware**

- Parallel Interface Module
- Prom Boot Loader Module
- Formulator Processor Module
- 16K-Byte RAM Module
- Formulator Card Cage and Motherboard
- Processor Module to Peripheral Cable
- Power Cable
- Cable Kit

**Software**

- F8-DOS-III Floppy Disk Operating System

**Documentation**

- Formulator User's Guide
- Formulator Hardware Reference Manual
- Formulator Mark II Systems Coverage Manual
- Formulator Utilities Manual

**FORMULATOR MARK III**

The fourth level of microprocessor development equipment is the Formulator Mark III, offering all of the design assistance required to develop microprocessor systems. The combination of hardware, software, and firmware offered by the Mark III assists the designer from the generation of source programs through the development of a prototype system. The Mark III is a modular microcomputer that accommodates a variety of memory, input/output, and communication configurations to form a new and powerful development system. It contains all of the components of the Mark II—the Processor Module, card cage and motherboard, cable kit, the Fairbug debug program, 16K bytes of RAM, and the Formulator Operating System. In addition, the Mark III includes a Quad I/O Module with four I/O ports and two interrupts, a Communications Module with an on-board UART, a universal breadboard for building user hardware configurations, an extender module, and an intelligent operator's panel. Power supplies for the Mark III may be either 100 volts, 115 volts, or 220 volts at 50/60Hz. Peripheral interfaces are available to connect the Mark III with a TI Silent 733, a Teletype ASR33, or an HP 2645A Mini-Data Station.

**Hardware**

- Formulator Mainframe
- Designer's Console with Firmware
- Formulator Processor Module
- 16K-Byte RAM Module
- Quad I/O Port Module
- Communications Module
- Universal Breadboard
- Extender Module
- Cable Kit
- User I/O Cable Assembly
- Communications Module to Peripheral Cable

**Software**

- Fairbug Debug Program
- Formulator Operating System

**Documentation**

- Formulator User's Guide
- Formulator Hardware Reference Manual
- Formulator Mark III Systems Coverage Manual
- Formulator Utilities Manual

**FORMULATOR MARK IIIFD**

The top of the line in microprocessor development equipment is the floppy-disk-based Formulator Mark IIIFD, offering all of the design assistance required to develop microprocessor based systems. The combination of hardware, software, and firmware offered by the Mark IIIFD assists the designer from the generation of source programs through the development of a prototype system. The Mark IIIFD is a modular microcomputer that accommodates a variety of memory, input/output, and communication configurations to form a new and powerful development system. It contains all of the components of the Mark IIFD, the Processor Module,

card cage and motherboard, cable kit, the Fairbug debug program, parallel interface, PROM boot loader, 16K bytes of RAM, and the F8-DOS-III disk operating system. In addition, the Mark IIIFD includes a quad I/O module with four I/O ports and two interrupts, a communications module with an on-board UART, a universal breadboard for building user hardware configurations, an extender module, and an intelligent operator's panel. Power supplies for the Mark IIIFD may be either 100 volts, 115 volts or 220 volts at 50/60Hz. The Mark IIIFD can communicate with teletype ASR33 or other standard RS232 glass or printing terminals.



# FAIRCHILD MICROCOMPUTERS

## MICROMACHINE™ SERIES AND F8 FAMILY DESIGN AIDS

### FORMULATOR MARK IIIFD (Cont'd)

#### Hardware

Formulator Mainframe  
 Designer's Console with Firmware  
 Formulator Processor Module  
 Parallel Interface Module  
 PROM Boot Loader Module  
 16K-Byte RAM Module  
 Quad I/O Port Module  
 Communications Module  
 Universal Breadboard  
 Extender Module  
 Cable Kit

User I/O Cable Assembly  
 Communications Module to Peripheral Cable

#### Software

F8-DOS-III Floppy Disk Operating System

#### Documentation

Formulator User's Guide  
 Formulator Hardware Reference Manual  
 Formulator Mark III Systems Coverage  
 Formulator Utilities Manual

### F8-DOS-III DESCRIPTION

The Formulator F8-DOS-III operating system provides floppy-disk bulk storage capability for Fairchild's Formulator Mark IIFD and Mark IIIFD F8 microcomputers when used with up to four plug-compatible iCOM® series FD 360, FD3700 and Frugal Floppies™ providing for over one megabyte of total storage capacity.

F8-DOS-III provides a powerful and complete development software package with batch operation, linking loader, and relocating assembler, and provides an easy to use, reliable, fast and extremely efficient capability for auxiliary program and data storage during F8 and F3870 software development or in end-user applications.

iCOM® Advertised	F8-DOS-III SUMMARY			
FD3700 Series Features	Disk Monitor	Editor	Relocating Assembler	Real-Time Debugger
Fully IBM 3740 media and format compatible	Assemble (Relocating)	Move Line	No-List Option	Symbolic Debugging
Full formatter and controller built-in	Load (Linking)	Copy Line	No-Object Option	Set Up to 8 Breakpoint
Full sector Read/Write buffers	List Directory	Bottom	Error Messages	Clear Breakpoint
allow asynchronous or DMA data transfer	Print File	Change	Invalid Label	Clear All Breakpoints
Drive and diskette Write Protect capability	Rename File	Delete	Duplicate Label	Continue Execution
Positive latching door mechanism	Create File	File	Invalid Op Code	Go To Location
Up to 4 drives with no software or hardware modifications	Delete File	Find String	Operand Error	Return to Monitor
MTBF in excess of 2300 hours (FD 3712 dual drive)	Copy File	Insert	Syntax Error	Single Step
Plug-in convenience allows MTTR of 18 minutes	Copy Disk	Locate String	Undefined Symbol	Trace On Long
Front panel LED status indicators	GenMod (Created	Next	Expression Storage	Trace On Short
LED drive select indicators	Linked File)	Replace	Overflow	Trace Off
Fully retracting head and pressure pad for maximum diskette life	Edit Mode	Tab	Relocatability	Display Memory
50 pin flat ribbon cable with 3M interface connector—FD 360 compatible	Load (Absolute)	Top	Error	Display Register
	DeBug Mode	Type	Pseudo Operand	Display Port
	Assign Virtual I/O	Up	Error	Store Memory
	Burn PROM		Cross Reference	Store Register
	Convert			Store Port
	ROM Dump			

## MICROMACHINE™ SERIES AND F8 FAMILY DESIGN AIDS

### FORMULATOR GROWTH PACKAGES

The Mark I, Mark II, and Mark III Formulator systems previously described are all upwards compatible. The Mark I can be expanded to become a Mark II; likewise, the Mark II may be developed into a Mark III. In addition, a Mark II can be expanded to a Mark IIFD and a Mark III into a Mark IIIFD. This means that a microprocessor system designer may enter the microcomputer design at a level which best matches the needs at hand—amount of available money, time, microprocessor experience—and be able to increase the Formulator's capabilities as his needs grow. Three growth packages are available to Formulator product owners. Growth Package 1 converts a Mark I system to a Mark II; Growth Package 2 extends the capabilities of the Mark II into the Formulator Mark III, and Growth Package 3 extends a Mark II or III into a Mark IIFD or IIIFD.

#### Growth Package 1

- 16K-Byte RAM Module
- Mark II Formulator Operating System

#### Growth Package 2

- Quad I/O Module
- Communications Module
- Power Supply
- Fan
- Console Control Modules
- Internal Cable Wiring
- Universal Breadboard
- Extender Module
- I/O Cable Assembly
- Communications Module to Peripheral Cable
- Mark III Formulator Operating System

#### Growth Package 3

- Parallel Interface Module
- PROM Boot Loader Module
- F8-DOS-III System Diskette

### PERIPHERAL OPTIONS

The Formulator Mark II systems interface with either a Teletype ASR33 with the auto read/auto punch option or a TI Silent 733 ASR with the ADC option. The teletype terminal provides a paper tape based system, while the 733 allows file storage on magnetic tape cassettes. To decrease load times, a Remex high speed paper-tape reader (or equivalent) may be used with either peripheral unit.

The Formulator Mark III provides an interface for the HP Mini-Data Station as well. This high speed unit combines the efficiency of the magnetic tape cartridges with an intelligent terminal and thermal line printer to allow the rapid development and debugging of application programs.

The Formulator Mark IIFD and IIIFD systems interface with any standard RS232 terminal and printer or printing terminal to offer maximum peripheral cost/speed flexibility.

#### HP MINI-DATA STATION

The HP 2645A Mini-Data Station features an interactive CRT Terminal with high resolution display and a fully integrated mass storage capability, making it easy to use both on- and off-line. It uses 2-1/2" x 3-1/4" x 1/2" magnetic cartridges which store up to 110 kilobytes of formatted data. The Mini-Data Station has two mini

cartridge drives, allowing for a total of 220 kilobytes of data storage on magnetic tape. Thus, all files—both operating system and user files—are resident on the magnetic tape. Loading and storing files is accomplished by reading and writing onto the cartridge. The user's time is decreased and efficiency increased when the magnetic tapes are used.

The 2645 Mini-Data Station comes equipped with three data cartridges, an Owner's Manual, and an Installation and Service Manual.

#### HP 9866A PRINTER SUBSTATION

The HP 9866A line printer is a moderately priced, high performance companion to the HP 2645A Mini-Data Station, providing a permanent record of the contents of the Mini-Data Station display and memory for future use. The printer operates at up to 240 lines per minute with a maximum line width of 80 characters. The character set consists of 64 alphanumeric characters generated by a 5 x 7 dot matrix. Since a thermal printing mechanism is used to make this printer quiet enough for normal office use, thermal sensitive paper is required. This paper is 8-3/4 inches wide and available in 250 foot rolls.

The 9866A thermal printer comes equipped with two rolls of paper, a power cord, an interface card and cable, and an Instruction Manual.

## MICROMACHINE™ SERIES AND F8 FAMILY DESIGN AIDS

### iCOM F3712 DUAL FLOPPY DISK

The iCOM FD3700 Series Floppy Disk System for microcomputers continues the tradition of the iCOM FD360. The FD3700 brings to the OEM, and to the development lab, proven reliability and popular features, while incorporating advanced styling and new convenience items.

#### The iCOM FD3700 Series features the following:

- Fully IBM 3740 media and format compatible
- Full formatter and controller built in
- Full sector read/write buffers allow asynchronous or DMA data transfer
- Drive and diskette write-protect capability
- Positive latching door mechanism
- Up to four drives with no software or hardware modifications
- MTBF in excess of 2300 hours (FD3712 dual drive)
- Plug-in convenience allows MTTR of 18 minutes

- Front panel LED status indicators
- LED drive select indicators
- Fully retracting head and pressure pad for maximum diskette life
- 50-pin flat ribbon cable with 3M interface connector—FD360 compatible

#### iCOM Performance features are as follows:

- Disk speed 360 RPM  $\pm$  1.5%
- 10 ms track-to-track access time
- 40 ms head load time
- 5 ms sector read/write time
- 83 ms average latency time
- 700 ms automatic head unload time
- 1 ms interrecord time

#### Power Requirements Are:

110-125 V<sub>ac</sub>, 60Hz, 200 W max  
Optional 220-240 V<sub>ac</sub>, 50Hz, 200 W is available

## OPTIONAL FORMULATOR MODULES

Expansion of the Formulator microcomputers need not occur along the path indicated by the growth packages. Optional Formulator modules are available to expand RAM, PROM I/O, and communications, so the user can develop a custom system which is perfectly suited to his specific needs. These optional modules may be attached to the Formulator via the 13 card slots in the motherboard. The first three slots are dedicated to front panel operations of the Mark III. Another slot is reserved for the Processor Module. The remaining nine slots are linked on a common bus whose signals are compatible with the modules themselves. Additional system functions may be easily added to any Formulator system by simply plugging in one of the modules. Thus, the initial Formulator investment is preserved.

Nothing needs to be discarded as demands upon the system increase. Unless otherwise noted, all of the following optional modules are available to update any Mark I, Mark II, Mark IIFD, Mark III, or Mark IIIFD system to meet expanded requirements.

#### Optional Modules

4K-Byte RAM Module  
16K-Byte RAM Module  
Quad I/O Port Module  
4K-Byte PROM Module  
Communications Module  
Byte Parallel Interface Module  
ROM Simulation Module  
Universal breadboard  
Extender Module  
I/O Light Display Board

## PROM PROGRAMMER

The ability to easily program permanent memory devices is essential to any microprocessor design. The Formulator PROM Programmer connects to a Quad I/O Module within either a Formulator Mark II or a Formulator Mark III, permitting the programming of any of the following fuseable link or ultraviolet light erasable PROMs from a pattern stored in the Formulator memory.

The 11" x 12" x 4" PROM Programmer is driven by a utility program contained within the Formulator Operating System and features a simple, easy to use com-

mand set. The commands, entered into the PROM Programmer from the Formulator peripheral via the keyboard, allow the user to transfer data from a PROM to memory, burn a PROM, verify a PROM pattern, manually enter a single byte of data, and display PROM locations using the system software. The programming idiosyncrasies of each PROM are contained in software look-up tables to relieve the user of intricate repetitious set-up. The procedure is simply to identify the PROM type (like 93448) and the PROM parameter look-up table is automatically invoked, defining such things as number of words, word bit length, burn time, wait time, retry conditions, etc. The programming is convenient

# FAIRCHILD MICROCOMPUTERS

## MICROMACHINE™ SERIES AND F8 FAMILY DESIGN AIDS

### PROM PROGRAMMER (Cont'd)

enough to allow the PROM Programmer to be used in a production environment.

Included in the basic system are two socket boards, one for the Fairchild 93436/93446 PROMs and one for the 93438/93448 PROMs. Socket boards for the ultraviolet eraseable devices are also available. A cable to the Quad I/O Module and a power cord are also included in the basic unit.

### Fairchild Fusible Link PROMS

93436 (512 x 4)  
 93446 (512 x 4)  
 93438 (512 x 8)  
 93448 (512 x 8)

### Ultraviolet Eraseable PROMS

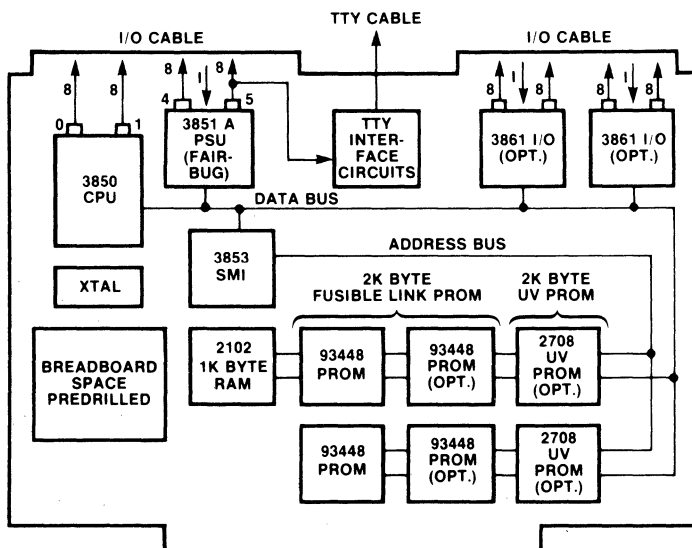
2704 (512 x 8)  
 2708 (1024 x 8)

### OCM-1 ONE-CARD MICROCOMPUTER

The OCM-1 is a complete microcomputer system contained on a single printed circuit board and offering the following features:

- 64-byte scratch pad memory
- 1K-byte RAM
- 8K-byte ROM (1K supplied, sockets provided for balance)
- 4K-byte EPROM (sockets provided)
- 4K-byte PROM (sockets provided)
- Up to four programmable timers
- Up to four programmable interrupts
- RS232 interface (current loop optional)
- 2MHz clock
- Self-contained Fairbug teletype operating system
- Up to 64 individually programmable, bidirectional, latched I/O lines.

The unit is based on the F8 microcomputer and is fully supported by the Formulator family of program development aids. In addition, the OCM-1 contains a built-in teletype operating system, called Fairbug I, contained in the F3851A Program Storage Unit. Using an OCM-1-to-TTY cable assembly, the board can be directly coupled to a teletype or RS232 terminal to display or alter memory location, to load and punch paper tape, or to make entries from the keyboard or by program instruction. An alternative built-in operating system, K-D Bug, contained in the F3856A PSU is also available. It provides all of the Fairbug I functions plus a resident monitor to facilitate operation with a low-cost calculator-style keyboard and LED display. A Fairbug user's guide is provided with the OCM-1. The K-D Bug should be ordered as a separate item.



### MICROMACHINE™ SERIES AND F8 FAMILY DESIGN AIDS

#### ONE CARD MICROCOMPUTER (Cont'd)

The OCM-1 processor section includes the 3850 Central Processing Unit, the F3853 Static Memory Interface, a 2MHz clock, and reset circuitry.

The OCM-1 memory section contains the capability for the use of five different types of storage including 64 bytes of scratch pad, 1K bytes of RAM, sockets for 2K bytes of EROM (2708), sockets for 2K bytes of fusible link PROM (93448), and the Fairbug I operating system.

The I/O portion of the system is contained in the F3850 Central Processing Unit and a F3851A Program Storage Unit, each containing two 8-bit I/O ports. Two sockets are provided for inserting standard F8 PIO circuits (F3861 or F3871) or, if more ROM is required, standard PSUs (F3851 or F3856) may be inserted. In either case, four additional I/O ports are provided bringing the maximum total to eight I/O ports (64 lines). Only single-byte instructions are required to individually program these lines for either input or output functions. Latches on each line reduce external hardware cost. A circuit on the board gives the OCM-1 the capability of communicating with a teletype, RS232 device or 20mA current loop.

In its standard configuration, the OCM-1 contains two interrupts and two timers, one in the F3851A PSU and one in the F3853 SMI. Two additional interrupts and timers may be added by plugging the two additional PIOs into their sockets. A "daisy-chained" priority system determines which interrupt will be serviced if two or more requests are made simultaneously.

The OCM-1 requires three power supply voltages: +12V @ 0.255 A, -5V @ 0.4 A and -5V @ 0.09 A. The -5V supply is used only for the 2708 EROM devices. All supply voltages are  $\pm 5\%$  maximum.

The entire microcomputer is contained on a single board (epoxy glass with solder mask) measuring approximately 7.5 inches by 10.5 inches. It includes a 2-inch by 4-inch pre-drilled breadboarding area for users who want to develop unique system configurations. In addition, a Formulator-compatible 100-pin edge connector, a special connector for TTY or terminal, and two 44-pin edge connectors for F8 signals, are contained on the board. A switch to enable the Fairbug operating system is also provided. The OCM-1 is delivered completed with OCM-1 Users Manual, Fairbug Users Guide and F8 Guide to Programming.

#### FORMULATOR SUPPORT

In addition to the optional boards, peripherals, cables, and other accessories, the Mark I, Mark II, and Mark III Formulator systems are supported by a wide range of documentation, and an intensive training program.

#### FORMULATOR DOCUMENTATION

The Formulator user has access to a full range of reference and instructional manuals to aid him in his system design and programming.

#### F8 USER'S GUIDE

The F8 User's Guide is a detailed description of the F8 family of microprocessor devices. Microprocessor systems are discussed, with the configurations of the F8 circuits examined in depth. The User's Guide also outlines the F8 instruction set. Detailed specifications of each member of the F8 microprocessor family is given, including functional descriptions, logic diagrams, signal load levels, and timing diagrams for each circuit. Typical F8 system configurations are also presented.

#### MICROMACHINE USER'S GUIDE

The Micromachine 2 User's Guide is a detailed description of the F3870, F38T70, F3872 and F3874 Micromachines. This manual covers programming and systems design with emphasis on application implementation.

#### GUIDE TO PROGRAMMING

The Guide to Programming is written for logic designers with little or no background in computer programming. It introduces machine and assembly language programming to the potential user of microprocessors and microcomputer systems. Introductory topics include flowcharting, memory allocation, source and object programs, and assembly language. More advanced topics include programmed I/O, interrupts, programmable timers, subroutines, macros, data manipulation, and programmed direct memory access channels. Numerous examples of these programming techniques are given.

#### FORMULATOR USER'S GUIDE

The Formulator User's Guide fully describes the operation of the Formulator Development system. It covers the Mark I, Mark II, and Mark III hardware configurations and contains a detailed description of the Formulator software—the monitor, the editor, the assembler, and the debug program. The F8 DOS-III User's Guide is also available for Mark IIFD and Mark IIIIFD systems.

#### FORMULATOR HARDWARE REFERENCE MANUAL

This book presents an in-depth technical description of the F8 Formulator System, its component subsystems, and options. The technical description includes general functional characteristics, theory of operation, and detailed description of interface signals.

# FAIRCHILD MICROCOMPUTERS

## F6800 MICROPROCESSOR FAMILY

### F6800 MICROPROCESSOR FAMILY

Item	DEVICE NO.	Function	Power Supply V	P <sub>D</sub> Max (Typ) mW	Cycle Time ns	Access Time ns	Memory Size	Logic/Connection Diagram	Package(s)
1	<b>F6800</b>	MPU, Address, Interrupt	5.0	(600)	1000			P10	6I,8P
2	<b>F68A00</b>	MPU, Address, Interrupt	5.0	(500)	667			P10	6I,8P
3	<b>F68B00</b>	MPU, Address, Interrupt	5.0	(500)	500			P10	6I,8P
4	<b>F6801<sup>(1)</sup></b>	Single Chip Microcomputer with 128x8 RAM	5.0	(500)	500		2Kx8 (ROM)	P10	6I,8P
5	<b>F6802</b>	MPU, Address, RAM Interrupt	5.0	(600)	1000		128x8 (RAM)	P19	6I,8P
6	<b>F68A02</b>	MPU, Address, RAM, Interrupt	5.0	(600)	667		128x8	P19	6I,8P
7	<b>F68B02</b>	MPU, Address, RAM, Interrupt	5.0	600	500		128x8	P19	6I,8P
8	<b>F6809<sup>(2)</sup></b>	MPU, Address, Interrupt	5.0		500/1K				6I,6T
9	<b>F6810</b>	Static RAM	5.0	400		460	128x8	P13	7R,9N
10	<b>F68A10</b>	Static RAM	5.0	400		360	128x8	P13	7R,9N
11	<b>F68B10</b>	Static RAM	5.0	400		250	128x8	P13	7R,9N
12	<b>F6820/21</b>	Parallel I/O 16 lines	5.0	550	1000			P11	6I,8P
13	<b>F68A21</b>	Parallel I/O 16 lines	5.0	550	667			P11	6I,8P
14	<b>F68B21</b>	Parallel I/O 16 lines	5.0	550	500			P11	6I,8P
15	<b>F68308</b>	Mask Prog ROM	5.0	650		500	1Kx8	P14	7R,9N
16	<b>F68A308</b>	Mask Prog ROM	5.0	650		360	1Kx8	P14	7R,9N
17	<b>F68B308</b>	Mask Prog ROM	5.0	650		250	1Kx8	P14	7R,9N
18	<b>F68316</b>	Mask Prog ROM	5.0			500	2Kx8	P15	7R,9N
19	<b>F68A316</b>	Mask Prog ROM	5.0			360	2Kx8	P15	7R,9N
20	<b>F68B316</b>	Mask Prog ROM	5.0			250	2Kx8	P15	7R,9N
21	<b>F6840</b>	Programmable Timer	5.0	550	1000			P16	8E,9Y
22	<b>F68A40</b>	Programmable Timer	5.0	550	667			P17	8E,9Y
23	<b>F68B40</b>	Programmable Timer	5.0	550	500			P17	8E,9Y
24	<b>F6843<sup>(1)</sup></b>	Floppy Disk Interface	5.0						6I
25	<b>F6844<sup>(1)</sup></b>	Direct Memory Access							6I
26	<b>F6845<sup>(1)</sup></b>	CRT Controller	5.0					P22	6I,8P
27	<b>F6846</b>	ROM, I/O, Timer	5.0	800	1000		2Kx8	P20	6I,8P
28	<b>F68A46</b>	ROM, I/O, Timer	5.0	800	667		2Kx8	P20	6I,8P

1. To be announced

2. F6809 supports the F6800 instruction set but also has enhanced instructions and additional hardware features.

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# FAIRCHILD MICROCOMPUTERS

## F6800 MICROPROCESSOR FAMILY

### F6800 MICROPROCESSOR FAMILY (Cont'd)

Item	DEVICE NO.	Function	Power Supply V	P <sub>D</sub> Max (Typ) mW	Cycle Time ns	Access Time ns	Memory Size	Logic/Connection Diagram	Package(s)
1	F68B46	ROM, I/O, Timer	5.0	800	500		2Kx8	P20	6I,8P
2	F68488	GP/A (IEEE Bus)	5.0					P25	6I,8P
3	F6850	Async Data Adapter	5.0	300	1000			P12	7R,9N
4	F68A50	Async Data Adapter	5.0	300	667			P12	7R,9N
5	F68B50	Async Data Adapter	5.0	300	500			P12	7R,9N
6	F6852	Sync Data Adapter	5.0	300	1000			P17	6J,9B
7	F68A52	Sync Data Adapter	5.0	300	667			P17	6J,9B
8	F68B52	Sync Data Adapter	5.0	300	500			P17	6J,9B
9	F6854	Advanced Data Link CTL	5.0		1000			P18	8E,9Y
10	F68A54	Advanced Data Link CTL	5.0		667			P18	8E,9Y
11	F68B54	Advanced Data Link CTL	5.0		500			P18	8E,9Y
12	F6860	0-600 BPS Modem	5.0	325				P23	7R,9N
13	F6862	2400 BPS Modulator	5.0	300				P24	7R,9N

### MICROPROCESSOR PERIPHERALS

Item	Function	DEVICE NO.	Temperature <sup>(3)</sup>	No. of Pins	Logic/Connection Diagram	Packages(s)
14	USART	F3843	C	28	S8	8E
15	Synchronous Protocol Communications Controller	F3846 <sup>(1)</sup>	C	40	—	—

1. To be announced

2. F6809 supports the F6800 instruction set but also has enhanced instructions and additional hardware features.

3. C = Commercial temperature range

## FAIRCHILD MICROCOMPUTERS

### 8-BIT BIPOLAR MICROPROCESSOR FAMILY

#### LSI PERIPHERAL LOGIC ELEMENTS

Item	DEVICE NO.	Functional Description	Power Supply V	Maximum Frequency MHz (Typ)	Power mW (Typ)	Logic/Connection Diagram	Package(s)
1	9401	16-Bit Cyclic Redundancy Generator/Checker	5.0	18	350	P26	6A,7A
2	9403	16x4-Bit Serial/Parallel FIFO Buffer Memory	5.0	10	600	P27	6Q,9U
3	9423	64x4-Bit Serial/Parallel FIFO Buffer Memory	5.0	8.0	750	P27	6Q,9U

#### BIT SLICE MICROPROCESSORS

Item	DEVICE NO.	Functional Description	Power Supply V	Maximum Frequency MHz (Typ)	Power mW (Typ)	Logic/Connection Diagram	Package(s)
4	9404	Data Path Switch	5.0	10	300	P28	6Q,9U
5	9405A	4-Bit Arithmetic Logic Register Stack (CPU slice with 8 Registers)	5.0	13	550	P29	6Q,9U
6	9406	16x4 push-down pop-up Program Stack	5.0	10	500	P30	6Q,9U
7	9407	Data Access Register (PC, SP and operand pointer)	5.0	10	450	P31	6Q,9U
8	9408	10-Bit Microprogram Sequencer/Controller (pipeline capability)	5.0	7.0	650	P32	6Q,9U
9	9408A	10-Bit Microprogram Sequencer/Controller (pipeline capability)	5.0	10	650	P32	6I,8P
10	9410	Register Stack (16x4 RAM with output latch)	5.0	25	375	P33	7D,9M



## FAIRCHILD MICROCOMPUTERS

### 8-BIT CMOS MICROPROCESSOR FAMILY

#### LSI PERIPHERAL LOGIC ELEMENTS

Item	DEVICE NO.	Functional Description	Power Supply V	Frequency MHz (Typ @ 5V)	Power mW (Typ @ 5V)	Logic/ Connection Diagram	Package(s)
1	<b>4702B</b>	Programmable Bit Rate Generator	3-15	5.0	0.05	P35	4L,6B,9B
2	<b>4703B</b>	16x4-Bit Serial/Parallel FIFO Buffer Memory	3-15	2.3	0.015	P36	4M,6Q,9U

#### BIT SLICE MICROPROCESSORS

3	<b>4704B</b>	Data Path Logic Switch	3-15	4.3	0.015	P37	4M,6Q,9U
4	<b>4705B</b>	4-Bit Arithmetic Logic Register Stack	3-15	2.0	0.015	P38	4M,6Q,9U
5	<b>4706B</b>	16x4 Push-down Pop-up Program Stack	3-15	2.0	0.015	P39	4M,6Q,9U
6	<b>4707B</b>	Data Access Register	3-15	5.2	0.015	P40	4M,6Q,9U
7	<b>4708B</b>	10-Bit Microprogram Sequencer/Controller (pipeline capability)	3-15	2.0	0.015	P41	6I,8P
8	<b>4710B</b>	Register Stack (16x4 RAM with output latch)	3-15	6.8	0.01	P42	7D,9M

### 16-BIT MICROPROCESSOR FAMILY

#### 9440 16-BIT BIPOLAR MICROPROCESSOR

The 9440 I<sup>3</sup>L microprocessor is a minicomputer CPU compactly packaged in a 40-pin DIP. It requires a 5.0 V power supply and dissipates 1.0 W of power. A full military temperature range version is available.

9440 features include TTL input/output levels, single static clock driven by an on-chip oscillator (up to 12MHz, variable), microprogram control using a PLA (program logic array), eight 16-bit on-chip registers, priority interrupt handling with up to 16 priority levels, fast direct memory access at memory speeds, four classes of instructions allowing a total of 2192 different instructions, and 32 K 16-bit words (65K byte) addressing ranges.

The 9440 system includes the following LSI support circuits:

**9441\*** Memory Control Unit—contains a 15-bit memory address register, refresh address counter

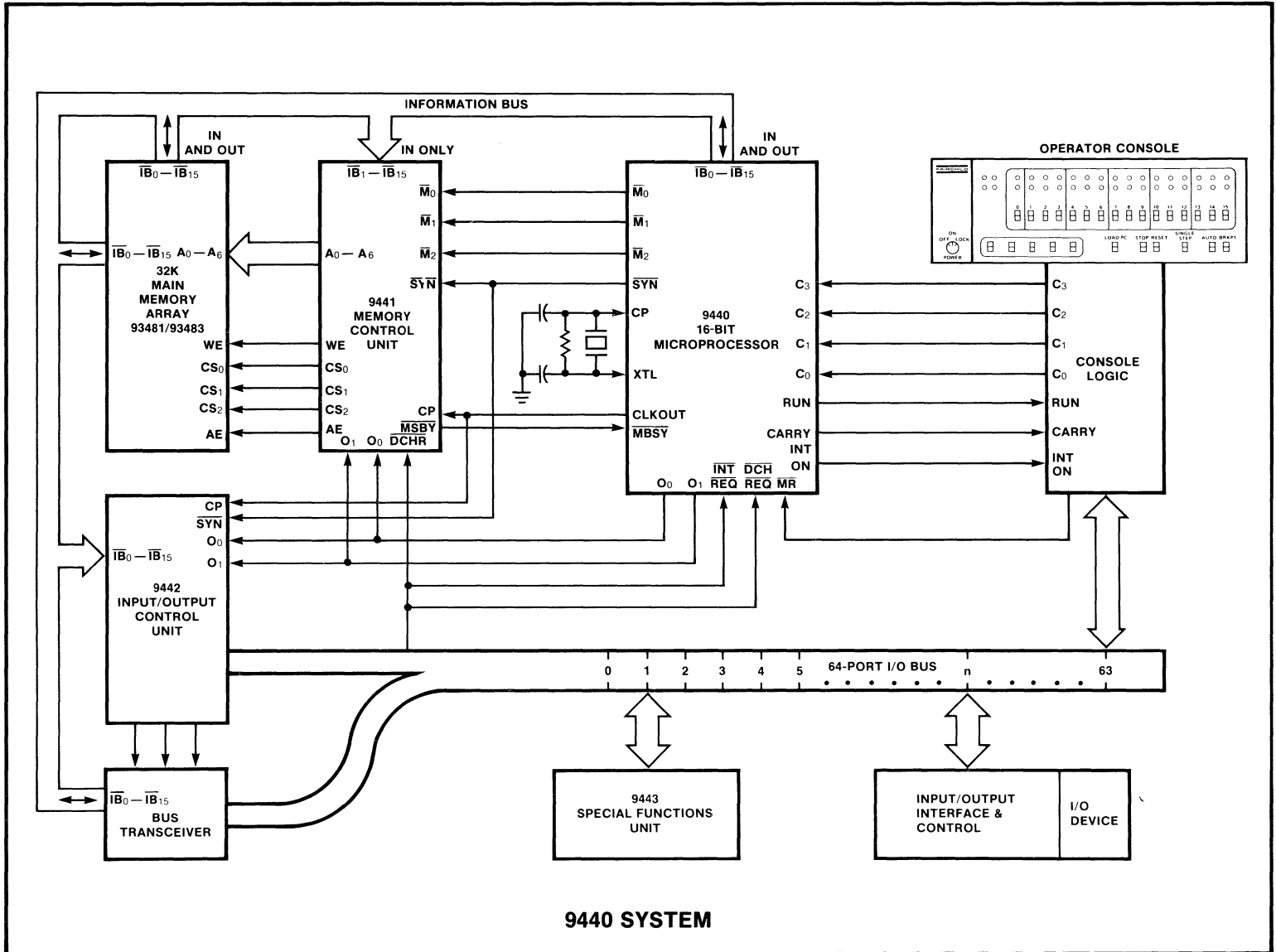
\*To be announced

and a 7-bit address multiplexer. It provides the timing and control signals to operate up to 32K words (64K bytes) of I<sup>3</sup>L dynamic memory (93481, 93483) for read, write, refresh and DMA operations.

**9442\*** Input/Output Control Unit—responds to I/O instructions and generates the timing and control signals for 9440 peripheral devices.

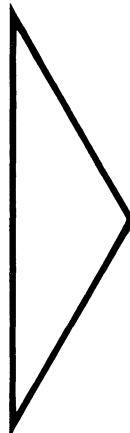
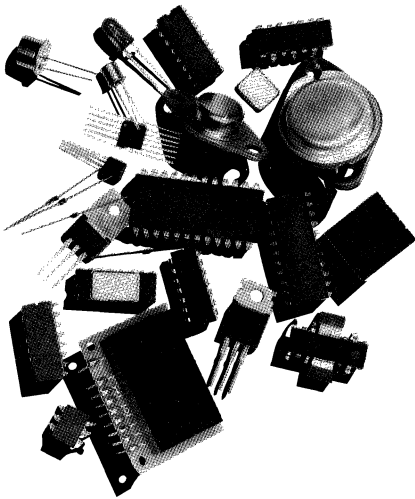
**9443\*** Special Functions Unit—executes the multiply, divide and stack instructions.

To fully utilize the 9440 flexible instruction set the Fairchild Integrated Real-time Executive (FIRE™) software package is provided. It consists of all the required program development aids plus a full set of diagnostic programs as well as high level language processors.



9440 SYSTEM





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**FAIRCHILD AEROSPACE & DEFENSE**

**JAN QPL STATUS**

**LINEAR**

Item	DEVICE NO. JM38510/	Industry Basic Type	Part I or II QPL	Process Level	Package	Lead Finish
1	10101BCA	741	I	B	DIP	Solder
2	10101BCB	741	I	B	DIP	Tin Plate
3	10101BGA	741	I	B	CAN	Solder
4	10101BGB	741	I	B	CAN	Tin Plate
5	10101BGC	741	I	B	CAN	Gold Plate
6	10101BHA	741	I	B	FLAT	Solder
7	10101BHB	741	I	B	FLAT	Tin Plate
8	10101BHC	741	I	B	FLAT	Gold Plate
9	10101CCA	741	I	C	DIP	Solder
10	10101CCB	741	I	C	DIP	Tin Plate
11	10101CGA	741	I	C	CAN	Solder
12	10101CGB	741	I	C	CAN	Tin Plate
13	10101CGC	741	I	C	CAN	Gold Plate
14	10101CHA	741	I	C	FLAT	Solder
15	10101CHB	741	I	C	FLAT	Tin Plate
16	10101CHC	741	I	C	FLAT	Gold Plate
17	10102BAA	747	I	B	FLAT	Solder
18	10102BAB	747	I	B	FLAT	Tin Plate
19	10102BAC	747	I	B	FLAT	Gold Plate
20	10102BCA	747	I	B	DIP	Solder
21	10102BCB	747	I	B	DIP	Tin Plate
22	10102BIA	747	I	B	CAN	Solder
23	10102BIB	747	II	B	CAN	Tin Plate
24	10102BIC	747	I	B	CAN	Gold Plate
25	10102CAA	747	I	C	FLAT	Solder
26	10102CAB	747	I	C	FLAT	Tin Plate
27	10102CAC	747	I	C	FLAT	Gold Plate
28	10102CCA	747	I	C	DIP	Solder
29	10102CCB	747	I	C	DIP	Tin Plate
30	10102CIA	747	I	C	CAN	Solder
31	10102CIB	747	II	C	CAN	Tin Plate
32	10102CIC	747	I	C	CAN	Gold Plate

**FAIRCHILD AEROSPACE & DEFENSE**

**JAN QPL STATUS**

**LINEAR (Cont'd)**

Item	DEVICE NO. JM38510/	Industry Basic Type	Part I or II QPL	Process Level	Package	Lead Finish
1	10103BCA	101A	I	B	DIP	Solder
2	10103BCB	101A	I	B	DIP	Tin Plate
3	10103BGA	101A	I	B	CAN	Solder
4	10103BGB	101A	I	B	CAN	Tin Plate
5	10103BGC	101A	I	B	CAN	Gold Plate
6	10103BHA	101A	I	B	FLAT	Solder
7	10103BHB	101A	I	B	FLAT	Tin Plate
8	10103BHC	101A	I	B	FLAT	Gold Plate
9	10103CCA	101A	I	C	DIP	Solder
10	10103CCB	101A	I	C	DIP	Tin Plate
11	10103CGA	101A	I	C	CAN	Solder
12	10103CGB	101A	I	C	CAN	Tin Plate
13	10103CGC	101A	I	C	CAN	Gold Plate
14	10103CHA	101A	I	C	FLAT	Solder
15	10103CHB	101A	I	C	FLAT	Tin Plate
16	10103CHC	101A	I	C	FLAT	Gold Plate
17	10104BCA	108A	I	B	DIP	Solder
18	10104BCB	108A	I	B	DIP	Tin Plate
19	10104BGA	108A	I	B	CAN	Solder
20	10104BGB	108A	I	B	CAN	Tin Plate
21	10104BGC	108A	I	B	CAN	Gold Plate
22	10104BHA	108A	I	B	FLAT	Solder
23	10104BHB	108A	I	B	FLAT	Tin Plate
24	10104BHC	108A	I	B	FLAT	Gold Plate
25	10104CCA	108A	I	C	DIP	Solder
26	10104CCB	108A	I	C	DIP	Tin Plate
27	10104CGA	108A	I	C	CAN	Solder
28	10104CGB	108A	I	B	CAN	Tin Plate
29	10104CGC	108A	I	C	CAN	Gold Plate
30	10104CHA	108A	I	C	FLAT	Solder
31	10104CHB	108A	I	C	FLAT	Tin Plate
32	10104CHC	108A	I	C	FLAT	Gold Plate

**FAIRCHILD AEROSPACE & DEFENSE**

**JAN QPL STATUS**

**LINEAR (Cont'd)**

Item	DEVICE NO. JM38510/	Industry Basic Type	Part I or II QPL	Process Level	Package	Lead Finish
1	10201BCA	723	I	B	DIP	Solder
2	10201BCB	723	I	B	DIP	Tin Plate
3	10201BIA	723	I	B	CAN	Solder
4	10201BIC	723	I	B	CAN	Gold Plate
5	10201CCA	723	I	C	DIP	Solder
6	10201CCB	723	I	C	DIP	Tin Plate
7	10201CIA	723	I	C	CAN	Solder
8	10201CIC	723	I	C	CAN	Gold Plate
9	10301BCA	710	I	B	DIP	Solder
10	10301BCB	710	I	B	DIP	Tin Plate
11	10301BGA	710	I	B	CAN	Solder
12	10301BGB	710	I	B	CAN	Tin Plate
13	10301BGC	710	I	B	CAN	Gold Plate
14	10301BHA	710	I	B	FLAT	Solder
15	10301BHB	710	I	B	FLAT	Tin Plate
16	10301BHC	710	I	B	FLAT	Gold Plate
17	10301CCA	710	I	C	DIP	Solder
18	10301CCB	710	I	C	DIP	Tin Plate
19	10301CGA	710	I	C	CAN	Solder
20	10301CGB	710	I	C	CAN	Tin Plate
21	10301CGC	710	I	C	CAN	Gold Plate
22	10301CHA	710	I	C	FLAT	Solder
23	10301CHB	710	I	C	FLAT	Tin Plate
24	10301CHC	710	I	C	FLAT	Gold Plate
25	10302BCA	711	II	B	DIP	Solder
26	10302BCB	711	II	B	DIP	Tin Plate
27	10302BHA	711	II	B	FLAT	Solder
28	10302BHB	711	II	B	FLAT	Tin Plate
29	10302BHC	711	II	B	FLAT	Gold Plate
30	10302BIA	711	II	B	CAN	Solder
31	10302BIC	711	II	B	CAN	Gold Plate
32	10302CCA	711	II	C	DIP	Solder



**FAIRCHILD AEROSPACE & DEFENSE**

**JAN QPL STATUS**

**LINEAR (Cont'd)**

<b>Item</b>	<b>DEVICE NO. JM38510/</b>	<b>Industry Basic Type</b>	<b>Part I or II QPL</b>	<b>Process Level</b>	<b>Package</b>	<b>Lead Finish</b>
1	10302CCB	711	II	C	DIP	Tin Plate
2	10302CHA	711	II	C	FLAT	Solder
3	10302CHB	711	II	C	FLAT	Tin Plate
4	10302CHC	711	II	C	FLAT	Gold Plate
5	10302CIA	711	II	C	CAN	Solder
6	10302CIC	711	II	C	CAN	Gold Plate
7	10304BCA	111	II	B	DIP	Solder
8	10304BCB	111	II	B	DIP	Tin Plate
9	10304BGA	111	II	B	CAN	Solder
10	10304BGB	111	II	B	CAN	Tin Plate
11	10304BGC	111	II	B	CAN	Gold Plate
12	10304BHA	111	II	B	FLAT	Solder
13	10304BHB	111	II	B	FLAT	Tin Plate
14	10304BHC	111	II	B	FLAT	Gold Plate
15	10304CCA	111	II	C	DIP	Solder
16	10304CCB	111	II	C	DIP	Tin Plate
17	10304CGA	111	II	C	CAN	Solder
18	10304CGB	111	II	C	CAN	Tin Plate
19	10304CGC	111	II	C	CAN	Gold Plate
20	10304CHA	111	II	C	FLAT	Solder
21	10304CHB	111	II	C	FLAT	Tin Plate
22	10304CHC	111	II	C	FLAT	Gold Plate
23	10401BAA	55107	I	B	FLAT	Solder
24	10401BAB	55107	I	B	FLAT	Tin Plate
25	10401BAC	55107	I	B	FLAT	Gold Plate
26	10401BCA	55107	I	B	DIP	Solder
27	10401BCB	55107	I	B	DIP	Tin Plate
28	10401CAA	55107	I	C	FLAT	Solder
29	10401CAB	55107	I	C	FLAT	Tin Plate
30	10401CAC	55107	I	C	FLAT	Gold Plate
31	10401CCA	55107	I	C	DIP	Solder
32	10401CCB	55107	I	C	DIP	Tin Plate
33	10402BAA	55108	I	B	FLAT	Solder

**FAIRCHILD AEROSPACE & DEFENSE**

**JAN QPL STATUS**

**LINEAR (Cont'd)**

Item	DEVICE NO. JM38510/	Industry Basic Type	Part I or II QPL	Process Level	Package	Lead Finish
1	10402BAB	55108	I	B	FLAT	Tin Plate
2	10402BAC	55108	I	B	FLAT	Gold Plate
3	10402BCA	55108	I	B	DIP	Solder
4	10402BCB	55108	I	B	DIP	Tin Plate
5	10402CAA	55108	I	C	FLAT	Solder
6	10402CAB	55108	I	C	FLAT	Tin Plate
7	10402CAC	55108	I	C	FLAT	Gold Plate
8	10402CCA	55108	I	C	DIP	Solder
9	10402CCB	55108	I	C	DIP	Tin Plate
10	10403BEA	9614	I	B	DIP	Solder
11	10403BEB	9614	I	B	DIP	Tin Plate
12	10403BFA	9614	I	B	FLAT	Solder
13	10403BFB	9614	I	B	FLAT	Tin Plate
14	10403BFC	9614	I	B	FLAT	Gold Plate
15	10403CEA	9614	I	C	DIP	Solder
16	10403CEB	9614	I	C	DIP	Tin Plate
17	10403CFA	9614	I	C	FLAT	Solder
18	10403CFB	9614	I	C	FLAT	Tin Plate
19	10403CFC	9614	I	C	FLAT	Gold Plate
20	10404BEA	9615	I	B	DIP	Solder
21	10404BEB	9615	I	B	DIP	Tin Plate
22	10404BFA	9615	I	B	FLAT	Solder
23	10404BFB	9615	I	B	FLAT	Tin Plate
24	10404BFC	9615	I	B	FLAT	Gold Plate
25	10404CEA	9615	I	C	DIP	Solder
26	10404CEB	9615	I	C	DIP	Tin Plate
27	10404CFA	9615	I	C	FLAT	Solder
28	10404CFB	9615	I	C	FLAT	Tin Plate
29	10404CFC	9615	I	C	FLAT	Gold Plate
30	10802BCA	3045	II	B	DIP	Solder
31	10802BCB	3045	II	B	DIP	Tin Plate
32	10802CCA	3045	II	C	DIP	Solder
33	10802CCB	3045	II	C	DIP	Tin Plate

**FAIRCHILD AEROSPACE & DEFENSE**

**JAN QPL STATUS**

**DIGITAL**

Item	DEVICE NO. JM38510/	Industry Basic Type	Part I or II QPL	Process Level	Package	Lead Finish
1	00101BAB	5430	I	B	FLAT	Tin Plate
2	00101BAC	5430	I	B	FLAT	Gold Plate
3	00101BCB	5430	I	B	DIP	Tin Plate
4	00101CAB	5430	I	C	DIP	Tin Plate
5	00101CAC	5430	I	C	FLAT	Gold Plate
6	00101CCB	5430	I	C	DIP	Tin Plate
7	00102BAB	5420	I	B	FLAT	Tin Plate
8	00102BAC	5420	I	B	FLAT	Gold Plate
9	00102BCB	5420	I	B	DIP	Tin Plate
10	00102CAB	5420	I	C	FLAT	Tin Plate
11	00102CAC	5420	I	C	FLAT	Gold Plate
12	00102CCB	5420	I	C	DIP	Tin Plate
13	00103BCB	5410	I	B	DIP	Tin Plate
14	00103CCB	5410	I	C	DIP	Tin Plate
15	00104BAB	5400	I	B	FLAT	Tin Plate
16	00104BAC	5400	I	B	FLAT	Gold Plate
17	00104BCB	5400	I	B	DIP	Tin Plate
18	00104CAB	5400	I	C	FLAT	Tin Plate
19	00104CAC	5400	I	C	FLAT	Gold Plate
20	00104CCB	5400	I	C	DIP	Tin Plate
21	00105BAB	5404	I	B	FLAT	Tin Plate
22	00105BAC	5404	I	B	FLAT	Gold Plate
23	00105BCB	5404	I	B	DIP	Tin Plate
24	00105CAB	5404	I	C	FLAT	Tin Plate
25	00105CAC	5404	I	C	FLAT	Gold Plate
26	00105CCB	5404	I	C	DIP	Tin Plate
27	00107BAB	5401	I	B	FLAT	Tin Plate
28	00107BAC	5401	I	B	FLAT	Gold Plate
29	00107BCB	5401	I	B	DIP	Tin Plate
30	00107CAB	5401	I	C	FLAT	Tin Plate
31	00107CAC	5401	I	C	FLAT	Gold Plate
32	00107CCB	5401	I	C	DIP	Tin Plate

**FAIRCHILD AEROSPACE & DEFENSE**

**JAN QPL STATUS**

**DIGITAL (Cont'd)**

Item	DEVICE NO. JM38510/	Industry Basic Type	Part I or II QPL	Process Level	Package	Lead Finish
1	00108BAB	5405	I	B	FLAT	Tin Plate
2	00108BAC	5405	I	B	FLAT	Gold Plate
3	00108BCB	5405	I	B	DIP	Tin Plate
4	00108CAB	5405	I	C	FLAT	Tin Plate
5	00108CAC	5405	I	C	FLAT	Gold Plate
6	00108CCB	5405	I	C	DIP	Tin Plate
7	00109BCB	5403	I	B	DIP	Tin Plate
8	00109CCB	5403	I	C	DIP	Tin Plate
9	00205BAB	5474	I	B	FLAT	Tin Plate
10	00205BAC	5474	I	B	FLAT	Gold Plate
11	00205CAB	5474	I	C	FLAT	Tin Plate
12	00205CAC	5474	I	C	FLAT	Gold Plate
13	00206BAB	5470	I	B	FLAT	Tin Plate
14	00206CAB	5470	I	C	FLAT	Tin Plate
15	00301BAB	5440	I	B	FLAT	Tin Plate
16	00301BAC	5440	I	B	FLAT	Gold Plate
17	00301BCB	5440	I	B	DIP	Tin Plate
18	00301CAB	5440	I	C	FLAT	Tin Plate
19	00301CAC	5440	I	C	FLAT	Gold Plate
20	00301CCB	5440	I	C	DIP	Tin Plate
21	00303BAB	5438	I	B	FLAT	Tin Plate
22	00303BAC	5438	I	B	FLAT	Gold Plate
23	00303CAB	5438	I	C	FLAT	Tin Plate
24	00303CAC	5438	I	C	FLAT	Gold Plate
25	00401BAB	5402	I	B	FLAT	Tin Plate
26	00401BAC	5402	I	B	FLAT	Gold Plate
27	00401BCB	5402	I	B	DIP	Tin Plate
28	00401CAB	5402	I	C	FLAT	Tin Plate
29	00401CAC	5402	I	C	FLAT	Gold Plate
30	00401CCB	5402	I	C	DIP	Tin Plate
31	00404BCB	5427	I	B	DIP	Tin Plate
32	00404CCB	5427	I	C	DIP	Tin Plate

**FAIRCHILD AEROSPACE & DEFENSE**

**JAN QPL STATUS**

**DIGITAL (Cont'd)**

<b>Item</b>	<b>DEVICE NO. JM38510/</b>	<b>Industry Basic Type</b>	<b>Part I or II QPL</b>	<b>Process Level</b>	<b>Package</b>	<b>Lead Finish</b>
1	00701BAB	5486	I	B	FLAT	Tin Plate
2	00701BAC	5486	I	B	FLAT	Gold Plate
3	00701CAB	5486	I	C	FLAT	Tin Plate
4	00701CAC	5486	I	C	FLAT	Gold Plate
5	00801BAB	5406	I	B	FLAT	Tin Plate
6	00801BAC	5406	I	B	FLAT	Gold Plate
7	00801CAB	5406	I	C	FLAT	Tin Plate
8	00801CAC	5406	I	C	FLAT	Gold Plate
9	00802BAB	5416	I	B	FLAT	Tin Plate
10	00802BAC	5416	I	B	FLAT	Gold Plate
11	00802CAB	5416	I	C	FLAT	Tin Plate
12	00802CAC	5416	I	C	FLAT	Gold Plate
13	00803BAB	5407	I	B	FLAT	Tin Plate
14	00803BAC	5407	I	B	FLAT	Gold Plate
15	00803CAB	5407	I	C	FLAT	Tin Plate
16	00803CAC	5407	I	C	FLAT	Gold Plate
17	00804BAB	5417	I	B	FLAT	Tin Plate
18	00804BAC	5417	I	B	FLAT	Gold Plate
19	00804CAB	5417	I	C	FLAT	Tin Plate
20	00804CAC	5417	I	C	FLAT	Gold Plate
21	01601BCB	5408	I	B	DIP	Tin Plate
22	01601CCB	5408	I	C	DIP	Tin Plate
23	01602BCB	5409	I	B	DIP	Tin Plate
24	01602CCB	5409	I	C	DIP	Tin Plate
25	02301BAB	54H30	I	B	FLAT	Tin Plate
26	02301BAC	54H30	I	B	FLAT	Gold Plate
27	02301BCB	54H30	I	B	DIP	Tin Plate
28	02301CAB	54H30	I	C	FLAT	Tin Plate
29	02301CAC	54H30	I	C	FLAT	Gold Plate
30	02301CCB	54H30	I	C	DIP	Tin Plate
31	02302BCB	54H20	I	B	DIP	Tin Plate
32	02302CCB	54H20	I	C	DIP	Tin Plate

**FAIRCHILD AEROSPACE & DEFENSE**

**JAN QPL STATUS**

**DIGITAL (Cont'd)**

<b>Item</b>	<b>DEVICE NO. JM38510/</b>	<b>Industry Basic Type</b>	<b>Part I or II QPL</b>	<b>Process Level</b>	<b>Package</b>	<b>Lead Finish</b>
1	02303BCB	54H10	I	B	DIP	Tin Plate
2	02303CCB	54H10	I	C	DIP	Tin Plate
3	02304BCB	54H00	I	B	DIP	Tin Plate
4	02304CCB	54H00	I	C	DIP	Tin Plate
5	02305BAB	54H04	I	B	FLAT	Tin Plate
6	02305BAC	54H04	I	B	FLAT	Gold Plate
7	02305BCB	54H04	I	B	DIP	Tin Plate
8	02305CAB	54H04	I	C	FLAT	Tin Plate
9	02305CAC	54H04	I	C	FLAT	Gold Plate
10	02305CCB	54H04	I	C	DIP	Tin Plate
11	02307BCB	54H22	I	B	DIP	Tin Plate
12	02307CCB	54H22	I	C	DIP	Tin Plate
13	03001BCB	930	I	B	DIP	Tin Plate
14	03001CCB	930	I	C	DIP	Tin Plate
15	03004BCB	946	I	B	DIP	Tin Plate
16	03004CCB	946	I	C	DIP	Tin Plate
17	03005BCB	962	I	B	DIP	Tin Plate
18	03005CCB	962	I	C	DIP	Tin Plate
19	30001BAB	54LS00	II	B	FLAT	Tin Plate
20	30001BAC	54LS00	II	B	FLAT	Gold Plate
21	30001CAB	54LS00	II	C	FLAT	Tin Plate
22	30001CAC	54LS00	II	C	FLAT	Gold Plate
23	30003BAB	54LS04	II	B	FLAT	Tin Plate
24	30003BAC	54LS04	II	B	FLAT	Gold Plate
25	30003CAB	54LS04	II	C	FLAT	Tin Plate
26	30003CAC	54LS04	II	C	FLAT	Gold Plate
27	30005BAB	54LS10	II	B	FLAT	Tin Plate
28	30005BAC	54LS10	II	B	FLAT	Gold Plate
29	30005CAB	54LS10	II	C	FLAT	Tin Plate
30	30005CAC	54LS10	II	C	FLAT	Gold Plate
31	30007BAB	54LS20	II	B	FLAT	Tin Plate
32	30007BAC	54LS20	II	B	FLAT	Gold Plate

**FAIRCHILD AEROSPACE & DEFENSE**

**JAN QPL STATUS**

**DIGITAL (Cont'd)**

<b>Item</b>	<b>DEVICE NO. JM38510/</b>	<b>Industry Basic Type</b>	<b>Part I or II QPL</b>	<b>Process Level</b>	<b>Package</b>	<b>Lead Finish</b>
1	30007CAB	54LS20	II	C	FLAT	Tin Plate
2	30007CAC	54LS20	II	C	FLAT	Gold Plate
3	30009BAB	54LS30	II	B	FLAT	Tin Plate
4	30009BAC	54LS30	II	B	FLAT	Gold Plate
5	30009CAB	54LS30	II	C	FLAT	Tin Plate
6	30009CAC	54LS30	II	C	FLAT	Gold Plate
7	30103BEB	54LS112	II	B	DIP	Tin Plate
8	30103CEB	54LS112	II	C	DIP	Tin Plate
9	30105BEB	54LS114	II	B	DIP	Tin Plate
10	30105CEB	54LS114	II	C	DIP	Tin Plate
11	30106BEB	54LS174	II	B	DIP	Tin Plate
12	30106CEB	54LS174	II	C	DIP	Tin Plate
13	30109BEB	54LS109	II	B	DIP	Tin Plate
14	30109BFB	54LS109	II	B	FLAT	Tin Plate
15	30109CEB	54LS109	II	C	DIP	Tin Plate
16	30109CFB	54LS109	II	C	FLAT	Tin Plate
17	30301BAB	54LS02	II	B	FLAT	Tin Plate
18	30301BAC	54LS02	II	B	FLAT	Gold Plate
19	30301CAB	54LS02	II	C	FLAT	Tin Plate
20	30301CAC	54LS02	II	C	FLAT	Gold Plate
21	30302BCB	54LS27	II	B	DIP	Tin Plate
22	30302BAB	54LS27	II	B	FLAT	Tin Plate
23	30302BAC	54LS27	II	B	FLAT	Gold Plate
24	30302CCB	54LS27	II	C	DIP	Tin Plate
25	30302CAB	54LS27	II	C	FLAT	Tin Plate
26	30302CAC	54LS27	II	C	FLAT	Gold Plate
27	30501BCB	54LS32	II	B	DIP	Tin Plate
28	30501BAB	54LS32	II	B	FLAT	Tin Plate
29	30501BAC	54LS32	II	B	FLAT	Gold Plate
30	30501CCB	54LS32	II	C	DIP	Tin Plate
31	30501CAB	54LS32	II	C	FLAT	Tin Plate
32	30501CAC	54LS32	II	C	FLAT	Gold Plate

**FAIRCHILD AEROSPACE & DEFENSE**

**JAN QPL STATUS**

**DIGITAL (Cont'd)**

<b>Item</b>	<b>DEVICE NO. JM38510/</b>	<b>Industry Basic Type</b>	<b>Part I or II QPL</b>	<b>Process Level</b>	<b>Package</b>	<b>Lead Finish</b>
1	30701BEB	54LS138	II	B	DIP	Tin Plate
2	30701BFB	54LS138	II	B	FLAT	Tin Plate
3	30701CEB	54LS138	II	C	DIP	Tin Plate
4	30701CFB	54LS138	II	C	FLAT	Tin Plate
5	30702BEB	54LS139	II	B	DIP	Tin Plate
6	30702CEB	54LS139	II	C	DIP	Tin Plate
7	31001BCB	54LS11	II	B	DIP	Tin Plate
8	31001BAB	54LS11	II	B	FLAT	Tin Plate
9	31001BAC	54LS11	II	B	FLAT	Gold Plate
10	31001CCB	54LS11	II	C	DIP	Tin Plate
11	31001CAB	54LS11	II	C	FLAT	Tin Plate
12	31001CAC	54LS11	II	C	FLAT	Gold Plate
13	31003BAB	54LS21	II	B	FLAT	Tin Plate
14	31003BAC	54LS21	II	B	FLAT	Gold Plate
15	31003CAB	54LS21	II	C	FLAT	Tin Plate
16	31003CAC	54LS21	II	C	FLAT	Gold Plate
17	31004BCB	54LS08	II	B	DIP	Tin Plate
18	31004BAB	54LS08	II	B	FLAT	Tin Plate
19	31004BAC	54LS08	II	B	FLAT	Gold Plate
20	31004CCB	54LS08	II	C	DIP	Tin Plate
21	31004CAB	54LS08	II	C	FLAT	Tin Plate
22	31004CAC	54LS08	II	C	FLAT	Gold Plate



**FAIRCHILD AEROSPACE & DEFENSE**

**JAN QPL STATUS**

**DIODE  
QPL-19500**

Item	Item	Item	Item
1 1N251 JAN	30 1N914 JTX	59 1N971B-1 JTX*	88 1N4306 JTX
2 1N457 JAN	31 1N962B-1 JAN*	60 1N971B-1 JTXV*	89 1N4307 JAN
3 1N458 JAN	32 1N962B-1 JTX*	61 1N972B-1 JAN*	90 1N4307 JTX
4 1N459 JAN	33 1N962B-1 JTXV*	62 1N972B-1 JTX*	91 1N4307 JTXV
5 1N483B JAN	34 1N963B-1 JAN*	63 1N972B-1 JTXV*	92 1N4376 JAN
6 1N483B JTX	35 1N963B-1 JTX*	64 1N973B-1 JAN*	93 1N4376 JTX
7 1N485B JAN	36 1N963B-1 JTXV*	65 1N973B-1 JTX*	94 1N4454 JAN
8 1N485B JTX	37 1N964B-1 JAN*	66 1N973B-1 JTXV*	95 1N4454 JTX
9 1N486B JAN	38 1N964B-1 JTX*	67 1N3064 JAN	96 1N4454 JTXV
10 1N486B JTX	39 1N964B-1 JTXV*	68 1N3064 JTX	97 1N4454-1 JAN*
11 1N747A JAN	40 1N965B-1 JAN*	69 1N3595 JAN	98 1N4454-1 JTX*
12 1N747A JTX	41 1N965B-1 JTX*	70 1N3595 JTX	99 1N4454-1 JTXV*
13 1N747A JTXV	42 1N965B-1 JTXV*	71 1N3595 JTXV	100 1N5768 JAN
14 1N748A JAN	43 1N966B-1 JAN*	72 1N3600 JAN	101 1N5768 JTX
15 1N748A JTX	44 1N966B-1 JTX*	73 1N3600 JTX	102 1N5768 JTXV
16 1N748A JTXV	45 1N966B-1 JTXV*	74 1N3600 JTXV	103 1N5770 JAN
17 1N749A JAN	46 1N967B-1 JAN*	75 1N4148 JAN	104 1N5770 JTX
18 1N749A JTX	47 1N967B-1 JTX*	76 1N4148 JTX	105 1N5770 JTXV
19 1N749A JTXV	48 1N967B-1 JTXV*	77 1N4148 JTXV	106 1N5772 JAN
20 1N750A JAN	49 1N968B-1 JAN*	78 1N4148-1 JAN*	107 1N5772 JTX
21 1N750A JTX	50 1N968B-1 JTX*	79 1N4148-1 JTX*	108 1N5772 JTXV
22 1N750A JTXV	51 1N968B-1 JTXV*	80 1N4148-1 JTXV*	109 1N5774 JAN
23 1N751A JAN	52 1N969B-1 JAN*	81 1N4150 JAN	110 1N5774 JTX
24 1N751A JTX	53 1N969B-1 JTX*	82 1N4150 JTX	111 1N5774 TXV
25 1N751A JTXV	54 1N969B-1 JTXV*	83 1N4150 JTXV	112 1N6100 JAN
26 1N752A JAN	55 1N970B-1 JAN*	84 1N4150-1 JAN	113 1N6100 JTX
27 1N752A JTX	56 1N970B-1 JTX*	85 1N4150-1 JTX	114 1N6100 JTXV
28 1N752A JTXV	57 1N970B-1 JTXV*	86 1N4150-1 JTXV	
29 1N914 JAN	58 1N971B-1 JAN*	87 1N4306 JAN	

\* Utilizes metallurgical bond.

**FAIRCHILD AEROSPACE & DEFENSE**

**JAN QPL STATUS**

**TRANSISTOR  
QPL-19500**

Item	Item	Item	Item
1 2N706 JAN	22 2N2218A JAN	43 2N2369A JAN	64 2N2906 JTX
2 2N708 JAN	23 2N2218A JTX	44 2N2369A JTX	65 2N2906 TXV
3 2N708 JTX	24 2N2218A TXV	45 2N2369A TXV	66 2N2906A JAN
4 2N718A JAN	25 2N2219 JAN	46 2N2481 JAN	67 2N2906A JTX
5 2N718A JTX	26 2N2219 JTX	47 2N2481 JTX	68 2N2906A TXV
6 2N718A TXV	27 2N2219 TXV	48 2N2484 JAN	69 2N2907 JAN
7 2N744 JAN	28 2N2219A JAN	49 2N2484 JTX	70 2N2907 JTX
8 2N914 JAN	29 2N2219A JTX	50 2N2484 TXV	71 2N2907 TXV
9 2N914 JTX	30 2N2219A TXV	51 2N2904 JAN	72 2N2907A JAN
10 2N918 JAN	31 2N2221 JAN	52 2N2904 JTX	73 2N2907A JTX
11 2N918 JTX	32 2N2221 JTX	53 2N2904 TXV	74 2N2907A TXV
12 2N918 TXV	33 2N2221 TXV	54 2N2904A JAN	75 2N2919 JAN
13 2N930 JAN	34 2N2221A JAN	55 2N2904A JTX	76 2N2919 JTX
14 2N930 JTX	35 2N2221A JTX	56 2N2904A TXV	77 2N2919 TXV
15 2N1132 JAN	36 2N2221A TXV	57 2N2905 JAN	78 2N2920 JAN
16 2N1613 JAN	37 2N2222 JAN	58 2N2905 JTX	79 2N2920 JTX
17 2N1613 JTX	38 2N2222 JTX	59 2N2905S TXV	80 2N2920 TXV
18 2N1613 TXV	39 2N2222 TXV	60 2N2905A JAN	81 2N3013 JAN
19 2N2218 JAN	40 2N2222A JAN	61 2N2905A JTX	82 2N3013 JTX
20 2N2218 JTX	41 2N2222A JTX	62 2N2905SA TXV	
21 2N2218 TXV	42 2N2222A TXV	63 2N2906 JAN	

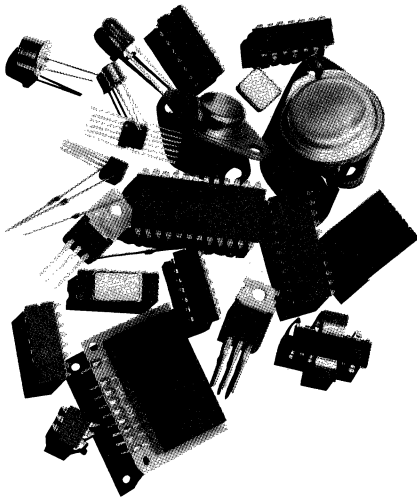
# FAIRCHILD AEROSPACE & DEFENSE

## JAN QPL STATUS

### UPCOMING QUALIFICATIONS

Fairchild plans to obtain numerous additional device qualifications. Although QPL attainment dates cannot be scheduled with accuracy, the following Fairchild products are expected to be qualified in the near future. Budgetary quotations are available:

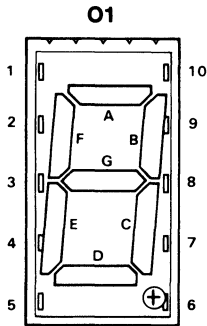
Item	Jan Part Number	Fairchild Part Number	Package	Comments
1	M38510/31101---	54LS85	DIP/FLAT	—
2	M38510/30001---	54LS00	DIP	Part I QPL
3	M38510/30301---	54LS02	DIP	Part I QPL
4	M38510/31003---	54LS21	DIP	Part I QPL
5	M38510/30901---	54LS151	DIP/FLAT	—
6	M38510/30902---	54LS153	DIP/FLAT	—
7	M38510/30903---	54LS157	DIP/FLAT	—
8	M38510/30904---	54LS158	DIP/FLAT	—
9	M38510/30905---	54LS251	DIP/FLAT	—
10	M38510/30908---	54LS253	DIP/FLAT	—
11	M38510/30102---	54LS74	DIP/FLAT	—
12	M38510/30107---	54LS175	DIP/FLAT	—
13	M38510/30106---	54LS174	DIP/FLAT	—
14	M38510/01701---	54174	DIP/FLAT	—
15	M38510/01702---	54175	DIP/FLAT	—
16	M38510/01306---	54161	DIP/FLAT	—
17	M38510/30602---	54LS195	DIP/FLAT	—
18	M38510/15802---	9317	DIP/FLAT	—
19	M38510/30906---	54LS257	DIP/FLAT	—
20	M38510/30907---	54LS258	DIP/FLAT	—
21	MIL-S-19500/2N5302	2N5302	—	JAN/JTX/JTXV



PRODUCT INDEX	1
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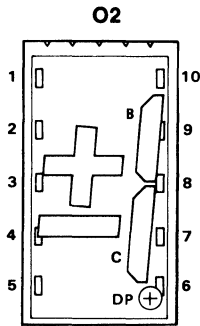


OPTOELECTRONICS



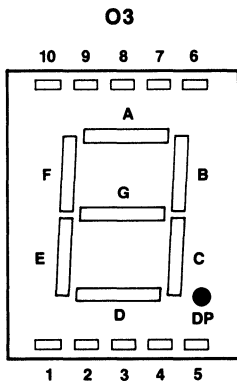
**PIN FND350/357/360/367**

- 1 Common-Cathode
- 2 Segment F
- 3 Segment G
- 4 Segment E
- 5 Segment D
- 6 Common-Cathode
- 7 Decimal Point
- 8 Segment C
- 9 Segment B
- 10 Segment A

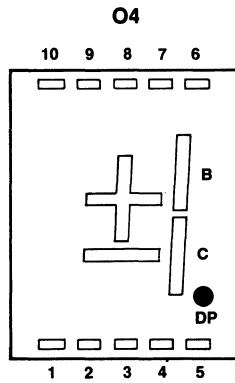


**PIN FND351/358/361/368**

- 1 Common-Cathode
- 2 Plus Sign
- 3 Minus Sign
- 4 NC
- 5 Omitted
- 6 Common-Cathode
- 7 Decimal Point
- 8 Segment C
- 9 Segment B
- 10 NC



- |            |                    |                    |
|------------|--------------------|--------------------|
| <b>PIN</b> | <b>FND507/537</b>  | <b>FND500/530</b>  |
|            | <b>547/557/567</b> | <b>540/550/560</b> |
| 1          | Segment E          | Segment E          |
| 2          | Segment D          | Segment D          |
| 3          | Comm-Anode         | Comm-Cathode       |
| 4          | Segment C          | Segment C          |
| 5          | Decimal Point      | Decimal Point      |
| 6          | Segment B          | Segment B          |
| 7          | Segment A          | Segment A          |
| 8          | Comm-Anode         | Comm-Cathode       |
| 9          | Segment F          | Segment F          |
| 10         | Segment G          | Segment G          |

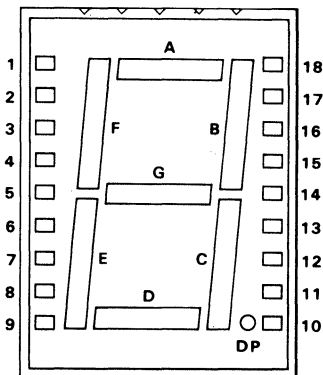


- |            |                    |                    |
|------------|--------------------|--------------------|
| <b>PIN</b> | <b>FND501/531</b>  | <b>FND508/538</b>  |
|            | <b>541/551/561</b> | <b>548/558/568</b> |
| 1          | Minus              | Minus              |
| 2          | Cathode ±          | Anode ±            |
| 3          | Segment C          | Segment C          |
| 4          | Cathode 1/DP       | Anode 1/DP         |
| 5          | Decimal Point      | Decimal Point      |
| 6          | Segment B          | Segment B          |
| 7          | Cathode 1/DP       | Anode 1/DP         |
| 8          | Cathode ±          | Anode ±            |
| 9          | Plus               | Plus               |
| 10         | NC                 | NC                 |

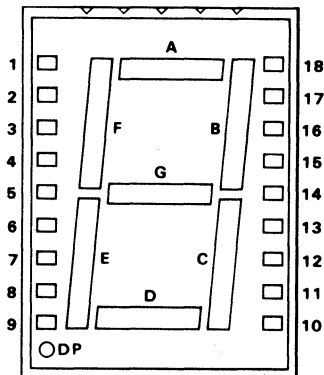
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## OPTOELECTRONICS

**O5**



**O6**



**PIN FND800**

- 1 Omitted
- 2 Segment A
- 3 Segment F
- 4 Common-Cath.
- 5 Segment E
- 6 Common-Cath.
- 7 NC
- 8 Omitted
- 9 Omitted
- 10 Decimal Point
- 11 Segment D
- 12 Common-Cath.
- 13 Segment C
- 14 Segment G
- 15 Segment B
- 16 Omitted
- 17 Common-Cath.
- 18 Omitted

**FND807**

- Omitted
- Segment A
- Segment F
- Common-Anode
- Segment E
- Common-Anode
- NC
- Omitted
- Omitted
- Decimal Point
- Segment D
- Common-Anode
- Segment C
- Segment G
- Segment B
- Omitted
- Common-Anode
- Omitted

**PIN FND850**

- 1 Omitted
- 2 Segment A
- 3 Segment F
- 4 Common-Cath.
- 5 Segment E
- 6 Common-Cath.
- 7 DP
- 8 Omitted
- 9 Omitted
- 10 NC
- 11 Segment D
- 12 Common-Cath.
- 13 Segment C
- 14 Segment G
- 15 Segment B
- 16 Omitted
- 17 Common-Cath.
- 18 Omitted

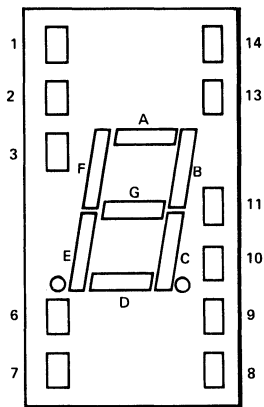
**FND847**

- Omitted
- Segment A
- Segment F
- Common-Anode
- Segment E
- Common-Anode
- DP
- Omitted
- Omitted
- NC
- Segment D
- Common-Anode
- Segment C
- Segment G
- Segment B
- Omitted
- Common-Anode
- Omitted

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

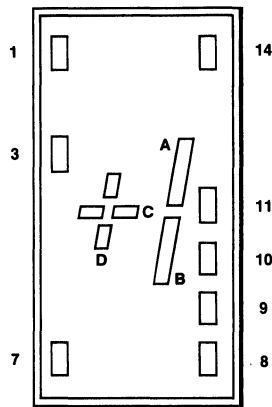
## OPTOELECTRONICS

**07**



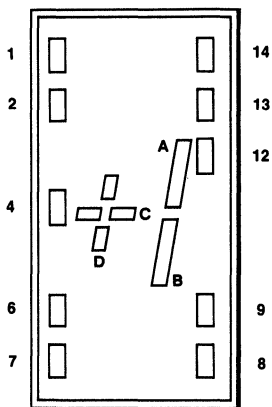
PIN	MAN71A	MAN72A
1	Cathode A	Cathode A
2	Cathode F	Cathode F
3	Common-Anode	Common-Anode
4	No pin	No pin
5	No pin	No pin
6	NC	Cathode DP
7	Cathode E	Cathode E
8	Cathode D	Cathode D
9	Common-Anode	NC
10	Cathode C	Cathode C
11	Cathode G	Cathode G
12	No pin	No pin
13	Cathode B	Cathode B
14	Common-Anode	Common-Anode

**08**



PIN	MAN73A
1	Anode C, D
2	No pin
3	Anode C, D
4	No pin
5	No pin
6	No pin
7	Cathode D
8	Cathode C
9	NC
10	Cathode B
11	Cathode A
12	No pin
13	No pin
14	Anode A, B

**09**

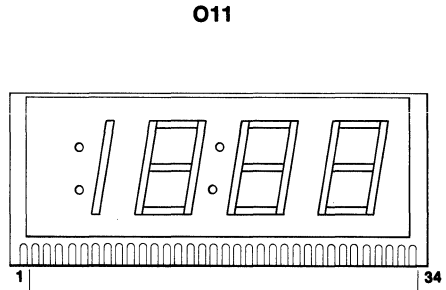
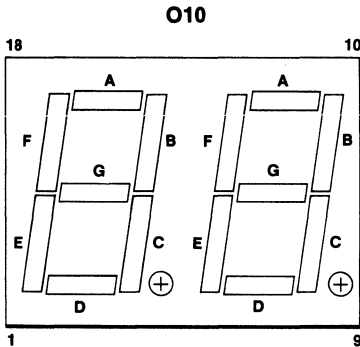


PIN	MAN74A
1	Anode F
2	Anode G
3	No pin
4	Common-Cathode
5	No pin
6	Anode E
7	Anode D
8	Anode C
9	Anode DP
10	No pin
11	No pin
12	Common-Cathode
13	Anode B
14	Anode A



# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## OPTOELECTRONICS



**PIN FND6710**

- 1 E Cath. Digit 1
- 2 D Cath. Digit 1
- 3 C Cath. Digit 1
- 4 DP Cath. Digit 1
- 5 E Cath. Digit 2
- 6 D Cath. Digit 2
- 7 G Cath. Digit 2
- 8 C Cath. Digit 2
- 9 DP Cath. Digit 2
- 10 B Cath. Digit 2
- 11 A Cath. Digit 2
- 12 F Cath. Digit 2
- 13 Digit 2 Anode
- 14 Digit 1 Anode
- 15 B Cath. Digit 1
- 16 A Cath. Digit 1
- 17 G Cath. Digit 1
- 18 F Cath. Digit 1

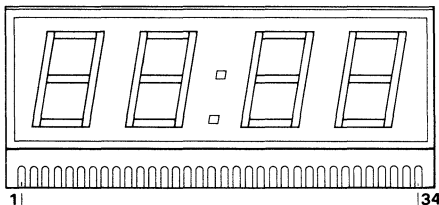
**FND6740**

- C Cath. Digit 1
- D Cath. Digit 1
- B Cath. Digit 1
- DP Cath. Digit 1
- E Cath. Digit 2
- D Cath. Digit 2
- G Cath. Digit 2
- C Cath. Digit 2
- DP Cath. Digit 2
- B Cath. Digit 2
- A Cath. Digit 2
- F Cath. Digit 2
- Digit 2 Anode
- Digit 1 Anode
- A Cath. Digit 1
- NC
- NC
- NC

**PIN FCS8000/FCS8001**

- |             |              |
|-------------|--------------|
| 1 NC        | 18 10 Min. F |
| 2 NC        | 19 10 Min. E |
| 3 Indicator | 20 10 Min. G |
| 4 NC        | 21 10 Min. A |
| 5 Indicator | 22 10 Min. D |
| 6 10 Hrs. C | 23 10 Min. B |
| 7 10 Hrs. B | 24 10 Min. C |
| 8 NC        | 25 NC        |
| 9 Hrs. F    | 26 Min. F    |
| 10 Hrs. G   | 27 Min. E    |
| 11 Hrs. E   | 28 Min. G    |
| 12 Hrs. A   | 29 Min. A    |
| 13 Hrs. B   | 30 Min. B    |
| 14 Hrs. D   | 31 Min. C    |
| 15 Hrs. C   | 32 Min. D    |
| 16 Colons   | 33 NC        |
| 17 NC       | 34 VLED      |

**O12**



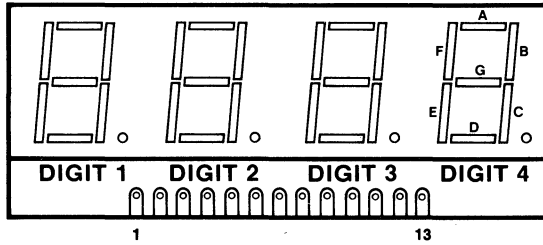
**PIN FCS8024/FCS8025**

- |             |              |
|-------------|--------------|
| 1 10 Hrs. A | 18 10 Min. F |
| 2 10 Hrs. E | 19 10 Min. E |
| 3 10 Hrs. D | 20 10 Min. G |
| 4 10 Hrs. G | 21 10 Min. A |
| 5 10 Hrs. F | 22 10 Min. D |
| 6 10 Hrs. C | 23 10 Min. B |
| 7 10 Hrs. B | 24 10 Min. C |
| 8 NC        | 25 NC        |
| 9 Hrs. F    | 26 Min. F    |
| 10 Hrs. G   | 27 Min. E    |
| 11 Hrs. E   | 28 Min. G    |
| 12 Hrs. A   | 29 Min. A    |
| 13 Hrs. B   | 30 Min. B    |
| 14 Hrs. D   | 31 Min. C    |
| 15 Hrs. C   | 32 Min. D    |
| 16 Colons   | 33 NC        |
| 17 NC       | 34 VLED      |

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## OPTOELECTRONICS

O13



**PIN FNA5420**

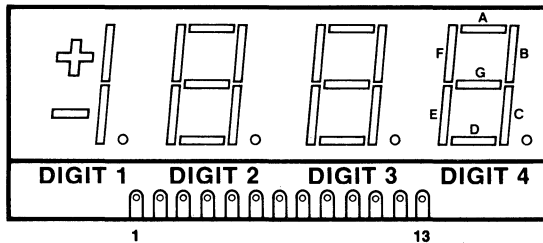
- 1 Digit 1 Com. Anode
- 2 Seg. G
- 3 NC
- 4 Seg. F
- 5 Seg. D
- 6 Digit 2 Com. Anode
- 7 Seg. A
- 8 Seg. B
- 9 Digit 3 Com. Anode
- 10 RHDP
- 11 Seg. C
- 12 Seg. E
- 13 Digit 4 Com. Anode

**FNA5427**

- Digit 1 Com. Cath.
- Seg. G "Plus" Sign Anode
- NC
- Seg. F
- Seg. D "Minus" Sign Anode
- Digit 2 Com. Cath.
- Seg. A
- Seg. B
- Digit 3 Com. Cath.
- RHDP
- Seg. C
- Seg. E
- Digit 4 Com. Cath.

**Preliminary Pin Assignment**

O14



**PIN FNA5428**

- 1 Digit 1 Com. Anode
- 2 Seg. G "Plus" Sign Cathode
- 3 NC
- 4 Seg. F
- 5 Seg. D "Minus" Sign Cath.
- 6 Digit 2 Com. Anode
- 7 Seg. A
- 8 Seg. B
- 9 Digit 3 Com. Anode
- 10 RHDP
- 11 Seg. C
- 12 Seg. E
- 13 Digit 4 Com. Anode

**FNA5421**

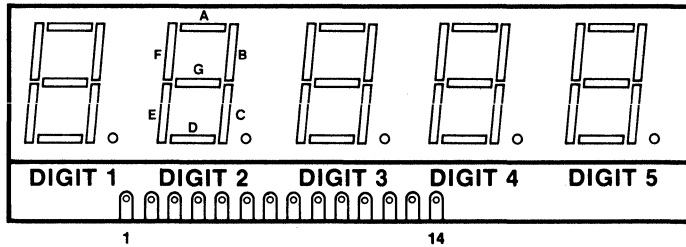
- Digit 1 Com. Cath.
- Seg. G
- LHDP
- Seg. F
- Seg. D
- Digit 2 Com. Cath.
- Seg. A
- Seg. B
- Digit 3 Com. Cath.
- RHDP
- Seg. C
- Seg. E
- Digit 4 Com. Cath.

**Preliminary Pin Assignment**

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## OPTOELECTRONICS

O15



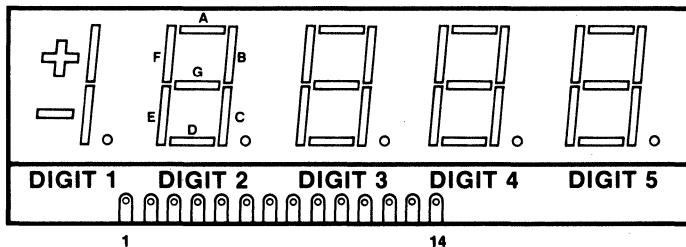
**PIN FNA5520\***

- 1 LHDP Anodes
- 2 Digit 1 Com. Cathodes
- 3 Seg. G, "Plus" Sign Anodes
- 4 Seg. F Anodes
- 5 Seg. D, "Minus" Sign Anodes
- 6 Digit 2 com. Cathodes
- 7 Seg. A Anodes
- 8 Seg. B Anodes
- 9 Digit 3 Com. Cathodes
- 10 RHDP Anodes
- 11 Seg. C Anodes
- 12 Seg. E Anodes
- 13 Digit 4 Com. Cathodes
- 14 Digit 5 Com. Cathodes

**FNA5527\***

- LHDP Cathodes
- Digit 1 Com. Anode
- Seg. G, "Plus" Sign Cath.
- Seg. F Cath.
- Seg. D, "Minus" Sign Cath.
- Digit 2 Com. Anode
- Seg. A Cath.
- Seg. B Cath.
- Digit 3 Com. Anode
- RHDP Cath.
- Seg. C Cath.
- Seg. E Cath.
- Digit 4 Com. Anode
- Digit 5 Com. Anode

O16



**PIN FNA5521**

- 1 NC
- 2 Com. Cath. Digit 1
- 3 Seg. G/"Plus" Ind. Anodes
- 4 Seg. F Anodes
- 5 Seg. D Anodes/Minus
- 6 Com. Cath. Digit 2
- 7 Seg. A Anodes
- 8 Seg. B Anodes
- 9 Com. Cath. Digit 3
- 10 DP Anodes
- 11 Seg. C Anodes
- 12 Seg. E Anodes
- 13 Com. Cath. Digit 4
- 14 Com. Cath. Digit 5

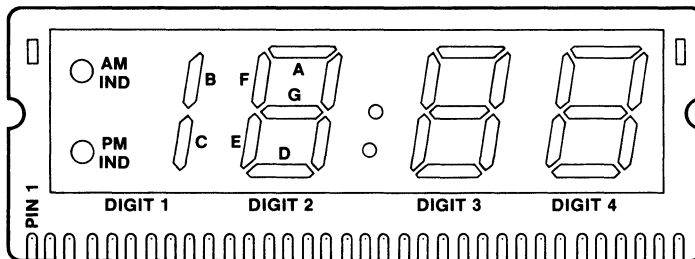
**FNA5528\***

- NC
- Com. Anode Digit 1
- Seg. G, "Plus" Sign Cath.
- Seg. F Cath.
- Seg. D Cath.
- Digit 2 Com. Anode
- Seg. A Cath.
- Seg. B Cath.
- Digit 3 Com. Anode
- DP Cath.
- Seg. C Cath.
- Seg. E Cath.
- Digit 4 Com. Anode
- Digit 5 Com. Anode

\*Preliminary Pin Assignment

OPTOELECTRONICS

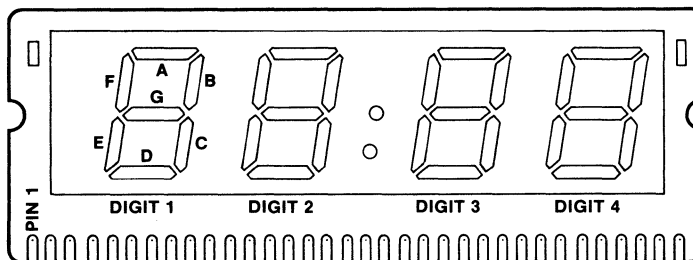
O17



**PIN FCS6400**

- |                           |                     |                            |
|---------------------------|---------------------|----------------------------|
| 1 Com. Cath. Digits 1 & 2 | 13 Segment A2 Anode | 25 Segment E3 Anode        |
| 2 NC                      | 14 Segment B2 Anode | 26 Segment C3              |
| 3 N/C                     | 15 Segment E2 Anode | 27 Segment F4              |
| 4 Segment A1 Anode        | 16 Segment D2 Anode | 28 Segment G4 Anode        |
| 5 Segment F1 Anode        | 17 Segment C2 Anode | 29 Segment A4 Anode        |
| 6 Segment G1 Anode        | 18 Colon Anode      | 30 Segment B4 Anode        |
| 7 Segment E1 Anode        | 19 Colon Anode      | 31 Segment E4 Anode        |
| 8 Segment D1              | 20 Segment F3 Anode | 32 Segment D4 Anode        |
| 9 Segment C1 Anode        | 21 Segment G3 Anode | 33 Segment C4 Anode        |
| 10 Segment B1 Anode       | 22 Segment A3 Anode | 34 Com. Cath. Digits 3 & 4 |
| 11 Segment F2 Anode       | 23 Segment B3 Anode |                            |
| 12 Segment G2 Anode       | 24 Segment D3 Anode |                            |

O18



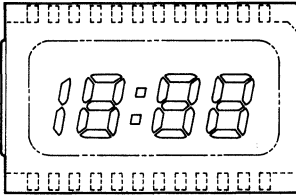
**PIN FCS6401**

- |                           |                     |                            |
|---------------------------|---------------------|----------------------------|
| 1 Com. Cath. Digits 1 & 2 | 13 Segment A2 Anode | 25 Segment E3 Anode        |
| 2 PM IND. Anode           | 14 Segment B2 Anode | 26 Segment C3 Anode        |
| 3 AM IND.                 | 15 Segment E2 Anode | 27 Segment F4 Anode        |
| 4 N/C                     | 16 Segment D2 Anode | 28 Segment G4 Anode        |
| 5 N/C                     | 17 Segment C2 Anode | 29 Segment A4 Anode        |
| 6 N/C                     | 18 Colon Anode      | 30 Segment B4 Anode        |
| 7 N/C                     | 19 Colon Anode      | 31 Segment E4 Anode        |
| 8 N/C                     | 20 Segment F3 Anode | 32 Segment D4 Anode        |
| 9 Segment C1 Anode        | 21 Segment G3 Anode | 33 Segment C4 Anode        |
| 10 Segment B1 Anode       | 22 Segment A3 Anode | 34 Com. Cath. Digits 3 & 4 |
| 11 Segment F2 Anode       | 23 Segment B3 Anode |                            |
| 12 Segment G2 Anode       | 24 Segment D3 Anode |                            |

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## OPTOELECTRONICS

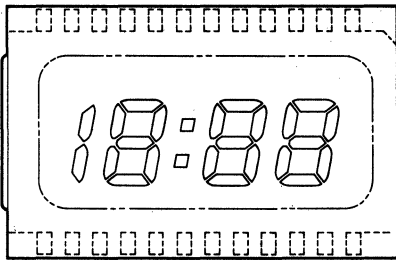
O19



**PIN FLC3503-1**

1	Backplane	13	Segment B <sub>3</sub>
2	Half Digit	14	Segment A <sub>3</sub>
3	Segment E <sub>1</sub>	15	Segment F <sub>3</sub>
4	Segment D <sub>1</sub>	16	Segment G <sub>3</sub>
5	Segment C <sub>1</sub>	17	Segment B <sub>2</sub>
6	Colons	18	Segment A <sub>2</sub>
7	Segment E <sub>2</sub>	19	Segment F <sub>2</sub>
8	Segment D <sub>2</sub>	20	Segment G <sub>2</sub>
9	Segment C <sub>2</sub>	21	Segment B <sub>1</sub>
10	Segment E <sub>1</sub>	22	Segment A <sub>1</sub>
11	Segment D <sub>1</sub>	23	Segment F <sub>1</sub>
12	Segment C <sub>1</sub>	24	Segment G <sub>1</sub>

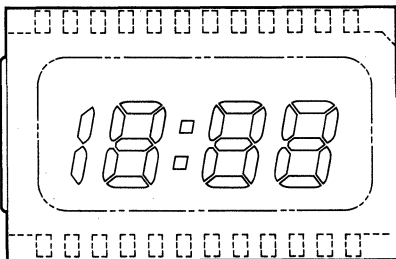
O20



**PIN FLC3505-1**

1	Backplane	13	Segment B <sub>3</sub>
2	Half Digit	14	Segment A <sub>3</sub>
3	Segment E <sub>1</sub>	15	Segment F <sub>3</sub>
4	Segment D <sub>1</sub>	16	Segment G <sub>3</sub>
5	Segment C <sub>1</sub>	17	Segment B <sub>2</sub>
6	Colons	18	Segment A <sub>2</sub>
7	Segment C <sub>2</sub>	19	Segment F <sub>2</sub>
8	Segment D <sub>2</sub>	20	Segment G <sub>2</sub>
9	Segment C <sub>2</sub>	21	Segment B <sub>1</sub>
10	Segment E <sub>3</sub>	22	Segment A <sub>1</sub>
11	Segment D <sub>3</sub>	23	Segment F <sub>1</sub>
12	Segment C <sub>3</sub>	24	Segment G <sub>1</sub>

O21



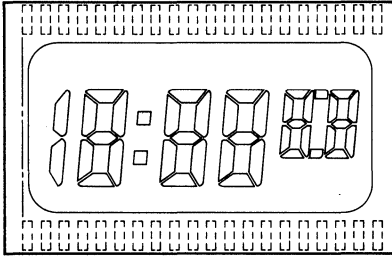
**PIN FLC3505-2**

1	Backplane	13	Segment B <sub>3</sub>
2	Half Digit	14	Segment A <sub>3</sub>
3	Segment E <sub>1</sub>	15	Segment F <sub>3</sub>
4	Segment D <sub>1</sub>	16	Segment G <sub>3</sub>
5	Segment C <sub>1</sub>	17	Segment B <sub>2</sub>
6	Colon	18	Segment A <sub>2</sub>
7	Segment E <sub>2</sub>	19	Segment F <sub>2</sub>
8	Segment D <sub>2</sub>	20	Segment G <sub>2</sub>
9	Segment C <sub>2</sub>	21	Segment B <sub>1</sub>
10	Segment E <sub>1</sub>	22	Segment A <sub>1</sub>
11	Segment D <sub>1</sub>	23	Segment F <sub>1</sub>
12	Segment C <sub>1</sub>	24	Segment G <sub>1</sub>

OPTOELECTRONICS

O22

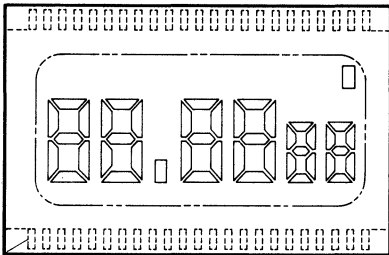
PIN FLC5505-1



1 Backplane	15 Segment D4	29 Segment B3
2 Segment E1	16 Segment C4	30 Segment A3
3 Segment D1	17 Segment B5	31 Segment F3
4 Segment C1	18 Segment E5	32 Segment B2
5 Segment G2	19 Segment D5	33 Segment A2
6 Segment E2	20 Segment C5	34 Segment F2
7 Segment D2	21 Segment G5	35 Colon
8 Segment C2	22 Segment B5	36 Segment B1
9 Segment G3	23 Segment A5	37 Segment A1
10 Segment E3	24 Segment F5	38 Segment F1
11 Segment D3	25 Segment G4	39 Segment G1
12 Segment C3	26 Segment B4	40 Half Digit
13 Segment G4	27 Segment A4	
14 Segment E4	28 Segment F4	

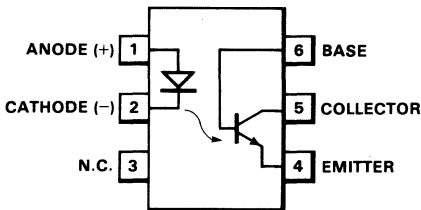
O23

PIN FLC6005-2



1 Segment E1	17 Segment C5	33 Segment B4
2 Seg. D1, A1	18 Segment E6	34 Segment A4
3 Segment C1	19 Segment D6	35 Segment F4
4 Segment E1	20 Segment J6	36 Segment G4
5 Segment D2	21 Segment C6	37 Segment B3
6 Segment C2	22 Segment G6	38 Segment F3
7 Period	23 Backplane	39 Segment G3
8 Segment E3	24 Indicator	40 Segment B2
9 Seg. A3, D3	25 Segment B6	41 Segment A2
10 Segment C3	26 Segment A6	42 Segment F2
11 Segment E4	27 Segment F6	43 Segment G2
12 Segment D4	28 Segment B5	44 Segment B1
13 Segment C4	29 Segment A5	45 Segment F1
14 Segment E5	30 Segment H5	46 Segment G1
15 Segment J5	31 Segment F5	
16 Segment D5	32 Segment G5	

O24



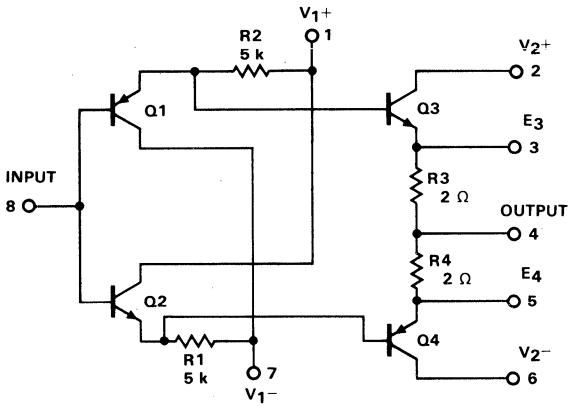
PIN

1 Anode (+)	} Input Diode
2 Cathode (-)	
3 NC	
4 Emitter	} Output npn Phototransistor
5 Collector	
6 Base	

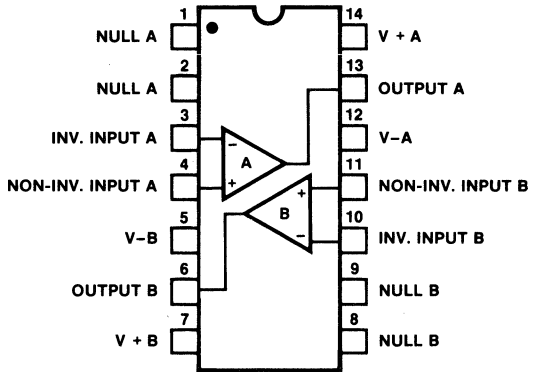
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## HYBRID

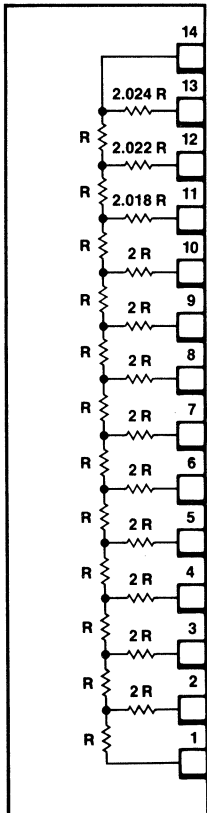
**H1**  
**SH0002**



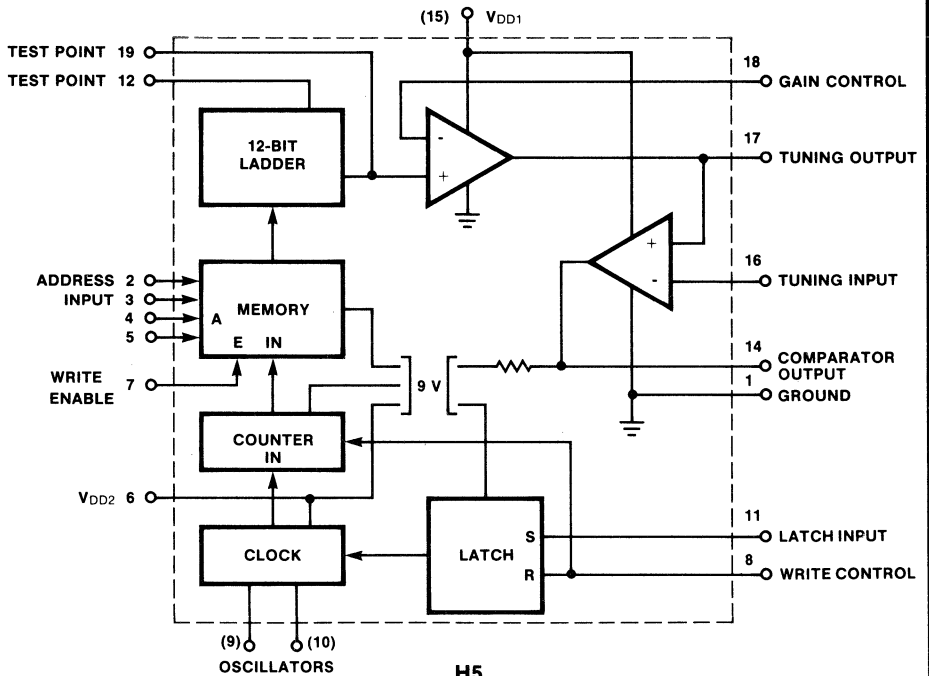
**H2**  
**SH2714**



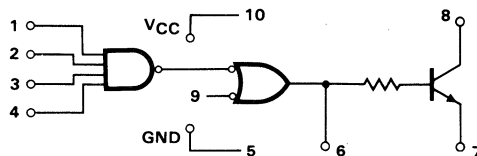
**H3**  
**SH1552**



**H4**  
**SH1549**

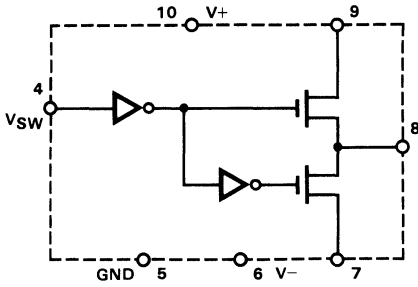


**H5**  
**SH2001, SH2002**  
**SH2200, SH2201**

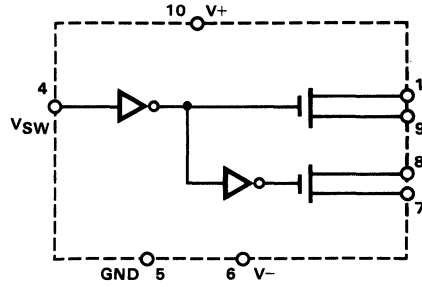


HYBRID

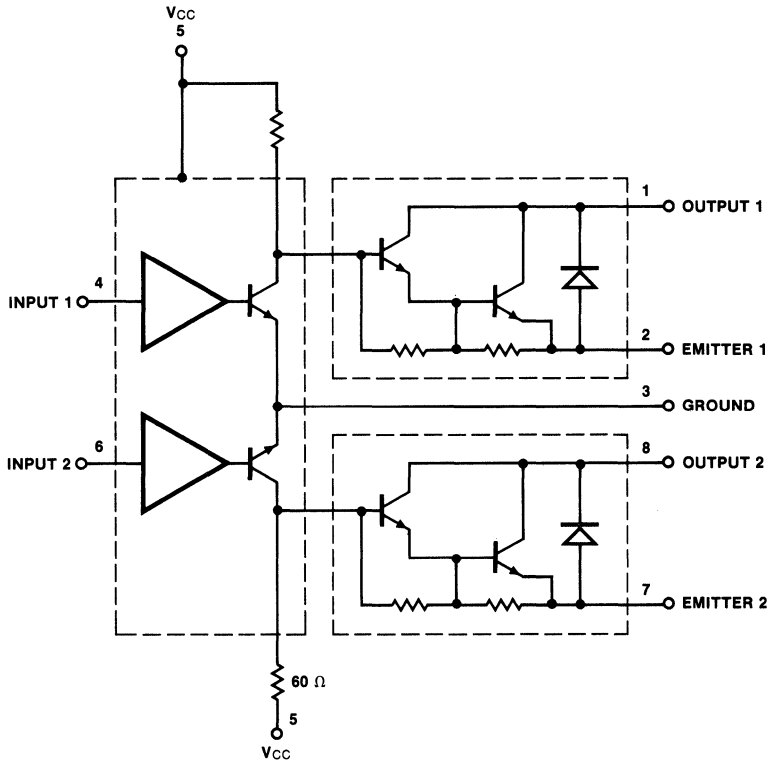
H6  
SH3002



H7  
SH3003



H8  
SH3011

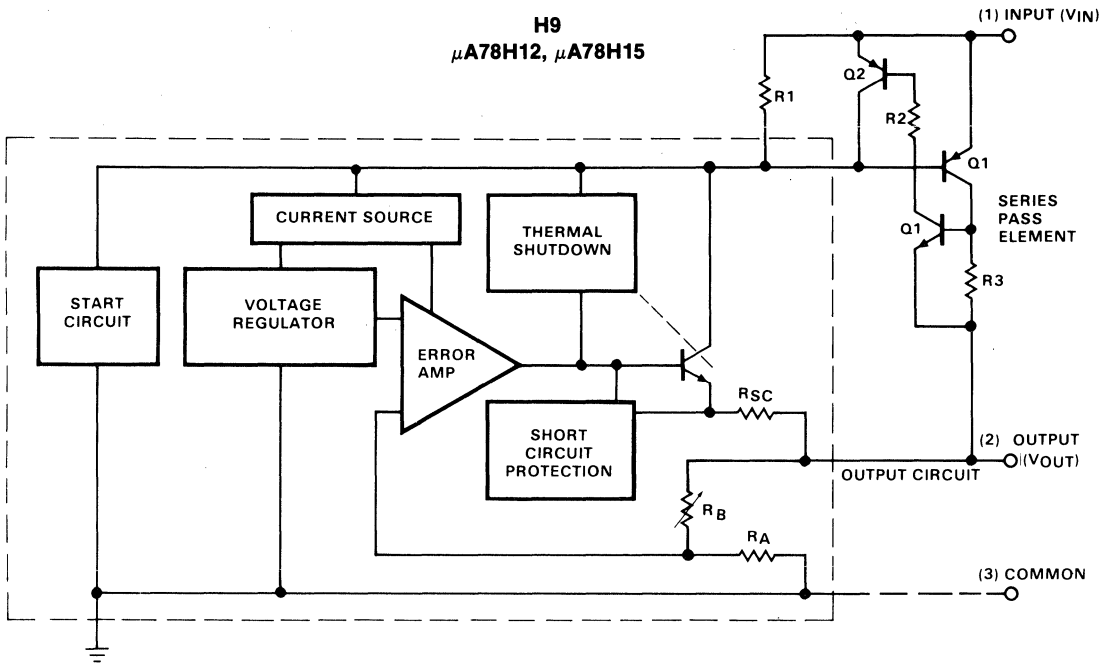




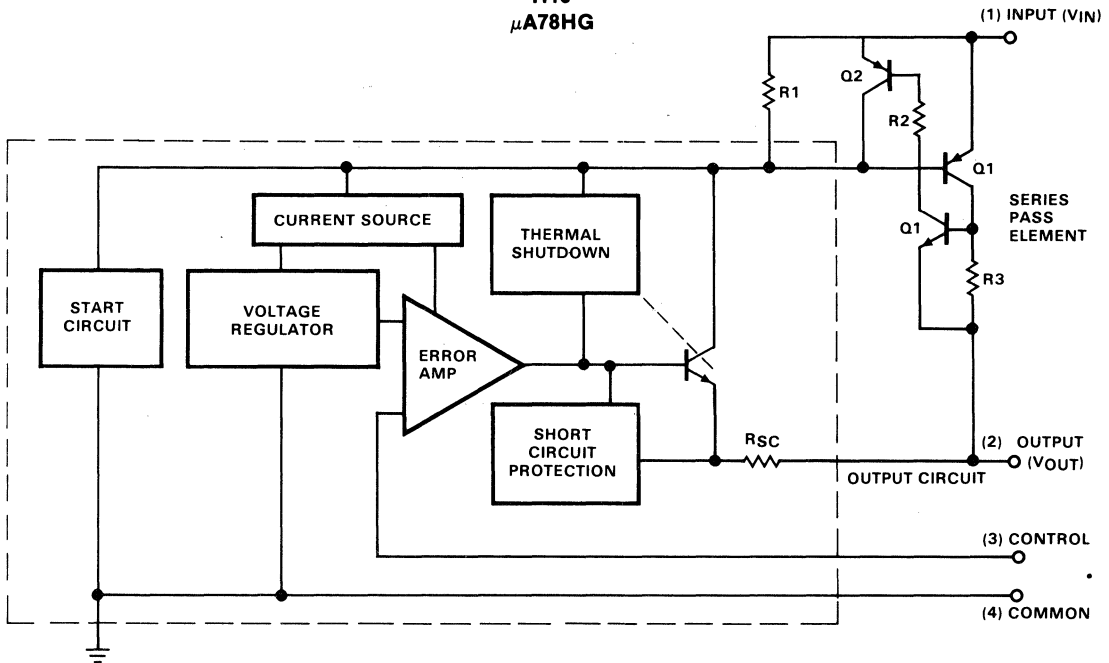
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## HYBRID

**H9**  
 $\mu\text{A78H12}$ ,  $\mu\text{A78H15}$

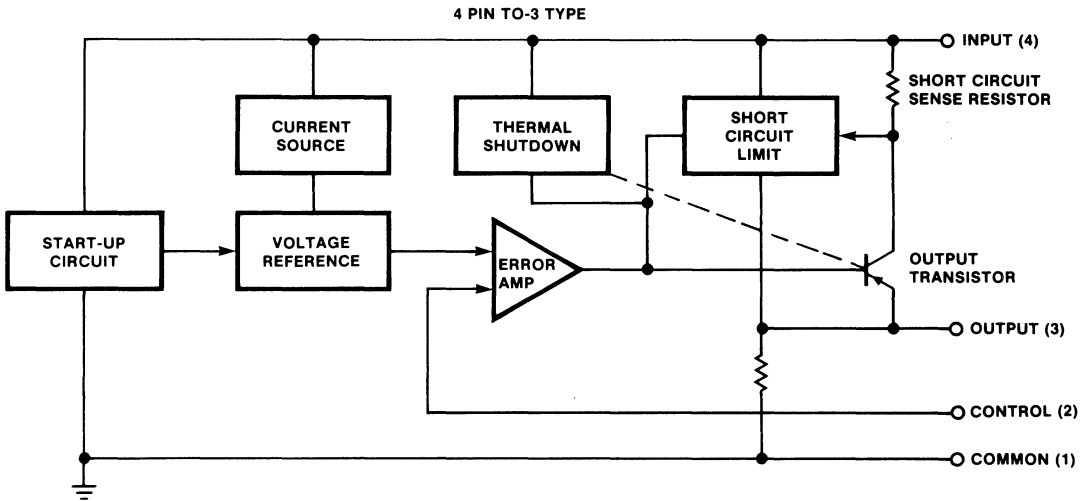


**H10**  
 $\mu\text{A78HG}$

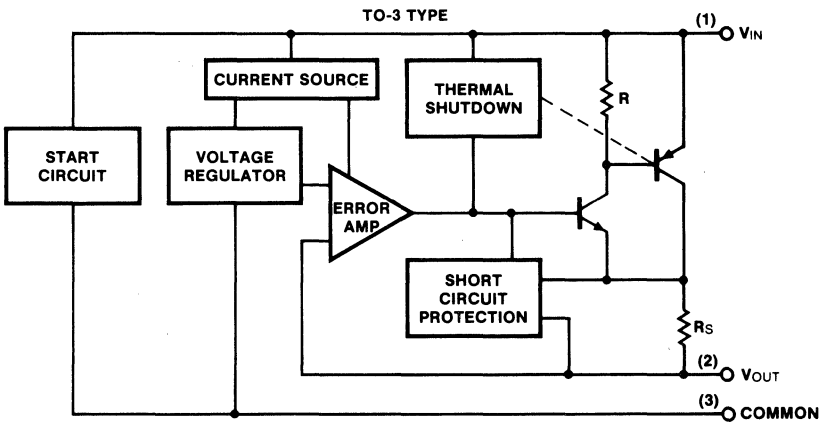


HYBRID

H11  
 $\mu$ A79HG

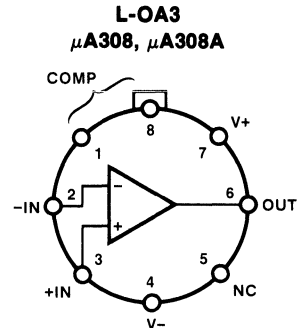
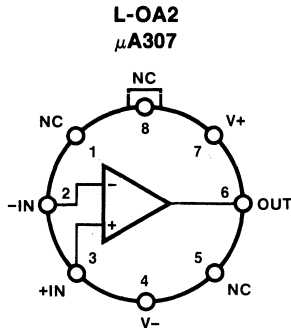
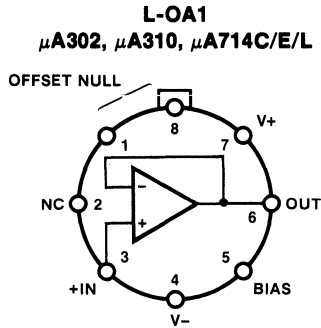


H12  
 $\mu$ A78H05,  $\mu$ A78H05A,  $\mu$ A78P05  
 SH123, SH223, SH323

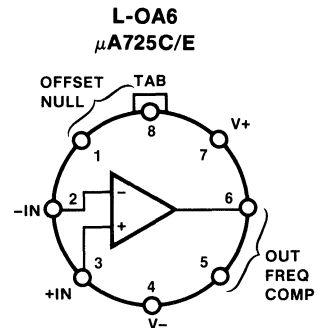
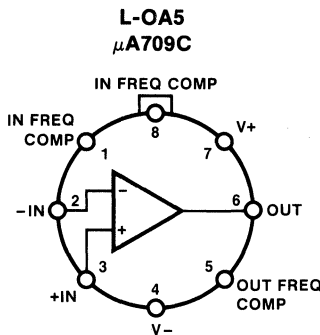
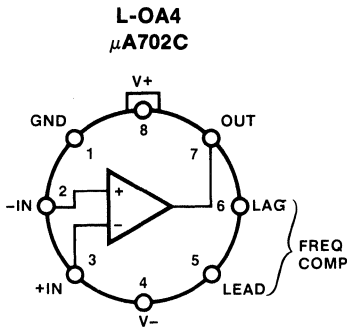


# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

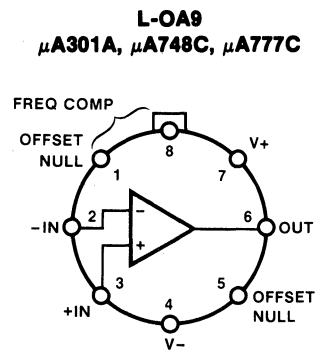
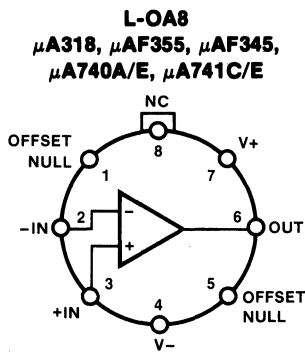
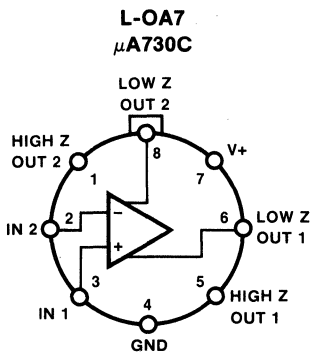
## LINEAR



Metal Can and Mini-Dip  
 Connection Shown



Metal Can and Mini-Dip  
 Connection Shown



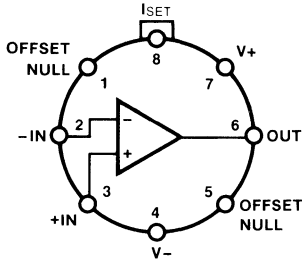
Metal Can and Mini-Dip  
 Connection Shown

Metal Can and Mini-Dip  
 Connection Shown

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

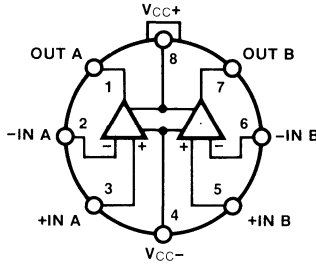
## LINEAR

**L-OA10**  
 $\mu\text{A776C}$ ,  $\mu\text{A798C}$ ,  $\mu\text{A1458}$



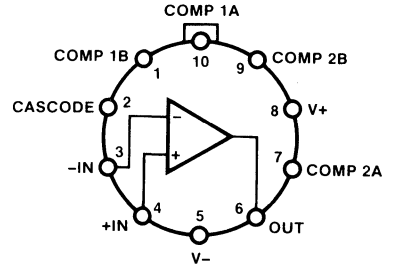
Metal Can and Mini-Dip  
 Connection Shown

**L-OA11**  
 $\mu\text{A4558}$

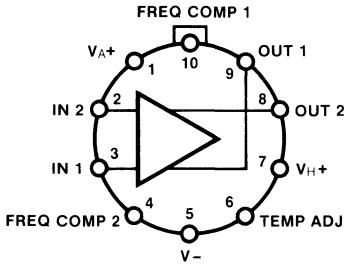


Metal Can and Mini-Dip  
 Connection Shown

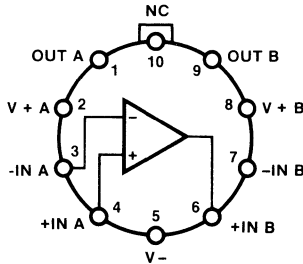
**L-OA12**  
 $\mu\text{A715C}$



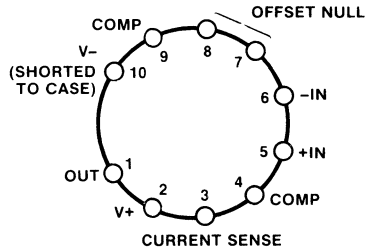
**L-OA13**  
 $\mu\text{A727C}$



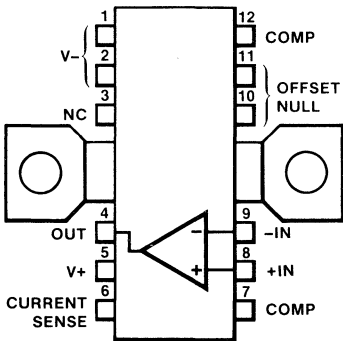
**L-OA14**  
 $\mu\text{A747C/E}$



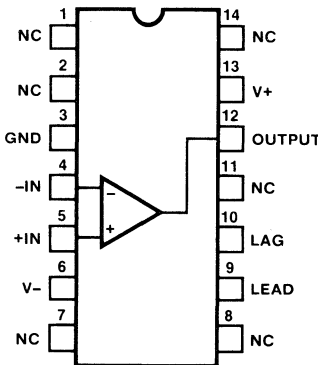
**L-OA15**  
 $\mu\text{A791C}$



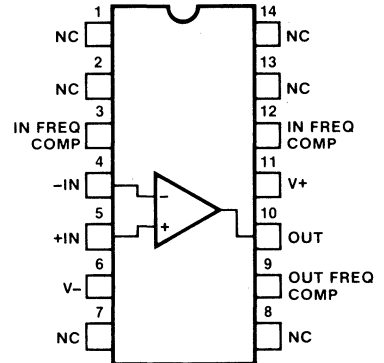
**L-OA16**  
 $\mu\text{A791C}$



**L-OA17**  
 $\mu\text{A702C}$ ,  $\mu\text{A4136}$



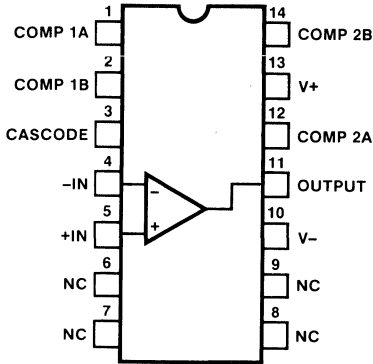
**L-OA18**  
 $\mu\text{A709C}$



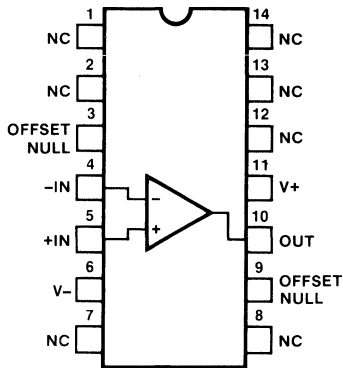
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## LINEAR

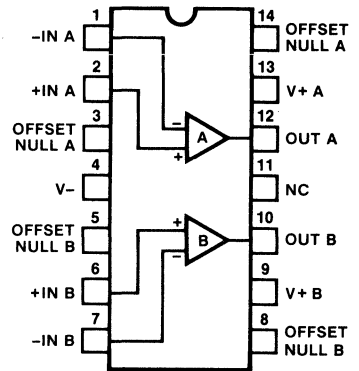
**L-OA19**  
 $\mu$ A715C



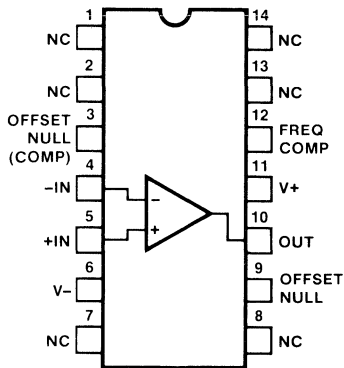
**L-OA20**  
 $\mu$ A741C/E



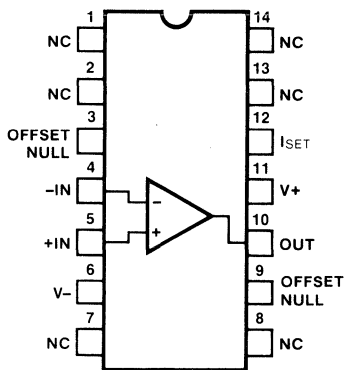
**L-OA21**  
 $\mu$ A747C/E



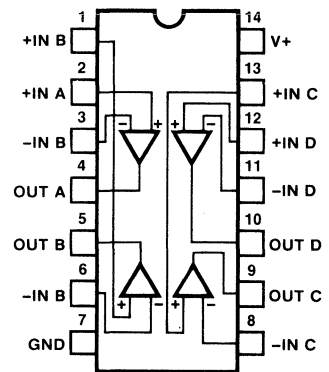
**L-OA22**  
 $\mu$ A301A,  $\mu$ A748,  $\mu$ A777C



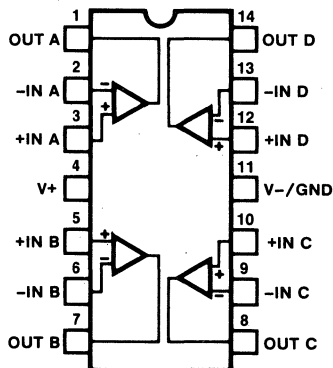
**L-OA23**  
 $\mu$ A776C



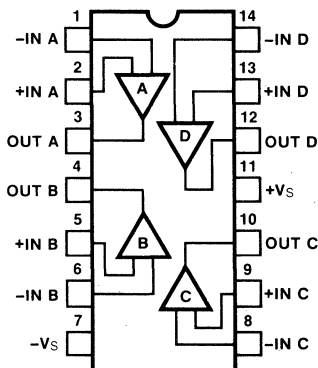
**L-OA24**  
 $\mu$ A3401



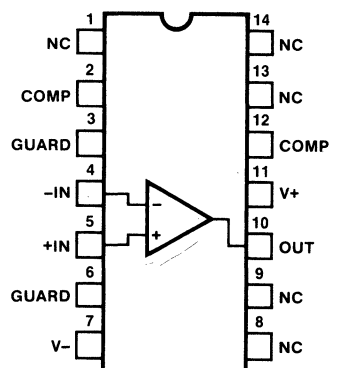
**L-OA25**  
 $\mu$ A324,  $\mu$ A348,  $\mu$ A3403



**L-OA26**  
 $\mu$ A4136



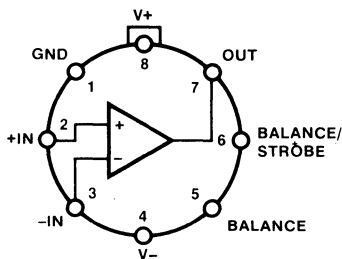
**L-OA27**  
 $\mu$ A308,  $\mu$ A308A



# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

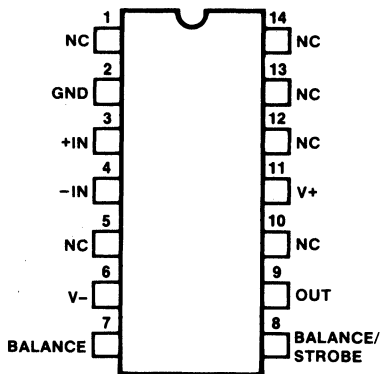
## LINEAR

**L-OA28**  
 $\mu$ AF111,  $\mu$ AF211,  $\mu$ AF311,  
 $\mu$ A111,  $\mu$ A211,  $\mu$ A311

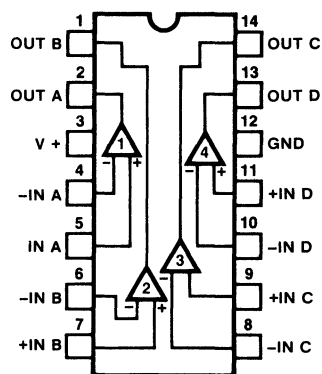


Metal Can and Mini-Dip  
 Connection Shown

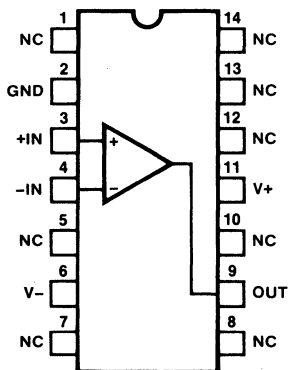
**L-OA29**  
 $\mu$ AF111,  $\mu$ AF211,  $\mu$ AF311,  
 $\mu$ A111,  $\mu$ A211,  $\mu$ A311



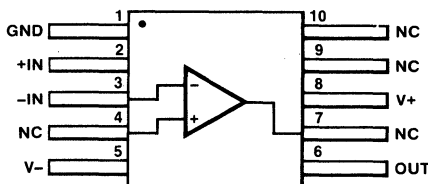
**L-OA30**  
 $\mu$ A139/A,  $\mu$ A239/A,  $\mu$ A339/A,  
 $\mu$ A775,  $\mu$ A2901,  $\mu$ A7302



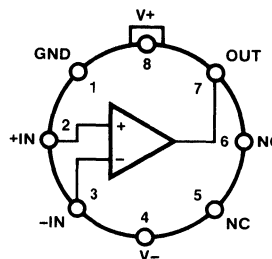
**L-OA31**  
 $\mu$ A710



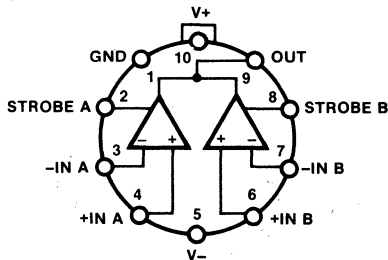
**L-OA32**  
 $\mu$ A710



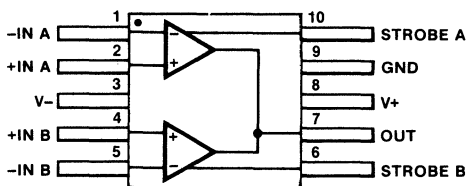
**L-OA33**  
 $\mu$ A710



**L-OA34**  
 $\mu$ A711



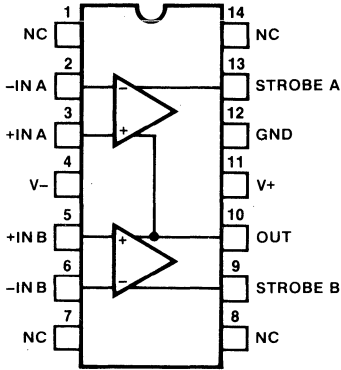
**L-OA35**  
 $\mu$ A711



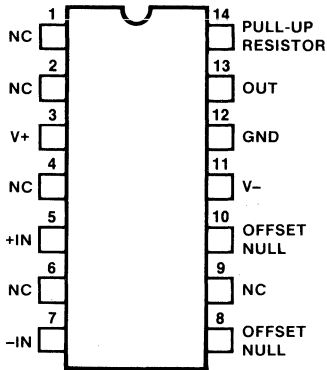
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## LINEAR

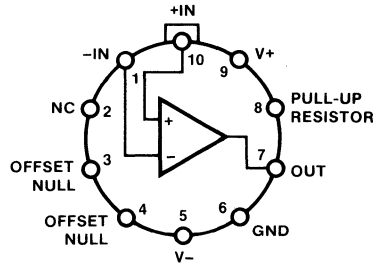
**L-OA36**  
 $\mu$ A711



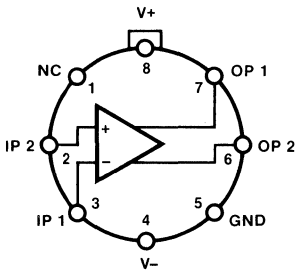
**L-OA37**  
 $\mu$ A734



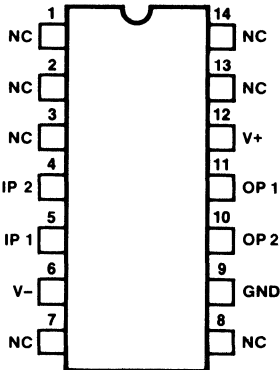
**L-OA38**  
 $\mu$ A734



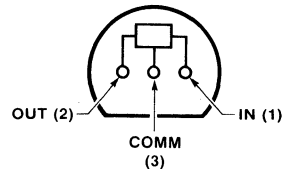
**L-OA39**  
 $\mu$ A760



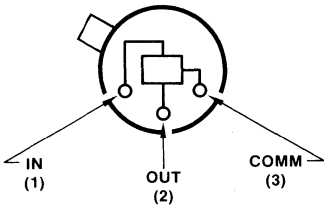
**L-OA40**  
 $\mu$ A760



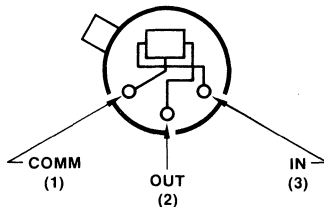
**L-VR1**  
 $\mu$ A78LXX



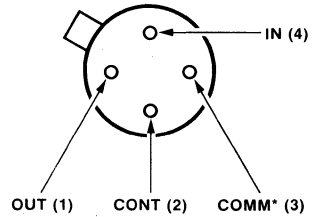
**L-VR2**  
 $\mu$ A78LXX,  $\mu$ A78MXX



**L-VR3**  
 $\mu$ A79MXX

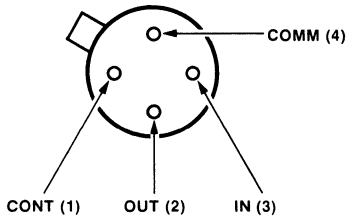


**L-VR4**  
 $\mu$ A78MG

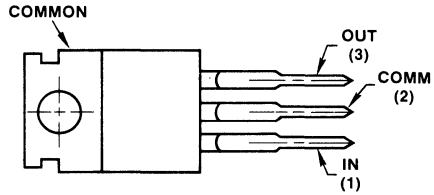


LINEAR

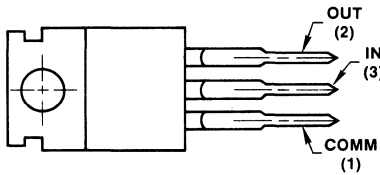
**L-VR5**  
 $\mu$ A79MG



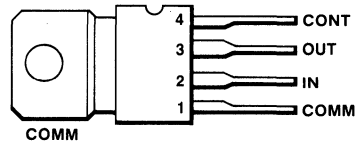
**L-VR6**  
 $\mu$ A78CB,  $\mu$ A78MXX,  
 $\mu$ A78CXX,  $\mu$ A78XX



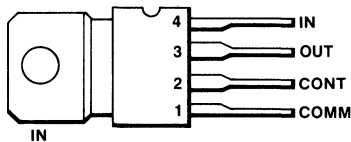
**L-VR7**  
 $\mu$ A79MXX,  $\mu$ A79XX



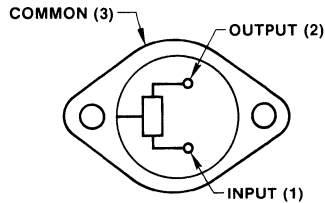
**L-VR8**  
 $\mu$ A78G,  $\mu$ A78MG



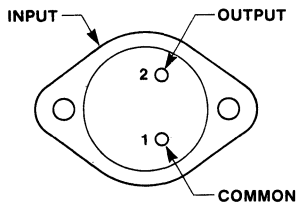
**L-VR9**  
 $\mu$ A79G,  $\mu$ A79MG



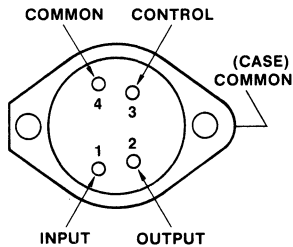
**L-VR10**  
 $\mu$ A78CB,  
 $\mu$ A78XX,  $\mu$ A109,  $\mu$ A209,  $\mu$ A309



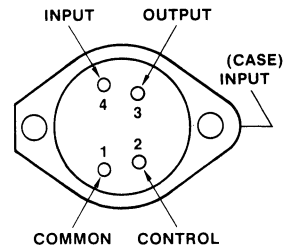
**L-VR11**  
 $\mu$ A79XX



**L-VR12**  
 $\mu$ A78G



**L-VR13**  
 $\mu$ A79G,  $\mu$ A79HG

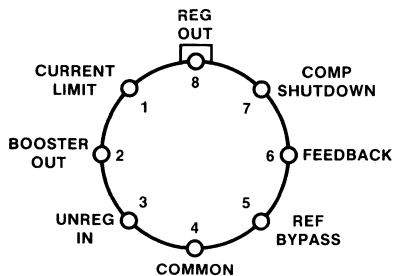




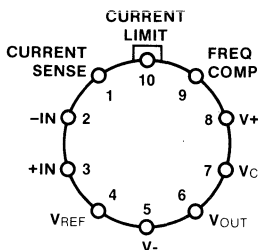
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## LINEAR

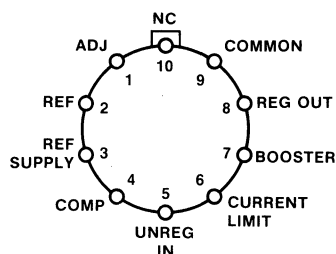
**L-VR14**  
 $\mu$ A105,  $\mu$ A305/A



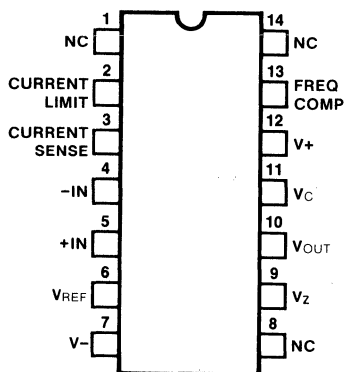
**L-VR15**  
 $\mu$ A723



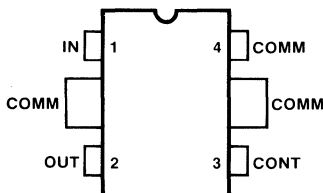
**L-VR16**  
 $\mu$ A104,  $\mu$ A304



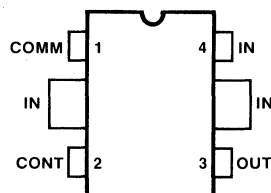
**L-VR17**  
 $\mu$ A723



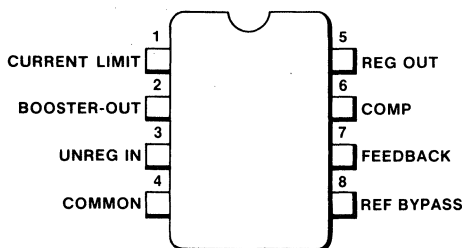
**L-VR18**  
 $\mu$ A78MG



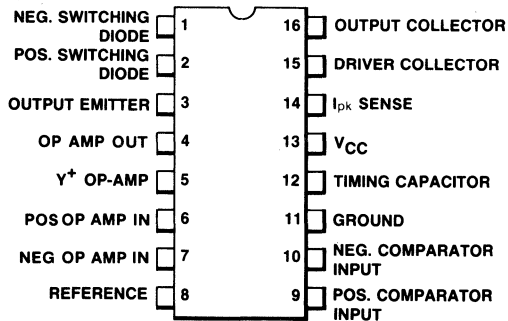
**L-VR19**  
 $\mu$ A79MG



**L-VR20**  
 $\mu$ A376



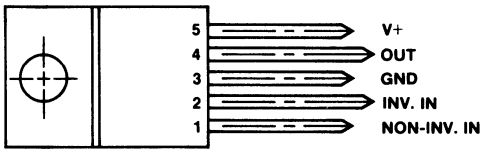
**L-VR21**  
 $\mu$ A78S



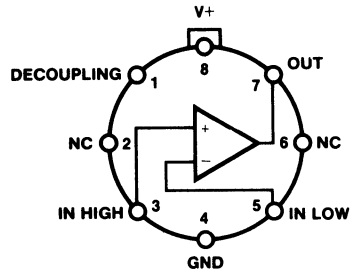
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## LINEAR

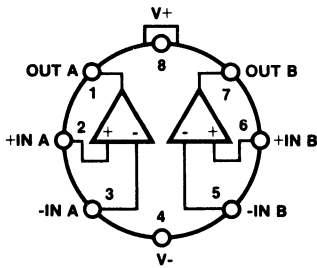
**L-C1**  
TD2002, TDA2002A



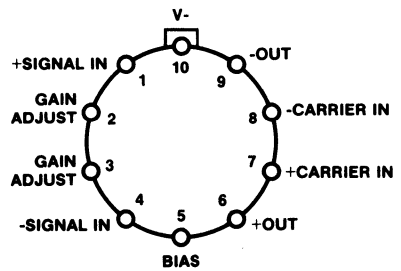
**L-C2**  
 $\mu$ A703



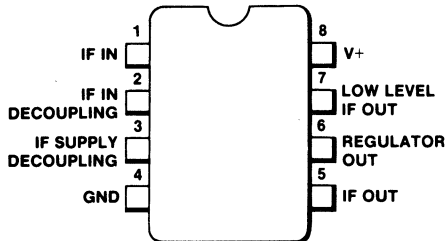
**L-C3**  
 $\mu$ A749



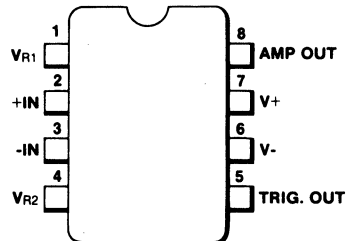
**L-C4**  
 $\mu$ A796



**L-C5**  
 $\mu$ A753

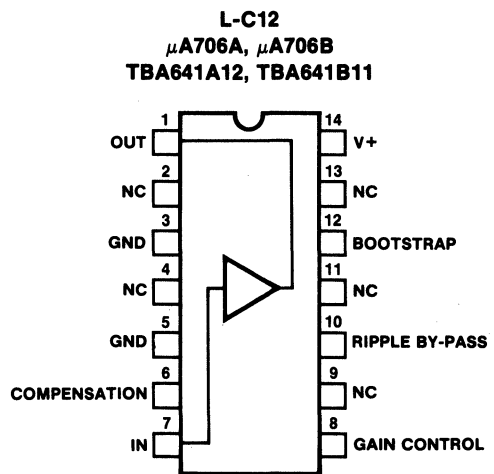
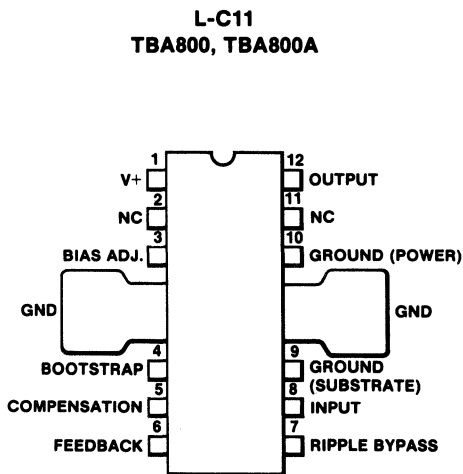
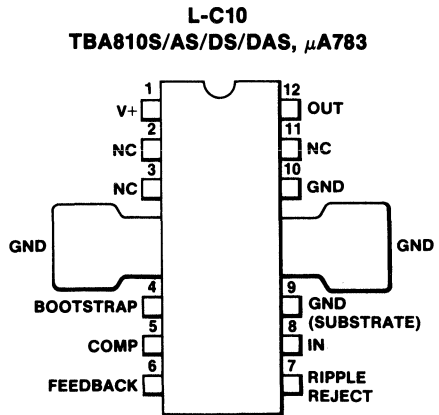
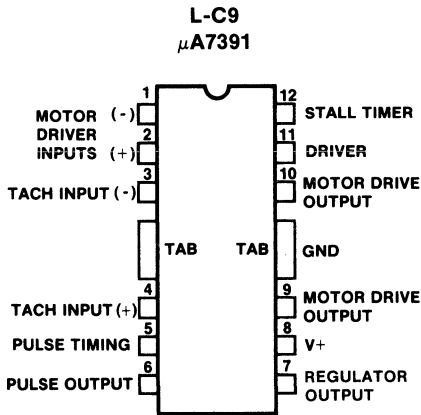
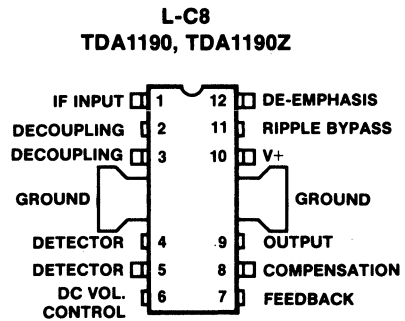
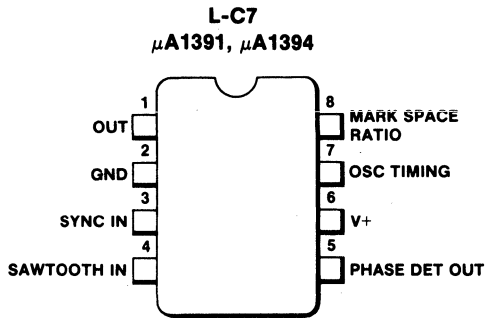


**L-C6**  
 $\mu$ A7390



# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

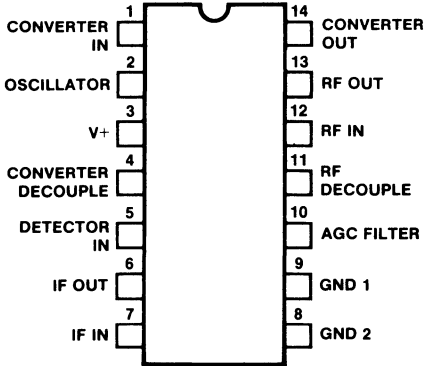
## LINEAR



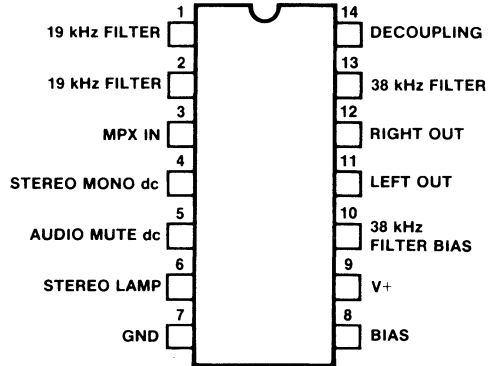
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## LINEAR

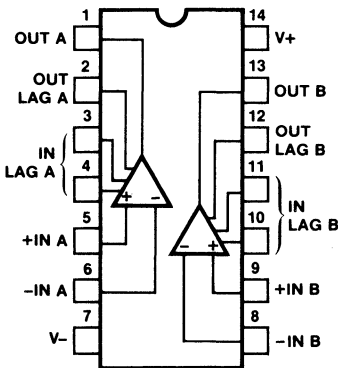
**L-C13**  
 $\mu$ A720



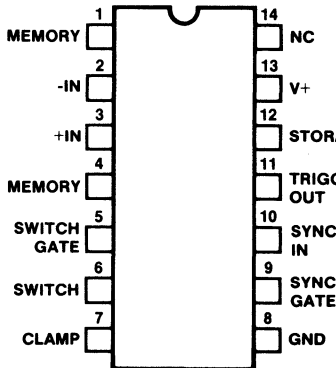
**L-C14**  
 $\mu$ A732



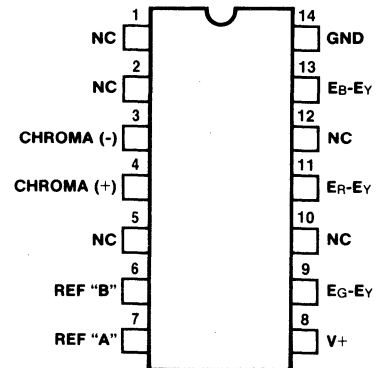
**L-C15**  
 $\mu$ A739



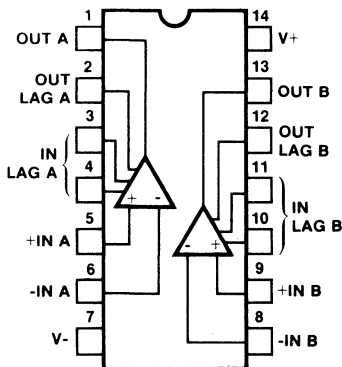
**L-C16**  
 $\mu$ A742



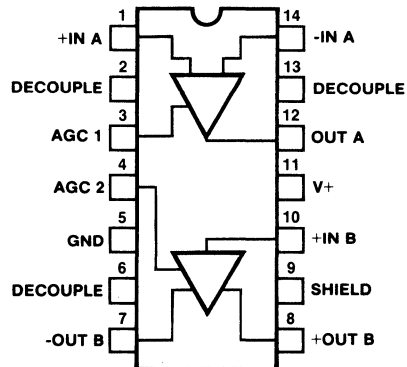
**L-C17**  
 $\mu$ A746



**L-C18**  
 $\mu$ A749



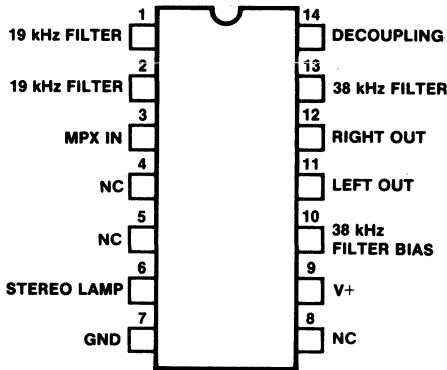
**L-C19**  
 $\mu$ A757



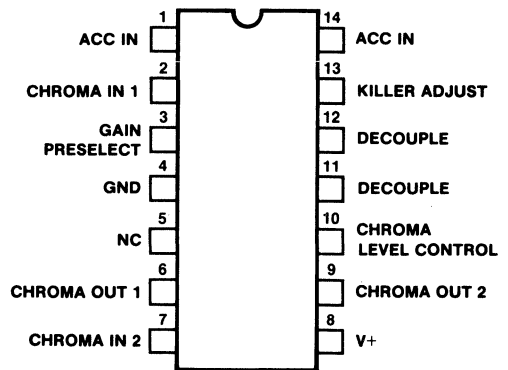
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## LINEAR

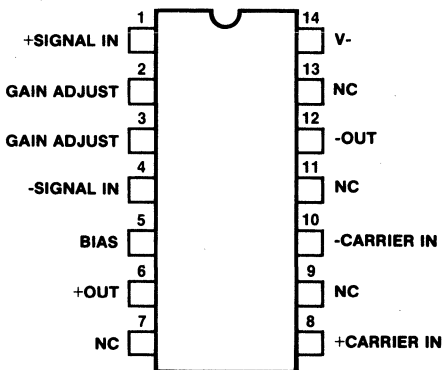
**L-C20**  
 $\mu$ A767



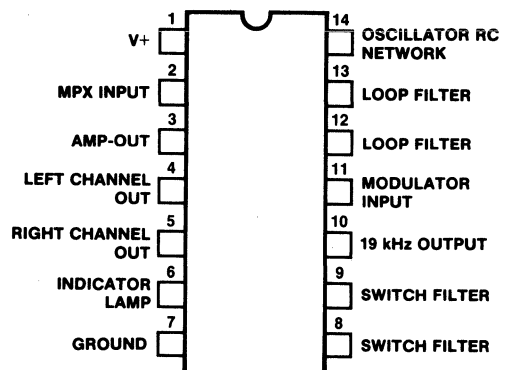
**L-C21**  
 $\mu$ A781



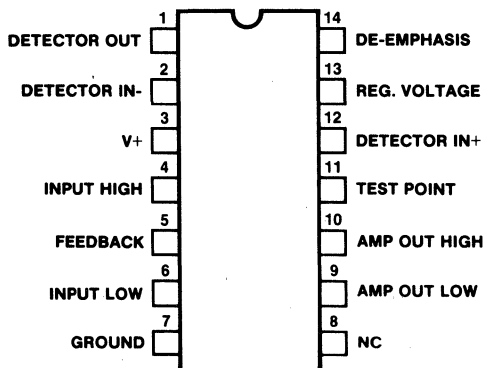
**L-C22**  
 $\mu$ A796



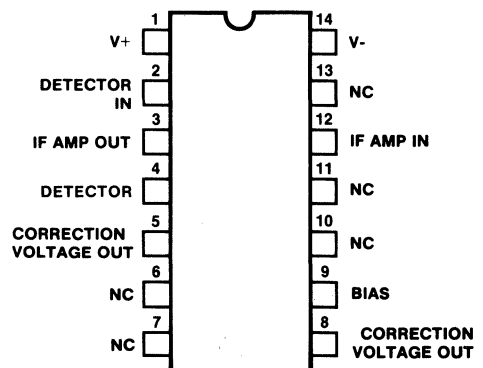
**L-C23**  
 $\mu$ A1310



**L-C24**  
 $\mu$ A2136

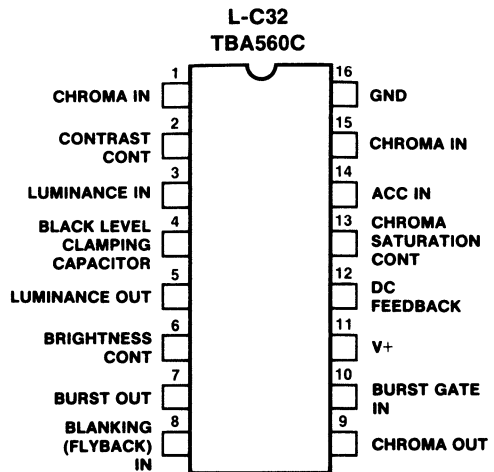
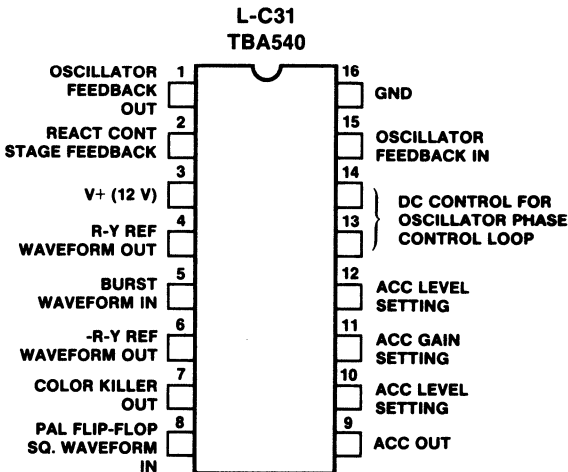
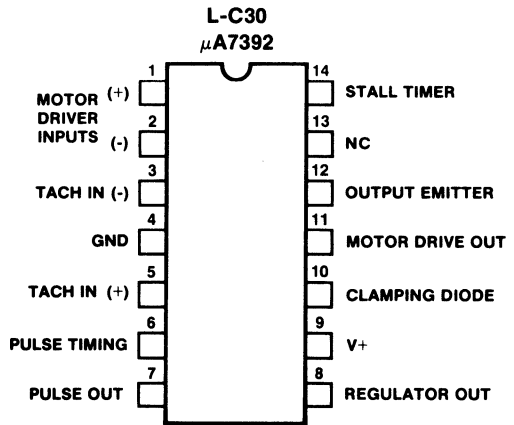
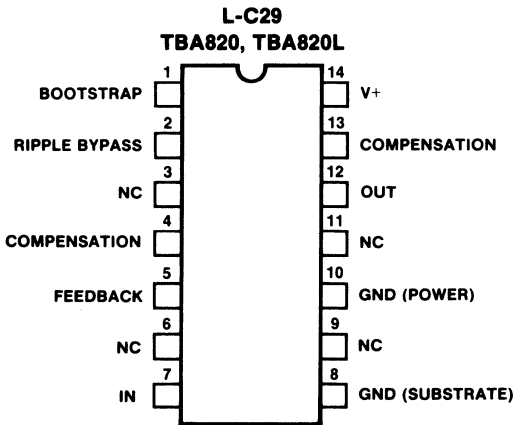
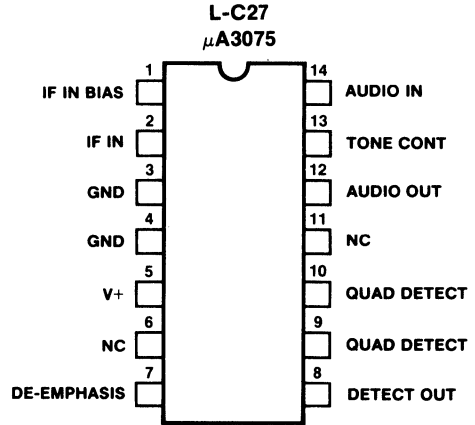
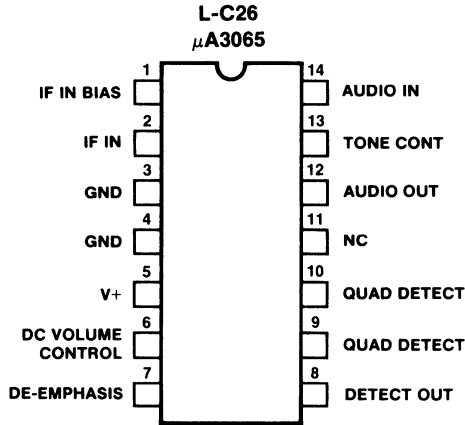


**L-C25**  
 $\mu$ A3064



# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

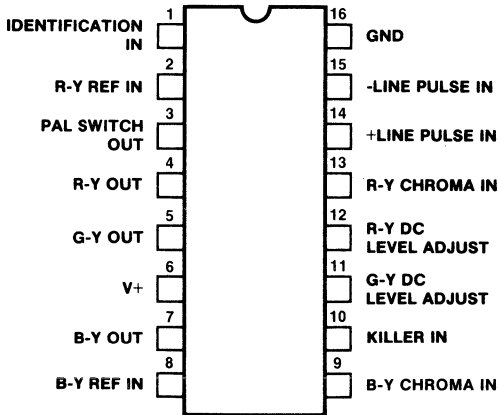
## LINEAR



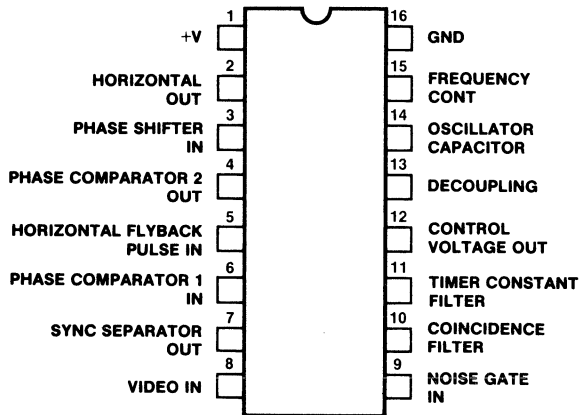
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## LINEAR

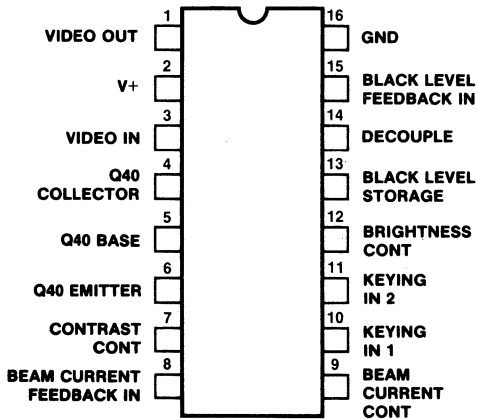
**L-C33  
TAA630S**



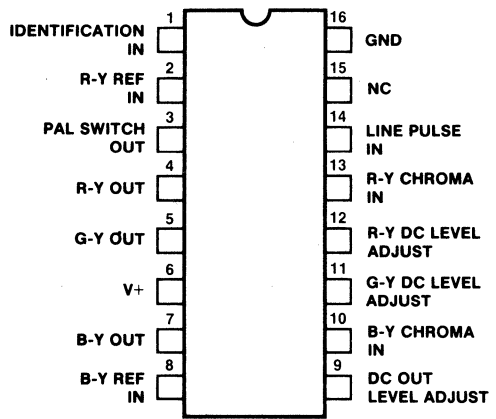
**L-C34  
TBA920, TBA920S**



**L-C35  
TBA970**



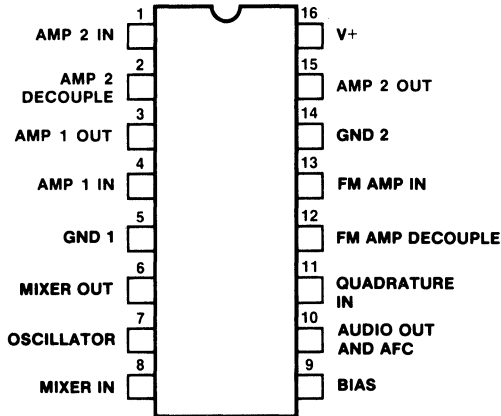
**L-C36  
TBA990**



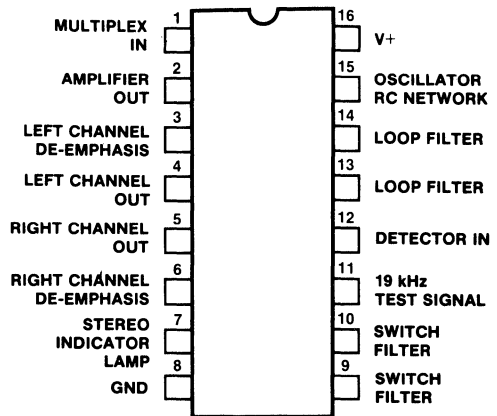
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## LINEAR

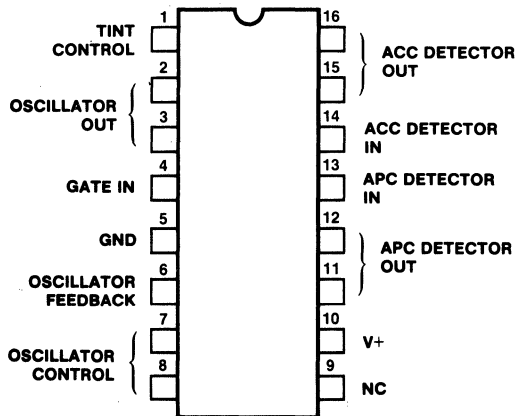
**L-C37**  
**μA721**



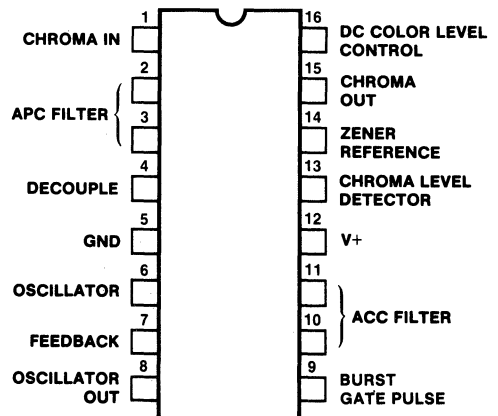
**L-C38**  
**μA758**



**L-C39**  
**μA780**



**L-C40**  
**μA787**

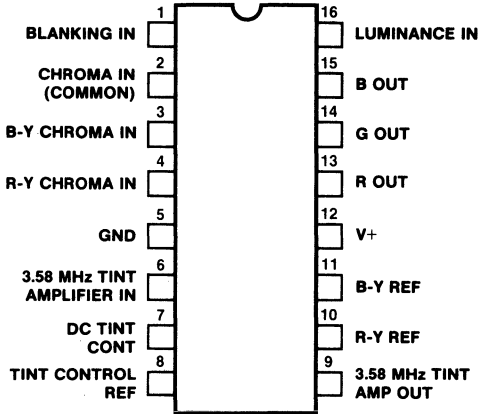




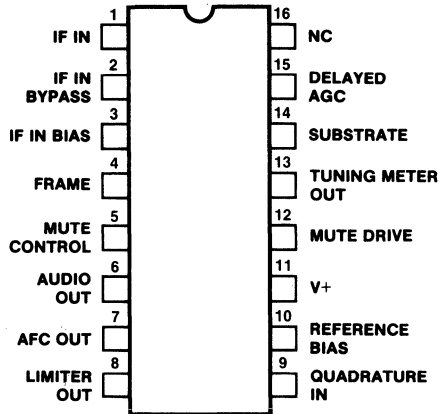
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## LINEAR

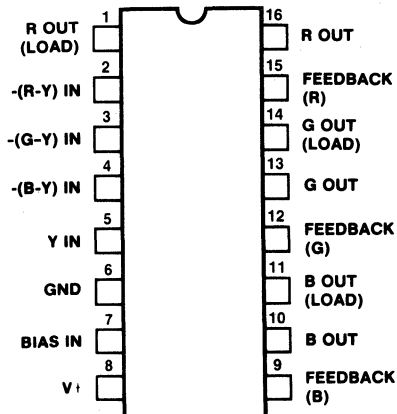
**L-C41**  
**μA798**



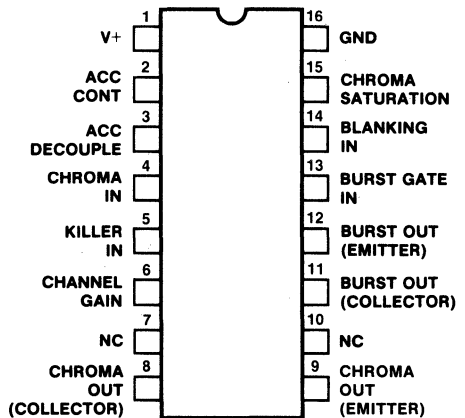
**L-C42**  
**μA3089**



**L-C43**  
**TBA530**



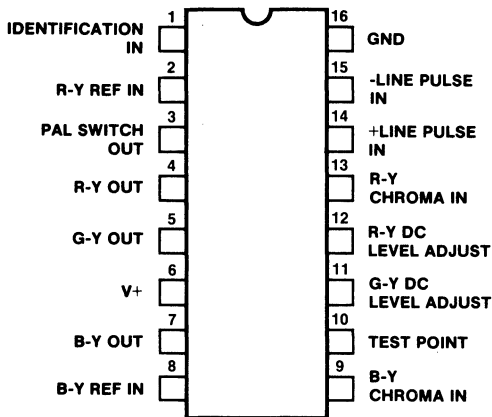
**L-C44**  
**TBA510**



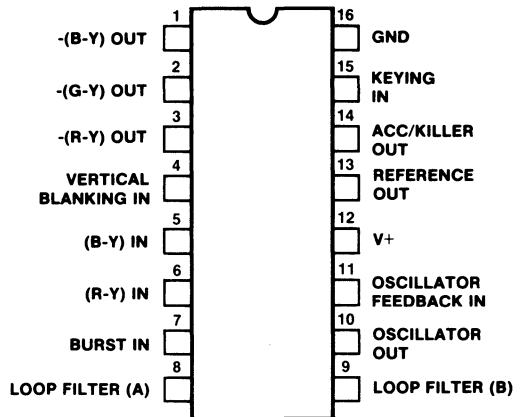
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## LINEAR

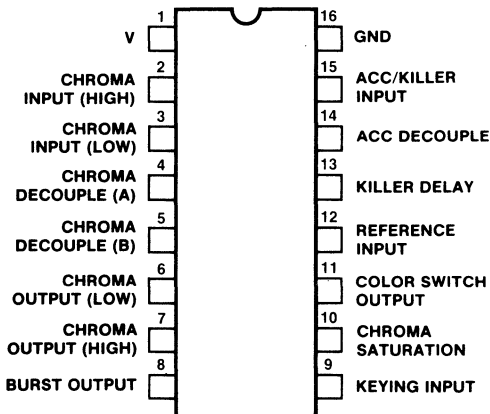
**L-C45  
TBA520**



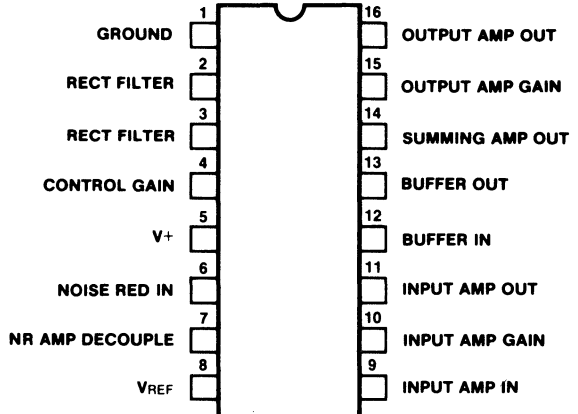
**L-C46  
TDA2521**



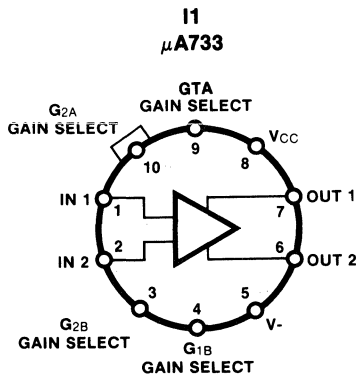
**L-C47  
TDA2510**



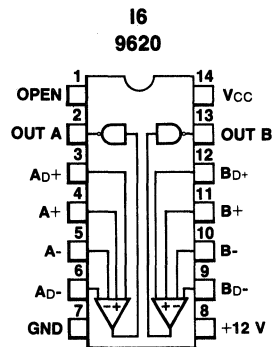
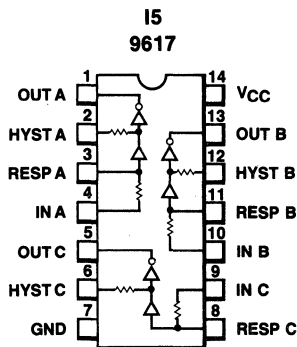
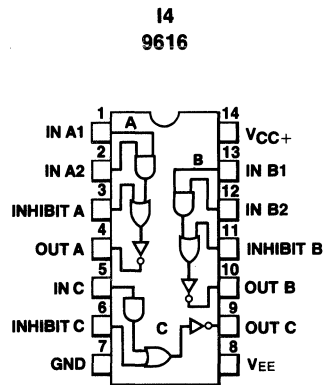
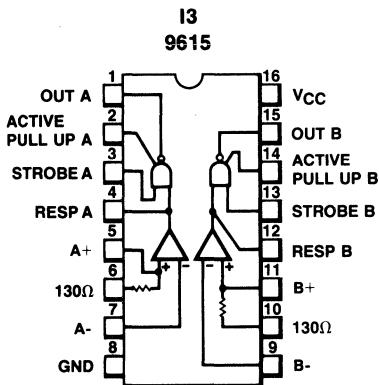
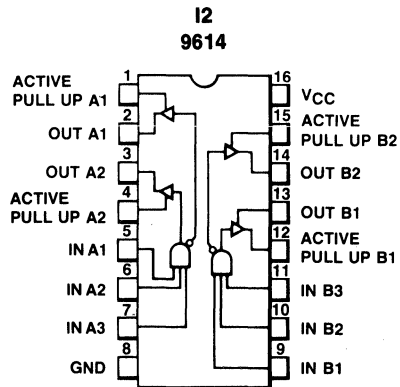
**L-C48  
 $\mu$ A7300**



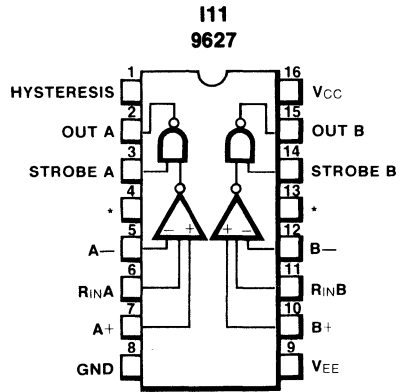
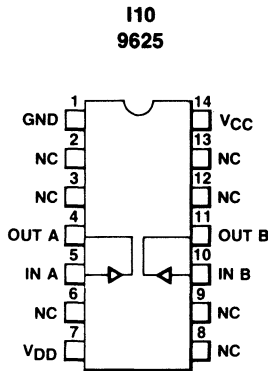
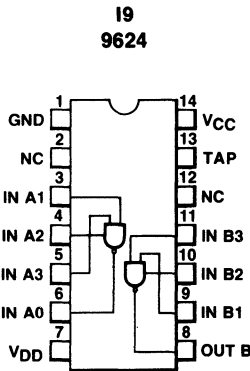
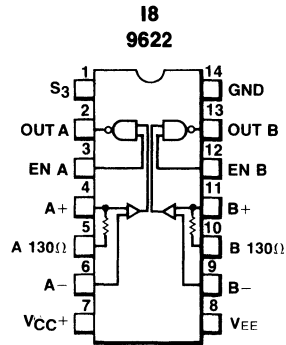
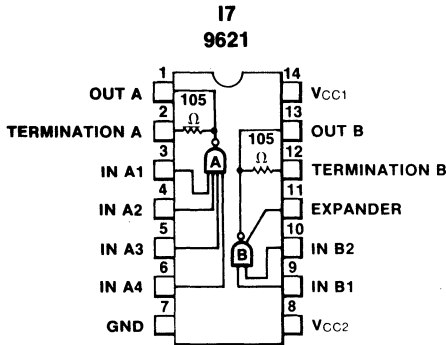
INTERFACE



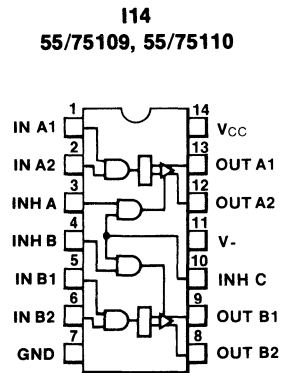
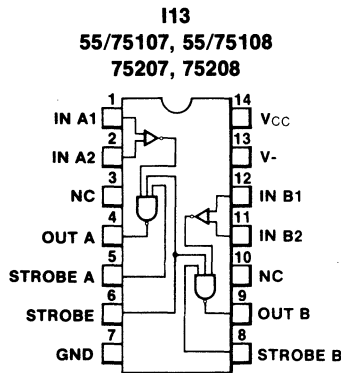
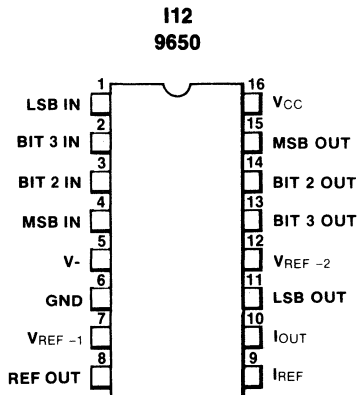
Flatpak and Dip Not Shown



INTERFACE

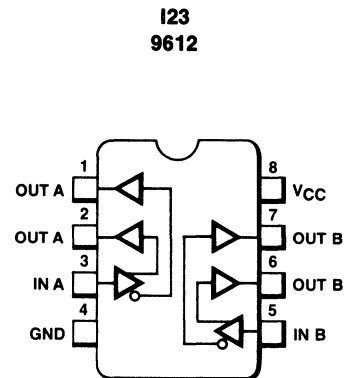
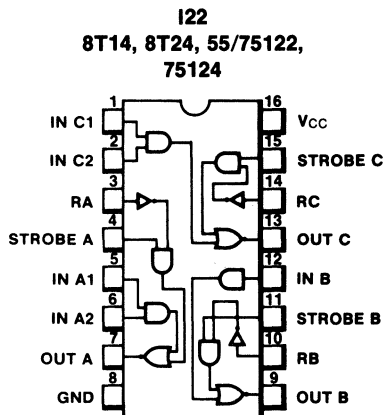
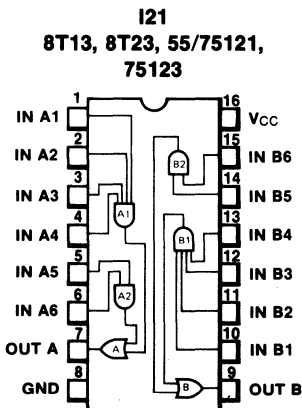
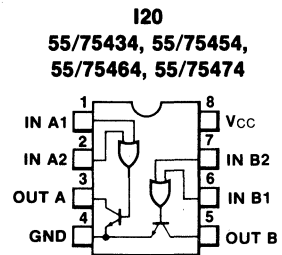
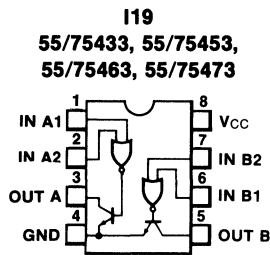
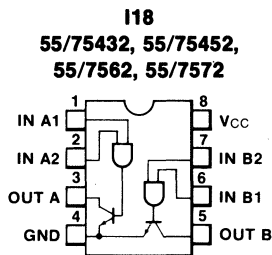
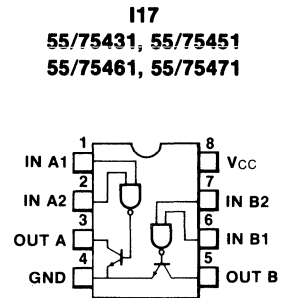
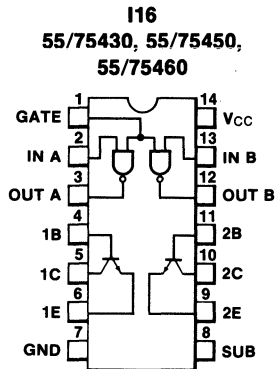
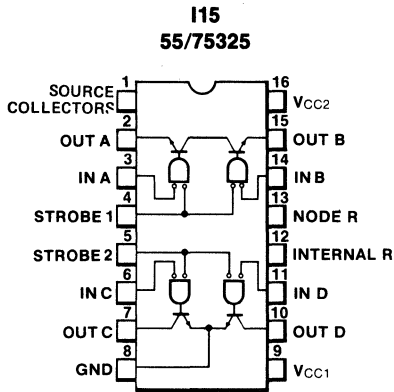


\*Internal Connection

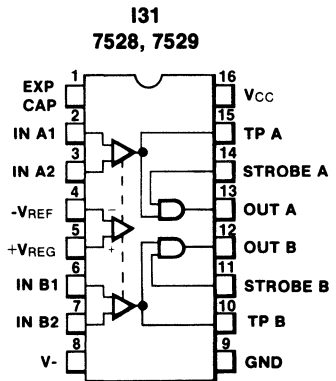
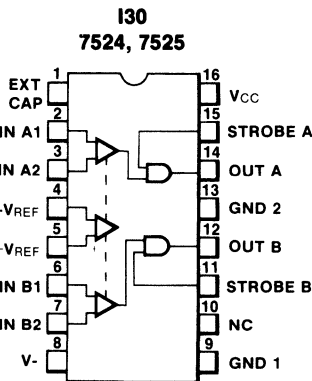
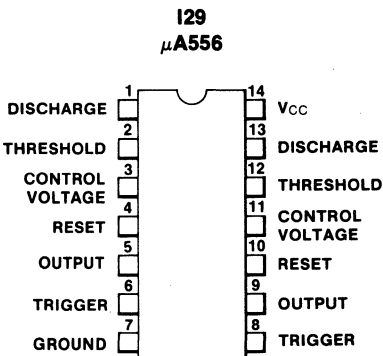
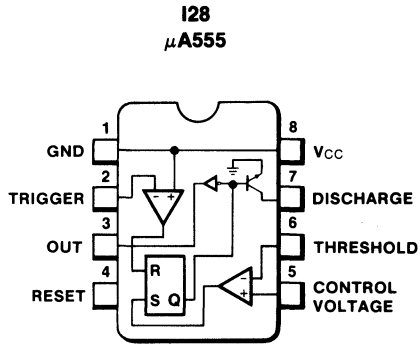
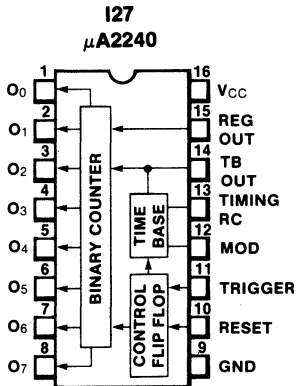
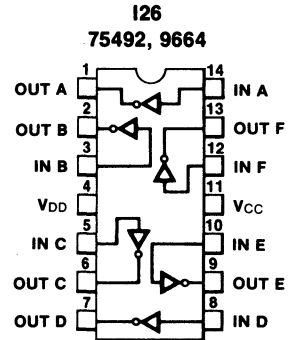
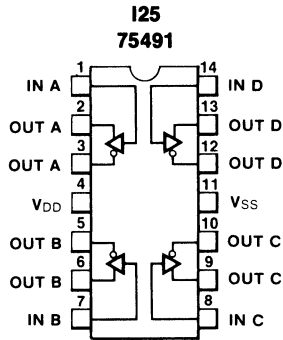
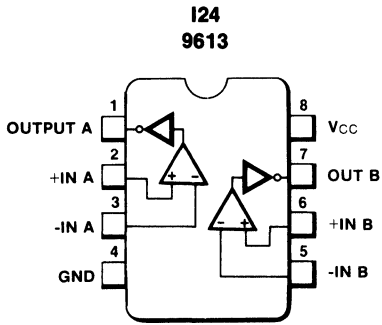


# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

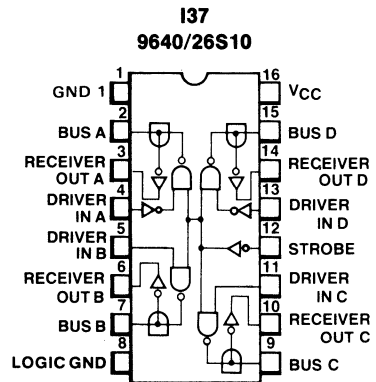
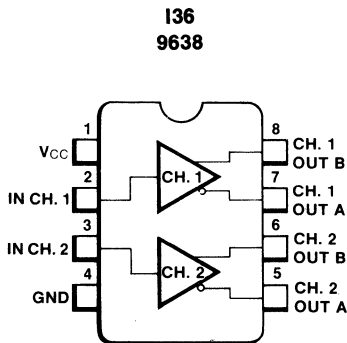
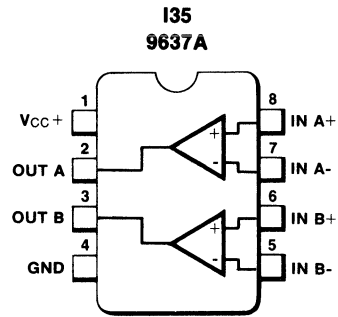
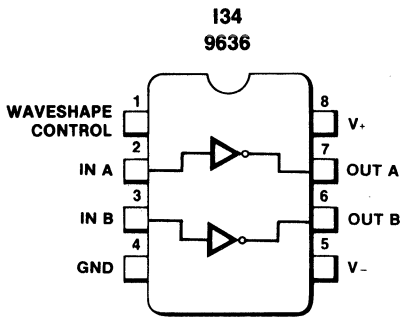
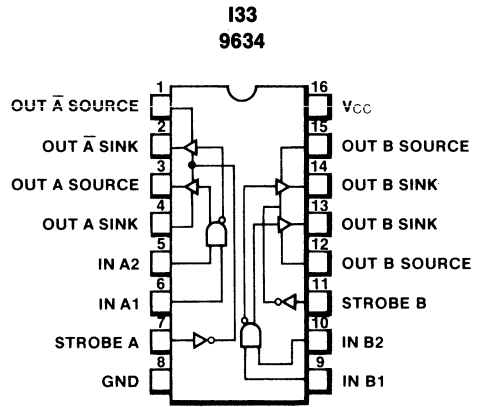
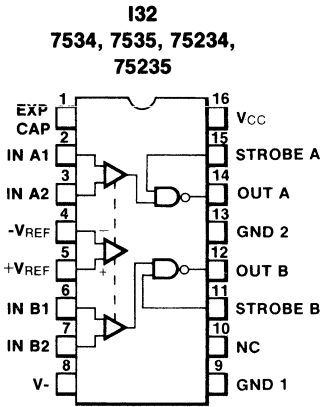
## INTERFACE



INTERFACE

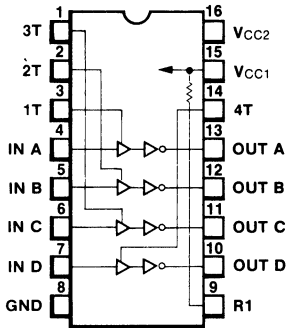


INTERFACE



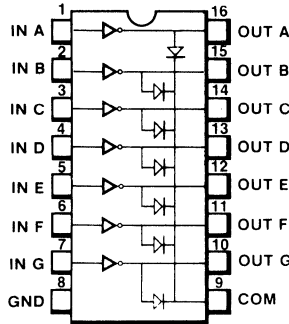
INTERFACE

**I38**  
75154

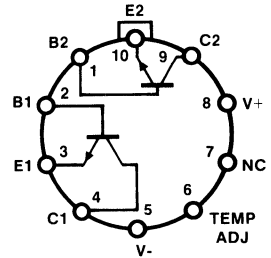


Minidip Not Shown

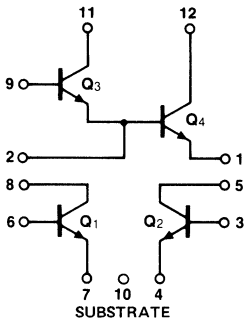
**I39**  
9665, 9666, 9667,  
9668



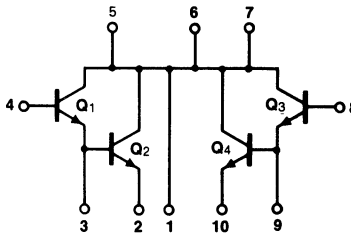
**I40**  
 $\mu$ A726



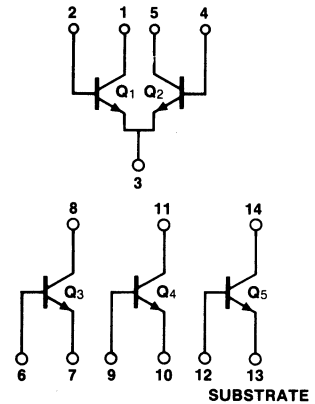
**I41**  
 $\mu$ A3018,  $\mu$ A3018A



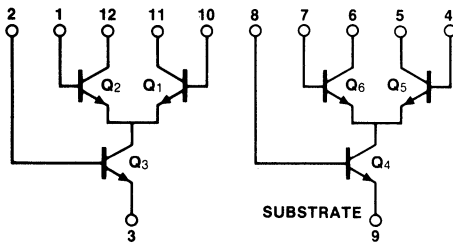
**I42**  
 $\mu$ A3036



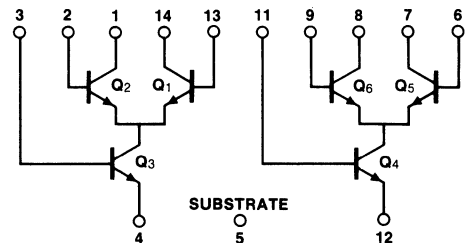
**I43**  
 $\mu$ A3045,  $\mu$ A3046,  
 $\mu$ A3086



**I44**  
 $\mu$ A3026



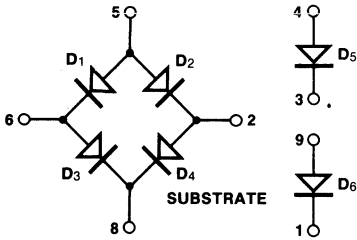
**I45**  
 $\mu$ A3054



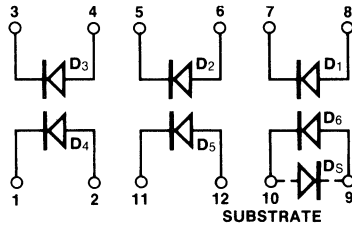


INTERFACE

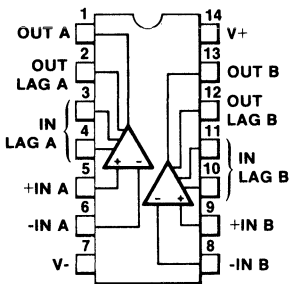
I46  
μA3039



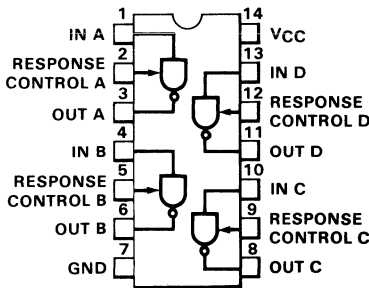
I47  
μA3019



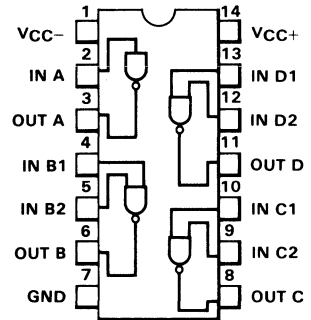
I48  
μA739



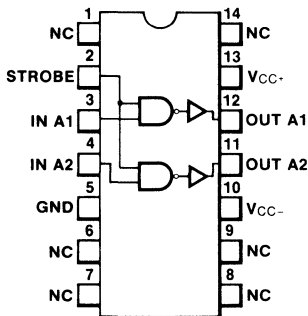
I49  
μA1488



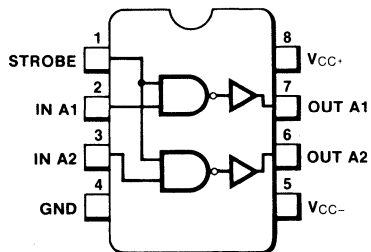
I50  
μA1489, μA1489A



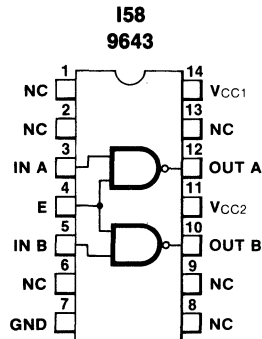
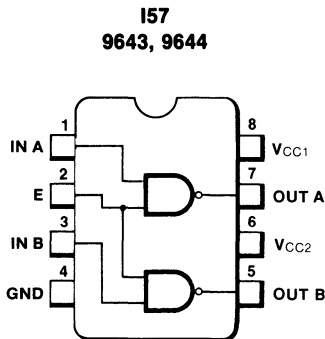
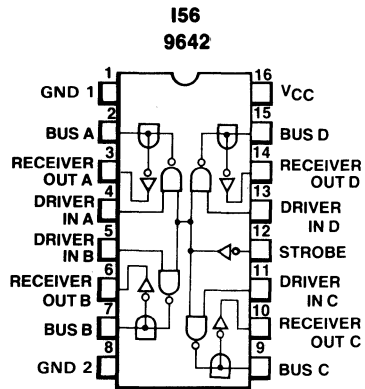
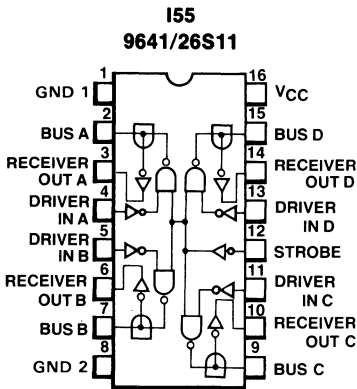
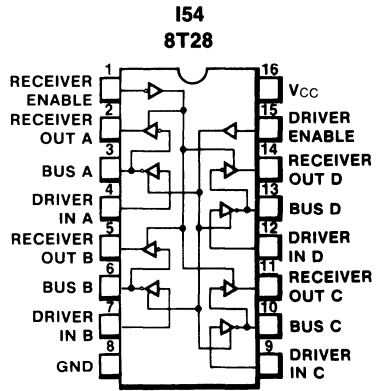
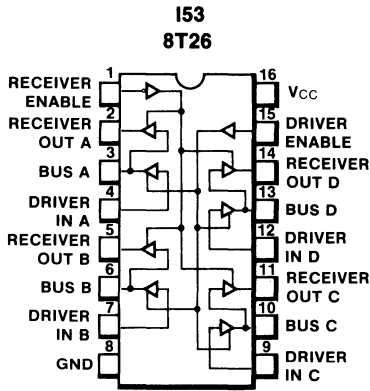
I51  
75150



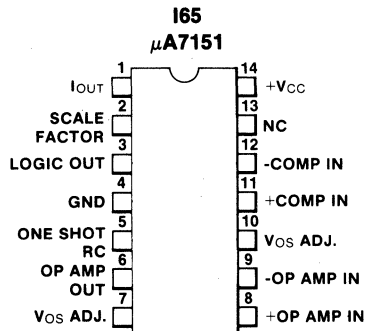
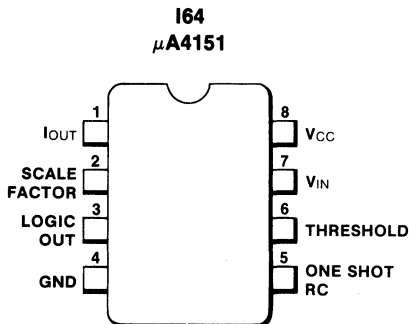
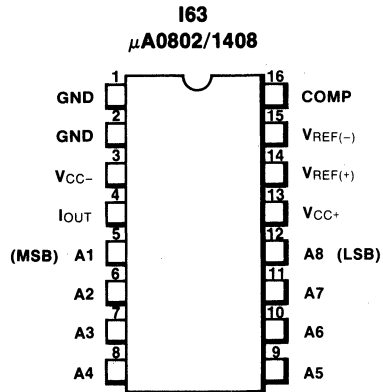
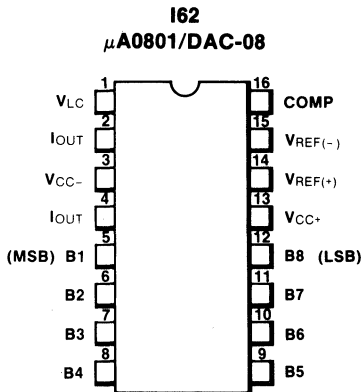
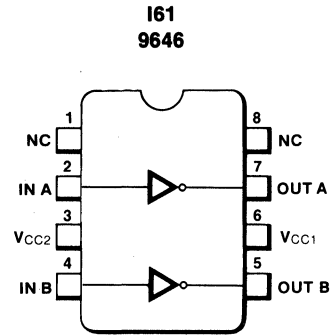
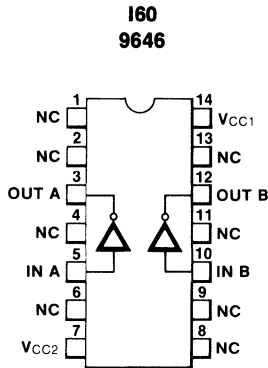
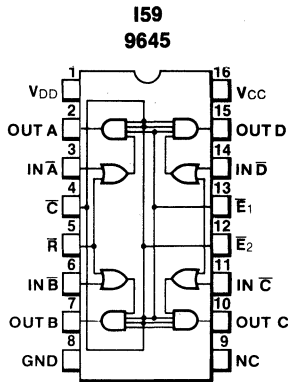
I52  
75150



INTERFACE

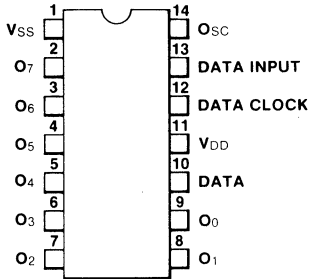


INTERFACE

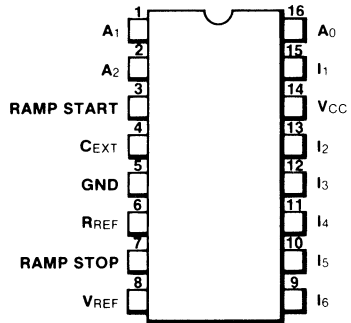


INTERFACE

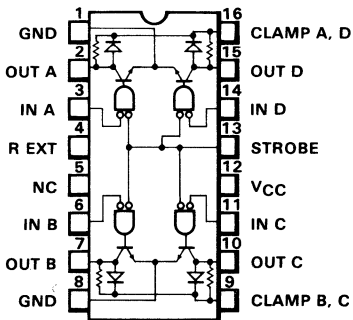
**I66**  
**9706**



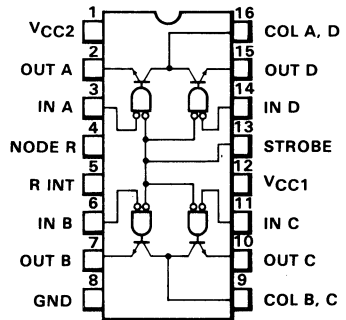
**I67**  
**9708**



**I68**  
**55/75326**



**I69**  
**55/75327**

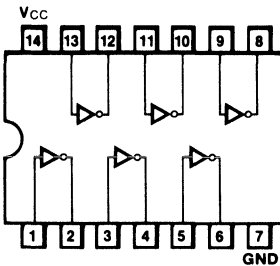


# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## DIGITAL - TTL

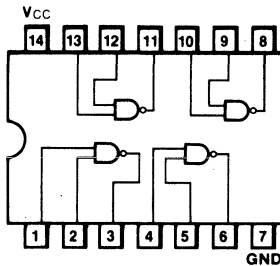
### D1

9016, 9S04, 54/7404,  
54H/74H04, 54S/74S04,  
54LS/74LS04, 9017,  
9S05A, 54/7405,  
54H/74H05, 54S/74S05,  
54LS/74LS05, 54/7406,  
54/7414, 54LS/74LS14,  
54/7416



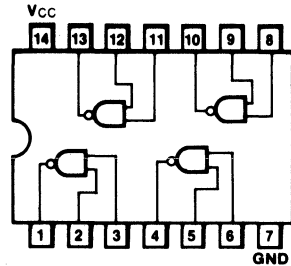
### D2

9002, 54/7400,  
54H/74H00, 54S/74S00,  
54LS/74LS00, 9012,  
54H/74H01, 54/7403,  
54S/74S03, 54LS/74LS03,  
7426, 54LS/74LS26  
54/7437, 54LS/74LS37,  
54/7438, 74LS38, 54/74132,  
54S/74S132, 74LS132



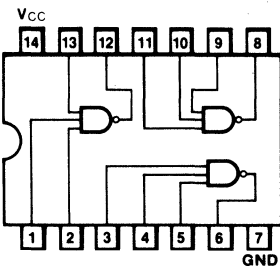
### D3

54/7401, 96101, 54/7439



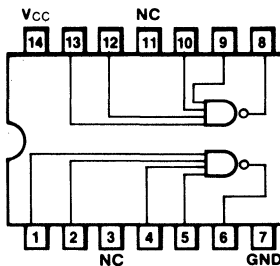
### D4

9003, 54/7410, 54H/74H10,  
54S/74S10, 54LS/74LS10,  
54/7412



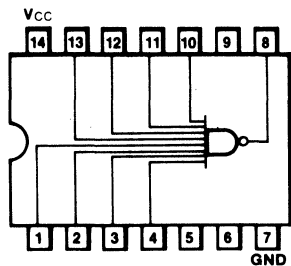
### D5

9004, 54/7420, 54H/74H20,  
54S/74S20, 54LS/74LS20,  
54/7422, 54H/74H22,  
74S22, 54LS/74LS22,  
9009, 54/7440, 54H/74H40,  
54S/74S40, 54LS/74LS40,  
54S/74S140



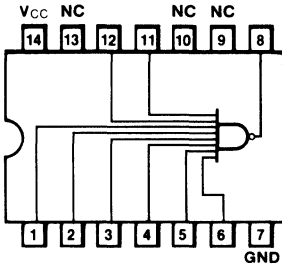
### D6

9007

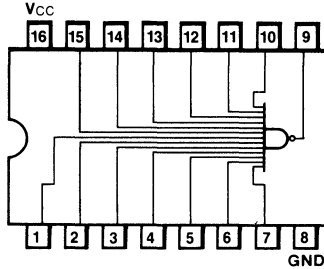


DIGITAL - TTL

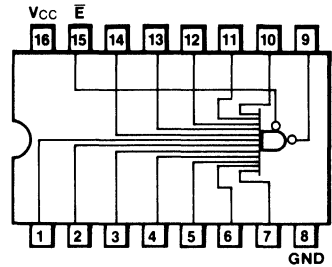
**D7**  
54/7430, 54H/74H30  
54S/74S30, 54LS/74LS30



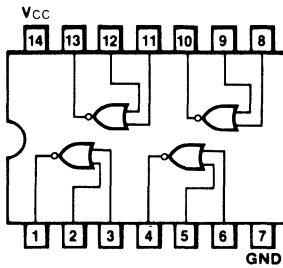
**D8**  
54S/74S133,  
54LS/74LS133



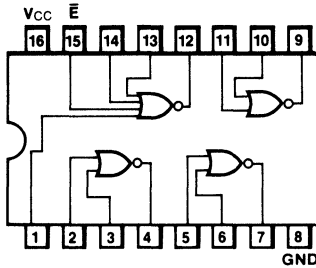
**D9**  
54S/74S134



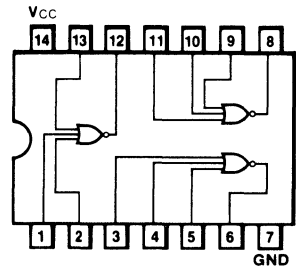
**D10**  
54/7402, 54S/74S02,  
54LS/74LS02, 54LS/74LS28  
74LS33



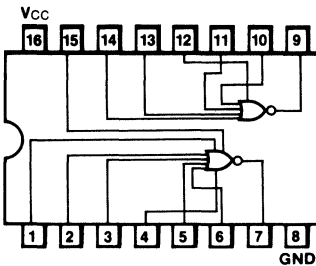
**D11**  
9015



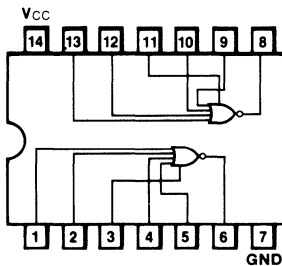
**D12**  
54/7427, 54LS/74LS27



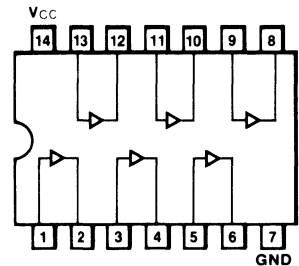
**D13**  
54/7425



**D14**  
54/7423

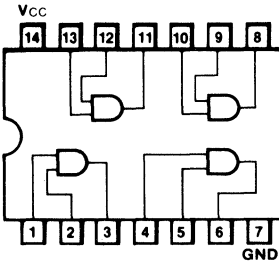


**D15**  
54/7407, 54/7417

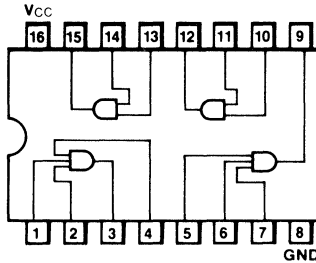


DIGITAL - TTL

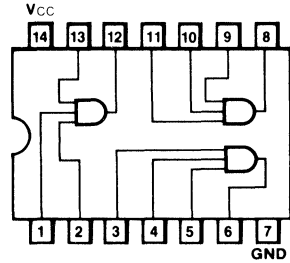
**D16**  
 547408, 54H/74H08,  
 54S/74S08, 54LS/74LS08  
 54/7409, 54S/74S09,  
 54LS/74LS09



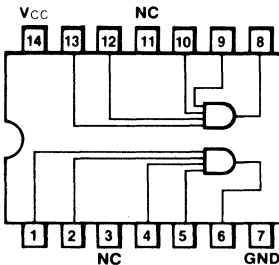
**D17**  
 9S41



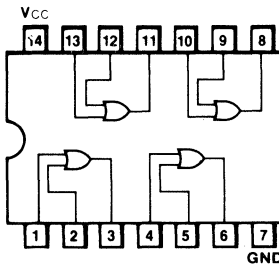
**D18**  
 54/7411, 54H/74H11,  
 54S/74S11, 54LS/74LS11,  
 54S/74S15, 54LS/74LS15



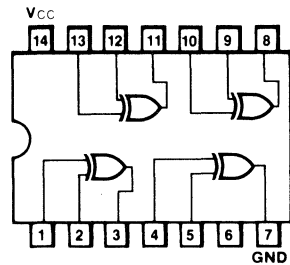
**D19**  
 54/7421, 54H/74H21  
 54LS/74LS21



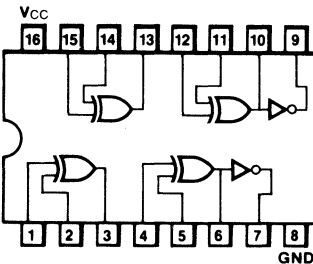
**D20**  
 54/7432, 54S/74S32  
 54LS/74LS32



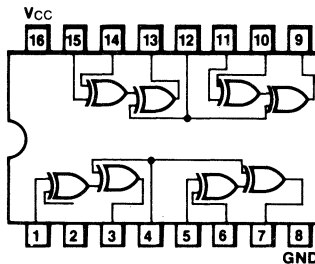
**D21**  
 54/7486, 54S/74S86,  
 54LS/74LS86, 54LS/74LS136



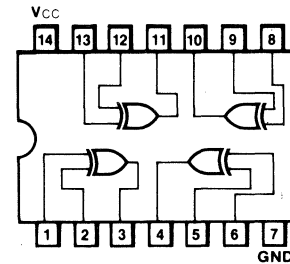
**D22**  
 9014



**D23**  
 54S/74S135



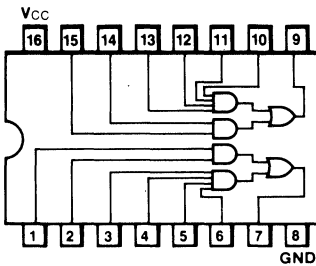
**D24**  
 9386, 74LS266



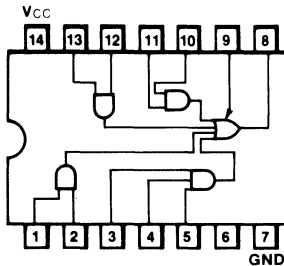
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## DIGITAL - TTL

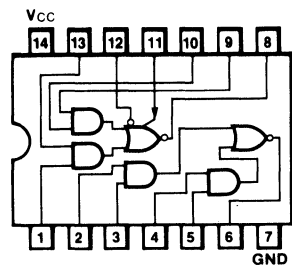
**D25**  
**9S42**



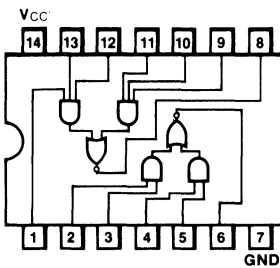
**D26**  
**54H/74H52**



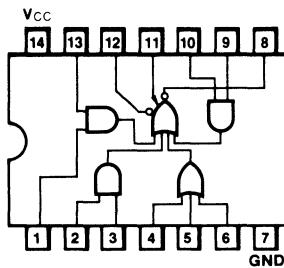
**D27**  
**9005, 54/7450, 54H/74H50**



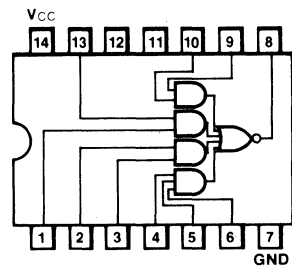
**D28**  
**54/7451\*, 54H/74H51\*,**  
**54S/74S51\*, 54LS/74LS51**



**D29**  
**9008, 54/7453, 54H/74H53**



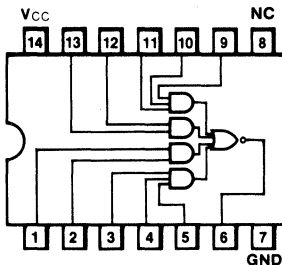
**D30**  
**54/7454, 54H/74H54**



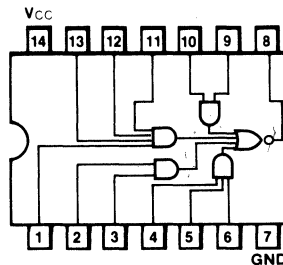
\*Make no external connection  
to pins 11 & 12

**9008, 54/7453, 54H/74H53**

**D31**  
**54LS/75LS54**



**D32**  
**74S64, 74S65**

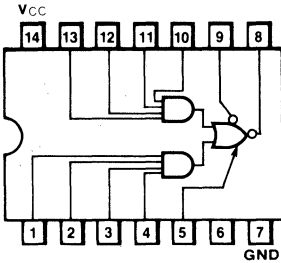




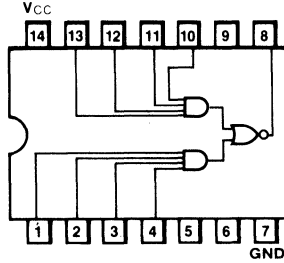
FAIRCHILD LOGIC/CONNECTION DIAGRAMS

DIGITAL - TTL

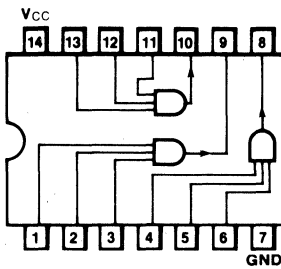
**D33**  
54H/74H55



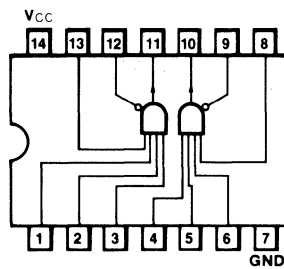
**D34**  
54LS/74LS55



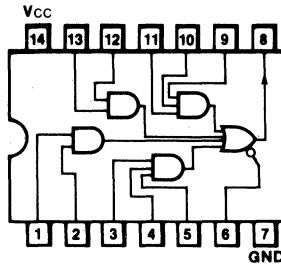
**D35**  
54H/74H61



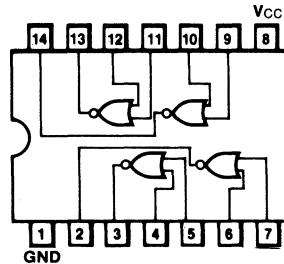
**D36**  
9006, 54/7460,  
54H/74H60



**D37**  
54H/74H62

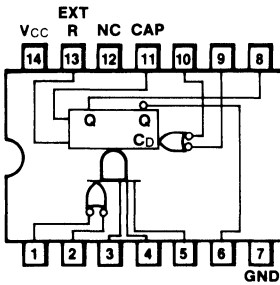


**D39**  
96106

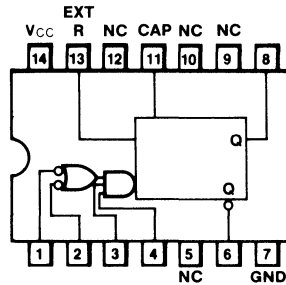


DIGITAL - TTL

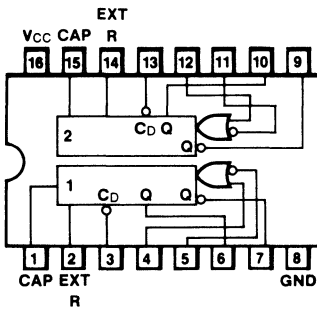
**D40**  
9600



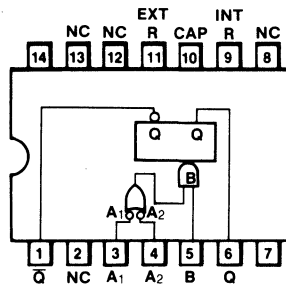
**D41**  
9601



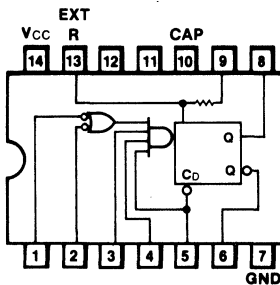
**D42**  
9602, 96L02,  
96S02, 96LS02



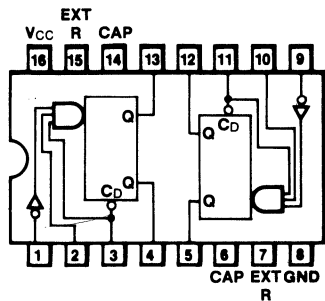
**D43**  
9603/74121



**D44**  
54/74122



**D45**  
54/74123



FAIRCHILD LOGIC/CONNECTION DIAGRAMS

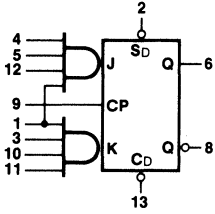
DIGITAL - TTL

MASTER/SLAVE

EDGE-TRIGGERED

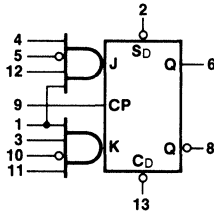
OUTPUT CHANGES  
ON POSITIVE GOING EDGE

D50  
9000



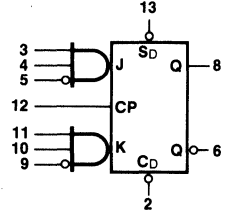
Vcc = Pin 14  
GND = Pin 7

D51  
9001



Vcc = Pin 14  
GND = Pin 7

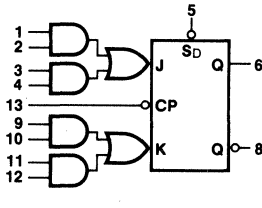
D54  
54/7470



Vcc = Pin 14  
GND = Pin 7

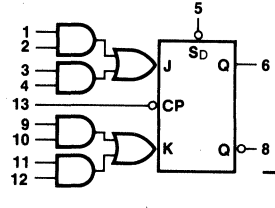
OUTPUT CHANGES ON NEGATIVE GOING EDGE

D52a  
54H/74H71



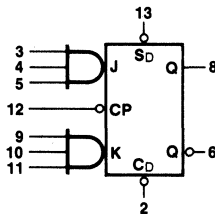
Vcc = Pin 14  
GND = Pin 7

D52b  
54H/74H101



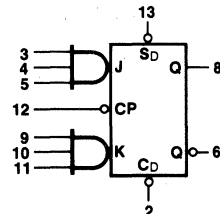
Vcc = Pin 14  
GND = Pin 7

D53a  
54/7472  
54H/74H72



Vcc = Pin 14  
GND = Pin 7

D53b  
54H/74H102



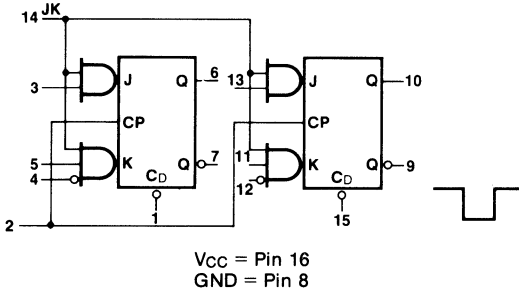
Vcc = Pin 14  
GND = Pin 7

DIGITAL - TTL

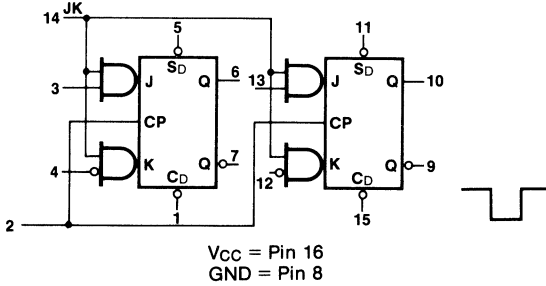
OUTPUT CHANGES ON POSITIVE GOING EDGE

MASTER/SLAVE

D55  
9020

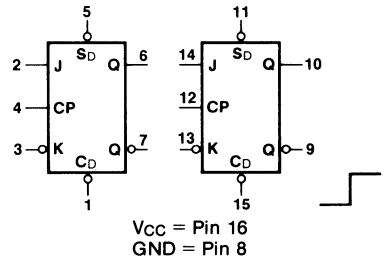


D56  
9022

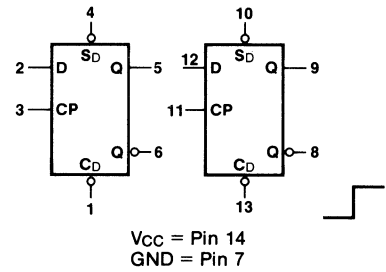


EDGE-TRIGGERED

D60  
9024, 54/74109, 54S/74S109,  
54LS/74LS109

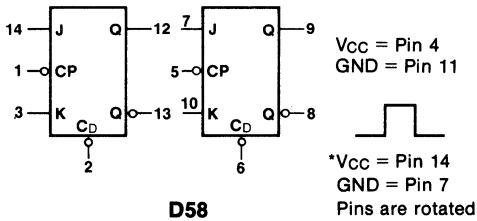


D61  
54/7474, 54H/74H74,  
54S/74S74, 54LS/74LS74

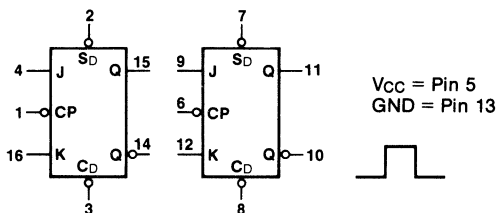


OUTPUT CHANGES ON NEGATIVE GOING EDGE

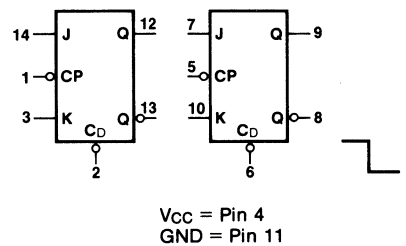
D57a  
54/7473, 54H/74H73, 54LS/74LS73  
\*54/74107, \*54LS/74LS107



D58  
54/7476, 54H/74H76,  
54LS/74LS76



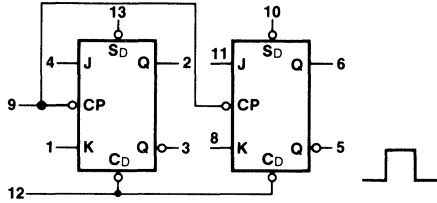
D57b  
54H/74H103



DIGITAL - TTL

MASTER/SLAVE

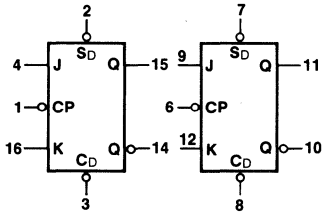
D59a  
54H/74H78



V<sub>CC</sub> = Pin 14  
GND = Pin 7

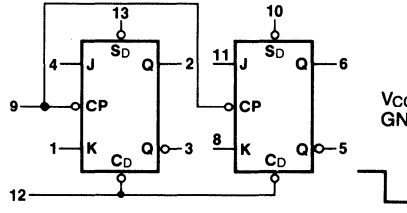
EDGE-TRIGGERED

D58  
54H/74H106



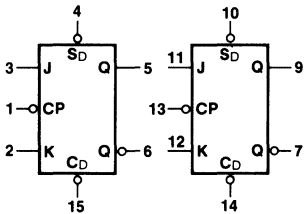
V<sub>CC</sub> = Pin 5  
GND = Pin 13

D59b  
54H/74H108



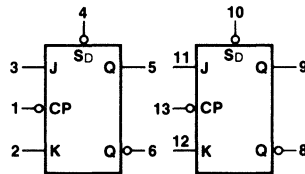
V<sub>CC</sub> = Pin 14  
GND = Pin 7

D62  
54S/74S112, 54LS/74LS112



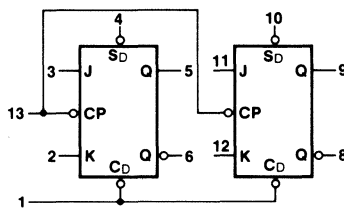
V<sub>CC</sub> = Pin 16  
GND = Pin 8

D63  
54S/74S113, 54LS/74LS113



V<sub>CC</sub> = Pin 14  
GND = Pin 7

D64  
54S/74S114, 54LS/74LS114



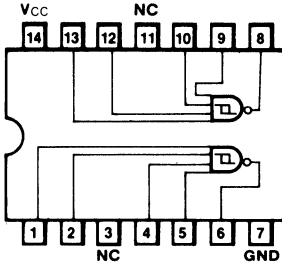
V<sub>CC</sub> = Pin 14  
GND = Pin 7

OUTPUT CHANGES ON NEGATIVE GOING EDGE

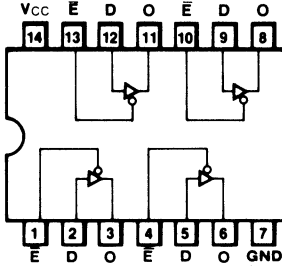
FAIRCHILD LOGIC/CONNECTION DIAGRAMS

DIGITAL - TTL

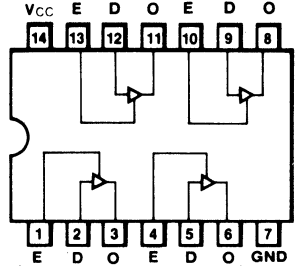
**D65**  
54/7413, 54LS/74LS13



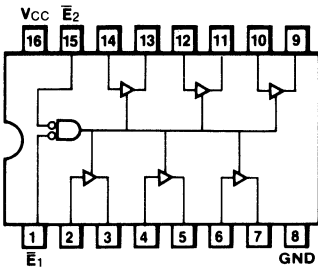
**D66**  
54/74125, 54LS/74LS125



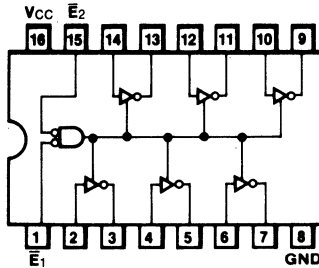
**D67**  
54/74126, 54LS/74LS126



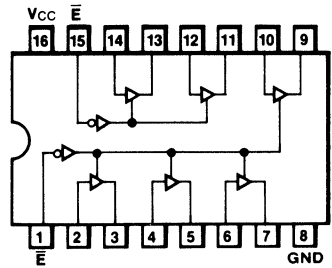
**D68**  
54LS/74LS365



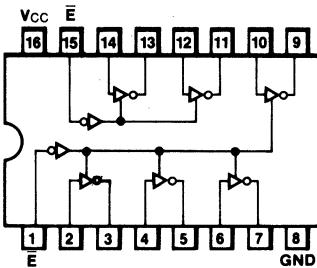
**D69**  
54LS/74LS366



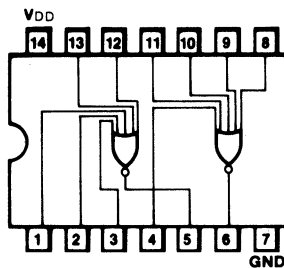
**D70**  
54LS/74LS367



**D71**  
54LS/74LS368



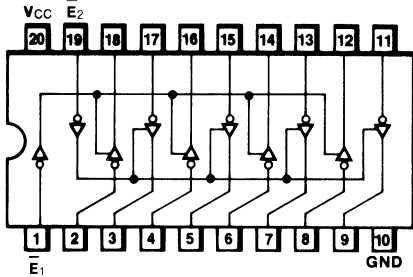
**D72**  
54LS/74LS260



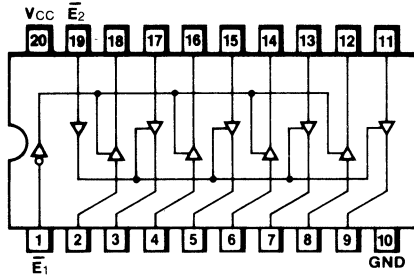
FAIRCHILD LOGIC/CONNECTION DIAGRAMS

DIGITAL - TTL

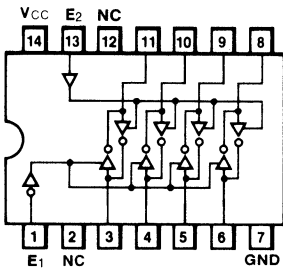
**D73**  
54LS/74LS240



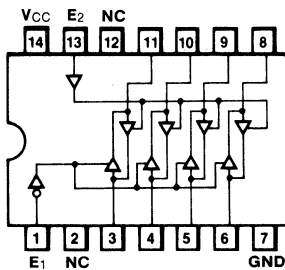
**D74**  
54LS/74LS241



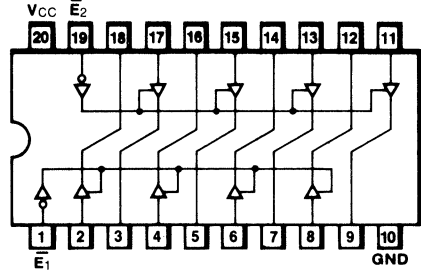
**D75**  
54LS/74LS242



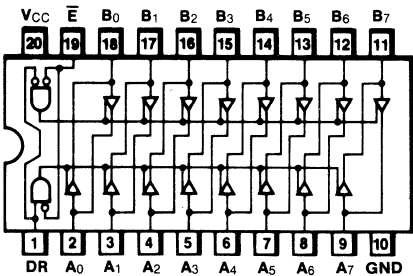
**D76**  
54LS/74LS243



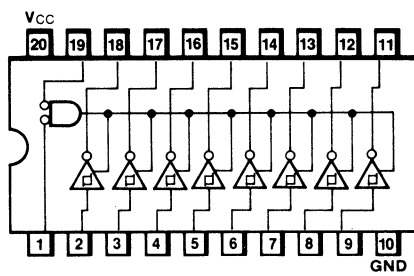
**D77**  
54LS/74LS244



**D79**  
54LS/74LS245

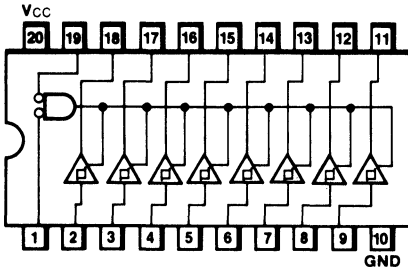


**D80**  
54LS/74LS540

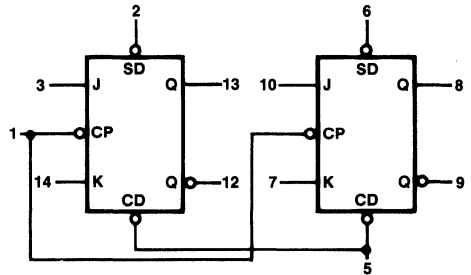


DIGITAL - TTL

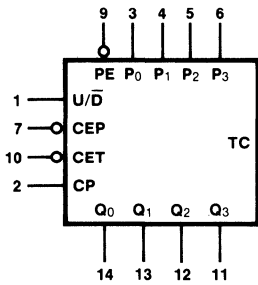
**D81**  
54LS/74LS541



**D82**  
54LS/74LS78

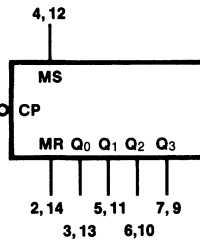


**D83**  
54LS/74LS168,  
54LS/74LS169



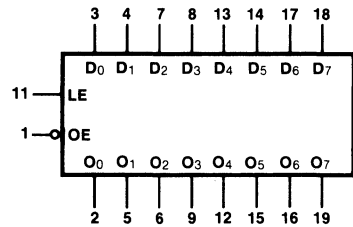
Vcc = Pin 16  
GND = Pin 8

**D84**  
54LS/74LS490 (each half)



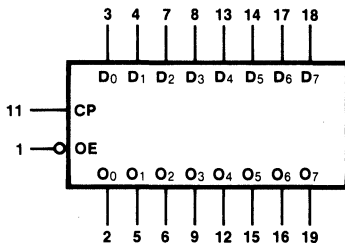
Vcc = Pin 16  
GND = Pin 8

**D85**  
54LS/74LS373



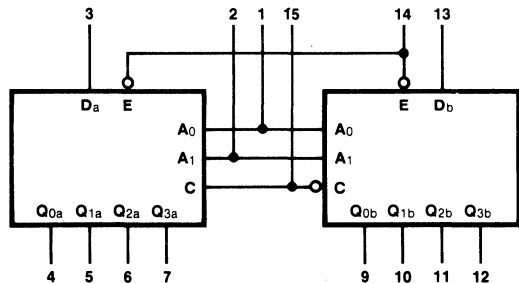
Vcc = Pin 20  
GND = Pin 10

**D86**  
54LS/74LS374



Vcc = Pin 20  
GND = Pin 10

**D87**  
54LS/74LS256

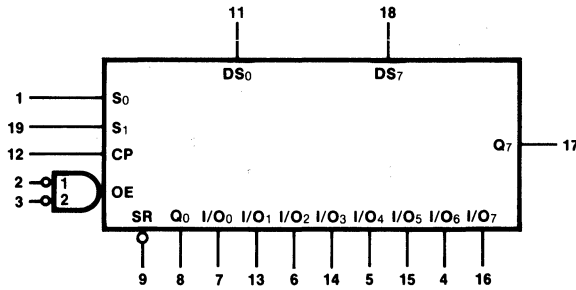


Vcc = Pin 16  
GND = Pin 8



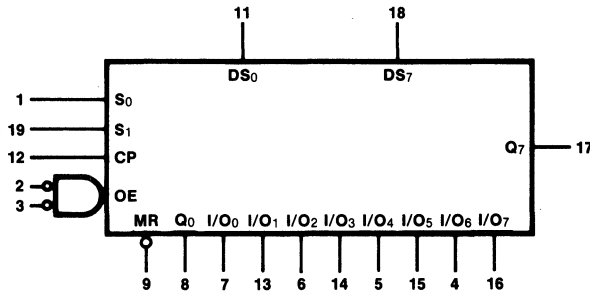
DIGITAL - TTL

**D88**  
**54LS/74LS299**



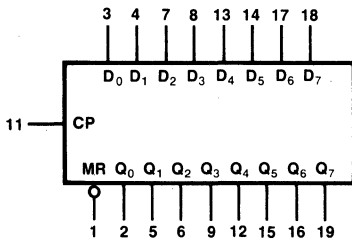
Vcc Pin 20  
GND = Pin 10

**D89**  
**54LS/74LS323**



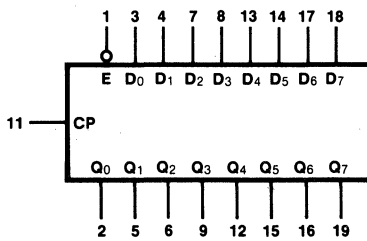
Vcc = Pin 20  
GND = Pin 10

**D90**  
**54LS/74LS273**



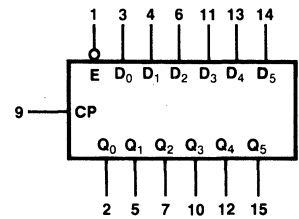
Vcc = Pin 20  
GND = Pin 10

**D91**  
**54LS/74LS377**



Vcc = Pin 20  
GND = Pin 10

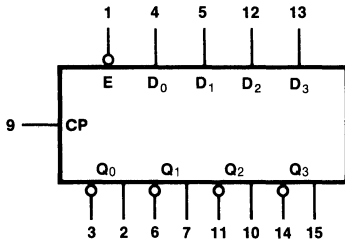
**D92**  
**54LS/74LS378**



Vcc = Pin 16  
GND = 8

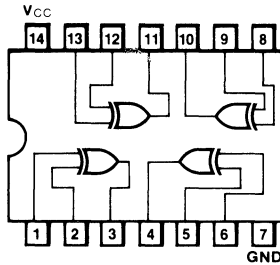
DIGITAL - TTL

**D93**  
54LS/74LS379

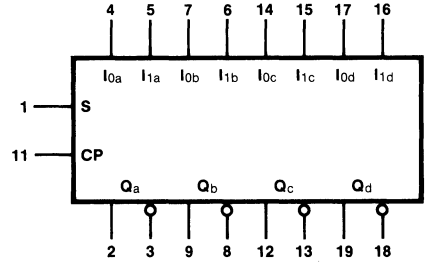


V<sub>CC</sub> = Pin 16  
GND = Pin 8

**D94**  
9386, 74LS266, 54LS/74LS386

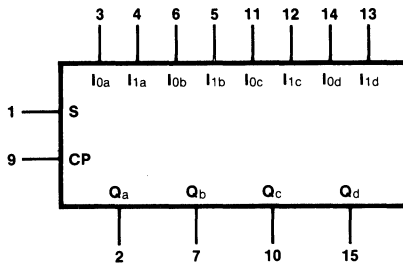


**D95**  
54LS/74LS398



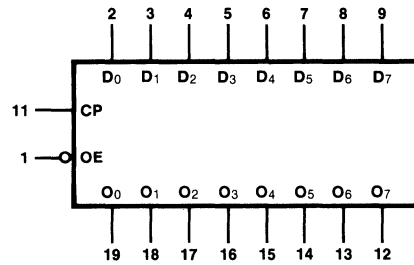
V<sub>CC</sub> = Pin 20  
GND = Pin 10

**D96**  
54LS/74LS399



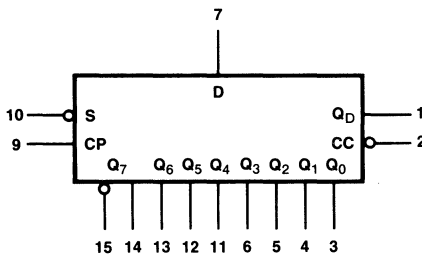
V<sub>CC</sub> = Pin 16  
GND = Pin 8

**D97**  
54LS/74LS574



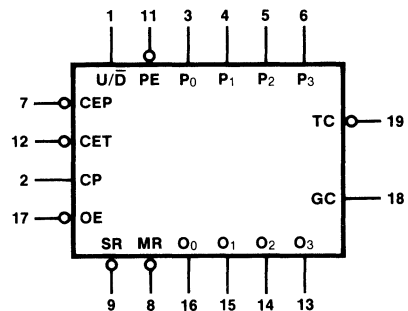
V<sub>CC</sub> = Pin 20  
GND = Pin 10

**D98**  
54LS/74LS502



V<sub>CC</sub> = Pin 16  
GND = Pin 8

**D99**  
54LS/74LS568,  
54LS/74LS569

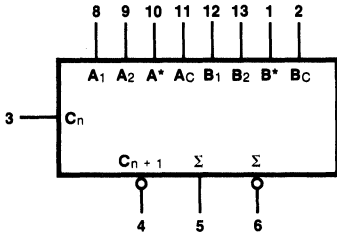


V<sub>CC</sub> = Pin 20  
GND = Pin 10

FAIRCHILD LOGIC/CONNECTION DIAGRAMS

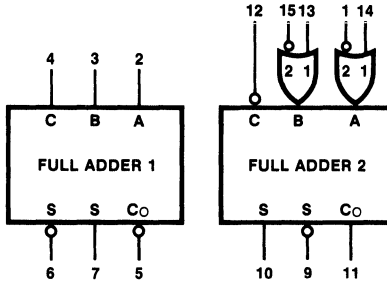
DIGITAL - TTL

**D100**  
54/7480



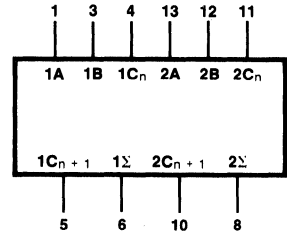
VCC = Pin 14  
GND = Pin 7

**D101**  
9304



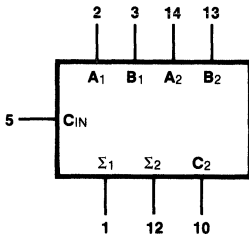
VCC = Pin 16  
GND = 8

**D102**  
93H/74H183



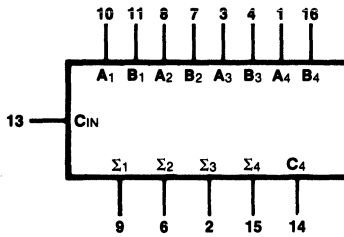
VCC = Pin 14  
GND = Pin 7

**D103**  
54/7482



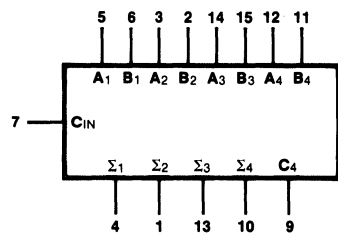
VCC = Pin 4  
GND = Pin 11  
NC = Pin 6, 7, 8, 9

**D104**  
54/7483A, 54LS/74LS83



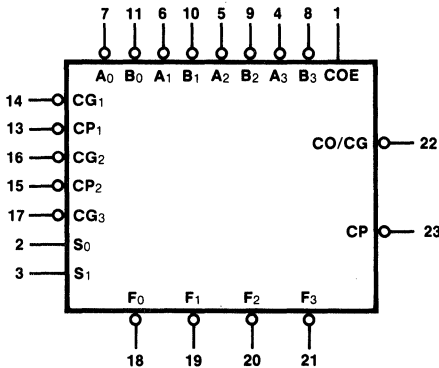
VCC = Pin 5  
GND = Pin 12

**D105**  
54/74283, 54LS/74LS283



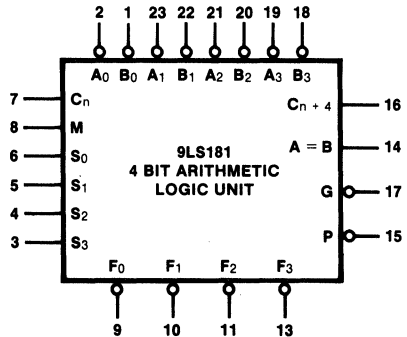
VCC = Pin 16  
GND = Pin 8

**D106**  
9340



VCC Pin 24  
GND = Pin 12

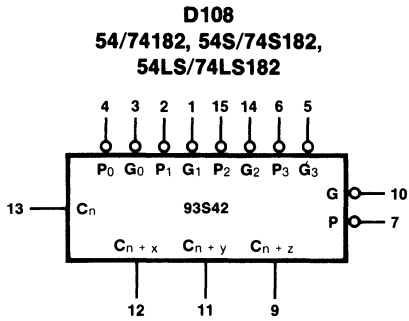
**D107**  
93L41, 93S41/74S181,  
54/74181, 54LS/74LS181



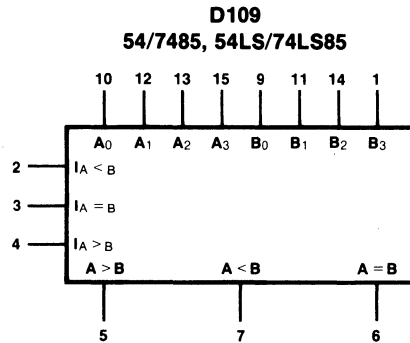
VCC Pin 24  
GND = Pin 12

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

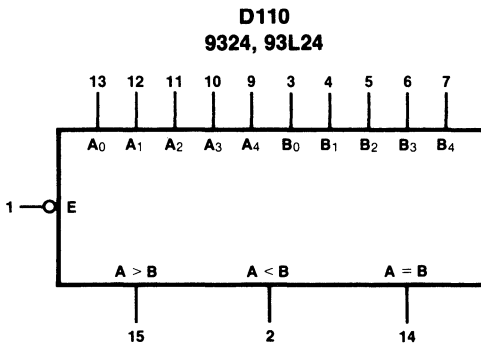
## DIGITAL - TTL



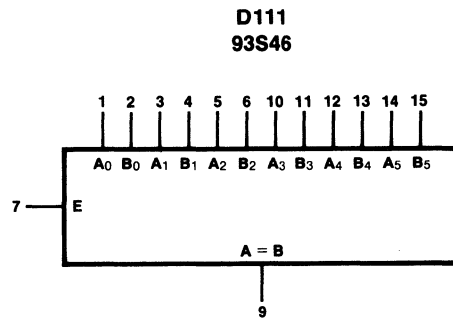
V<sub>CC</sub> = Pin 16  
GND = Pin 8



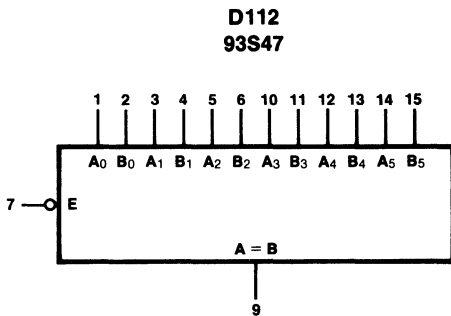
V<sub>CC</sub> = Pin 16  
GND = Pin 8



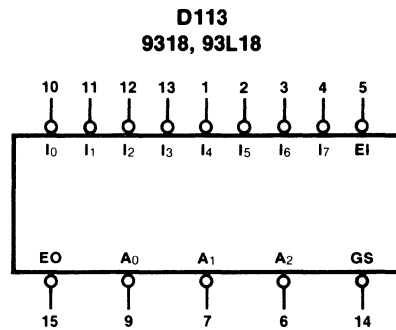
V<sub>CC</sub> = Pin 16  
GND = Pin 8



V<sub>CC</sub> = Pin 16  
GND = Pin 8



V<sub>CC</sub> = Pin 16  
GND = Pin 8

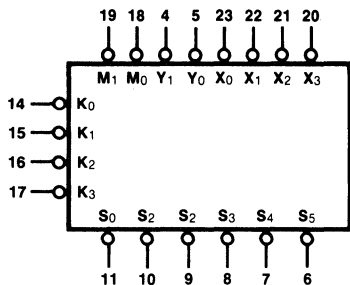


V<sub>CC</sub> = Pin 16  
GND = Pin 8

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

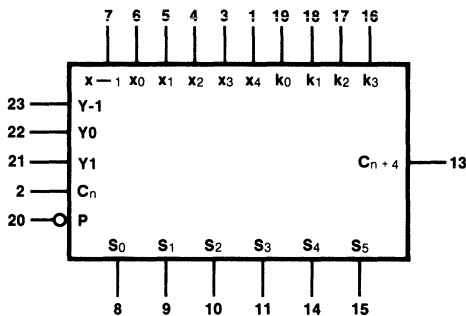
## DIGITAL - TTL

**D114**  
**9344**



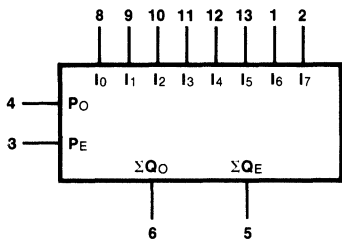
VCC = Pin 24  
GND = Pin 12  
NC = Pin 1, 2, 3, 13

**D115**  
**93S43**



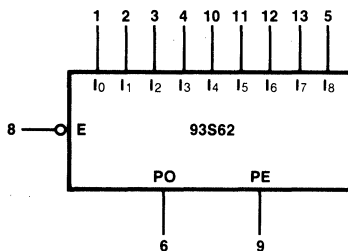
VCC = Pin 24  
GND = 12

**D116**  
**54/74180**



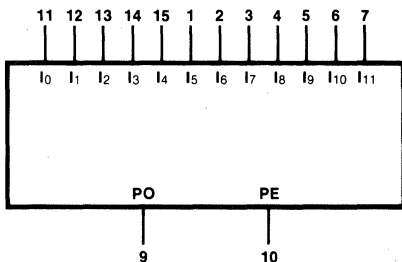
VCC = Pin 14  
GND = Pin 7

**D117**  
**93S62**



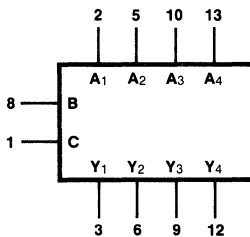
VCC = Pin 14  
GND = Pin 7

**D118**  
**9348**



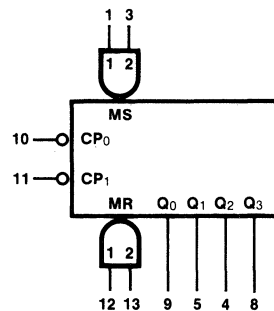
VCC = Pin 16  
GND = Pin 8

**D119**  
**93H87/74H87**



VCC = Pin 14  
GND = Pin 7

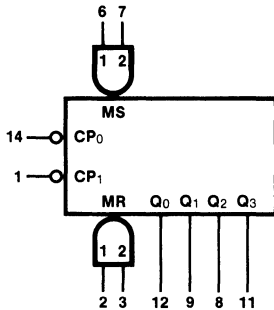
**D120**  
**54/74290, 54LS/74LS290**



VCC = Pin 14  
GND = Pin 7  
NC = Pins 2, 6

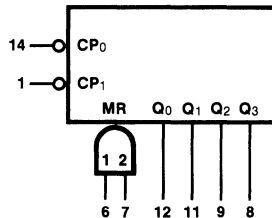
DIGITAL - TTL

**D121**  
54/7490A, 54LS/74LS90



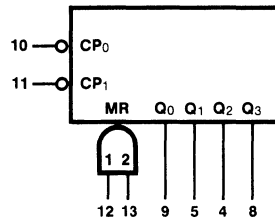
VCC = Pin 5  
GND = Pin 10  
NC = Pin 4, 13

**D122**  
54/7492, 74LS92



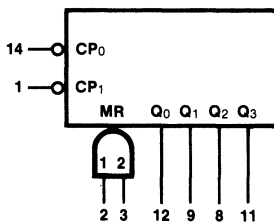
VCC = Pin 5  
GND = Pin 10  
NC = 2, 3, 4, 13

**D123**  
54/74293, 54LS/74LS293



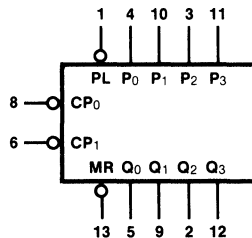
VCC = Pin 14  
GND = Pin 7  
NC = Pins 1, 2, 3, 6

**D124**  
54/7493A, 54LS/74LS93



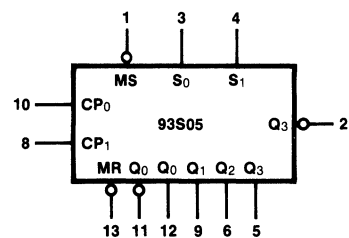
VCC Pin 5  
GND = Pin 10  
NC = Pins 4, 6, 7, 13

**D125**  
54/74176, 54/74177,  
54/74196, 54LS/74LS196,  
54/74197, 54LS/74LS197



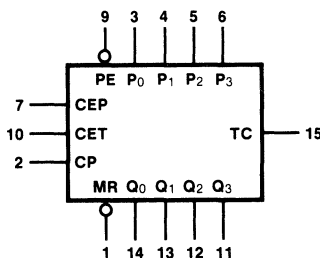
VCC = Pin 14  
GND = Pin 7

**D126**  
9305, 93S05



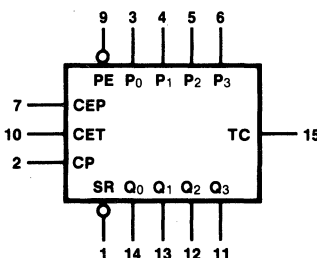
VCC = Pin 14  
GND = Pin 7

**D127**  
9310, 93L10, 93S10,  
9316, 93L16, 93S16  
54/74160, 54LS/74LS160,  
54/74161, 54LS/74LS161



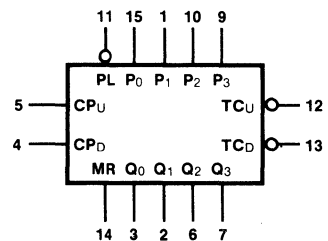
VCC = Pin 16  
GND = Pin 8

**D128**  
54/74162, 54LS/74LS162,  
54/74163, 54LS/74LS163



VCC = Pin 16  
GND = Pin 8

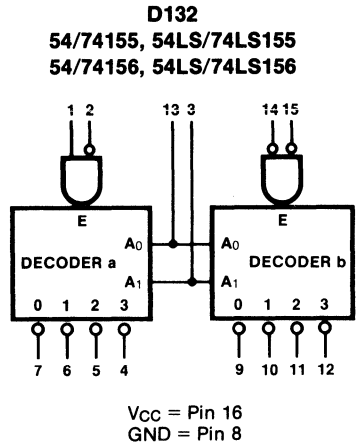
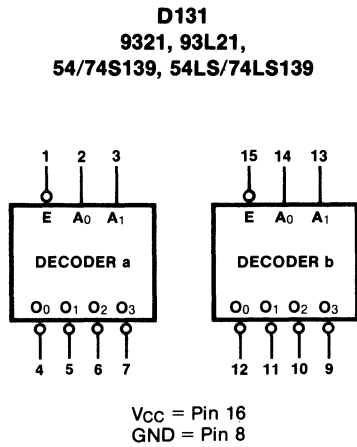
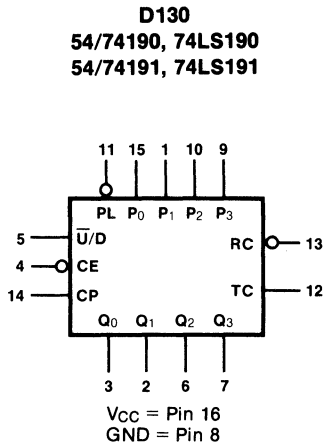
**D129**  
54/74192, 54LS/74LS192,  
54/74193, 54LS/74LS193



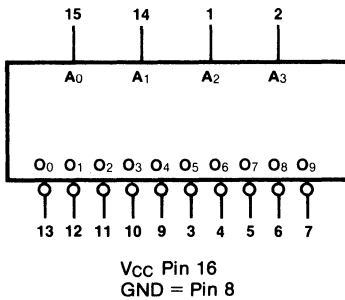
VCC = Pin 16  
GND = Pin 8

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

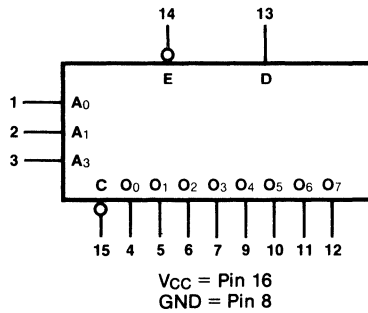
## DIGITAL - TTL



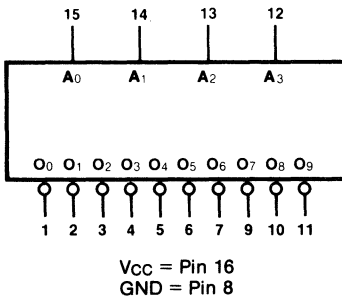
**D133**  
9301, 93L01, 9302



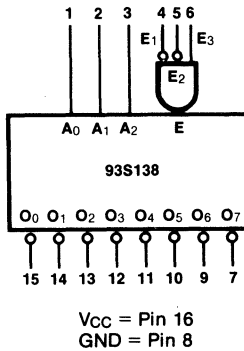
**D134**  
9334, 93L34, 54LS/74LS259



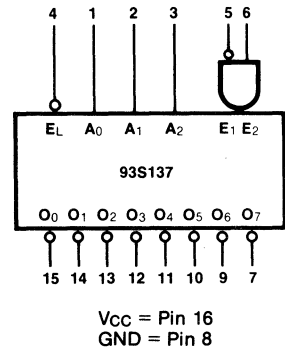
**D135**  
54/7442, 54LS/74LS42,  
54/7443, 54/7444, 54/7445  
54/74145, 54LS/74LS145



**D136**  
54S/74S138, 54LS/74LS138



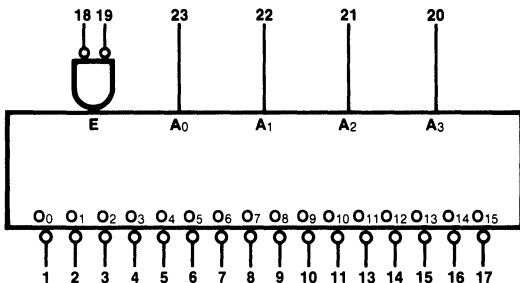
**D137**  
93S137



# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

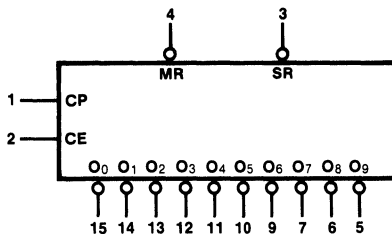
## DIGITAL - TTL

**D138**  
9311, 93L11, 54/74154



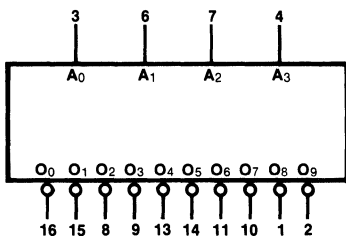
Vcc = Pin 24  
GND = Pin 12

**D139**  
9319, 9320



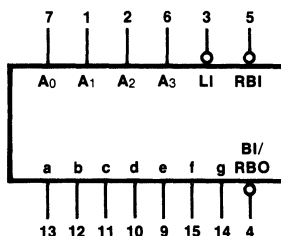
Vcc = Pin 16  
GND = Pin 8

**D140**  
9315  
54/7441, 74141



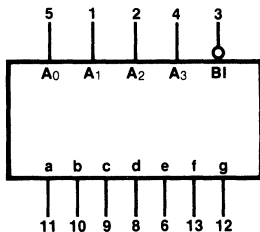
Vcc = Pin 5  
GND = Pin 12

**D141**  
9307, 54/7448,  
54LS/74LS48, 54LS/74LS248  
54LS/74LS249



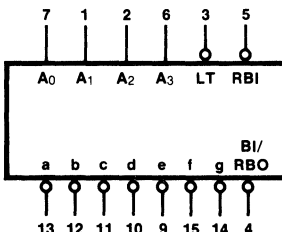
Vcc = Pin 16  
GND = Pin 8

**D142**  
54/7449, 54LS/74LS49



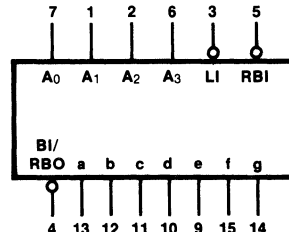
Vcc = Pin 14  
GND = Pin 7

**D143**  
9317B, 9317C, 54/7446,  
54/7447, 54LS/74LS47,  
54LS/74LS247



Vcc = Pin 16  
GND = Pin 8

**D144**  
9368



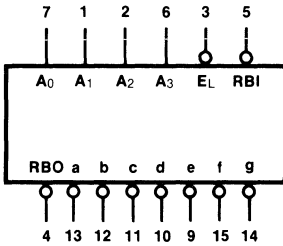
Vcc = Pin 16  
GND = Pin 8



# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

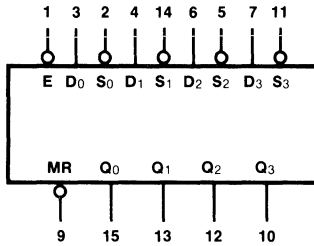
## DIGITAL - TTL

**D145**  
9370, 9374



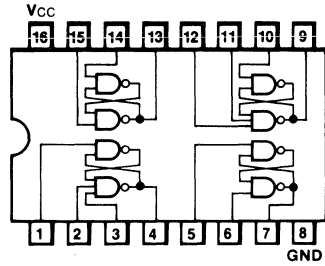
Vcc = Pin 16  
GND = Pin 8

**D146**  
9314, 93L14

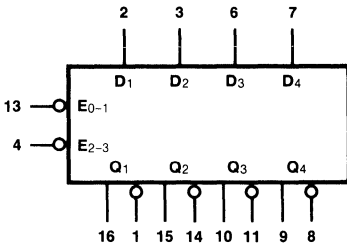


Vcc = Pin 16  
GND = Pin 8

**D147**  
54/74279, 54LS/74LS279

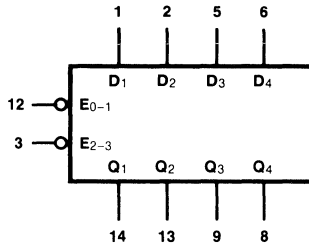


**D148**  
54/7475, 54LS/74LS75



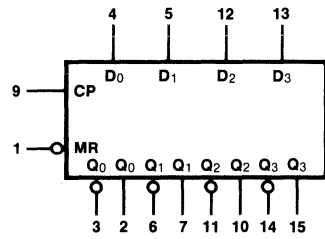
Vcc = Pin 5  
GND = Pin 12

**D149**  
54/7477, 54LS/74LS77



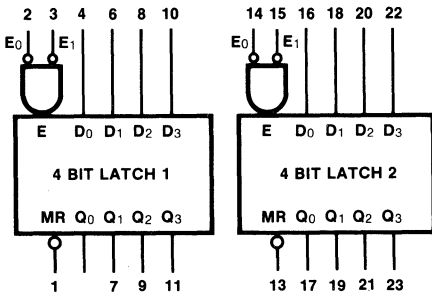
Vcc = Pin 4  
GND = Pin 11  
NC = Pins 7, 10

**D150**  
54/74175, 54S/74S175,  
54LS/74LS175



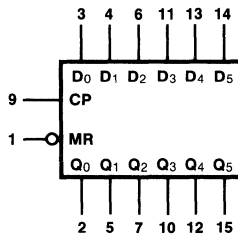
Vcc = Pin 16  
GND = Pin 8

**D151**  
9308, 93L08, 54/74116



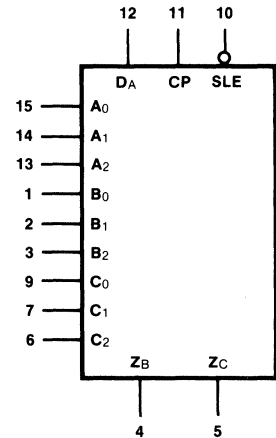
Vcc = Pin 24  
GND = Pin 12

**D152**  
54/74174, 54S/74S174,  
54LS/74LS174



Vcc = Pin 16  
GND = Pin 8

**D153**  
9338, 93L38

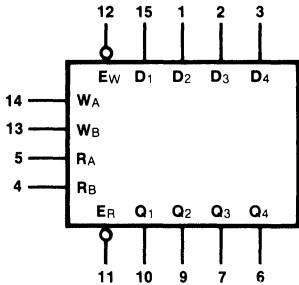


Vcc = Pin 16  
GND = Pin 8

FAIRCHILD LOGIC/CONNECTION DIAGRAMS

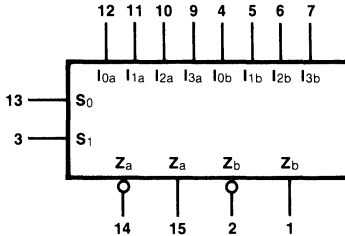
DIGITAL - TTL

**D154**  
54/74170, 54LS/74LS170,  
54LS/74LS670



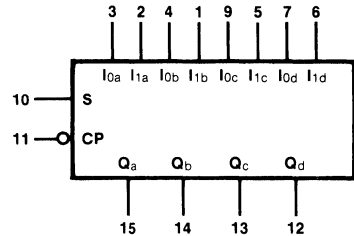
VCC = Pin 16  
GND = Pin 8

**D155**  
9309, 93L09



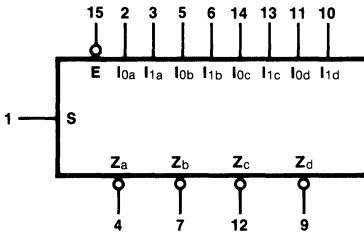
VCC = Pin 16  
GND = Pin 8

**D156**  
54/74298, 54LS/74LS298



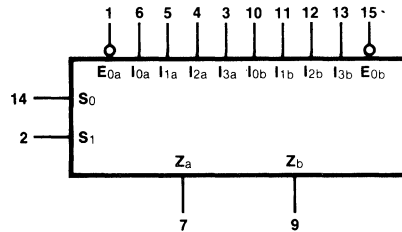
VCC = Pin 16  
GND = Pin 8

**D157**  
9322, 93L22, 54/74157,  
54S/74S157, 54LS/74LS157, 54S/74S158,  
54LS/74LS158, 54S/74S257, 54LS/74LS257,  
54S/74S258, 54LS/74LS258



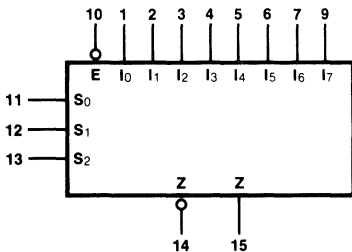
VCC = Pin 16  
GND = Pin 8

**D158**  
54/74153, 54S/74S153, 54LS/74LS153,  
54S/74S253, 54LS/74LS253



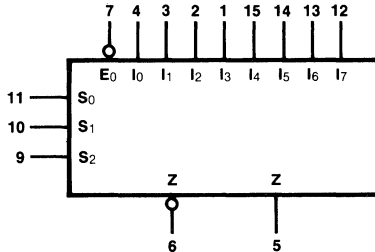
VCC = Pin 16  
GND = Pin 8

**D159**  
9312, 93L12, 93S12, 9313



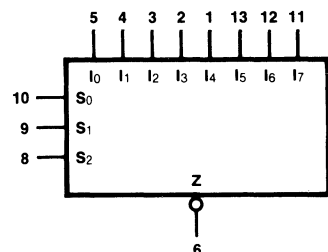
VCC = Pin 16  
GND = Pin 8

**D160**  
54/74151A, 54S/74S151,  
54LS/74LS151, 54S/74S251,  
54LS/74LS251



VCC = Pin 16  
GND = Pin 8

**D161**  
54/74152A, 54LS/74LS152

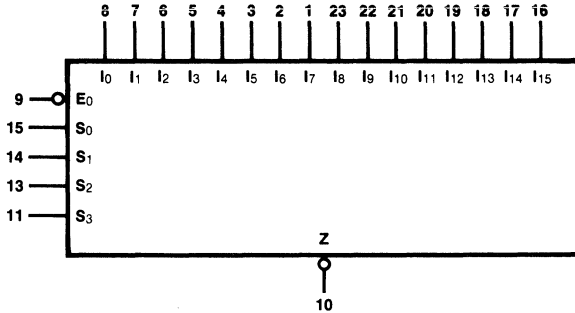


VCC = Pin 14  
GND = Pin 7

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

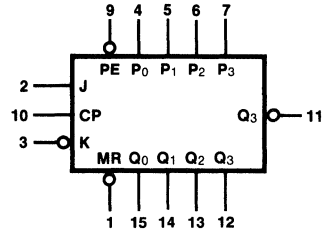
## DIGITAL - TTL

**D162**  
**54/74150**



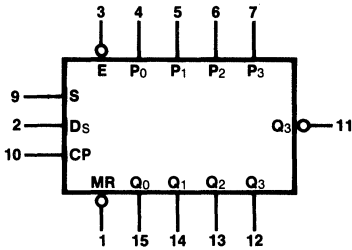
V<sub>CC</sub> = Pin 24  
GND = Pin 12

**D163**  
**9300, 93H00, 93L00, 93S00,**  
**54/74195, 54LS/74LS195**



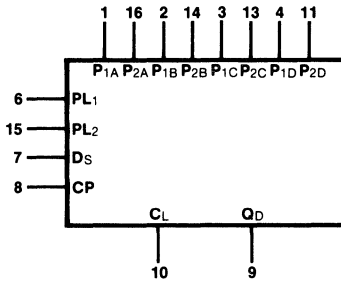
V<sub>CC</sub> = Pin 16  
GND = Pin 8

**D164**  
**93H72**



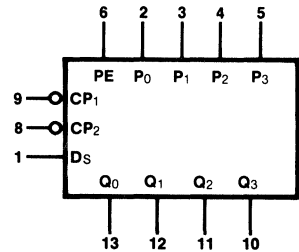
V<sub>CC</sub> = Pin 16  
GND = Pin 8

**D165**  
**54/7494**



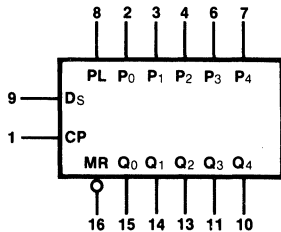
V<sub>CC</sub> = Pin 5  
GND = Pin 12

**D166**  
**54/7495, 54LS/74LS95,**  
**54LS/74LS95B**



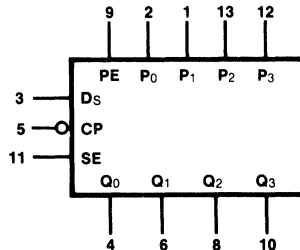
V<sub>CC</sub> = Pin 14  
GND = Pin 7

**D167**  
**54/7496**



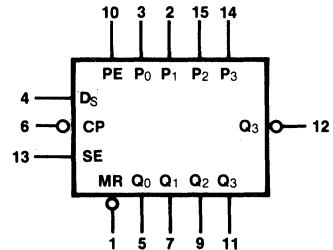
V<sub>CC</sub> = Pin 5  
GND = Pin 12

**D168**  
**54/74178**



V<sub>CC</sub> = Pin 14  
GND = Pin 7

**D169**  
**54/74179**

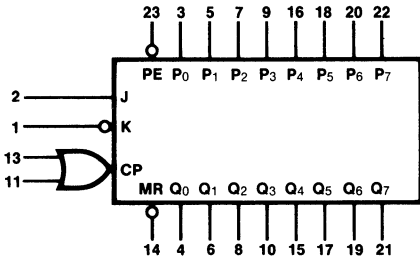


V<sub>CC</sub> = Pin 16  
GND = Pin 8

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

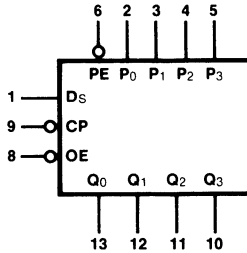
## DIGITAL - TTL

**D170**  
54/74199



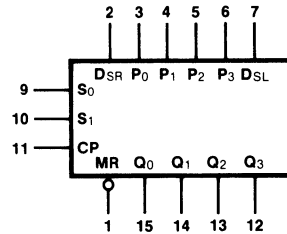
V<sub>CC</sub> = Pin 24  
GND = Pin 12

**D171**  
54LS/74LS295, 54LS/74LS295A



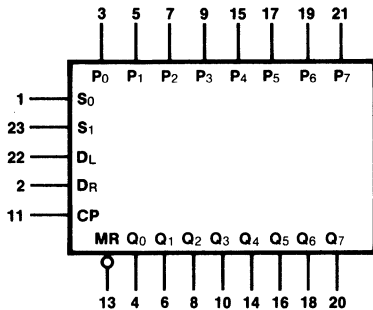
V<sub>CC</sub> = Pin 14  
GND = Pin 7

**D172**  
54/74194, 54S/74S194,  
54LS/74LS194



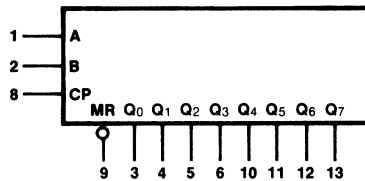
V<sub>CC</sub> = Pin 16  
GND = Pin 8

**D173**  
54/74198



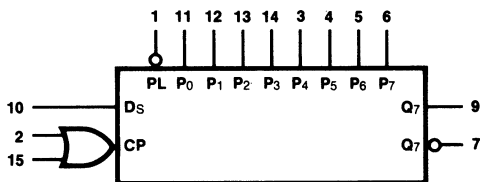
V<sub>CC</sub> = Pin 24  
GND = Pin 12

**D174**  
54/74164, 54LS/74LS164



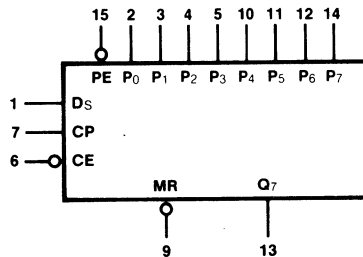
V<sub>CC</sub> = Pin 14  
GND = Pin 7

**D175**  
54/74165, 54LS/74LS165



V<sub>CC</sub> = Pin 16  
GND = Pin 8

**D176**  
54/74166

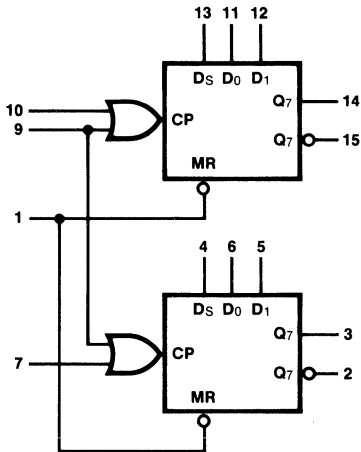


V<sub>CC</sub> = Pin 16  
GND = Pin 8

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

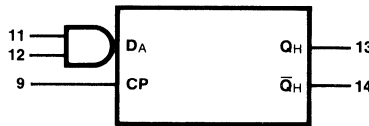
## DIGITAL - TTL

**D177**  
9328, 93L28



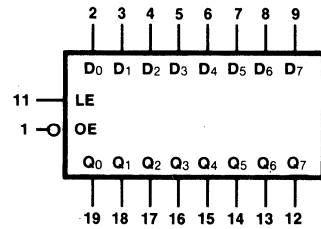
VCC = Pin 16  
GND = Pin 8

**D178**  
54/7491



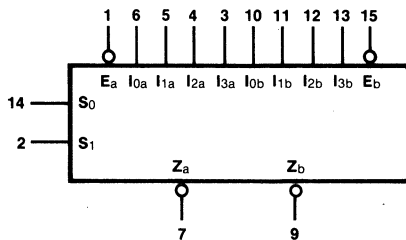
VCC = Pin 5  
GND = Pin 10

**D179**  
54LS/74LS573



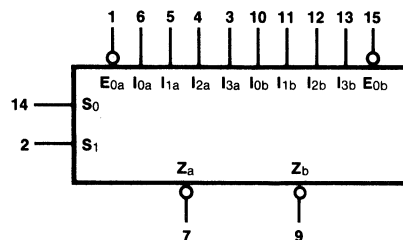
VCC = Pin 20  
GND = Pin 10

**D180**  
54LS/74LS352



VCC = Pin 16  
GND = Pin 8

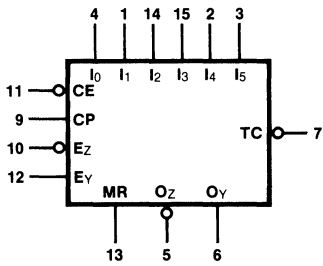
**D181**  
54LS/74LS353



VCC = Pin 16  
GND = Pin 8

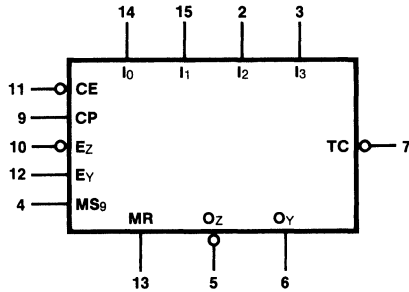
DIGITAL - TTL

**D187**  
9397, 7497



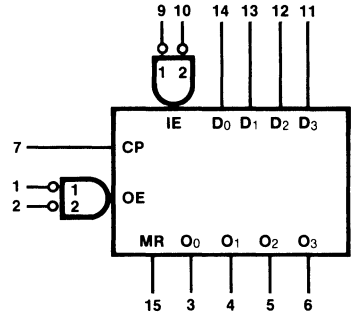
VCC = Pin 16  
GND = Pin 8

**D188**  
93167, 74167



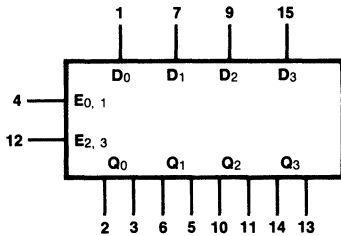
VCC = Pin 16  
GND = Pin 8

**D189**  
54LS/74LS173



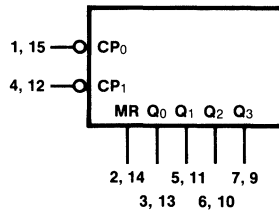
VCC = Pin 16  
GND = Pin 8

**D190**  
54LS/74LS375



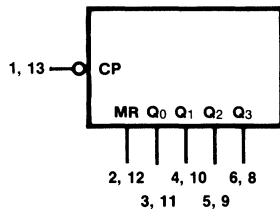
VCC = Pin 16  
GND = Pin 8

**D194**  
54LS/74LS390 (each half)



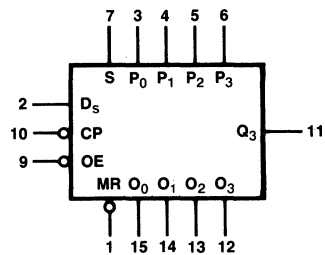
VCC = Pin 16  
GND = Pin 8

**D195**  
54LS/74LS393 (each half)



VCC = Pin 14  
GND = Pin 7

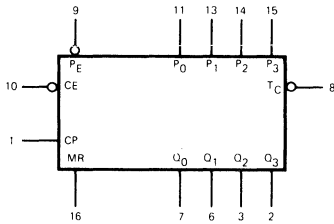
**D196**  
54LS/74LS395



VCC = Pin 16  
GND = Pin 8

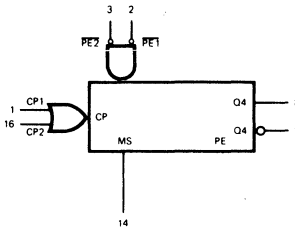
DIGITAL-ECL

**E1**  
95H16



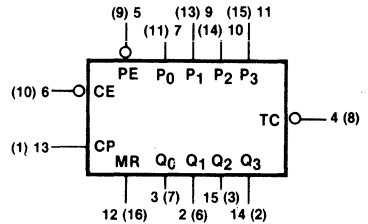
VCC = Pin 4  
VCCA = Pin 5  
VEE = Pin 12

**E2**  
95H90/95H91



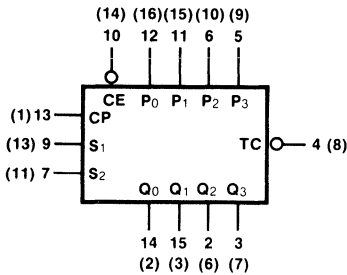
VCC = Pin 4  
VCCA = Pin 5  
VEE = Pin 12

**E3**  
95010/95016/10010/10016



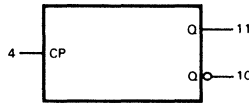
VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E4**  
10136/10137  
10536/10537



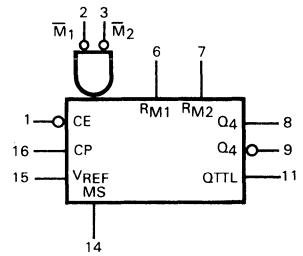
VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E5**  
11C05



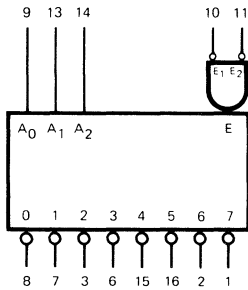
VCC = Pin 14  
VEE = Pin 7  
Bias Filter = Pin 6

**E6**  
11C90



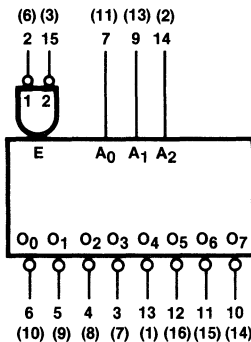
VCC = Pin 4, VCCA = Pin 5  
VEE = Pin 12, VEE = Pin 13 (TTL)

**E7**  
9538



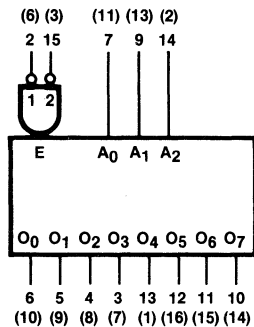
VCC = Pin 4  
VCCA = Pin 5  
VEE = Pin 12

**E8**  
10161/10561



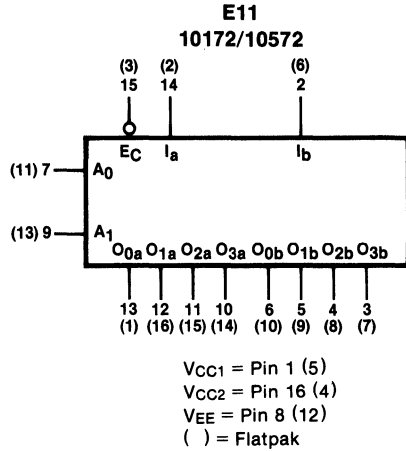
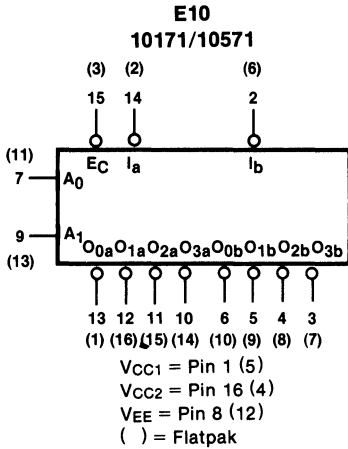
VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E9**  
10162/10562

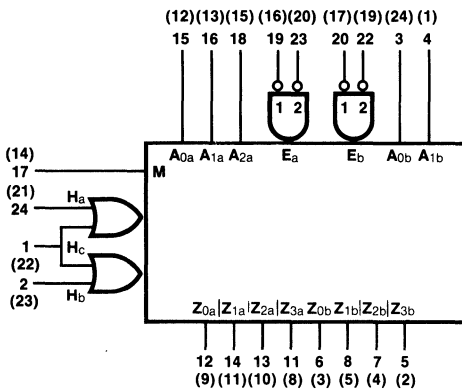


VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

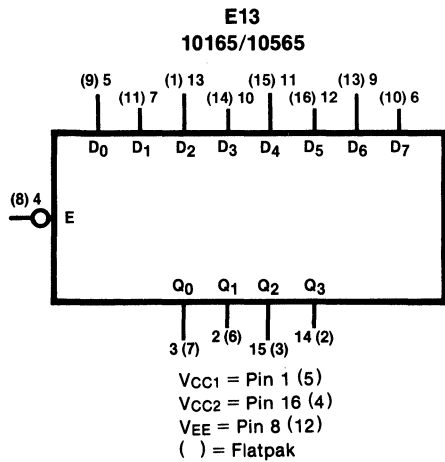
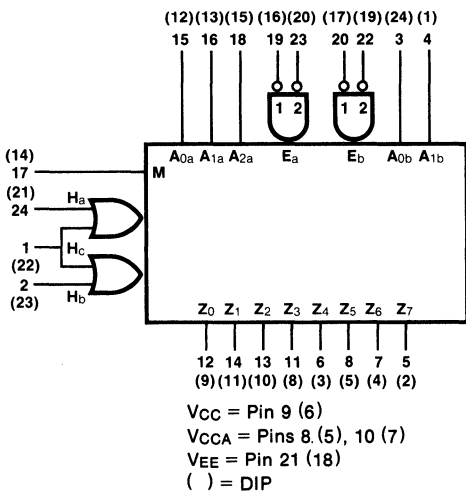
DIGITAL-ECL



**E12**  
100170  
Single 1-of-8 Application



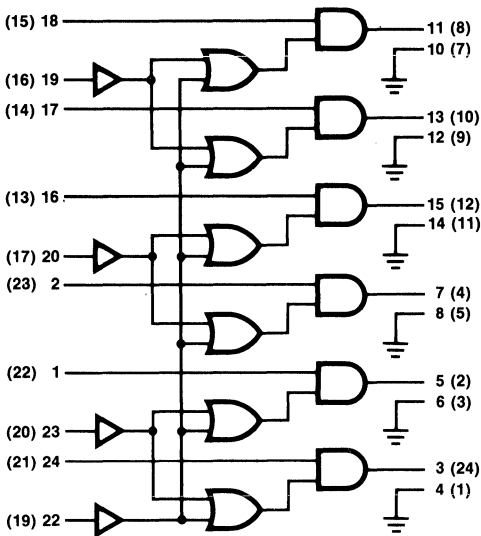
Dual 1-of-4 Application





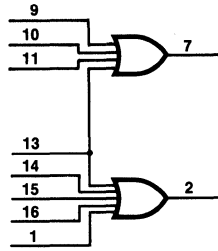
DIGITAL-ECL

**E14**  
100123



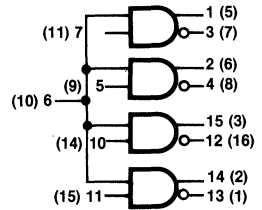
VCC = Pin 9 (6)  
VEE = Pin 21 (18)  
( ) = DIP

**E15**  
9595



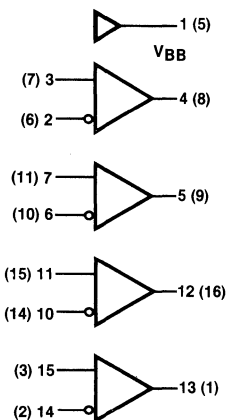
VCC = Pin 5  
VCCA = Pin 6  
VEE = Pin 12  
GND = Pin 4

**E16**  
95124/10124/10524



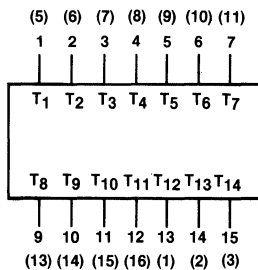
VCC = Pin 9 (13)  
VEE = Pin 8 (12)  
GND = Pin 16 (4)  
( ) = Flatpak

**E17**  
10125/10525



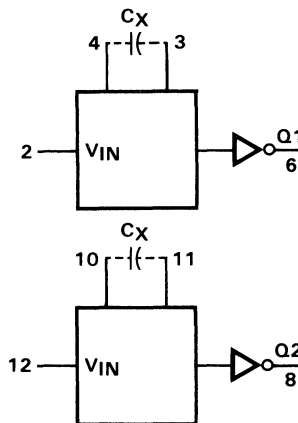
VCC = Pin 9 (13)  
VEE = Pin 8 (12)  
GND = Pin 16 (4)  
( ) = Flatpak

**E18**  
10014



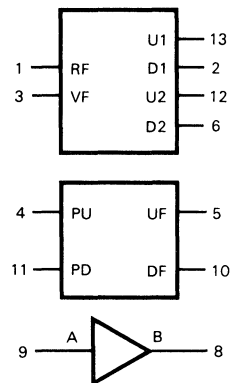
VCC = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E19**  
11C24



VCC (VCM) = Pins 1, 13  
VCC (Buffer) = Pin 14  
GND (VCM) = Pins 5, 9  
GND (BUFFER) = Pin 7

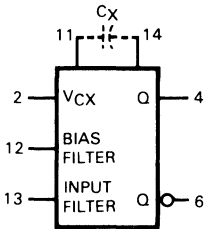
**E20**  
11C44



VCC = Pin 14  
GND = Pin 7

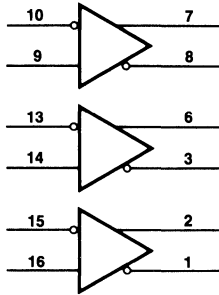
DIGITAL-ECL

**E21**  
11C58

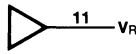


V<sub>CC1</sub> = Pin 1  
V<sub>CC2</sub> = Pin 5  
V<sub>EE</sub> = Pin 8

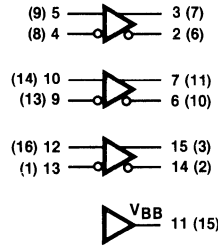
**E22**  
9582



V<sub>CC1</sub> = Pin 4  
V<sub>CC2</sub> = Pin 5  
V<sub>EE</sub> = Pin 12

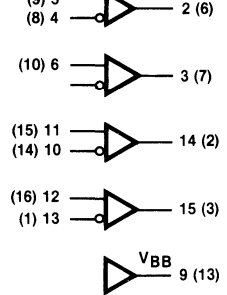


**E23**  
95115/10115/10515



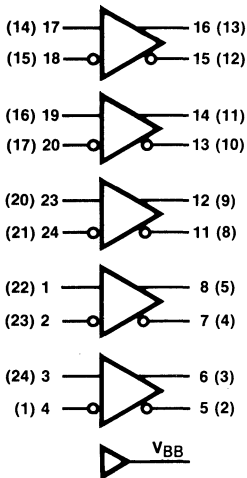
V<sub>CC1</sub> = Pin 1 (5)  
V<sub>CC2</sub> = Pin 16 (4)  
V<sub>EE</sub> = Pin 8 (12)  
( ) = Flatpak

**E24**  
95116/10114/10116  
10514/10516



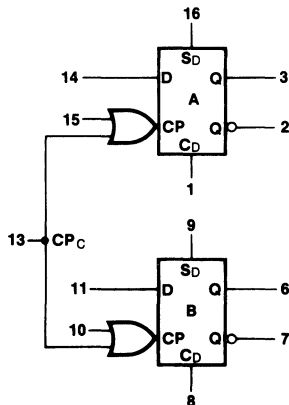
V<sub>CC1</sub> = Pin 1 (5)  
V<sub>CC2</sub> = Pin 16 (4)  
V<sub>EE</sub> = Pin 8 (12)  
( ) = Flatpak

**E25**  
100114



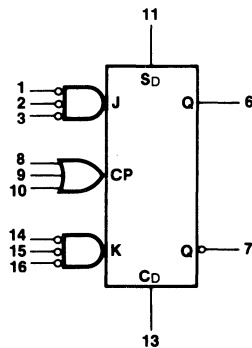
V<sub>CC</sub> = Pin 9 (6)  
V<sub>CCA</sub> = Pin 10 (7)  
V<sub>EE</sub> = Pin 21 (18)  
( ) = DIP

**E26**  
9528/95H28



V<sub>CC</sub> = Pin 4  
V<sub>CCA</sub> = Pin 5  
V<sub>EE</sub> = Pin 12

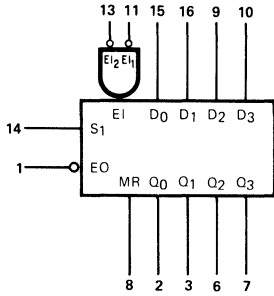
**E27**  
95H29



V<sub>CC</sub> = Pin 4  
V<sub>CCA</sub> = Pin 5  
V<sub>EE</sub> = Pin 12

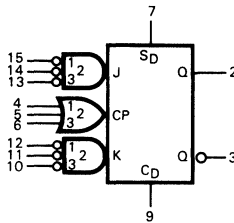
DIGITAL-ECL

**E28**  
9534



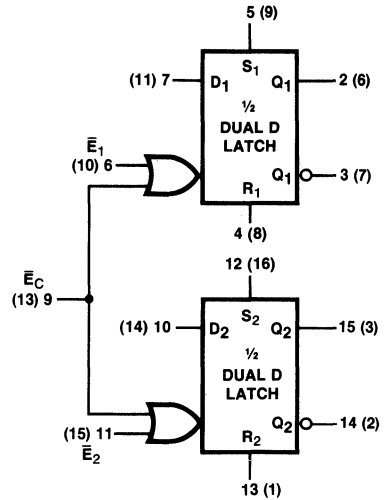
VCC = Pin 4  
VCCA = Pin 5  
VEE = Pin 12

**E29**  
95029



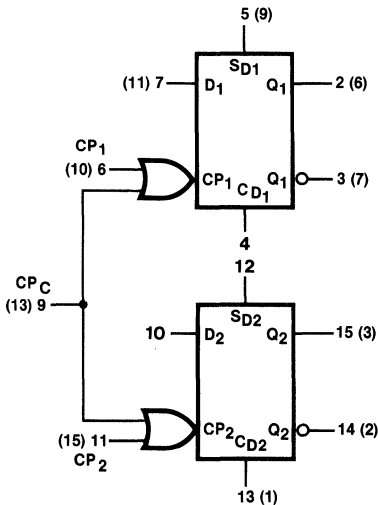
VCC1 = Pin 1  
VCC2 = Pin 16  
VEE = Pin 8

**E30**  
95130/10130/10530



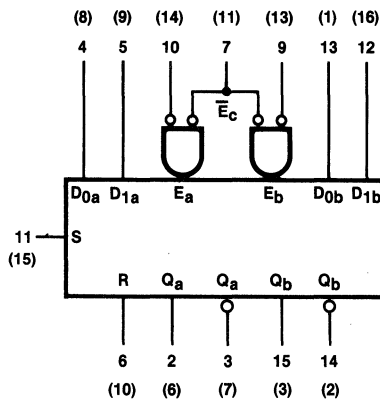
VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E31**  
95231/10231/10131  
10531/10631



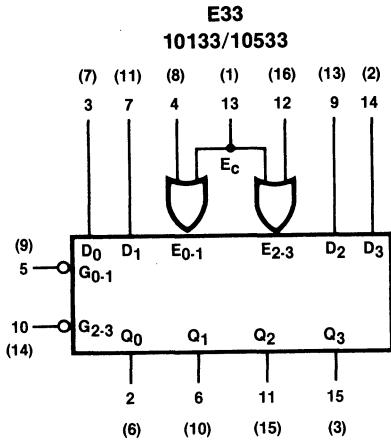
VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E32**  
10132/10532

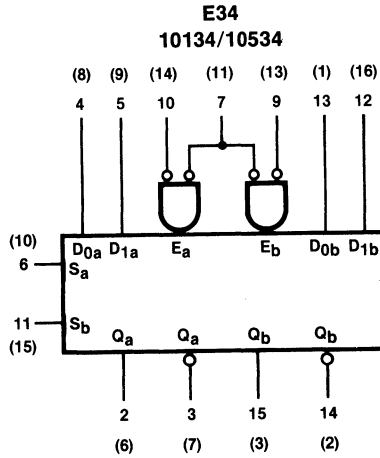


VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

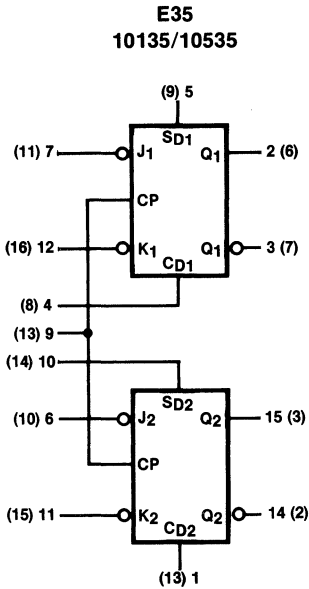
DIGITAL-ECL



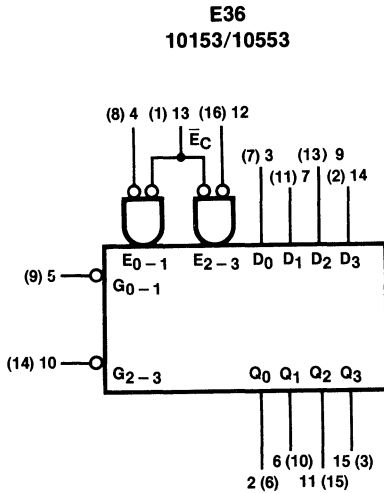
V<sub>CC1</sub> = Pin 1 (5)  
V<sub>CC2</sub> = Pin 16 (4)  
V<sub>EE</sub> = Pin 8 (12)  
( ) = Flatpak



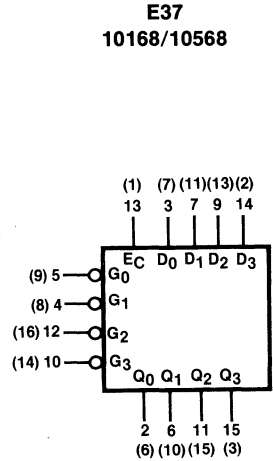
V<sub>CC1</sub> = Pin 1 (5)  
V<sub>CC2</sub> = Pin 16 (4)  
V<sub>EE</sub> = Pin 8 (12)  
( ) = Flatpak



V<sub>CC1</sub> = Pin 1 (5)  
V<sub>CC2</sub> = Pin 16 (4)  
V<sub>EE</sub> = Pin 8 (12)  
( ) = Flatpak



V<sub>CC1</sub> = Pin 1 (5)  
V<sub>CC2</sub> = Pin 16 (4)  
V<sub>EE</sub> = Pin 8 (12)  
( ) = Flatpak

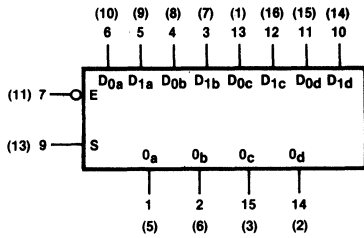


V<sub>CC1</sub> = Pin 1 (5)  
V<sub>CC2</sub> = Pin 16 (4)  
V<sub>EE</sub> = Pin 8 (12)  
( ) = Flatpak

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

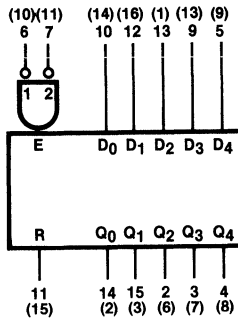
## DIGITAL-ECL

**E38**  
10173/10573



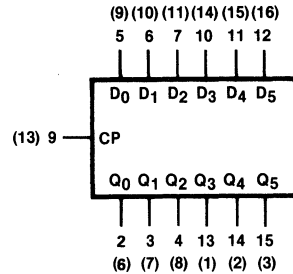
VCC = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E39**  
10175/10575



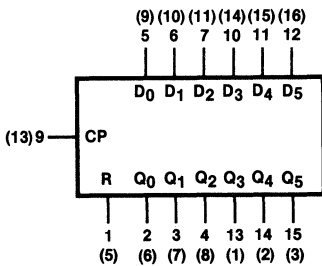
VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E40**  
10176/10576



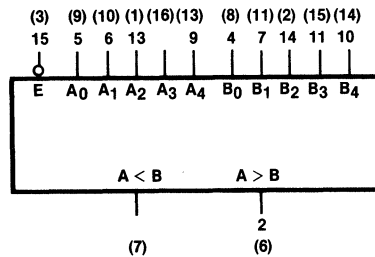
VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E41**  
10186/10586



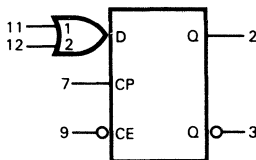
VCC = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E42**  
10166/10566



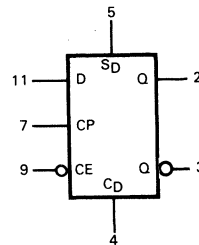
VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E43**  
11C06



VCC1 = Pin 1  
VCC2 = Pin 16  
VEE = Pin 8

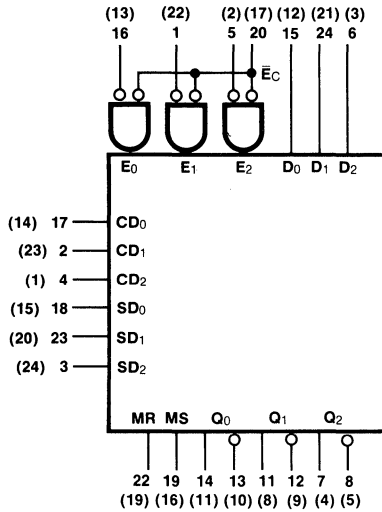
**E44**  
11C70



VCC1 = Pin 1  
VCC2 = Pin 16  
VEE = Pin 8

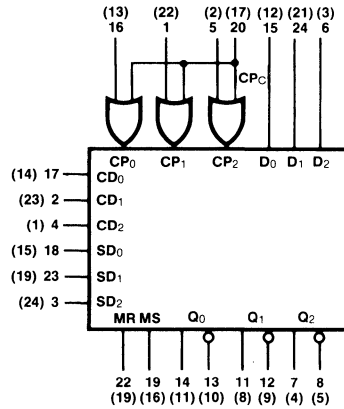
DIGITAL-ECL

**E45**  
**100130**



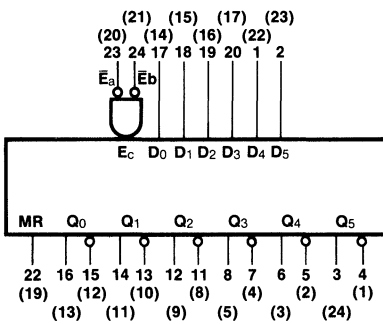
V<sub>CC</sub> = Pin 9 (6)  
V<sub>CCA</sub> = Pin 10 (7)  
V<sub>EE</sub> = Pin 21 (18)  
( ) = DIP

**E46**  
**100131**



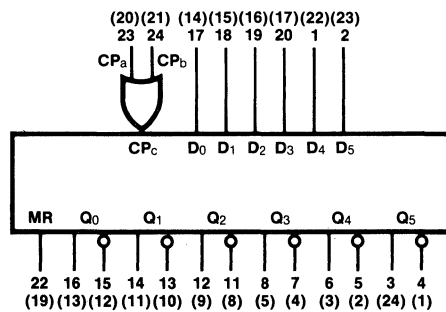
V<sub>CC</sub> = Pin 9 (6)  
V<sub>CCA</sub> = Pin 10 (7)  
V<sub>EE</sub> = Pin 21 (18)  
( ) = DIP

**E47**  
**100150**



V<sub>CC</sub> = Pin 9 (6)  
V<sub>CCA</sub> = Pin 10 (7)  
V<sub>EE</sub> = Pin 21 (18)  
( ) = DIP

**E48**  
**100151**

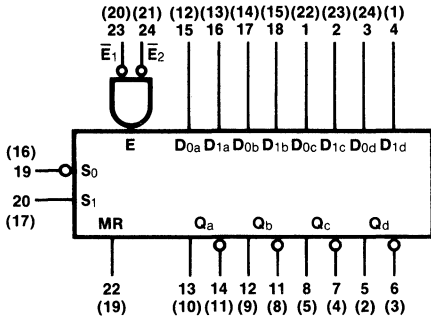


V<sub>CC</sub> = Pin 9 (6)  
V<sub>CCA</sub> = Pin 10 (7)  
V<sub>EE</sub> = Pin 21 (18)  
( ) = DIP

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

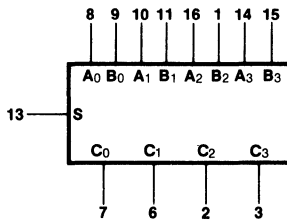
## DIGITAL-ECL

**E49**  
**100155**



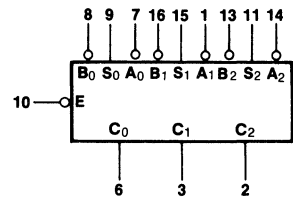
VCC = Pin 9 (6)  
VCCA = Pin 10 (7)  
VEE = Pin 21 (18)  
( ) = DIP

**E50**  
**9579**



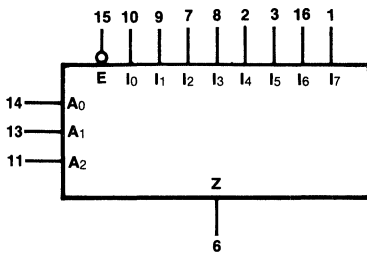
VCC = Pin 4  
VCCA = Pin 5  
VEE = Pin 12

**E51**  
**9580**



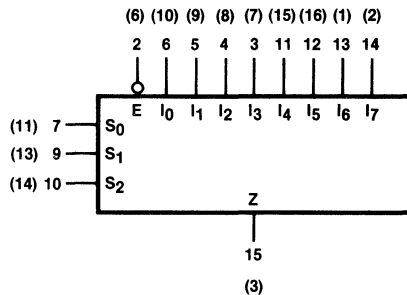
VCC = Pin 4  
VCCA = Pin 5  
VEE = Pin 12

**E52**  
**9581**



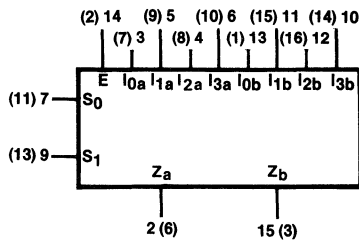
VCC = Pin 4  
VCCA = Pin 5  
VEE = Pin 12

**E53**  
**10164/10564**



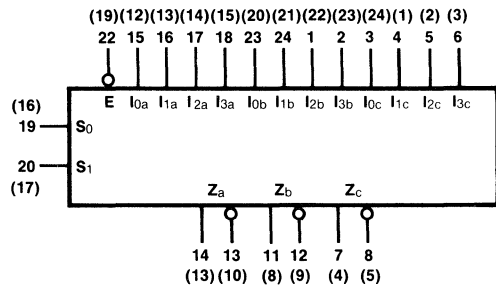
VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E54**  
**10174/10574**



VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E55**  
**100171**

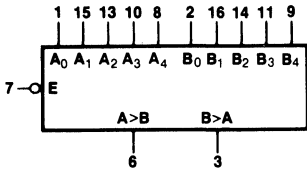


VCC = Pin 9 (6)  
VCCA = Pin 10 (7)  
VEE = Pin 21 (18)  
( ) = DIP

FAIRCHILD LOGIC/CONNECTION DIAGRAMS

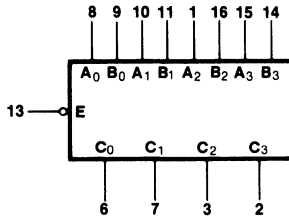
DIGITAL-ECL

**E56**  
95H55



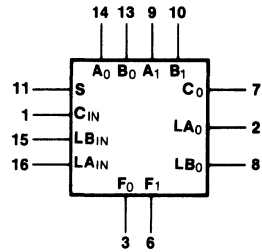
VCC = Pin 4  
VCCA = Pin 5  
VEE = Pin 12

**E57**  
9578



VCC = Pin 4  
VCCA = Pin 5  
VEE = Pin 12

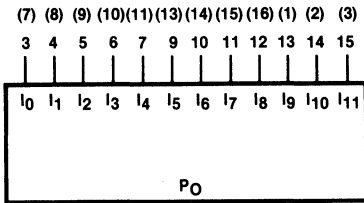
**E58**  
95H84



VCC = GND = Pins 4, 5  
VEE = Pin 12

**E59**

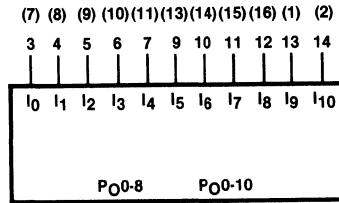
10160/10560



VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E60**

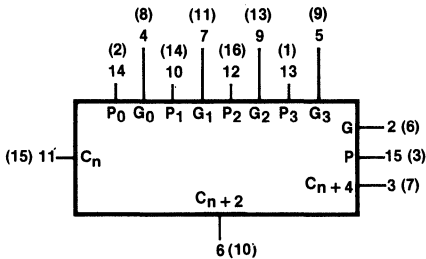
10170/10570



VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E61**

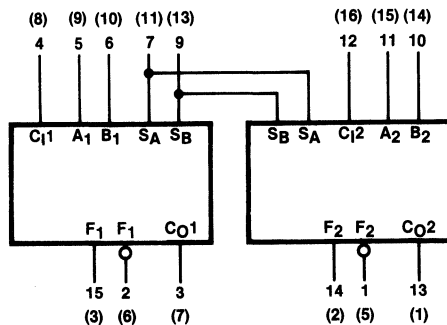
10179/10579



VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E62**

10180/10580

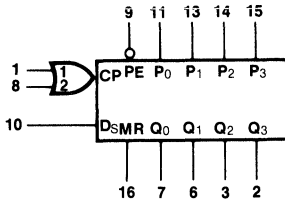


VCC = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak



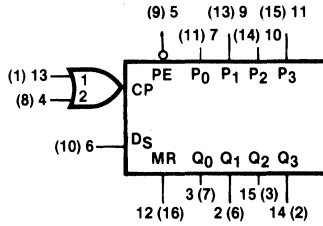
DIGITAL-ECL

**E63**  
95H00



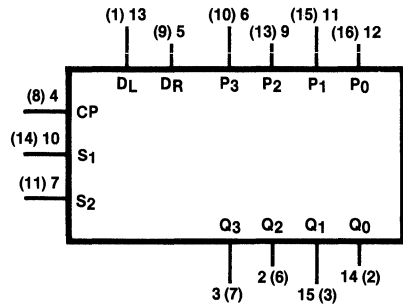
VCC = Pin 4  
VCCA = Pin 5  
VEE = Pin 12

**E64**  
95000/10000



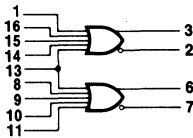
VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E65**  
10141/10541



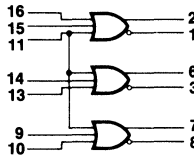
VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E66**  
9502/95H02/  
95H22/95L22



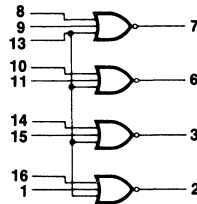
VCC = Pin 4  
VCCA = Pin 5  
VEE = Pin 12

**E67**  
9503/95H03/  
95H23/95L23



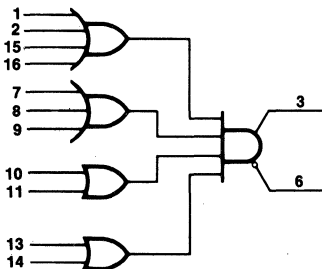
VCC = Pin 4  
VCCA = Pin 5  
VEE = Pin 12

**E68**  
9504/95H04/  
95H24/95L24



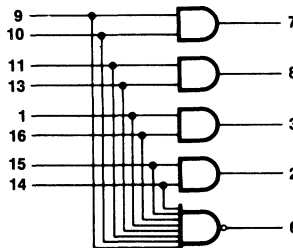
VCC = Pin 4  
VCCA = Pin 5  
VEE = Pin 12

**E69**  
9505



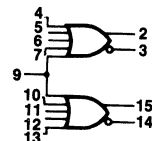
VCC = Pin 4  
VCCA = Pin 5  
VEE = Pin 12

**E70**  
9507



VCC = Pin 4  
VCCA = Pin 5  
VEE = Pin 12

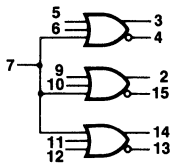
**E71**  
95002



VCC1 = Pin 1  
VCC2 = Pin 16  
VEE = Pin 8

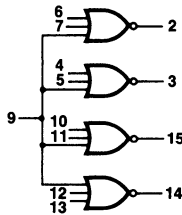
DIGITAL-ECL

**E72**  
95003



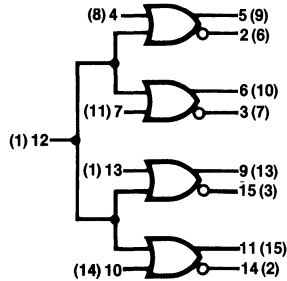
VCC1 = Pin 1  
VCC2 = Pin 16  
VEE = Pin 8

**E73**  
95004



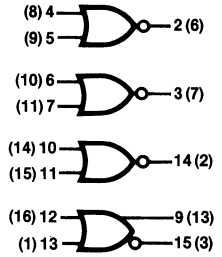
VCC1 = Pin 1  
VCC2 = Pin 16  
VEE = Pin 8

**E74**  
95101/10101/10501



VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

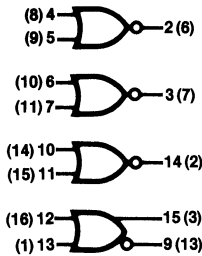
**E75**  
95102/10102/10502



VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E76**

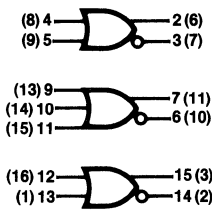
95103/10103/10503



VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E77**

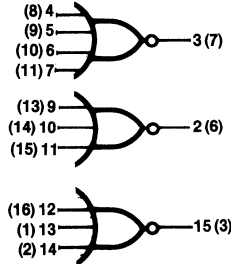
95105/10105/10505



VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E78**

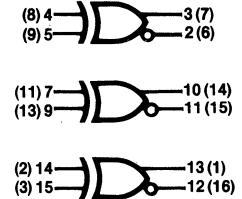
95106/10106/10506  
10123/10523



VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E79**

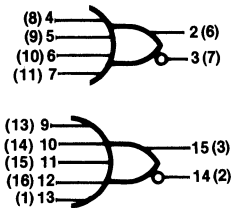
95107/10107/10507



VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E80**

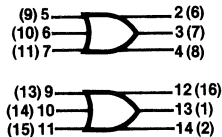
95109/10109/10509



VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E81**

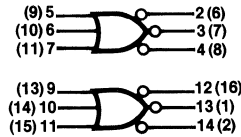
95110/10110/10210  
10510/10610



VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E82**

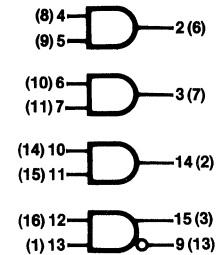
95111/10111/10211  
10511/10611



VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E83**

10104/10504

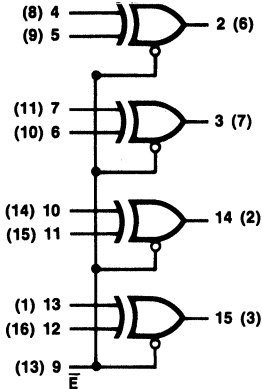


VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

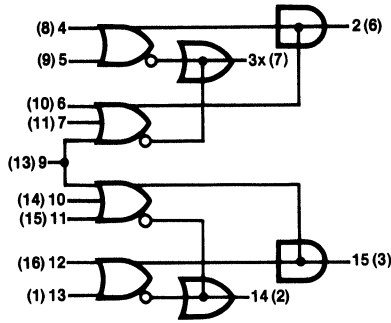
## DIGITAL-ECL

**E84**  
10113/10513



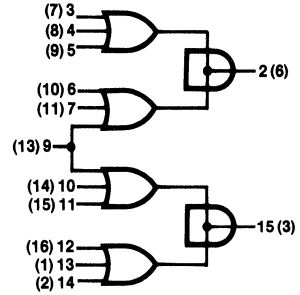
VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E85**  
10117/10517



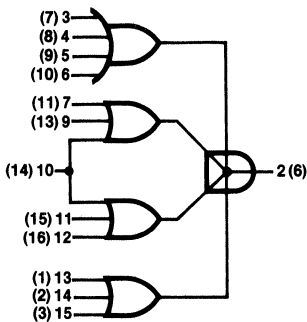
VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E86**  
10118/10518



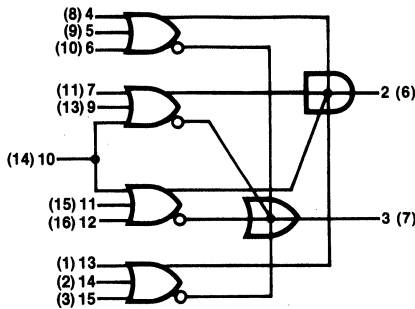
VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E87**  
10119/10519



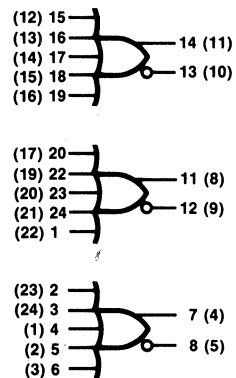
VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E88**  
10121/10521



VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

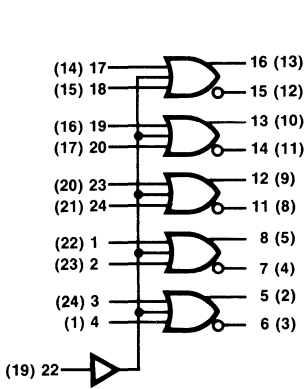
**E89**  
100101



VCC = Pin 9 (6)  
VCCA = Pin 10 (7)  
VEE = Pin 21 (18)  
( ) = DIP

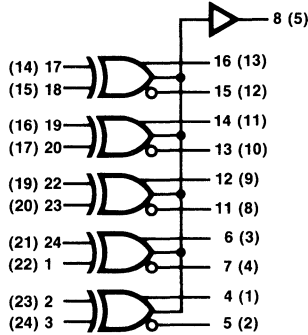
DIGITAL-ECL

**E90**  
100102



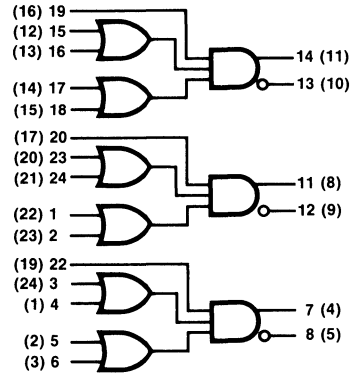
VCC = Pin 9 (6)  
VCCA = Pin 10 (7)  
VEE = Pin 21 (18)  
( ) = DIP

**E91**  
100107



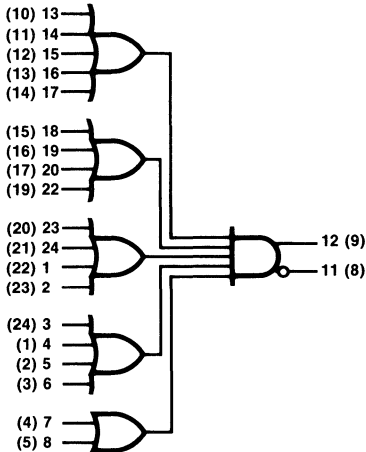
VCC = Pin 9 (6)  
VCCA = Pin 10 (7)  
VEE = Pin 21 (18)  
( ) = DIP

**E92**  
100117



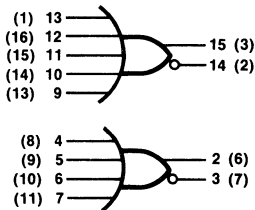
VCC = Pin 9 (6)  
VCCA = Pin 10 (7)  
VEE = Pin 21 (18)  
( ) = DIP

**E93**  
100118



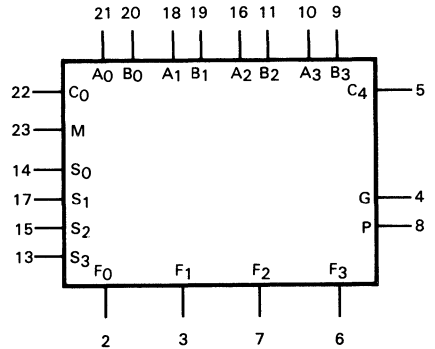
VCC = Pin 9 (6)  
VCCA = Pin 10 (7)  
VEE = Pin 21 (18)  
( ) = DIP

**E94**  
11C01



VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E95**  
10181/10581

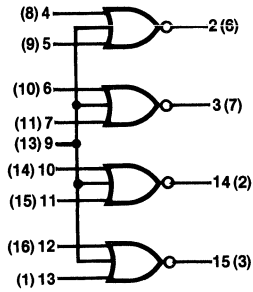


VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

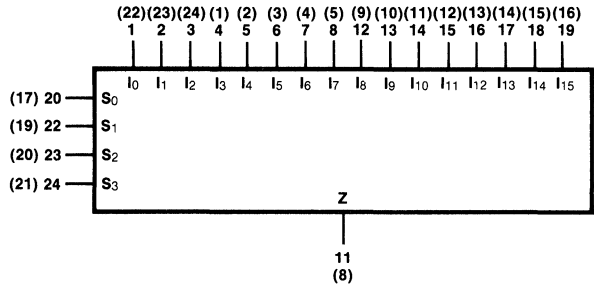
## DIGITAL-ECL

**E96**  
10100/10500



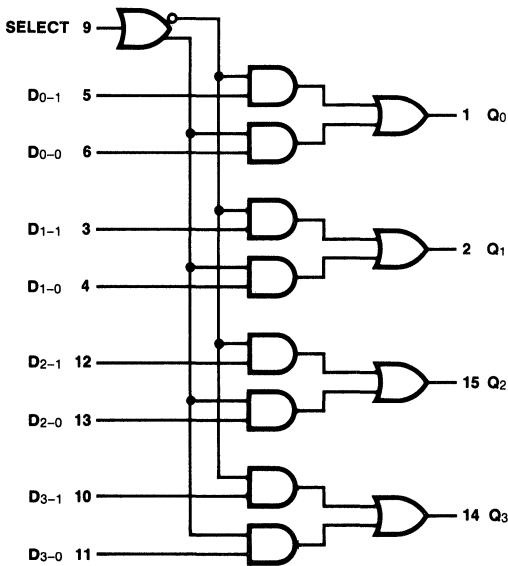
VCC1 = Pin 1 (5)  
VCC2 = Pin 16 (4)  
VEE = Pin 8 (12)  
( ) = Flatpak

**E97**  
100164



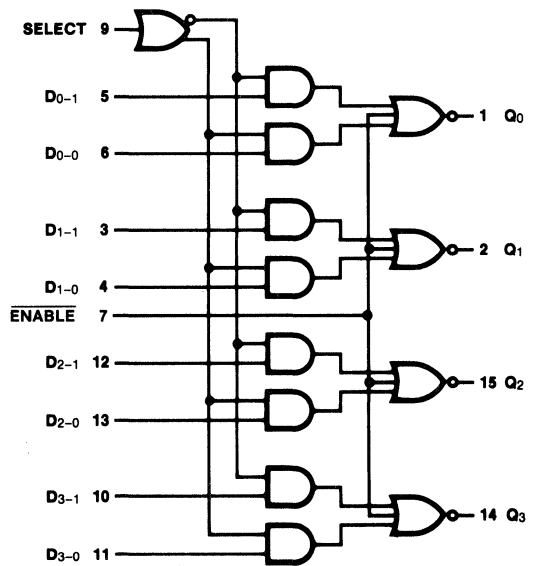
VCC = Pin 9 (6)  
VCCA = Pin 10 (7)  
VEE = Pin 21 (18)  
( · ) = DIP

**E98**  
10158/10558



VCC = Pin 16  
VEE = Pin 8

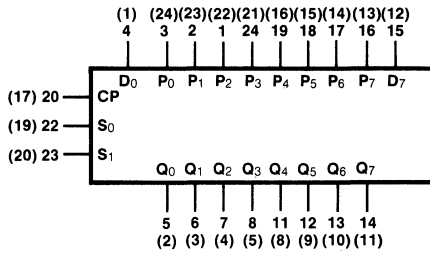
**E99**  
10159/10559



VCC = Pin 16  
VEE = Pin 8

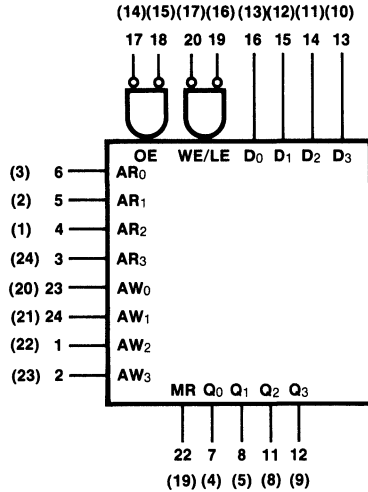
DIGITAL-ECL

**E100**  
100141



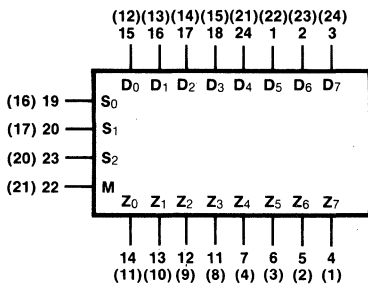
V<sub>CC</sub> = Pin 9 (6)  
V<sub>CCA</sub> = Pin 10 (7)  
V<sub>EE</sub> = Pin 21 (18)  
( ) = DIP

**E101**  
100145A



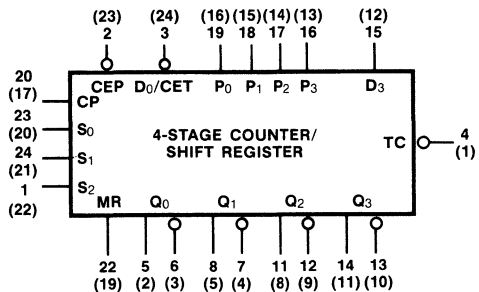
V<sub>CC</sub> = Pin 9 (6)  
V<sub>CCA</sub> = Pin 10 (7)  
V<sub>EE</sub> = Pin 21 (18)  
( ) = DIP

**E102**  
100158



V<sub>CC</sub> = Pin 9 (6)  
V<sub>CCA</sub> = Pin 10 (7)  
V<sub>EE</sub> = Pin 21 (18)  
( ) = DIP

**E103**  
100136

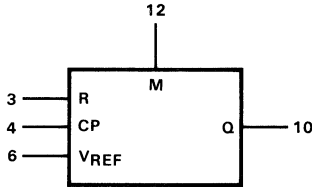


V<sub>CC</sub> = Pin 9 (6)  
V<sub>CCA</sub> = Pins 8 (5), 10 (7)  
V<sub>EE</sub> = Pin 21 (18)  
( ) = DIP

13

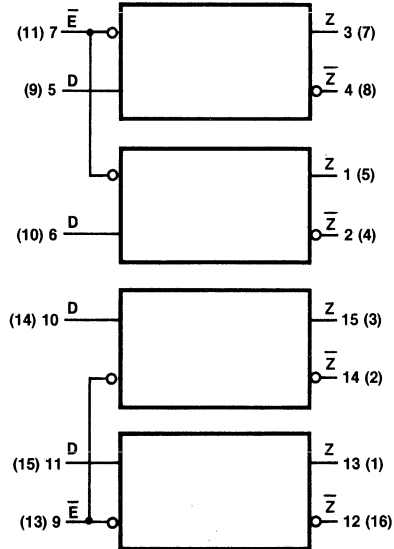
DIGITAL-ECL

**E104**  
11C83



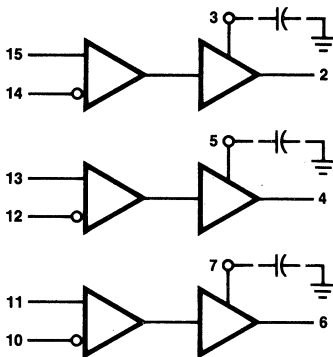
V<sub>CC</sub> = Pin 1  
V<sub>CCA</sub> = Pin 14  
GND = Pin 7

**E105**  
10192/10592



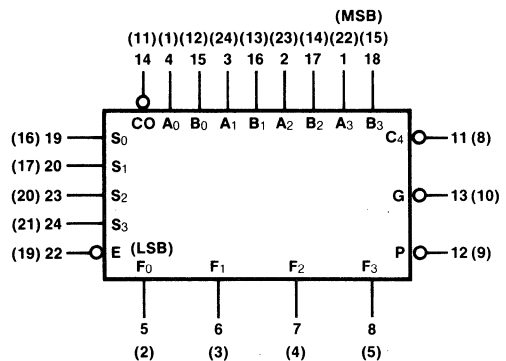
V<sub>CC</sub> = Pin 16 (4)  
V<sub>EE</sub> = Pin 8 (12)  
( ) = Flatpak

**E106**  
10177/10577



V<sub>CC</sub> = GND = Pins 1 (5), 16 (4)  
V<sub>EE</sub> = Pin 8 (12) = -5.2 V dc  $\pm$  5%  
V<sub>SS</sub> = Pin 9 (13) = +5.0 V dc or  
+6.0 V dc  $\pm$  10%

**E107**  
100181

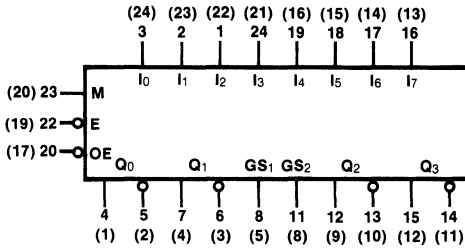


V<sub>CC</sub> = Pin 9 (6)  
V<sub>CCA</sub> = Pin 10 (7)  
V<sub>EE</sub> = Pin 21 (18)  
( ) = DIP

FAIRCHILD LOGIC/CONNECTION DIAGRAMS

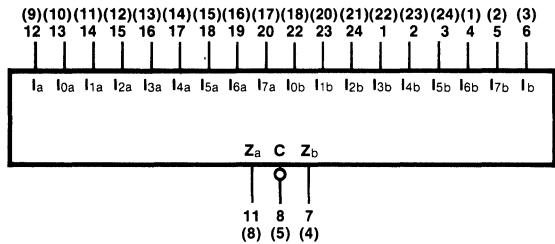
DIGITAL-ECL

**E108**  
100165



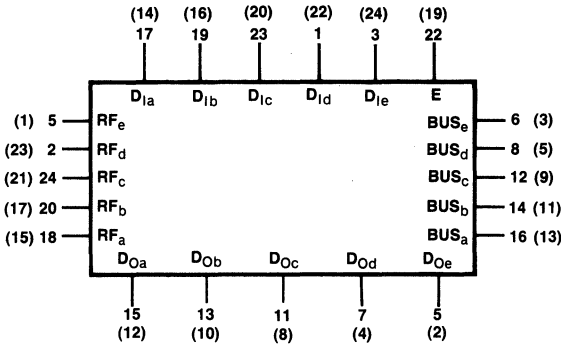
VCC = Pin 9 (6)  
VCCA = Pin 10 (7)  
VEE = Pin 21 (18)  
( ) = DIP

**E109**  
100160



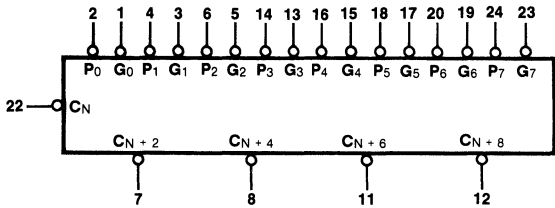
VCC = Pin 9 (6)  
VCCA = Pin 10 (7)  
VEE = Pin 21 (18)  
( ) = DIP

**E110**  
100194



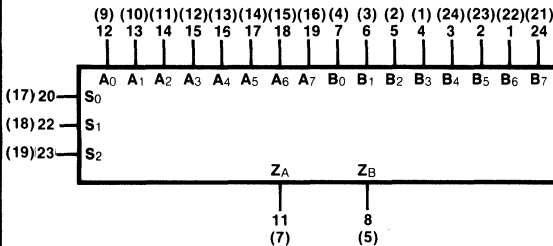
VCC = Pin 9 (6)  
VCCA = Pin 10 (7)  
VEE = Pin 21 (18)  
( ) = DIP

**E111**  
100179



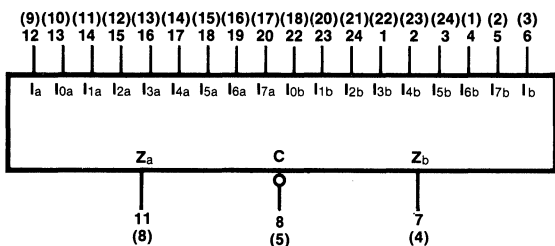
VCC = Pin 9 (6)  
VCCA = Pin 10 (7)  
VEE = Pin 21 (18)  
( ) = DIP

**E112**  
100163



VCC = 9 (6)  
VCCA = 10 (7)  
VEE = 21 (18)  
( ) = DIP

**E114**  
100166



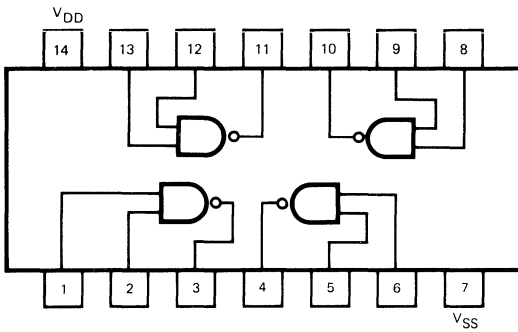
VCC = Pin 9  
VCCA = Pin 10  
VEE = Pin 21  
( ) = DIP

13

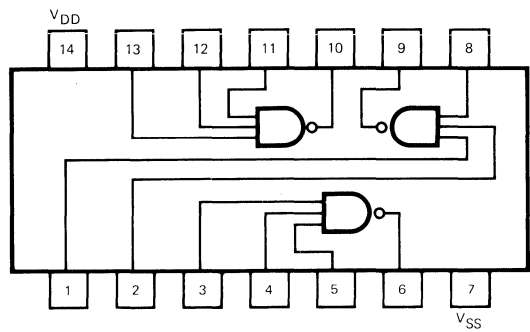


DIGITAL-CMOS

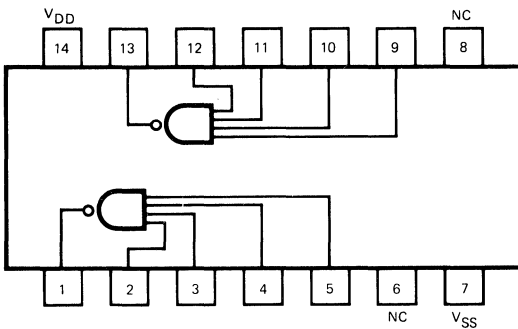
**C1**  
**4011B**



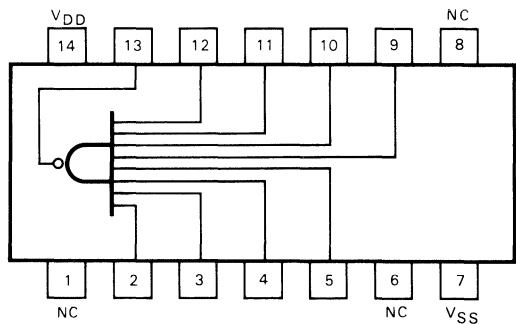
**C2**  
**4023B**



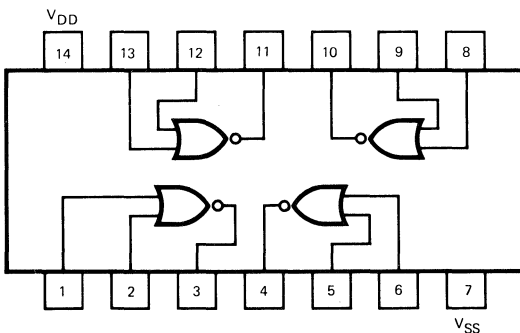
**C3**  
**4012B**



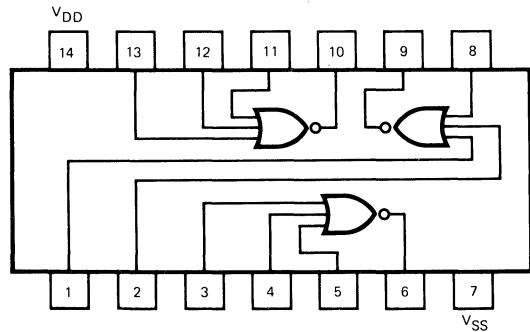
**C4**  
**4068B**



**C5**  
**4001B**



**C6**  
**4025B**

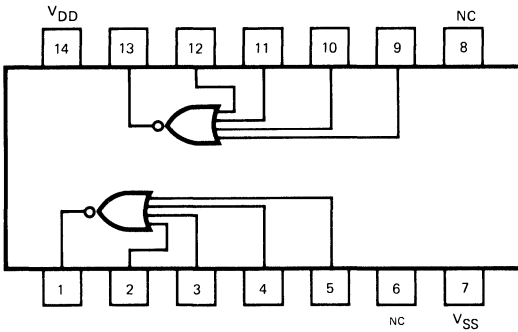


NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

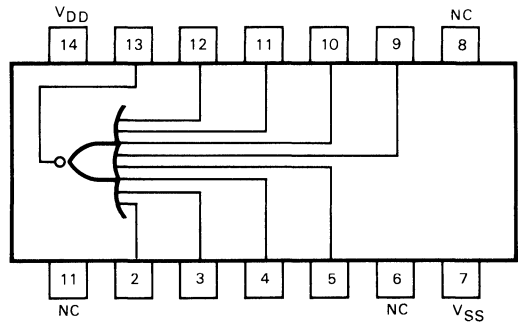
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## DIGITAL-CMOS

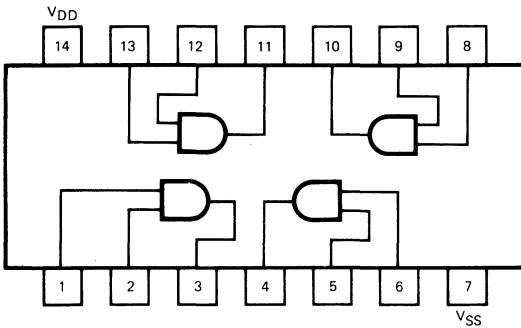
**C7  
4002B**



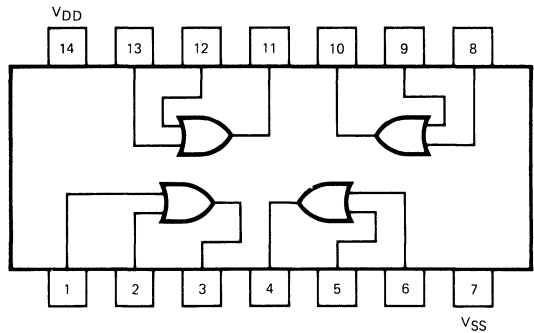
**C8  
4078B**



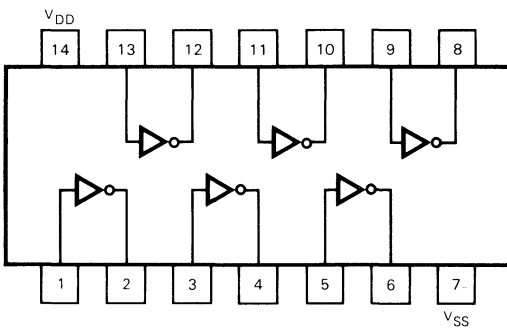
**C9  
4081B**



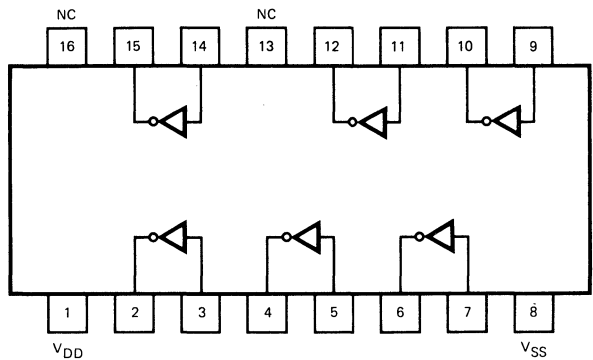
**C10  
4071B**



**C11  
4069B, 40014B**



**C12  
4049B**

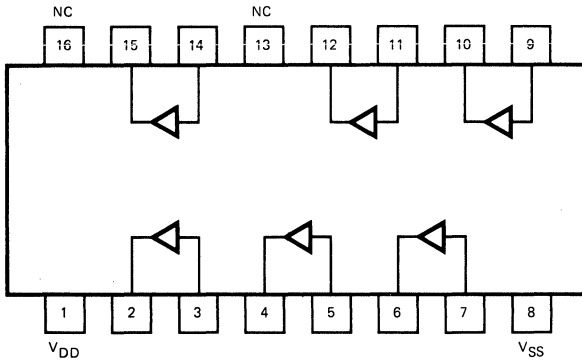


NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

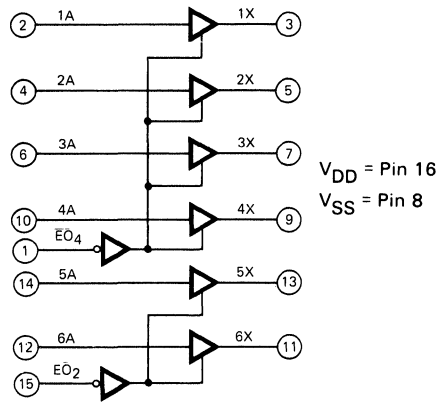
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## DIGITAL-CMOS

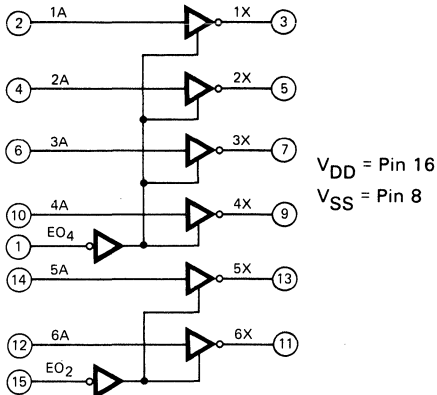
**C13**  
**4050B**



**C15**  
**40097B**

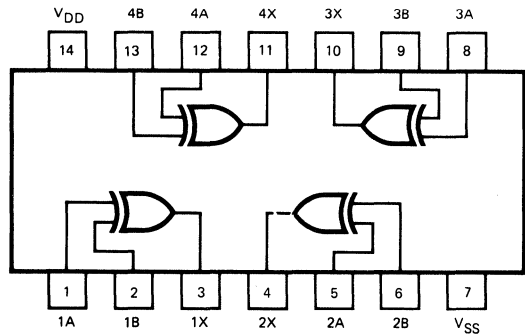


**C14**  
**40098B**



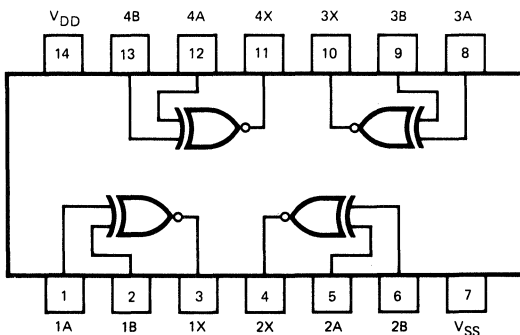
**C16**  
**4030B, 4070B**

$$X = \bar{A}B + A\bar{B}$$



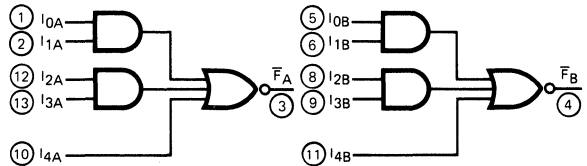
**C17**  
**4077B**

$$X = AB + \bar{A}\bar{B}$$



**C18**  
**4085B**

$$\bar{F} = \overline{0 \cdot 1_1 + 1_2 \cdot 1_3 + 1_4}$$



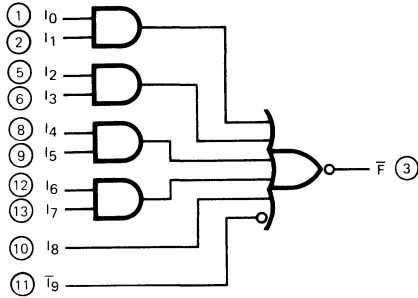
$V_{DD}$  = Pin 14

$V_{SS}$  = Pin 7

NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

DIGITAL-CMOS

**C19  
4086B**



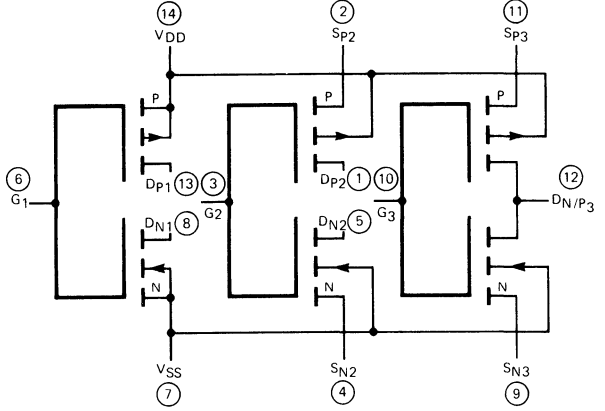
$$\bar{F} = I_0 \cdot I_1 + I_2 \cdot I_3 + I_4 \cdot I_5 + I_6 \cdot I_7 + I_8 \cdot I_9$$

NOTE:

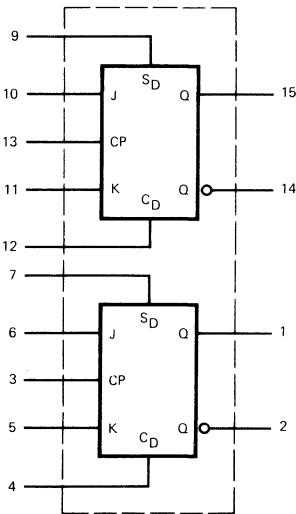
A HIGH on I<sub>8</sub> or a LOW on I<sub>9</sub> forces the output ( $\bar{F}$ ) LOW.

V<sub>DD</sub> = Pin 14    V<sub>SS</sub> = Pin 7    NC = Pin 4

**C20  
4007B**

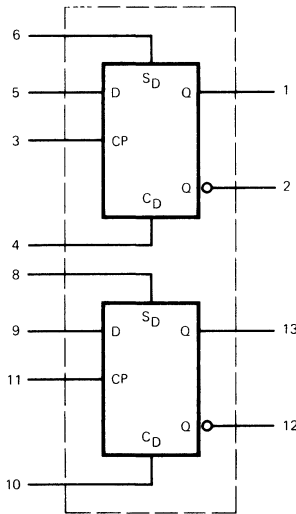


**C21  
4027B**



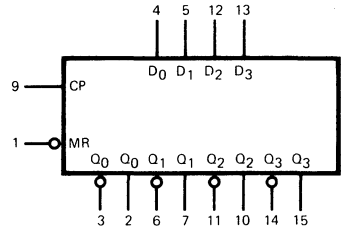
V<sub>DD</sub> = Pin 16  
V<sub>SS</sub> = Pin 8

**C22  
4013B**



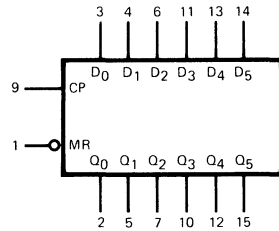
V<sub>DD</sub> = Pin 14  
V<sub>SS</sub> = Pin 7

**C23  
40175B**



V<sub>DD</sub> = Pin 16  
V<sub>SS</sub> = Pin 8

**C24  
40174B**



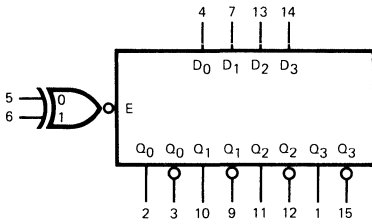
V<sub>DD</sub> = Pin 16  
V<sub>SS</sub> = Pin 8

NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

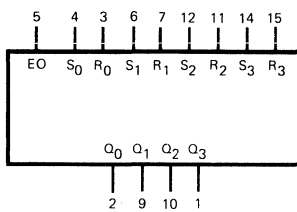
## DIGITAL-CMOS

**C25  
4042B**



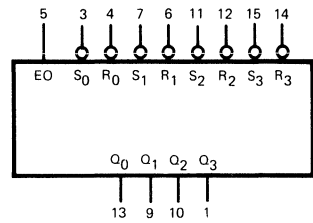
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C26  
4043B**



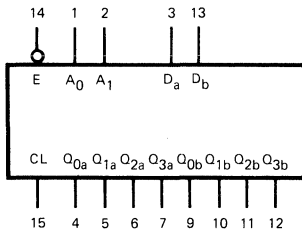
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8  
NC = Pin 13

**C27  
4044B**



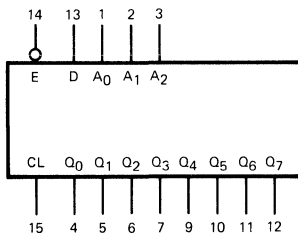
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8  
NC = Pin 2

**C28  
4723B**



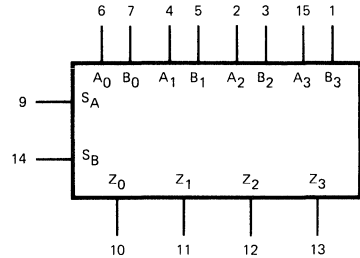
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C29  
4724B**



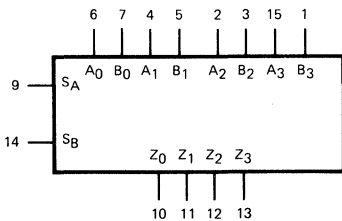
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C30  
4019B**



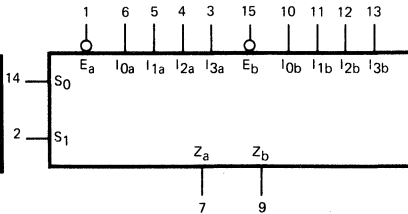
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C31  
4519B**



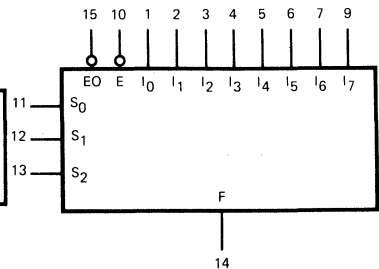
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C32  
4539B**



$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C33  
4512B**

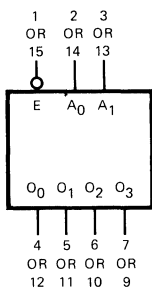


$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

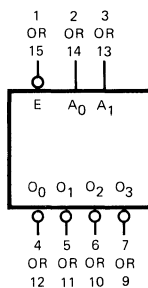
DIGITAL-CMOS

**C34**  
**4555B**



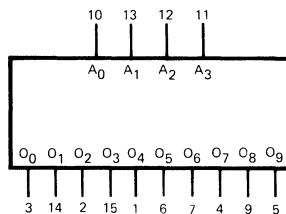
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C35**  
**4556B**



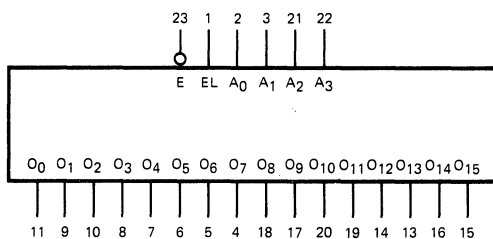
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C36**  
**4028B**



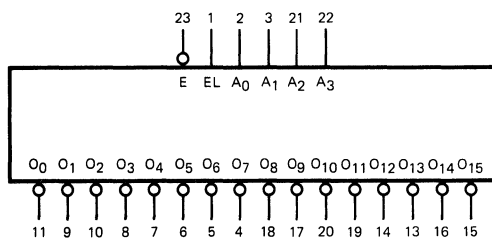
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C37**  
**4514B**



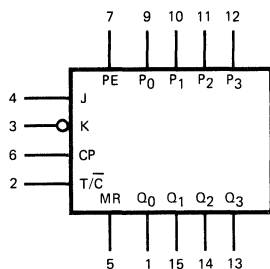
$V_{DD}$  = Pin 24  
 $V_{SS}$  = Pin 12

**C38**  
**4515B**



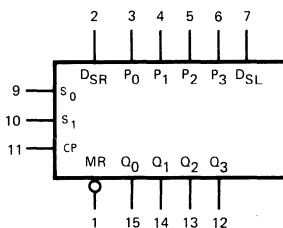
$V_{DD}$  = Pin 24  
 $V_{SS}$  = Pin 12

**C39**  
**4035B**



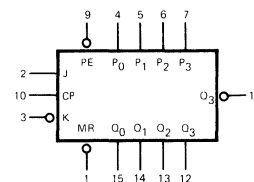
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C40**  
**40194B**



$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C41**  
**40195B**



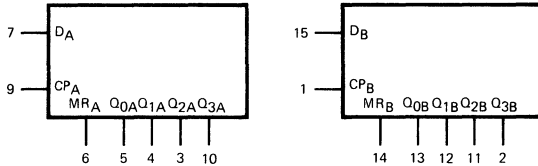
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

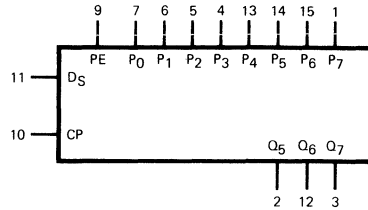
## DIGITAL-CMOS

**C42**  
**4015B**



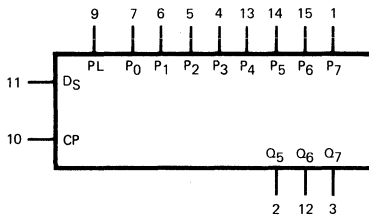
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C43**  
**4014B**



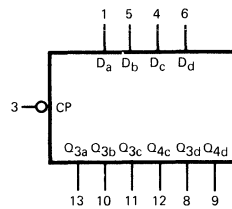
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C44**  
**4021B**



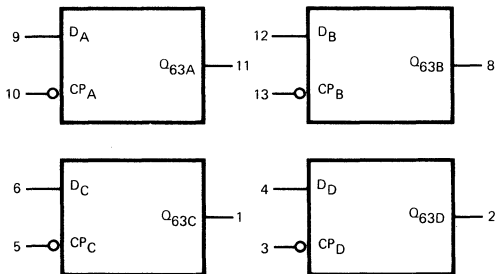
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C45**  
**4006B**



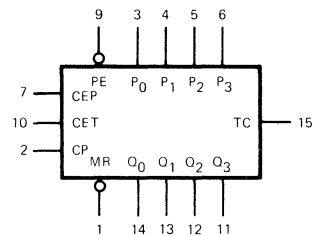
$V_{DD}$  = Pin 14  
 $V_{SS}$  = Pin 7  
NC = Pin 2

**C46**  
**4731B \***



$V_{DD}$  = Pin 14  
 $V_{SS}$  = Pin 7

**C47**  
**40160B, 40161B**



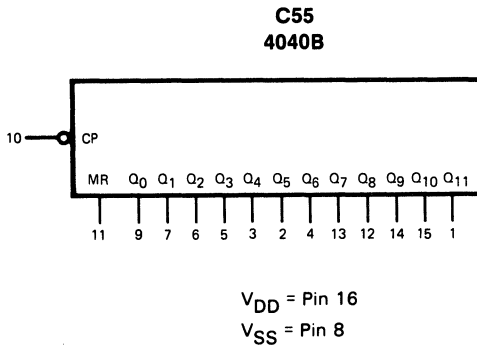
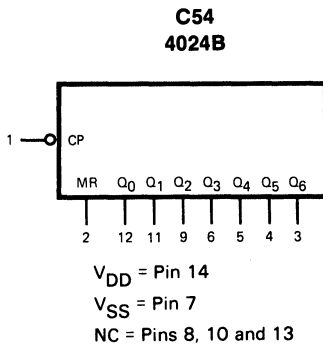
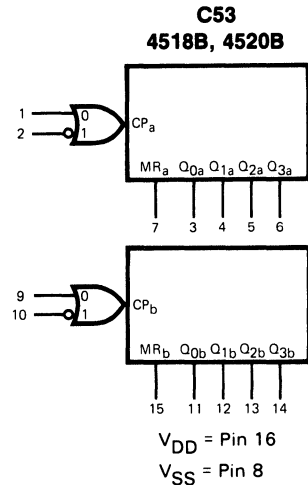
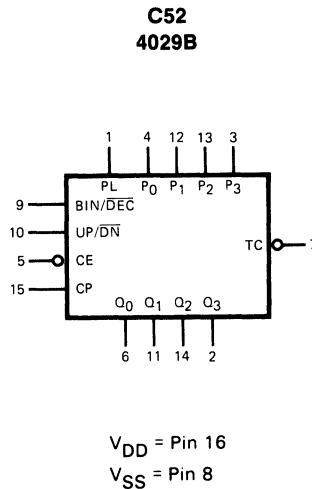
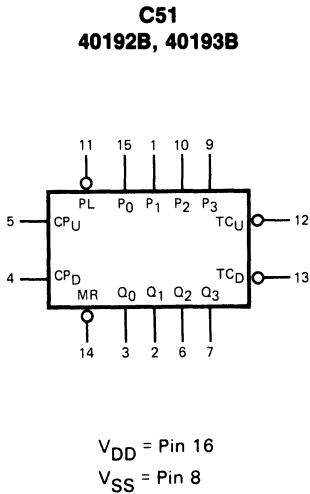
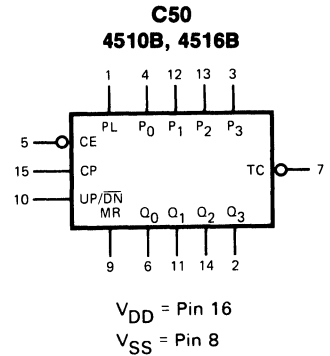
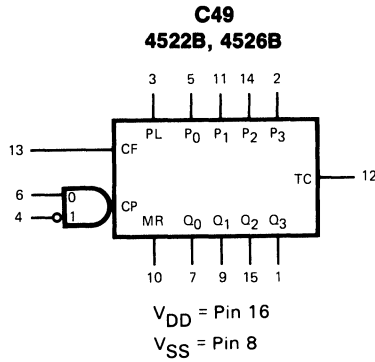
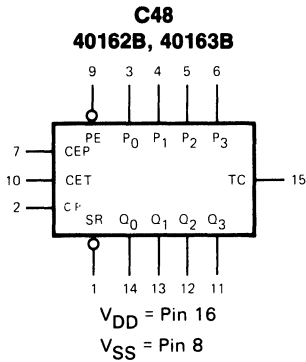
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

\*Pinout shown is for dual in-line package only.  
See CMOS databook for flatpak pinout.

NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## DIGITAL-CMOS



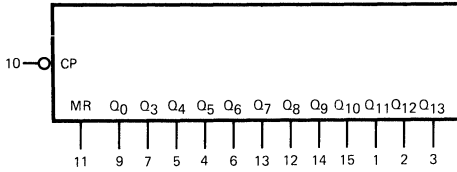
NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.



# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

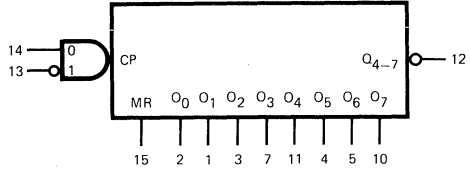
## DIGITAL-CMOS

**C56  
4020B**



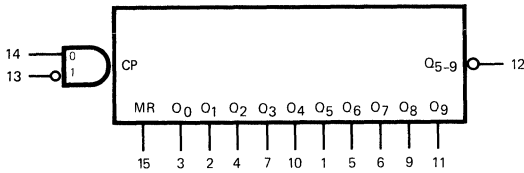
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C57  
4022B**



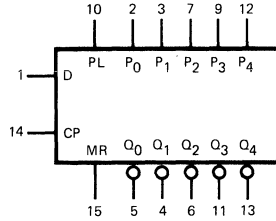
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8  
NC = Pin 6, 9

**C58  
4017B**



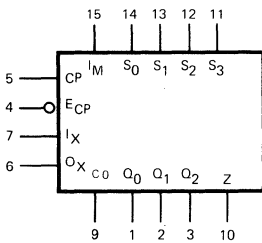
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C59  
4018B**



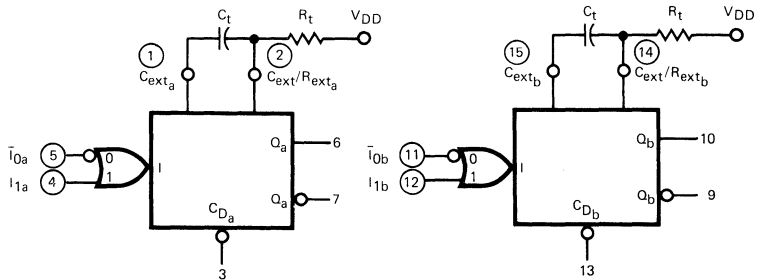
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C60  
4702B**



$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C61  
4528B**

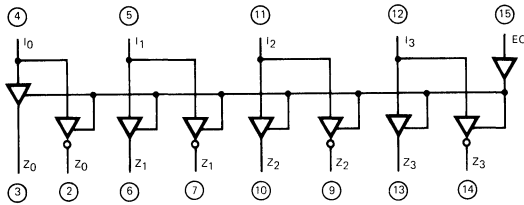


$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

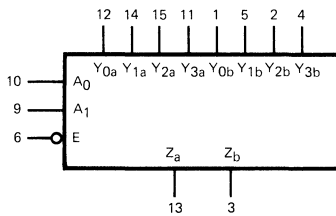
DIGITAL-CMOS

**C62**  
**4104B**



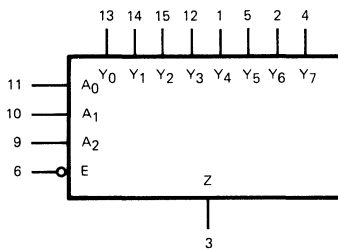
$V_{DDO}$  = Pin 1  
 $V_{DDI}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C64**  
**4052B**



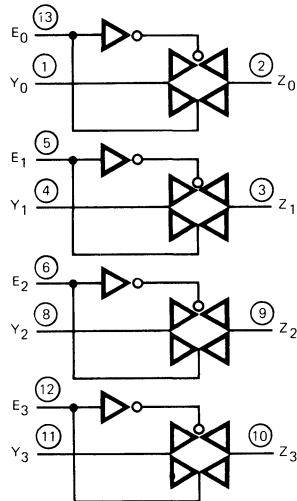
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8  
 $V_{EE}$  = Pin 7

**C65**  
**4051B**



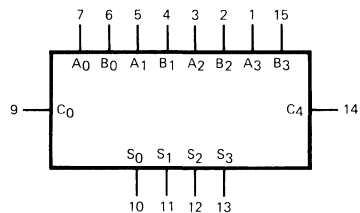
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8  
 $V_{EE}$  = Pin 7

**C63**  
**4016B, 4066B**



$V_{DD}$  = Pin 14  
 $V_{SS}$  = Pin 7

**C66**  
**4008B**



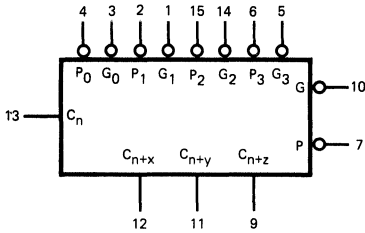
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

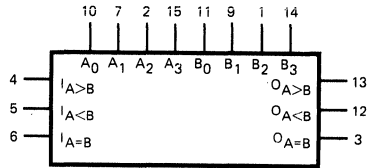
## DIGITAL-CMOS

**C68  
4582B**



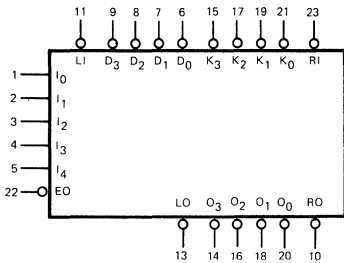
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C69  
40085B**



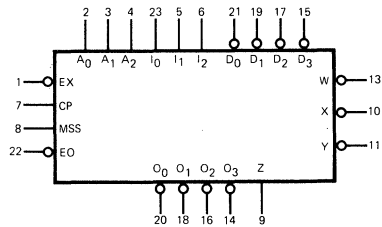
$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8

**C70  
4704B**



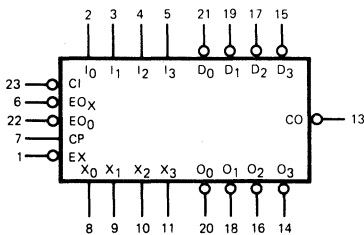
$V_{DD}$  = Pin 24  
 $V_{SS}$  = Pin 12

**C71  
4705B**



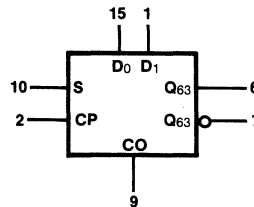
$V_{DD}$  = Pin 24  
 $V_{SS}$  = Pin 12

**C72  
4707B**



$V_{DD}$  = Pin 24  
 $V_{SS}$  = Pin 12

**C78  
4031B**

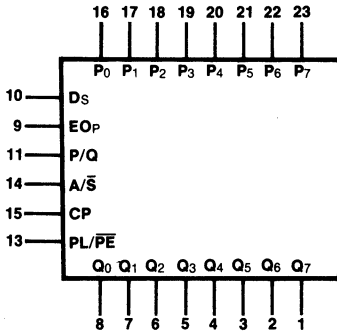


$V_{DD}$  = Pin 16  
 $V_{SS}$  = Pin 8  
NC = Pins 3, 4, 5, 11, 12, 13, 14

NOTE: The Flatpak versions have the same pinouts (Connection Diagram) as the Dual In-Line Packages.

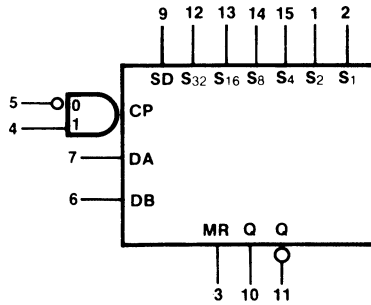
DIGITAL-CMOS

**C79**  
**4034B**



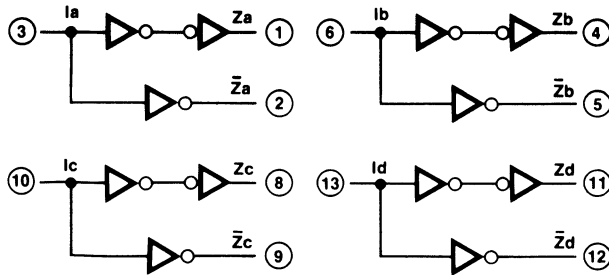
V<sub>DD</sub> = Pin 24  
V<sub>SS</sub> = Pin 12

**C80**  
**4557B**



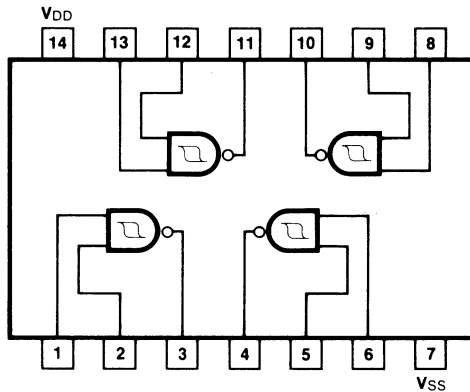
V<sub>DD</sub> = Pin 16  
V<sub>SS</sub> = Pin 8

**C81**  
**4041**



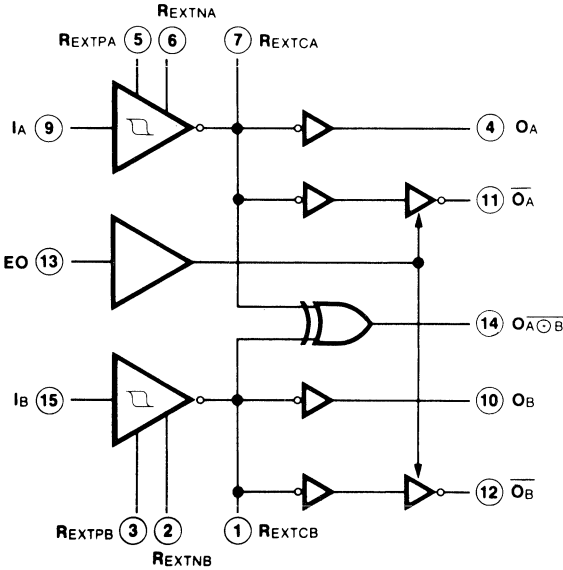
V<sub>DD</sub> = Pin 14  
V<sub>SS</sub> = Pin 7

**C82**  
**4093B**



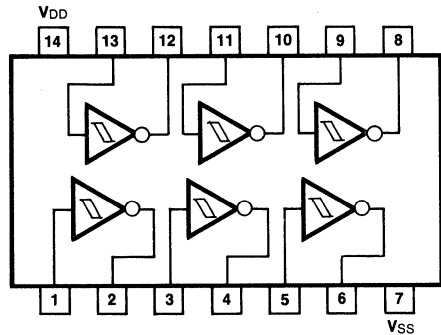
DIGITAL-CMOS

**C83  
4583B**

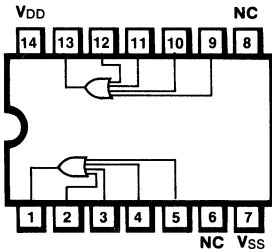


VDD = Pin 16  
VSS = Pin 8  
O = Pin Numbers

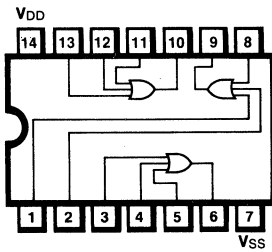
**C84  
40014B**



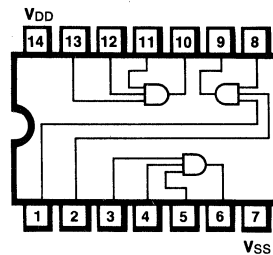
**C85  
4072B**



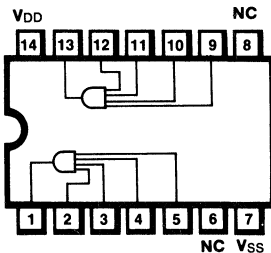
**C86  
4075B**



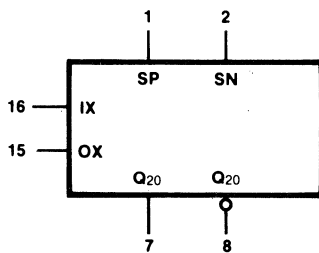
**C87  
4073B**



**C88  
4082B**

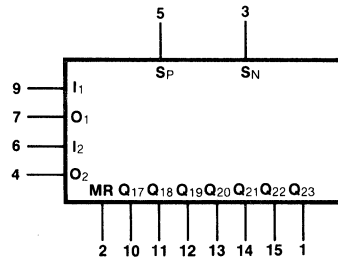


**C89  
4045B**



VDD = Pin 3  
VSS = Pin 14  
NC = Pins 4, 5, 6, 9, 10, 11, 12, & 13

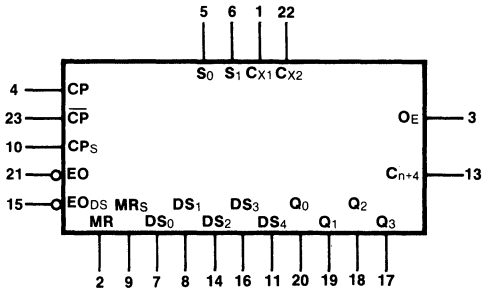
**C90  
4521B**



VDD = Pin 16  
VSS = Pin 8

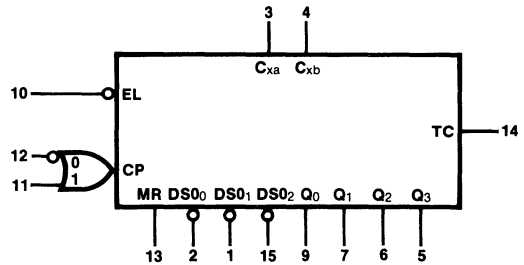
DIGITAL-CMOS

**C91  
4534B**



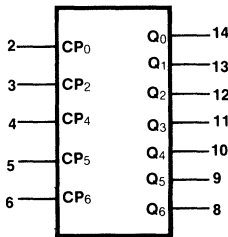
V<sub>DD</sub> = Pin 24  
V<sub>SS</sub> = Pin 12

**C92  
4553B**



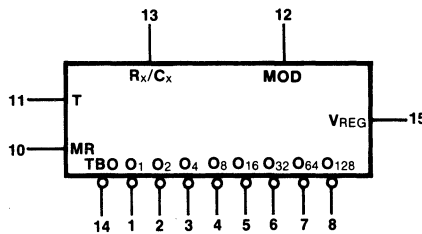
V<sub>DD</sub> = Pin 16  
V<sub>SS</sub> = Pin 8

**C93  
4727B**



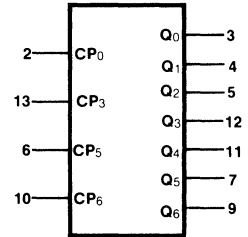
V<sub>DD</sub> = Pin 7  
V<sub>SS</sub> = Pin 1

**C94  
4722B**



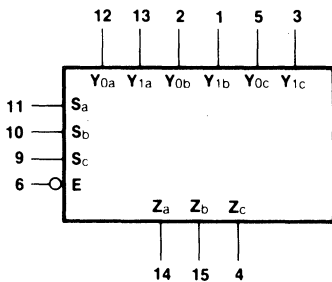
V<sub>DD</sub> = Pin 16  
V<sub>SS</sub> = Pin 8

**C95  
4737B**



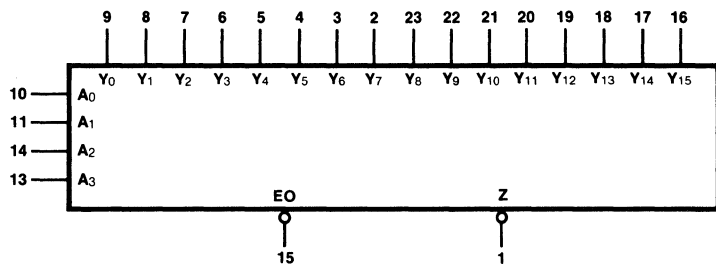
V<sub>DD</sub> = Pin 1  
V<sub>SS</sub> = Pin 8  
NC = Pin 14

**C96  
4053B**



V<sub>DD</sub> = Pin 16  
V<sub>SS</sub> = Pin 8  
V<sub>EE</sub> = Pin 7

**C97  
4067B**

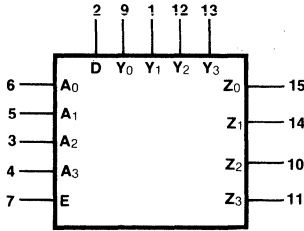


V<sub>DD</sub> = Pin 24  
V<sub>SS</sub> = Pin 12

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

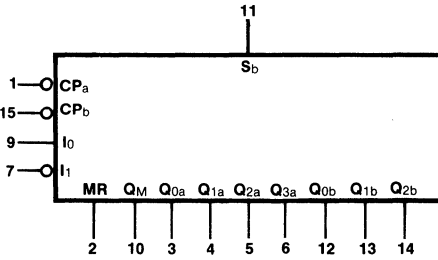
## DIGITAL-CMOS

**C98  
4741B**



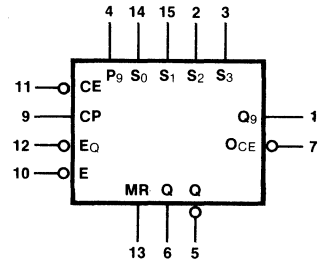
V<sub>DD</sub> = Pin 16  
V<sub>SS</sub> = Pin 8

**C99  
4566B**



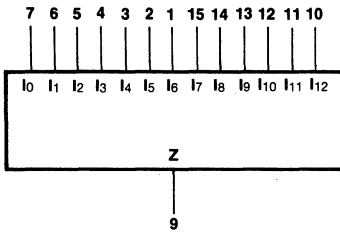
V<sub>DD</sub> = Pin 16  
V<sub>SS</sub> = Pin 8

**C103  
4527B**



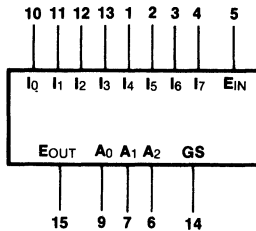
V<sub>DD</sub> = Pin 16  
V<sub>SS</sub> = Pin 8

**C104  
4531B**



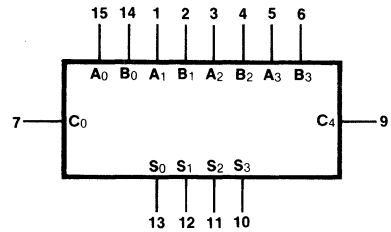
V<sub>DD</sub> = Pin 16  
V<sub>SS</sub> = Pin 8

**C105  
4532B**



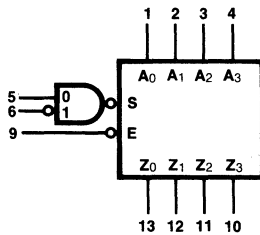
V<sub>DD</sub> = Pin 16  
V<sub>SS</sub> = Pin 8

**C106  
4560B**



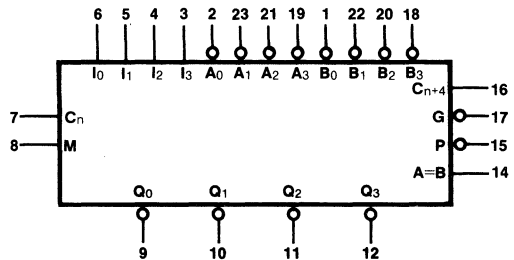
V<sub>DD</sub> = Pin 16  
V<sub>SS</sub> = Pin 8

**C107  
4561B**



V<sub>DD</sub> = Pin 14  
V<sub>SS</sub> = Pin 7  
NC = Pin 8

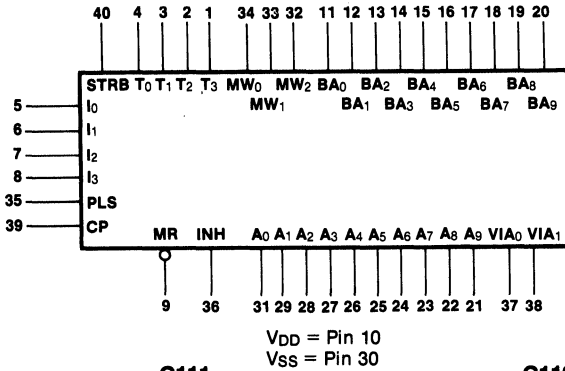
**C108  
4581B**



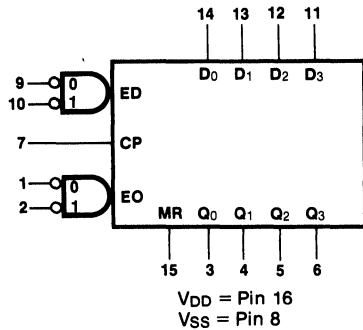
V<sub>DD</sub> = Pin 24  
V<sub>SS</sub> = Pin 12

DIGITAL-CMOS

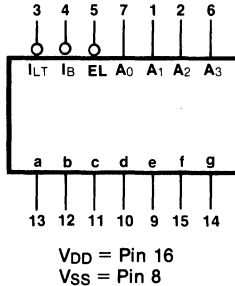
**C109**  
**4708B**



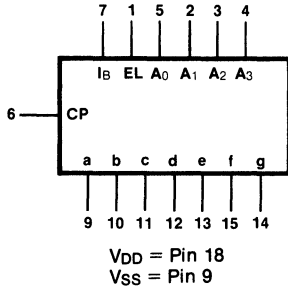
**C110**  
**4076B**



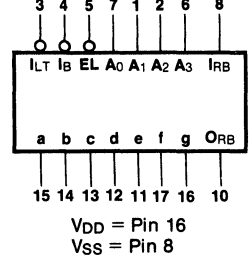
**C111**  
**4511B**



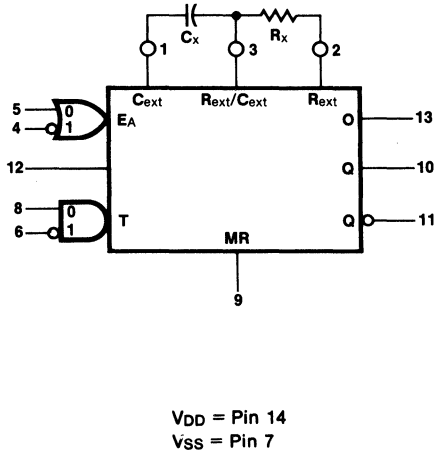
**C112**  
**4543B**



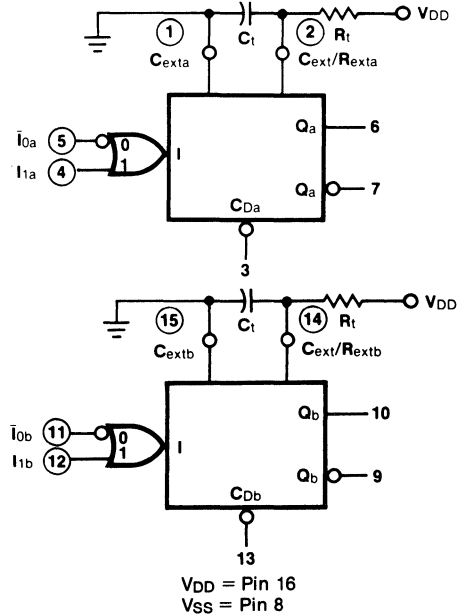
**C114**  
**4734B**



**C115**  
**4047B**



**C116**  
**4538B**

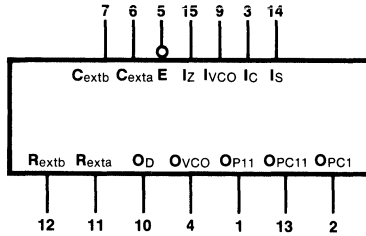




DIGITAL-CMOS

C117

4046B

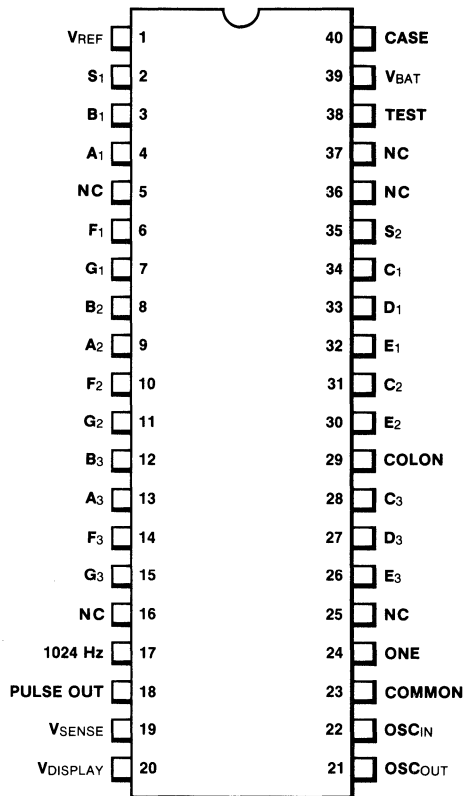


V<sub>DD</sub> = Pin 16

V<sub>SS</sub> = Pin 8

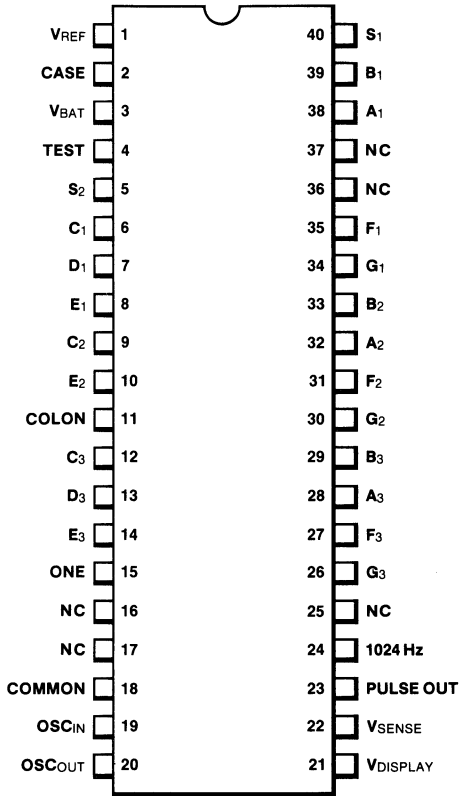
C118

FWB6013

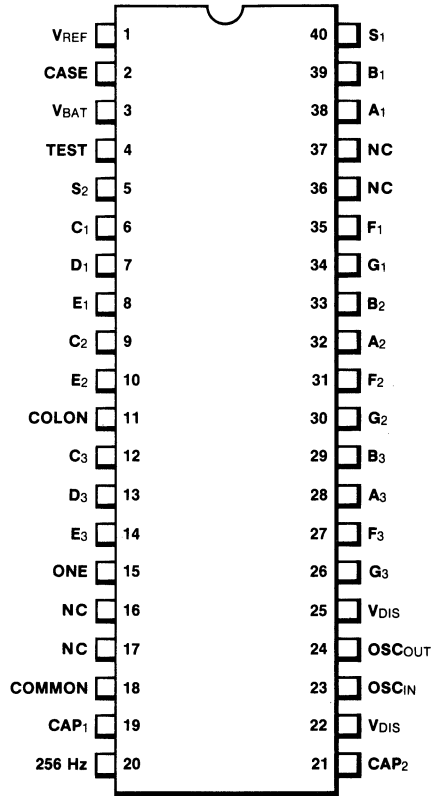


DIGITAL-CMOS

**C119  
FWB6003**



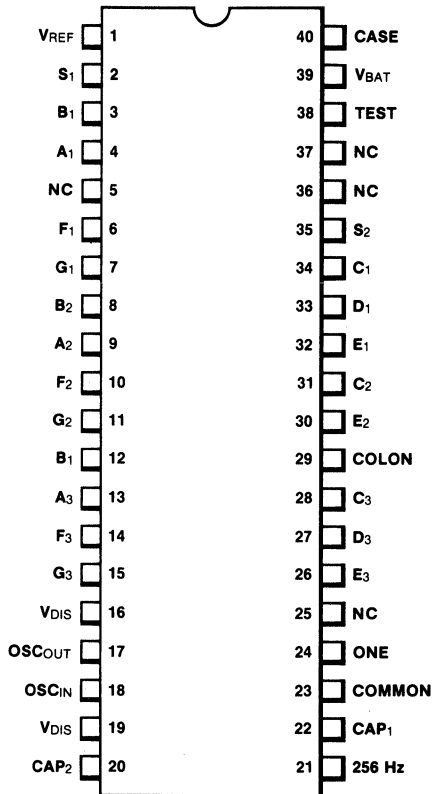
**C120  
FWB6005**



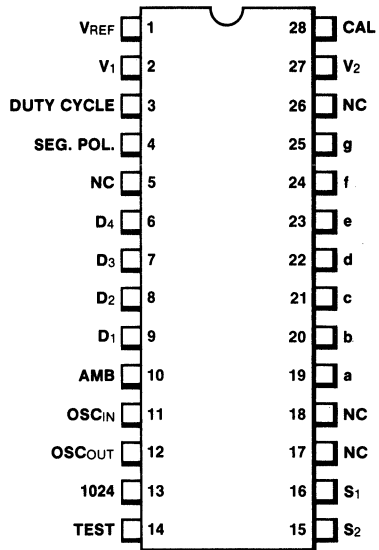
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## DIGITAL-CMOS

**C121  
FWB6105**

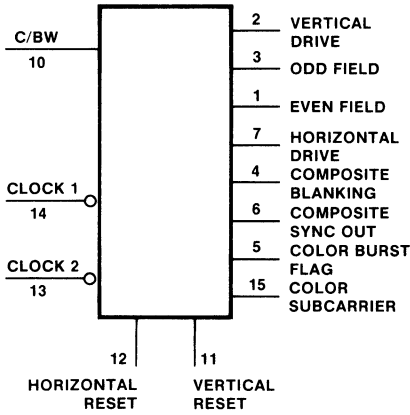


**C122  
FWB6004**



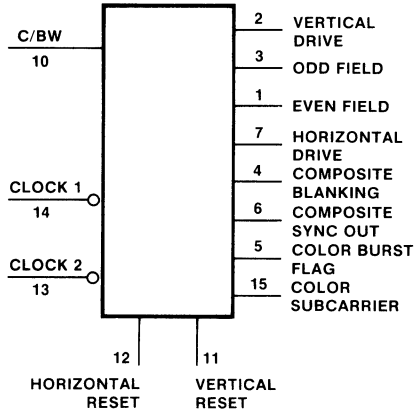
DIGITAL-MOS

**S1  
3262A**



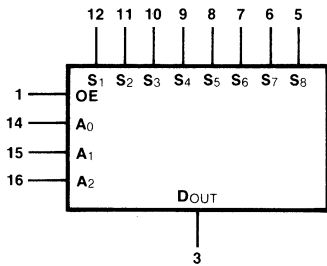
V<sub>SS</sub> = Pin 16  
V<sub>DD</sub> = Pin 9  
V<sub>GG</sub> = Pin 8

**S2  
3262B**



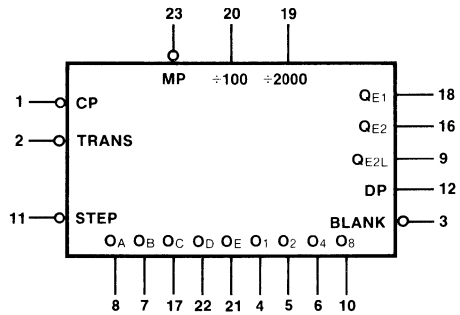
V<sub>SS</sub> = Pin 16  
V<sub>DD</sub> = Pin 9  
V<sub>GG</sub> = Pin 8

**S3  
3708**



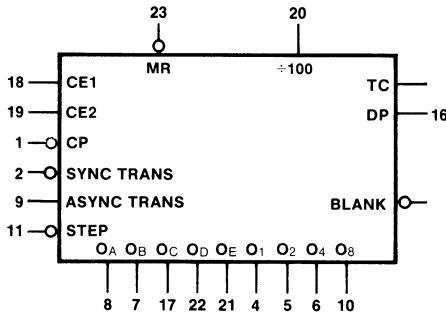
V<sub>SS</sub> = Pins 2 and 4  
V<sub>DD</sub> = Pin 13

**S4  
3814**



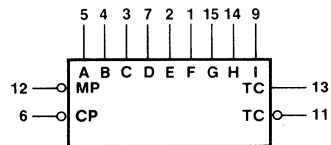
V<sub>SS</sub> = Pin 24  
V<sub>GG</sub> = Pin 15  
V<sub>DD</sub> = Pin 13

**S5  
3815**



V<sub>SS</sub> = +5 V ± 5% = Pin 24  
V<sub>DD</sub> = GND = Pin 13  
V<sub>GG</sub> = 12 V ± 5% = Pin 15

**S6  
3816**

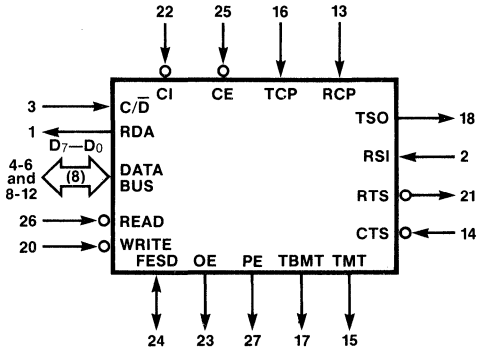


V<sub>SS</sub> = Pin 16  
V<sub>DD</sub> = Pin 8  
V<sub>GG</sub> = Pin 10

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

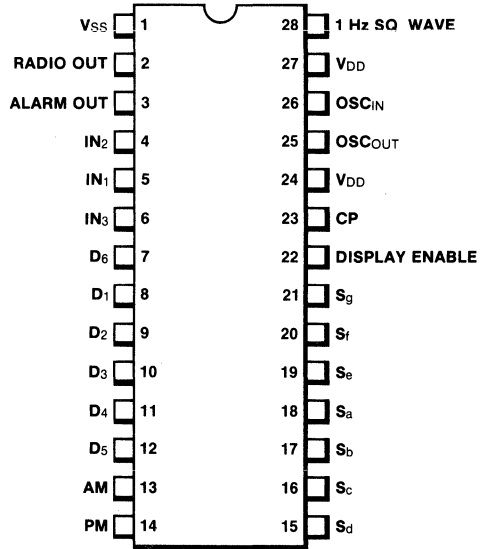
## DIGITAL-MOS

**S8**  
**F3843**

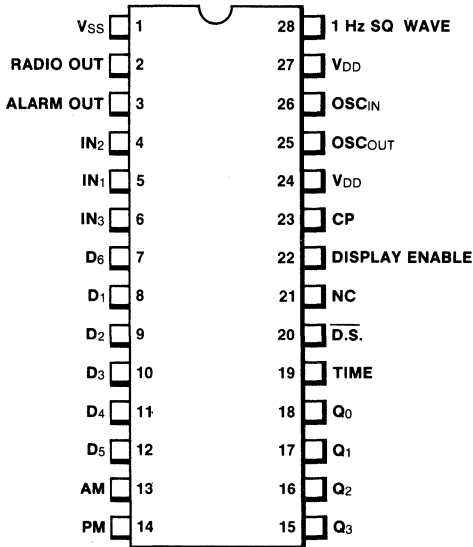


V<sub>CC</sub> (+5 V) = Pin 28  
 V<sub>DD</sub> (+12 V) = Pin 7  
 V<sub>SS</sub> (GND) = Pin 19

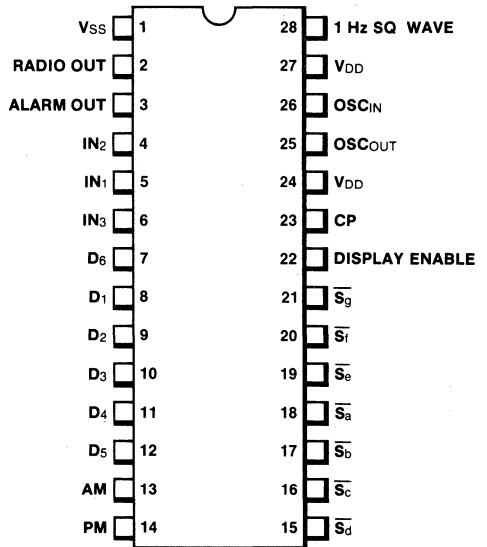
**S9**  
**FCM7001/FCM7004**



**S10**  
**FCM7002**

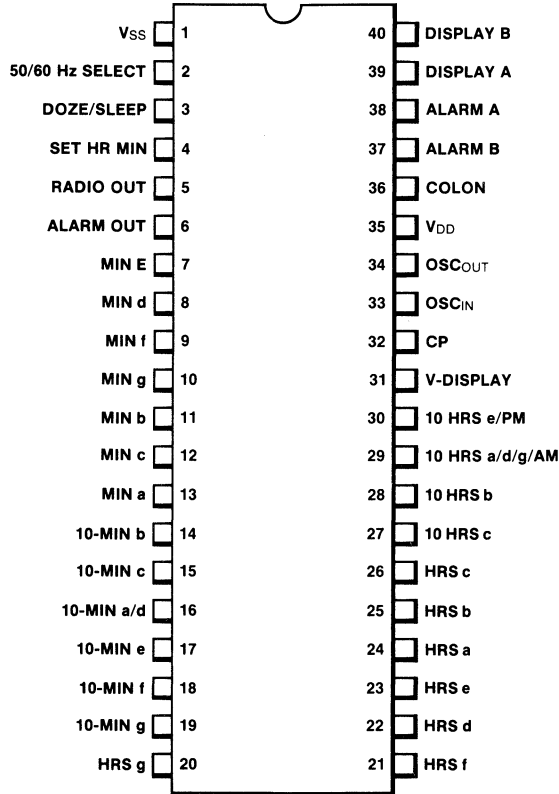


**S11**  
**FCM7003**



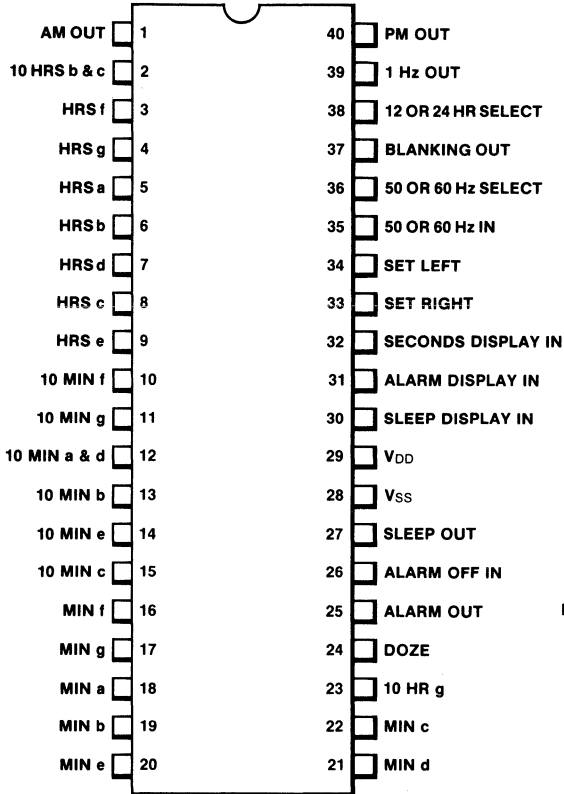
DIGITAL-MOS

S12  
FCM7010/FCM7015

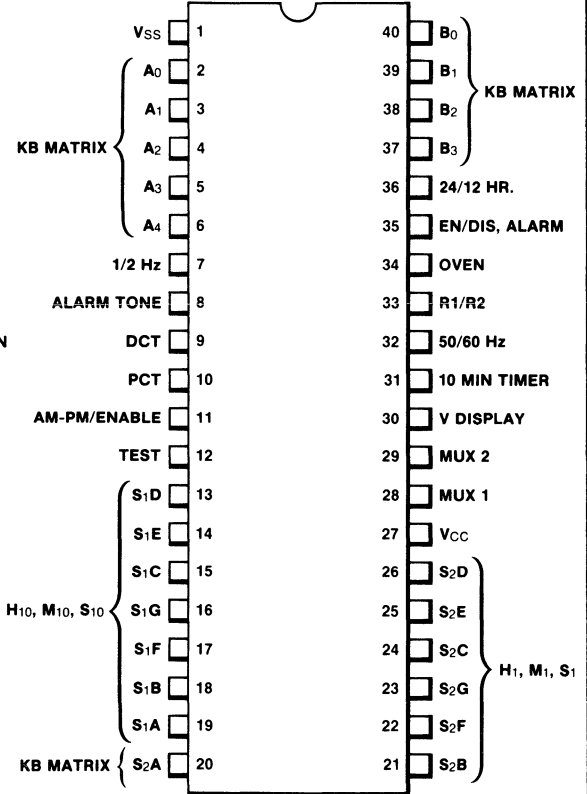


DIGITAL-MOS

S13  
FCM7030

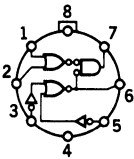


S14  
FCM7040

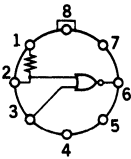


DIGITAL-RTL/CTL

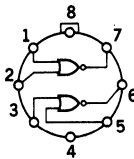
**F1**  
908



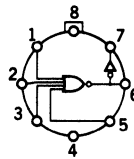
**F2**  
909



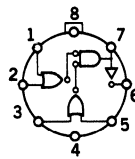
**F3**  
910



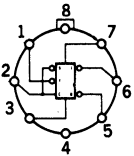
**F4**  
911



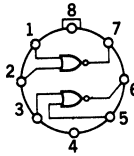
**F5**  
912



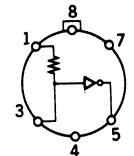
**F6**  
913



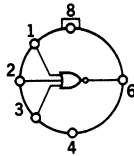
**F7**  
921



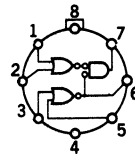
**F8**  
900



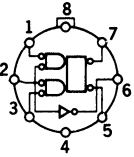
**F9**  
903



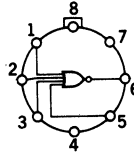
**F10**  
904



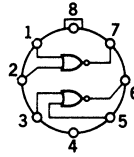
**F11**  
905



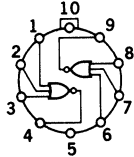
**F12**  
907



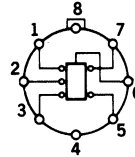
**F13**  
914



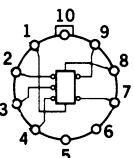
**F14**  
915



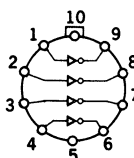
**F15**  
923, 974



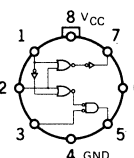
**F16**  
926



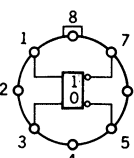
**F17**  
927



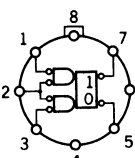
**F18**  
901



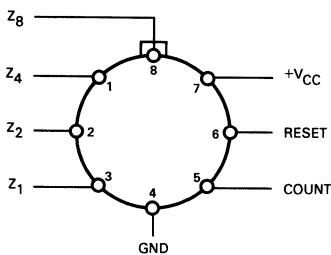
**F19**  
902



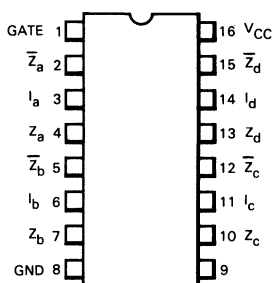
**F20**  
906



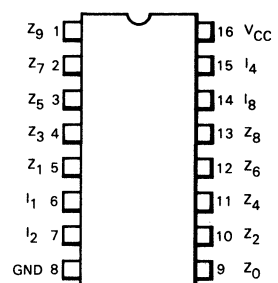
**F21**  
958, 959



**F22**  
959



**F23**  
960

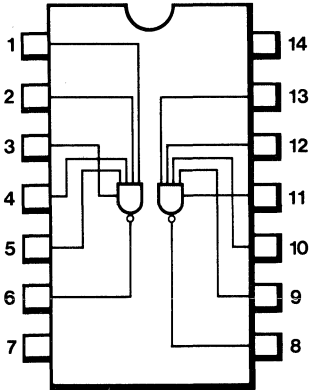




# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

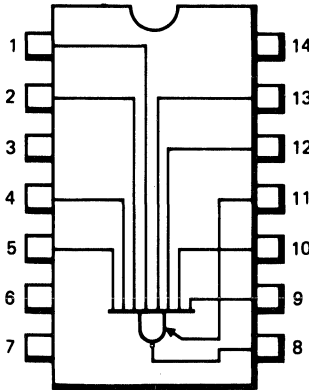
## DIGITAL-DTL

**G1**  
930, 932  
944, 961  
1800, 1801



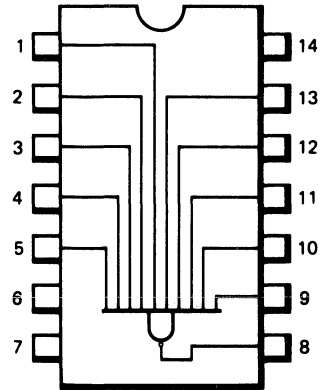
Vcc = Pin 14  
GND = Pin 7

**G2**  
1802, 1803



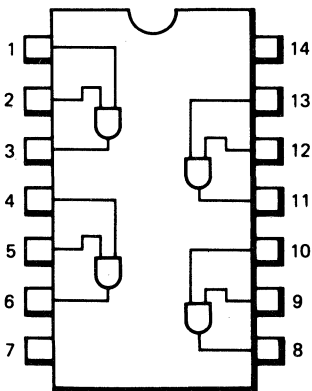
Vcc = Pin 14  
GND = Pin 7

**G3**  
1804, 1805



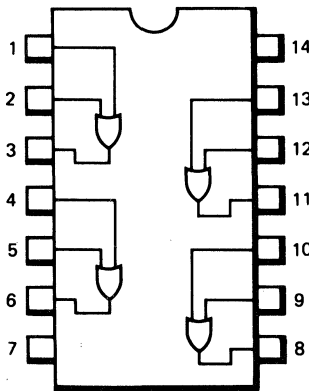
Vcc = Pin 14  
GND = Pin 7

**G4**  
1806, 1807



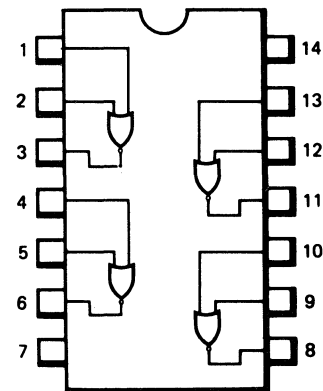
Vcc = Pin 14  
GND = Pin 7

**G5**  
1808, 1809



Vcc = Pin 14  
GND = Pin 7

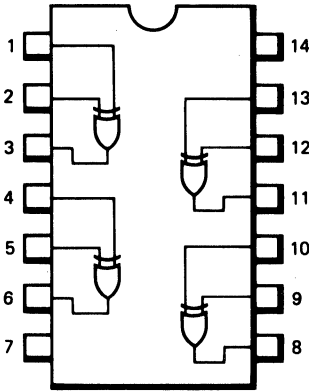
**G6**  
1810, 1811



Vcc = Pin 14  
GND = Pin 7

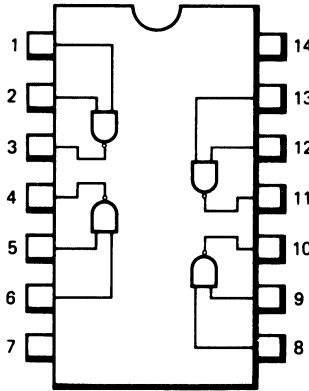
DIGITAL-DTL

**G7**  
1812



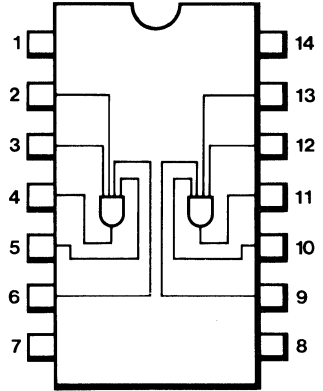
Vcc = Pin 14  
GND = Pin 7

**G8**  
9157, 9158



Vcc = Pin 14  
GND = Pin 7

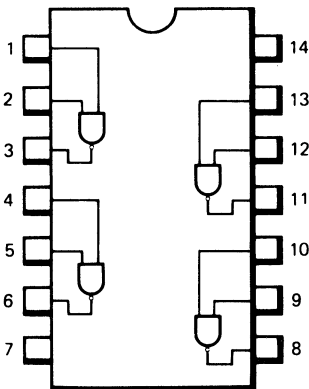
**G9**  
933



No connection required to V<sub>CC</sub> (Pin 14).

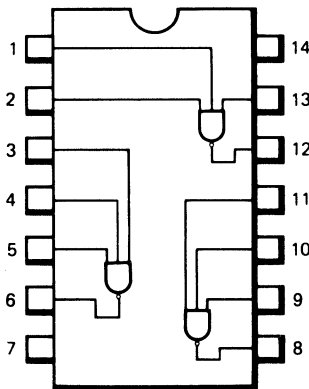
Vcc = Pin 14  
GND = Pin 7

**G10**  
946, 949



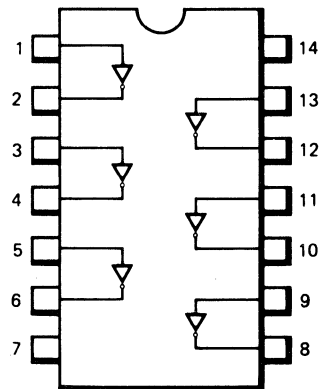
Vcc = Pin 14  
GND = Pin 7

**G11**  
962, 963



Vcc = Pin 14  
GND = Pin 7

**G12**  
9109, 9110, 9112  
9135, 935, 936  
937

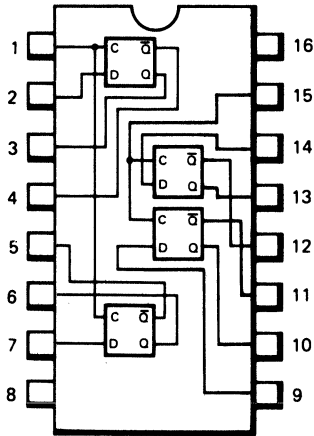


Vcc = Pin 14  
GND = Pin 7

FAIRCHILD LOGIC/CONNECTION DIAGRAMS

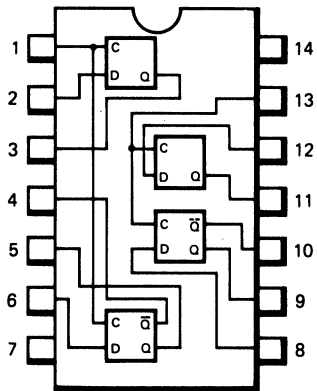
DIGITAL-DTL

**G13**  
**1813**



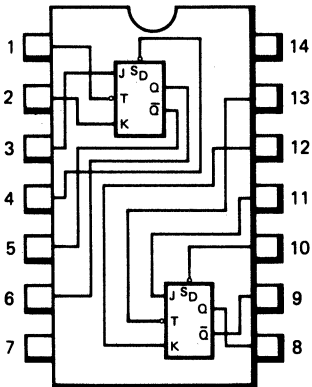
Vcc = Pin 16  
GND = Pin 8

**G14**  
**1814**



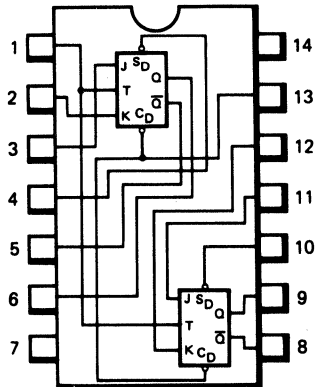
Vcc = Pin 14  
GND = Pin 7

**G15**  
**9093, 9094**



Vcc = Pin 14  
GND = Pin 7

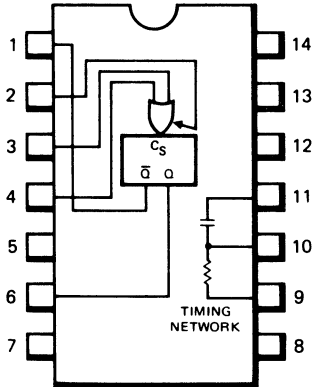
**G16**  
**9097, 9099**



Vcc = Pin 14  
GND = Pin 7

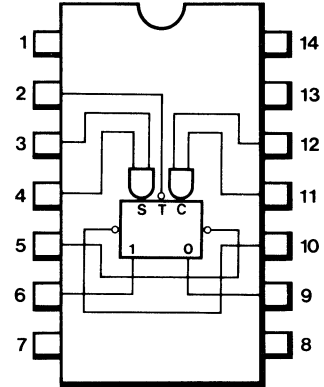
DIGITAL-DTL

**G17**  
941, 951



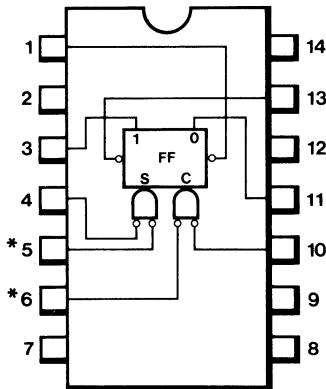
VCC = Pin 14  
GND = Pin 7

**G18**  
945, 948



VCC = Pin 14  
GND = Pin 7

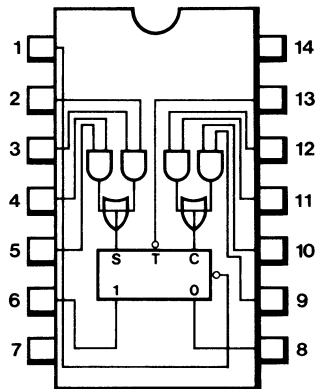
**G19**  
950



\*These inputs are capacitively coupled.

VCC = Pin 14  
GND = Pin 7

**G20**  
9111

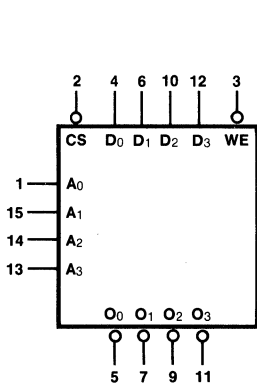


VCC = Pin 14  
GND = Pin 7

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

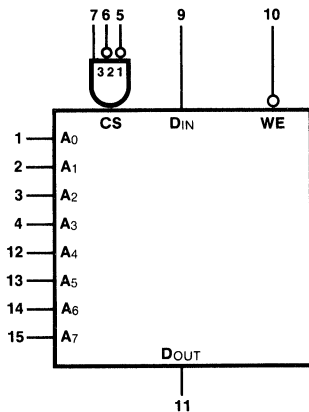
## MEMORY

**M1**  
54LS/74LS89, 54LS/74LS189,  
54LS/74LS289, 7489



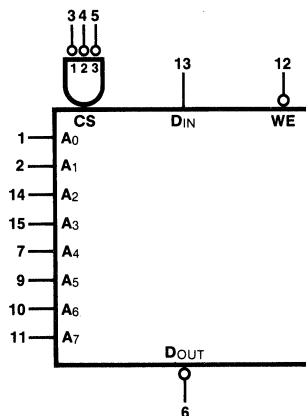
VCC = Pin 16  
GND = Pin 8

**M2**  
93410, 93410A



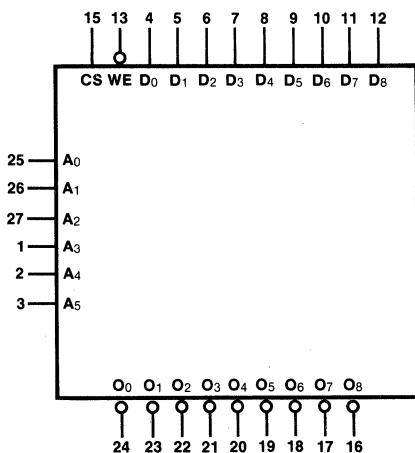
VCC = Pin 16  
GND = Pin 8

**M3**  
93411, 93411A, 93L420,  
93L421, 93421, 93421A



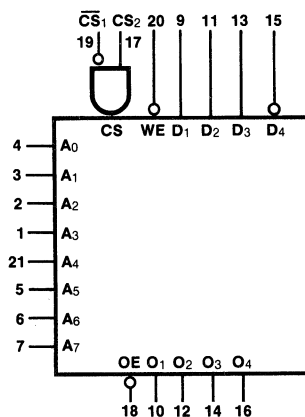
VCC = Pin 16  
GND = Pin 8

**M4**  
93419



VCC = Pin 28  
GND = Pin 14

**M5**  
93412, 93L412  
93422, 93L422

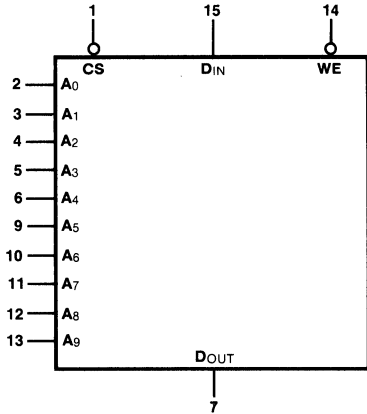


VCC = Pin 22  
GND = Pin 8

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

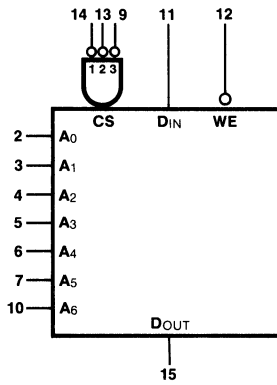
## MEMORY

**M6**  
93415, 93L415, 93415A,  
93425, 93L425, 93425A



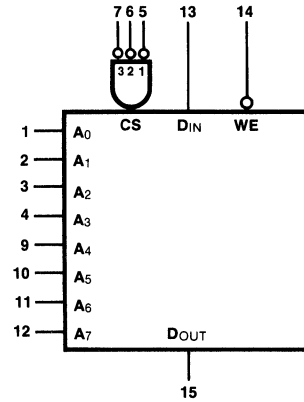
VCC = Pin 16  
GND = Pin 8

**M7**  
10405



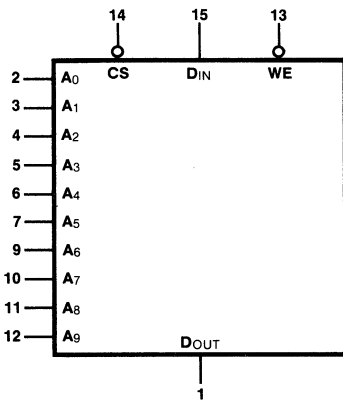
VCC = GND = Pins 1 and 16  
VEE = Pin 8

**M8**  
10410, 10411, 10414  
100414



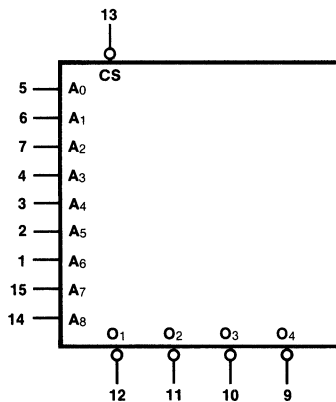
VCC = Pin 16  
VEE = Pin 8

**M9**  
10415, 10415A, 100415



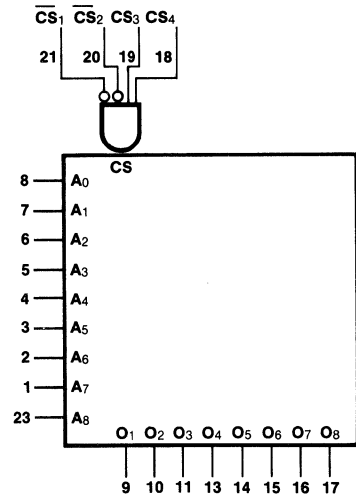
VCC = Pin 16  
VEE = Pin 8

**M10**  
93431, 93441  
93436, 93446



VCC = Pin 16  
VEE = Pin 8

**M11**  
93432, 93442  
93438, 93448

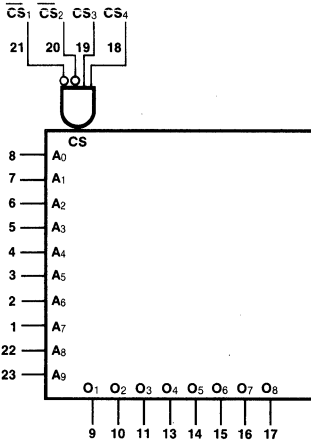


VCC = Pin 24  
GND = Pin 12

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

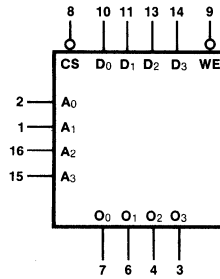
## MEMORY

**M12**  
93454, 93464



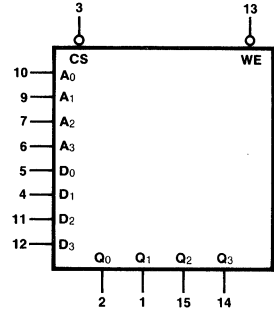
VCC = Pin 24  
GND = Pin 12

**M13**  
95400



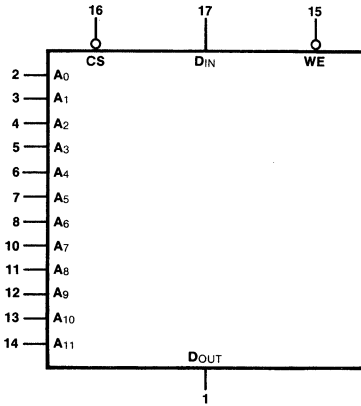
VCC = GND = Pin 5  
VEE = Pin 12

**M14**  
10145A



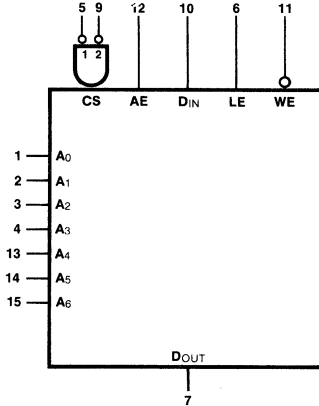
VCC = Pin 16  
GND = Pin 8

**M15**  
10470, 93470, 93471



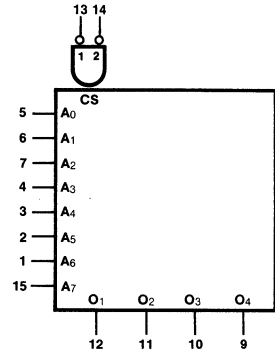
VCC = Pin 18  
VEE = Pin 9

**M16**  
93481, 93481A



VCC = Pin 16  
GND = Pin 8

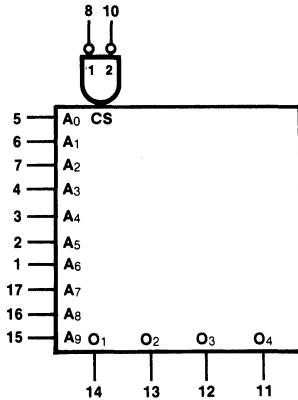
**M17**  
93417, 93427, 93457  
93467



VCC = Pin 16  
GND = Pin 8

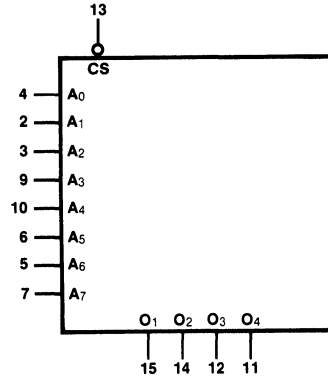
MEMORY

**M18**  
93452, 93453



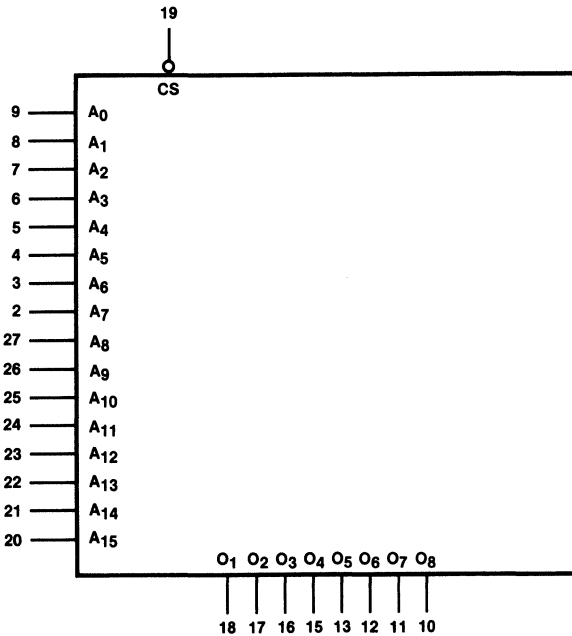
V<sub>CC</sub> = Pin 18  
GND = Pin 9

**M19**  
10416, 100416



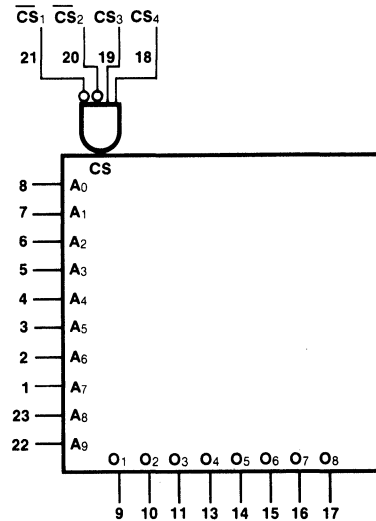
V<sub>CP</sub> = GND (Read Only) = Pin 1  
V<sub>CP</sub> = +12 V (Programming Only) = Pin 1  
V<sub>CC</sub> = GND = Pin 16  
V<sub>EE</sub> = Pin 8

**M20**  
93458, 93459



V<sub>CC</sub> = Pin 28  
GND = Pin 14  
V<sub>P</sub> = Pin 1

**M21**  
93450, 93451



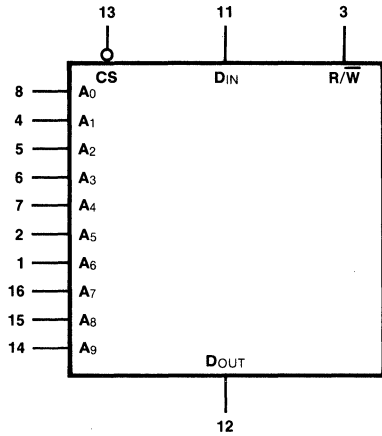
V<sub>CC</sub> = Pin 24  
GND = Pin 12



# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

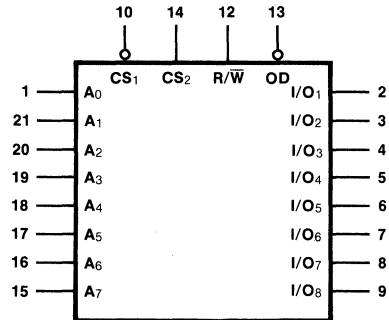
## MEMORY

**M22**  
2102, 2102L,  
21L02, 3542



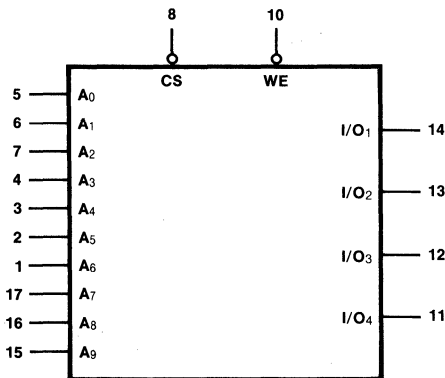
VSS = Pin 9  
VDD = Pin 10

**M23**  
3539



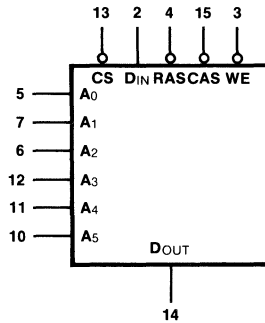
VDD = Pin 22  
VSS = Pin 11

**M24**  
F2114



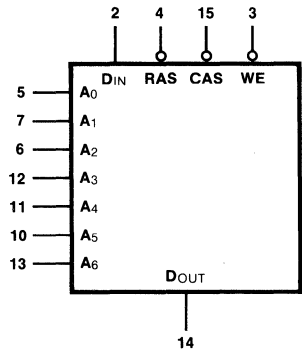
VCC = Pin 18  
GND = Pin 9

**M25**  
M4027



VSS = Pin 16  
VCC = Pin 9  
VDD = Pin 8  
VBB = Pin 1

**M26**  
F16K

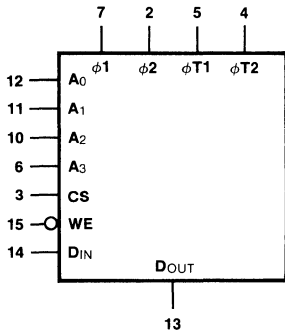


VSS = Pin 16  
VCC = Pin 9  
VDD = Pin 8  
VBB = Pin 1

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

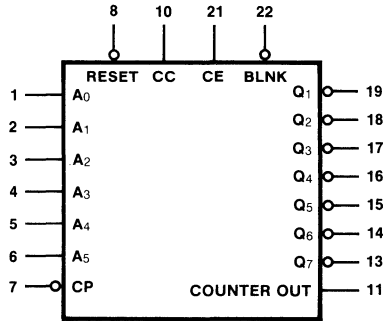
## MEMORY

**M27**  
**F464**



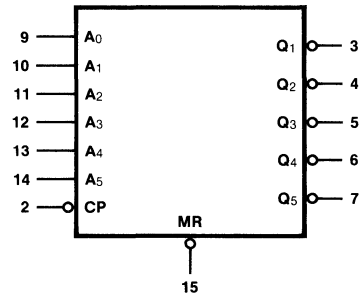
V<sub>DD</sub> = Pin 1  
V<sub>CC</sub> = Pin 16  
V<sub>SS</sub> = Pin 8  
V<sub>BB</sub> = Pin 9

**M28**  
**3257**



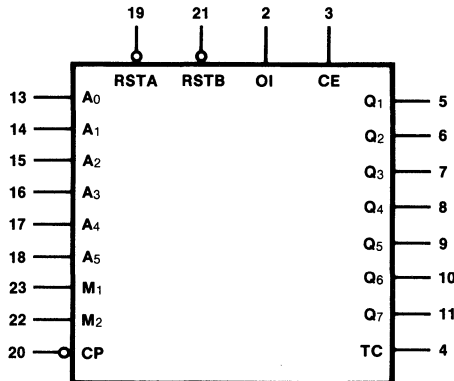
V<sub>SS</sub> = Pin 24  
V<sub>GG</sub> = Pin 23  
V<sub>DD</sub> = Pin 12

**M29**  
**3258**



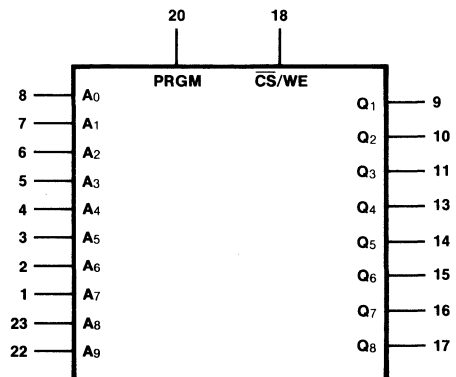
V<sub>SS</sub> = Pin 16  
V<sub>DD</sub> = Pin 8  
V<sub>GG</sub> = Pin 1

**M30**  
**3260**



V<sub>SS</sub> = Pin 24  
V<sub>GG</sub> = Pin 1  
V<sub>DD</sub> = Pin 12

**M31**  
**F2708**

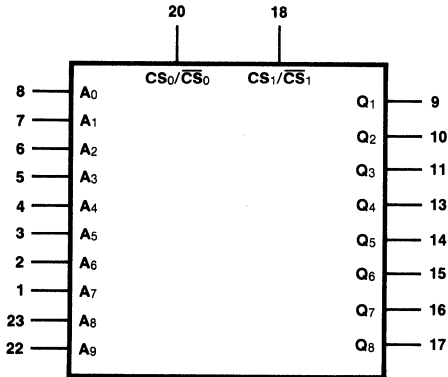


V<sub>DD</sub> = Pin 19  
V<sub>SS</sub> = Pin 12  
V<sub>CC</sub> = Pin 24  
V<sub>BB</sub> = Pin 21

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

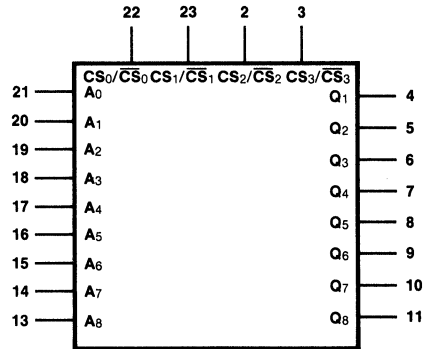
## MEMORY

**M32**  
**F3508**



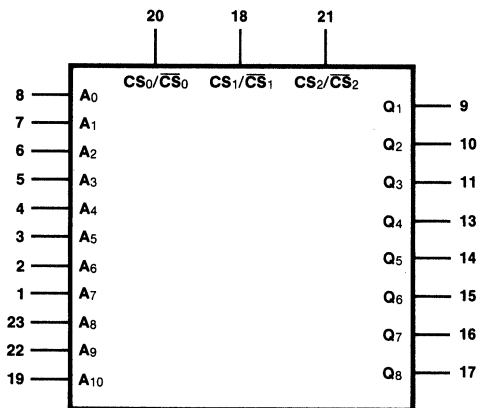
V<sub>CC</sub> = Pin 24  
V<sub>SS</sub> = Pin 12

**M33**  
**3514, 3515**



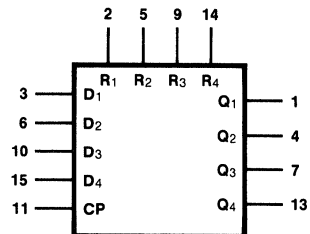
V<sub>SS</sub> = Pin 24  
V<sub>DD</sub> = Pin 12  
V<sub>GG</sub> = Pin 1

**M34**  
**F3516E**



V<sub>CC</sub> = Pin 24  
V<sub>SS</sub> = Pin 12

**M35**  
**3342, 3347, 3357**

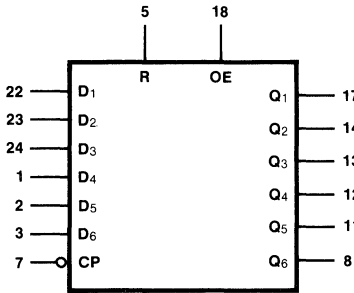


V<sub>SS</sub> = Pin 16  
V<sub>DD</sub> = Pin 8  
V<sub>GG</sub> = Pin 12

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

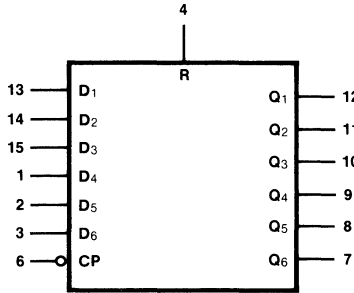
## MEMORY

**M36**  
**3348**



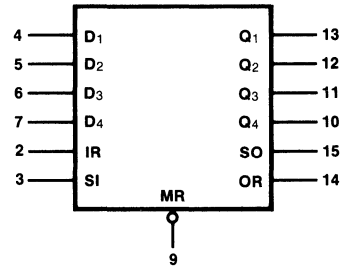
V<sub>SS</sub> = Pin 20  
V<sub>GG</sub> = Pin 6

**M37**  
**3349**



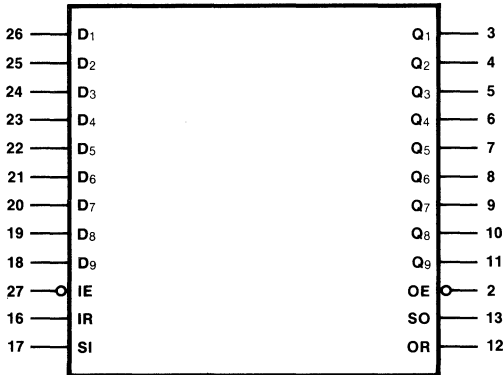
V<sub>CC</sub> = Pin 16  
V<sub>GG</sub> = Pin 5

**M38**  
**3341**



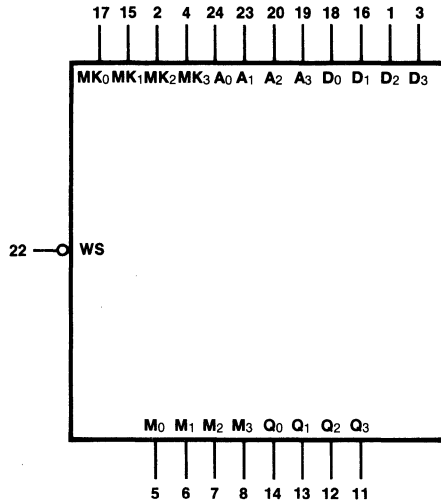
V<sub>SS</sub> = Pin 16  
V<sub>DD</sub> = Pin 8  
V<sub>GG</sub> = Pin 1

**M39**  
**3351**



V<sub>SS</sub> = Pin 28  
V<sub>DD</sub> = Pin 14  
V<sub>GG</sub> = Pin 1

**M40**  
**100142**

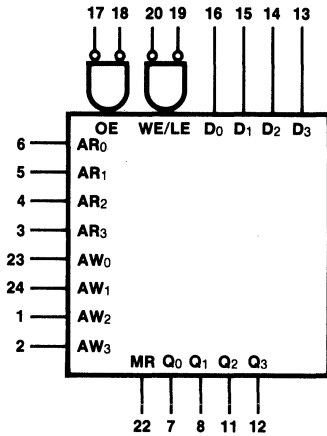


V<sub>CC</sub> = Pin 9  
V<sub>CCA</sub> = Pin 10  
V<sub>EE</sub> = Pin 21

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

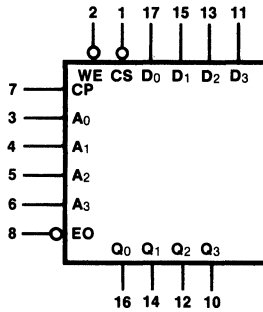
## MEMORY

**M41**  
**100145A**



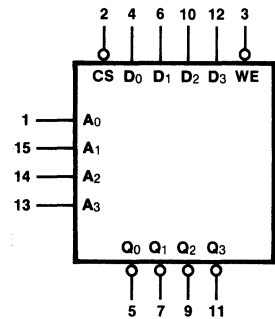
VCC = Pin 9  
VCCA = Pin 10  
VEE = Pin 21

**M42**  
**4710B**



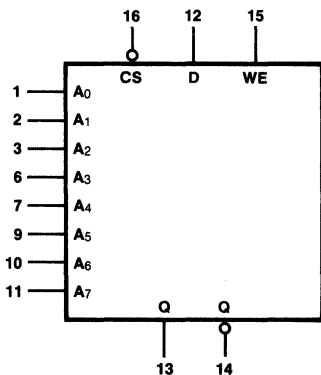
VDD = Pin 18  
VSS = Pin 9

**M43**  
**4725B**



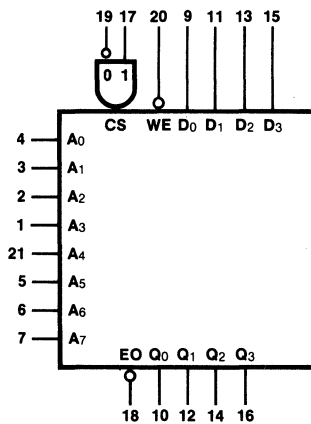
VDD = Pin 16  
VSS = Pin 8

**M44**  
**4720B**



VDD = Pin 5  
VSS = Pin 8  
NC = Pin 4

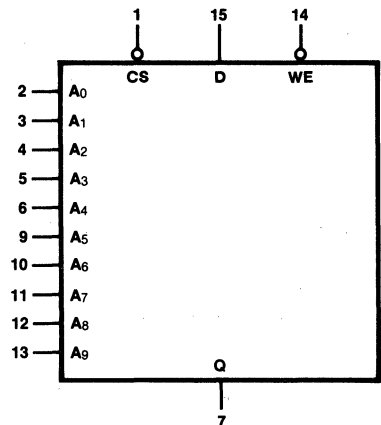
**M45**  
**4721B**



Flatpak pinout not shown.

VDD = Pin 22  
VSS = Pin 8

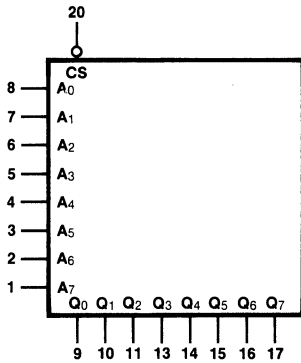
**M46**  
**4736B**



VDD = Pin 16  
VSS = Pin 8

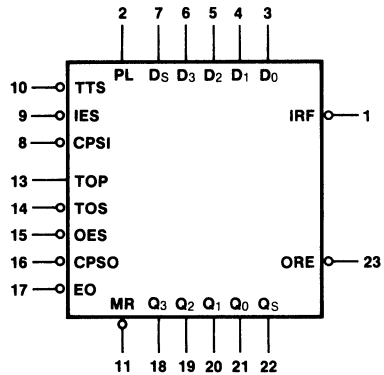
MEMORY

**M47  
4735B**



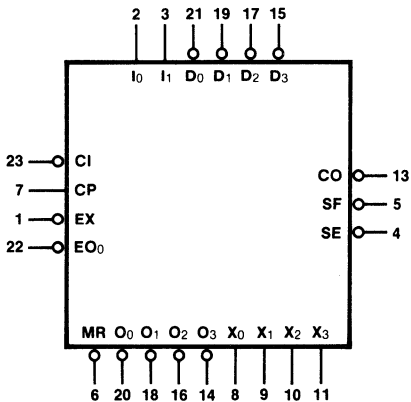
V<sub>DD</sub> = Pin 24  
 V<sub>SS</sub> = Pin 12  
 NC = Pins 18, 19, 21, 22, 23

**M48  
4703B**



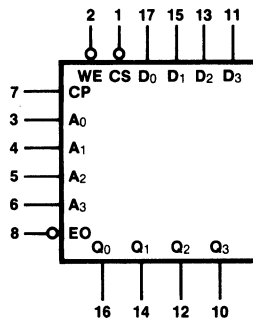
V<sub>DD</sub> = Pin 24  
 V<sub>SS</sub> = Pin 12

**M49  
4706B**



V<sub>DD</sub> = Pin 24  
 V<sub>SS</sub> = Pin 12

**M50  
9410**

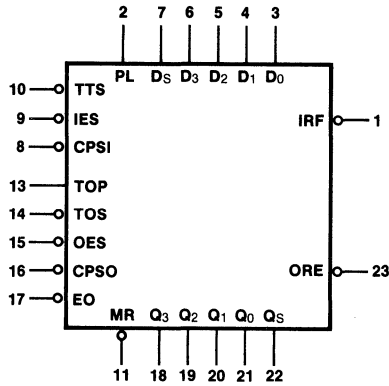


V<sub>CC</sub> = Pin 18  
 GND = Pin 9

# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

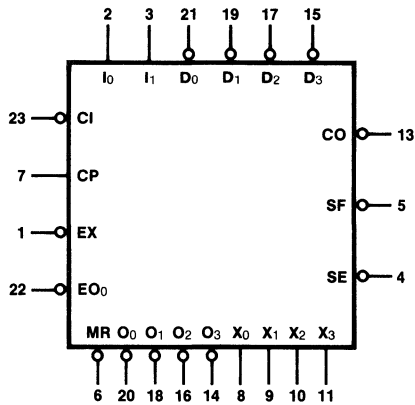
## MEMORY

**M51  
9403**



V<sub>CC</sub> = Pin 24  
GND = Pin 12

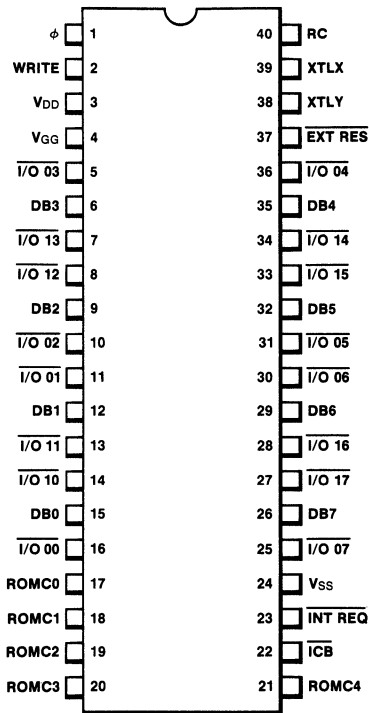
**M52  
9406**



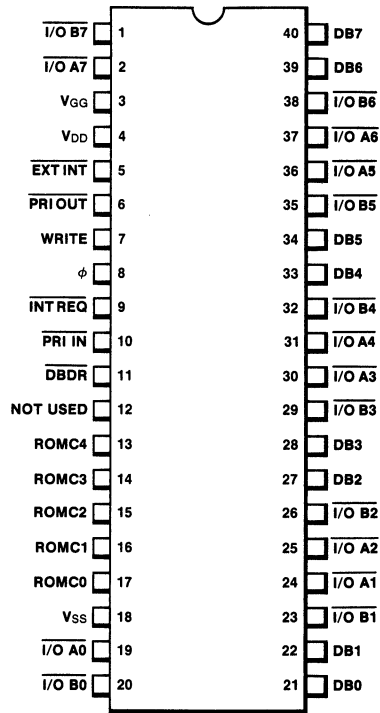
V<sub>CC</sub> = Pin 24  
GND = Pin 12

MICROCOMPUTERS

**P1  
F3850**



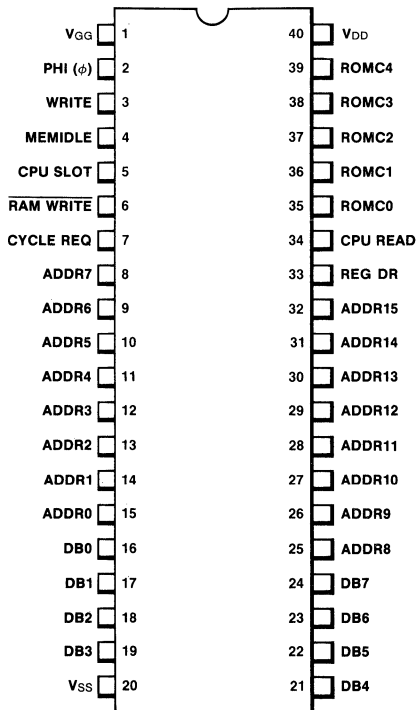
**P2  
F3851  
F3861**



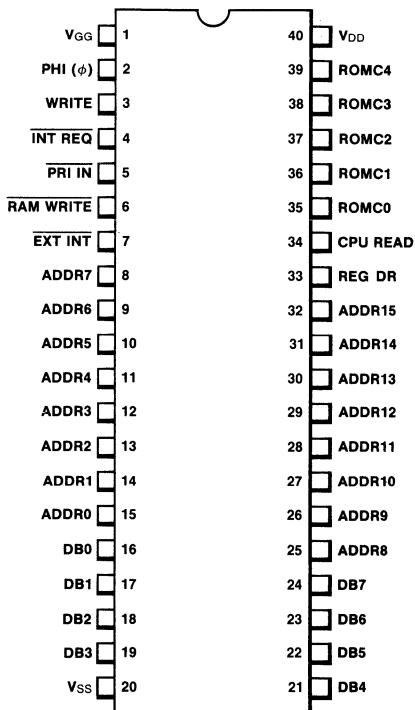


MICROCOMPUTERS

**P3  
F3852**

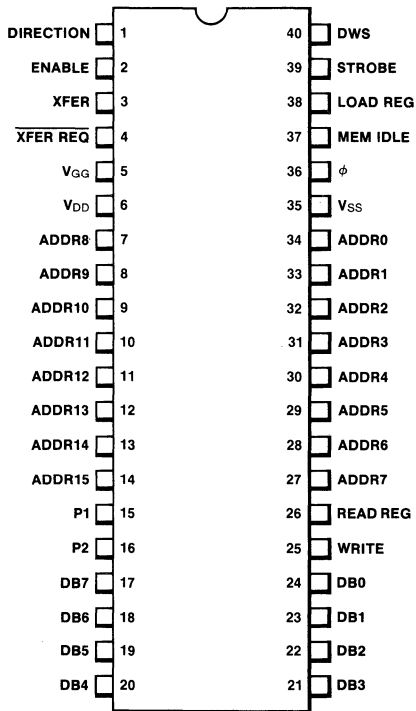


**P4  
F3853**

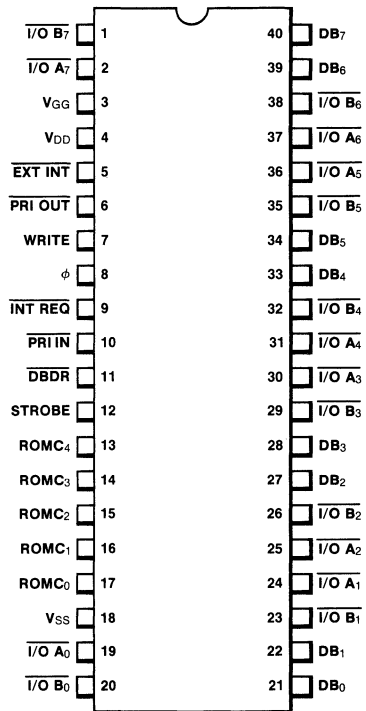


MICROCOMPUTERS

**P5  
F3854**

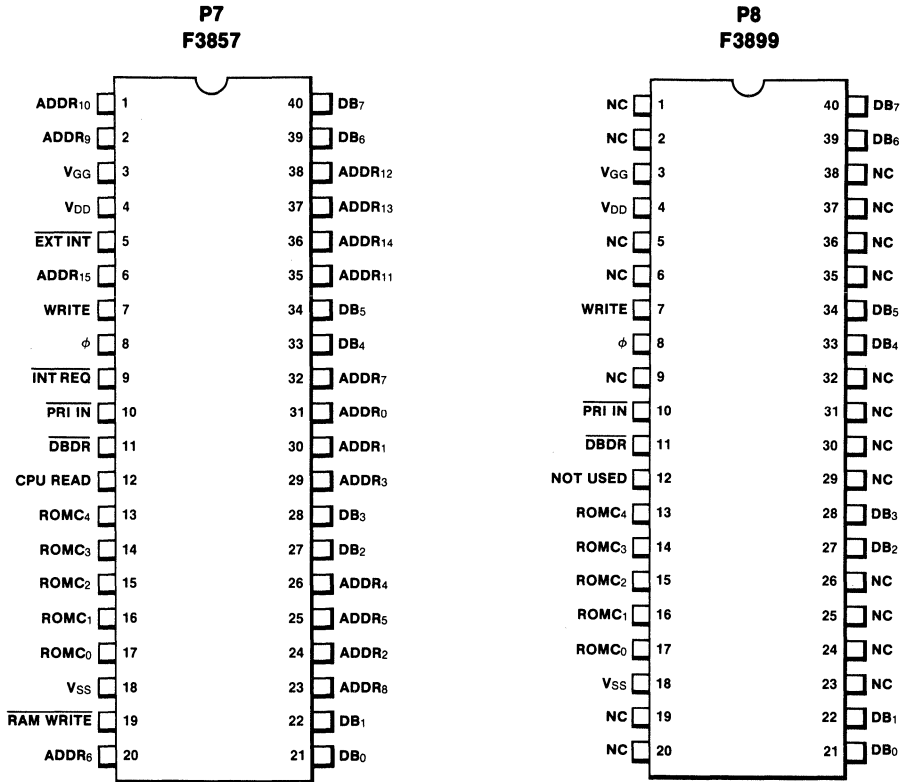


**P6  
F3856  
F3871**



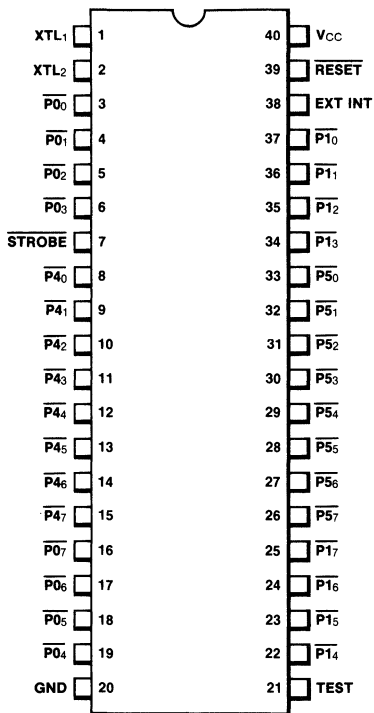
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## MICROCOMPUTERS

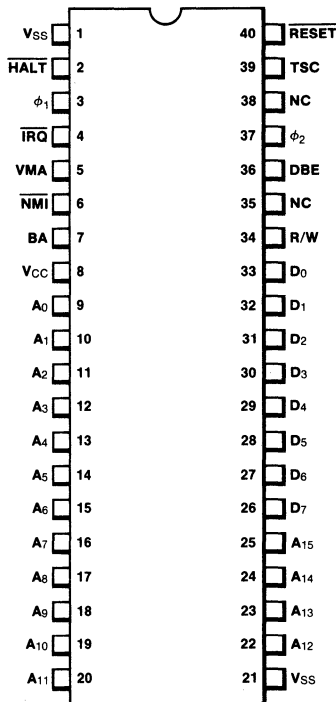


MICROCOMPUTERS

**P9  
F3870**



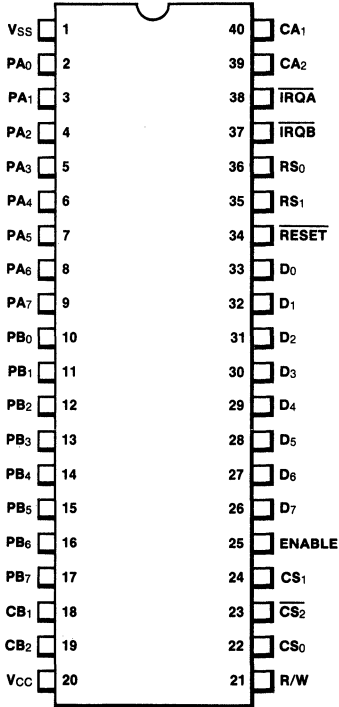
**P10  
F6800  
F68A00  
F68B00**



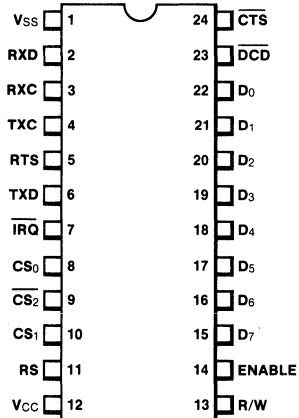
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## MICROCOMPUTERS

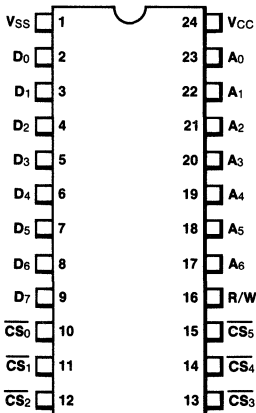
**P11**  
**F6820/21**  
**F68A21**  
**F68B21**



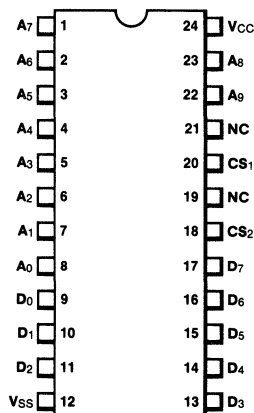
**P12**  
**F6850**  
**F68A50**  
**F68B50**



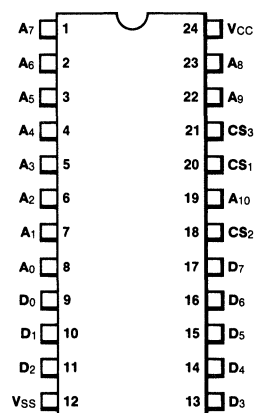
**P13**  
**F6810**  
**F68A10**  
**F68B10**



**P14**  
**F68308**  
**F68A308**

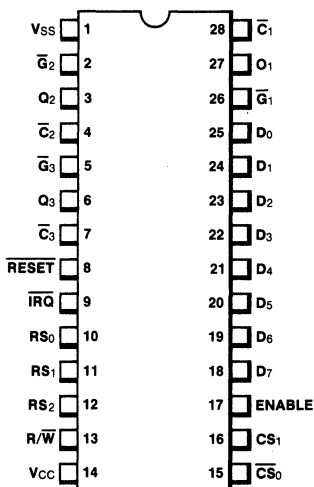


**P15**  
**F68316**  
**F68A316**  
**F68B316**

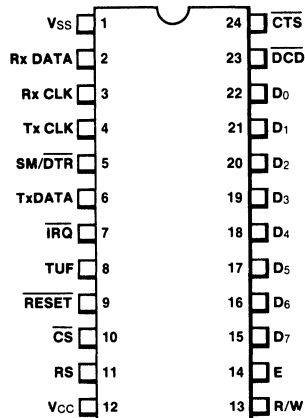


MICROCOMPUTERS

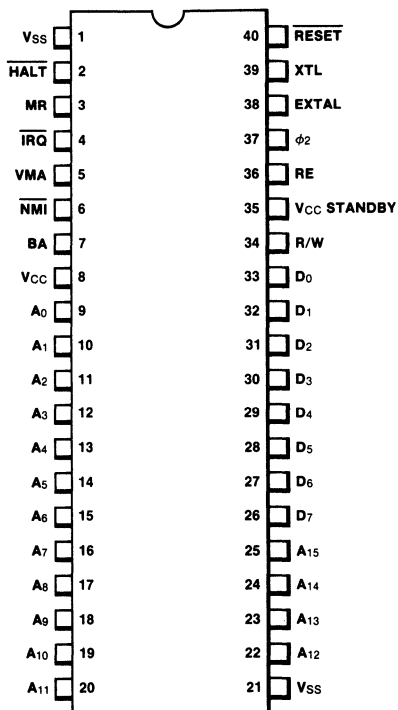
**P16**  
**F6840**  
**F68A40**



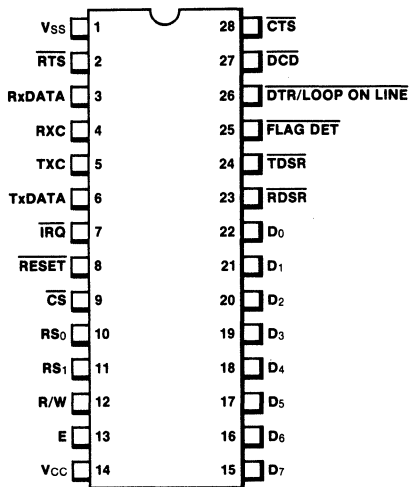
**P17**  
**F6852**  
**F68A52**  
**F68B52**



**P19**  
**F6802**  
**F68A02**  
**F68B02**



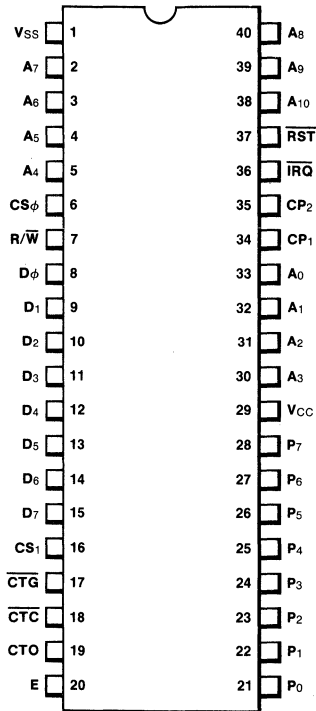
**P18**  
**F6854**  
**F68A54**



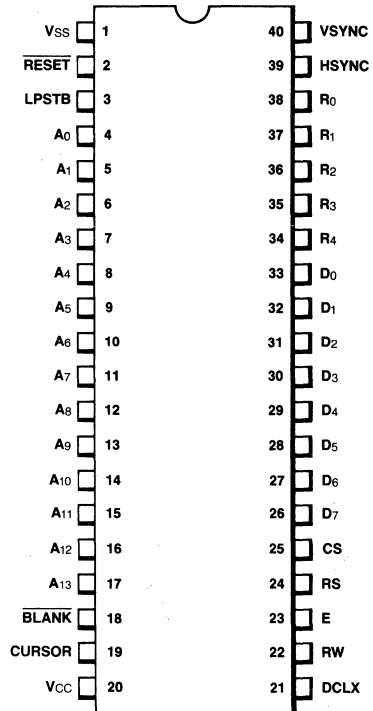
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## MICROCOMPUTERS

**P20  
F6846  
F68A46**

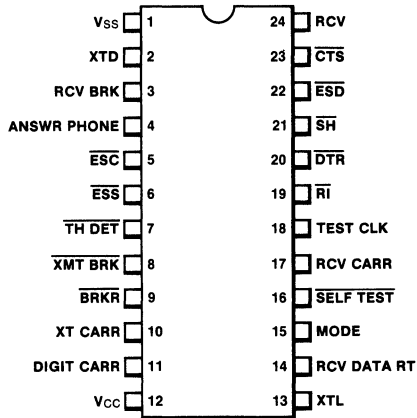


**P22  
F6840**

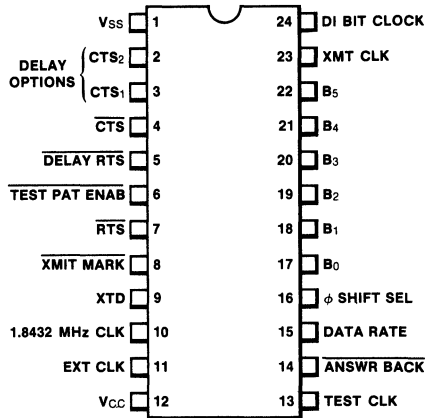


MICROCOMPUTERS

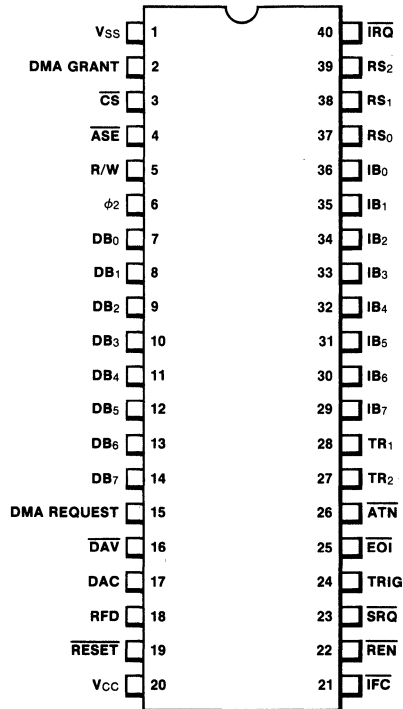
**P23  
F6860**



**P24  
F6862**



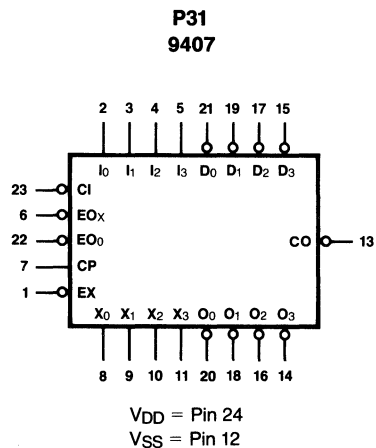
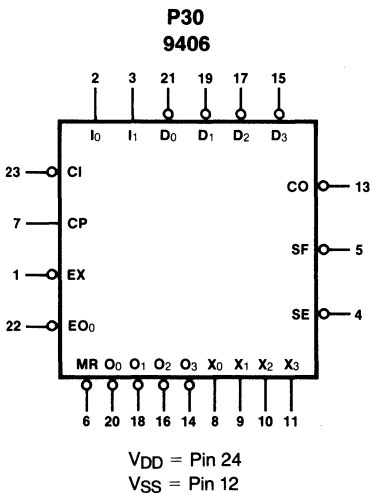
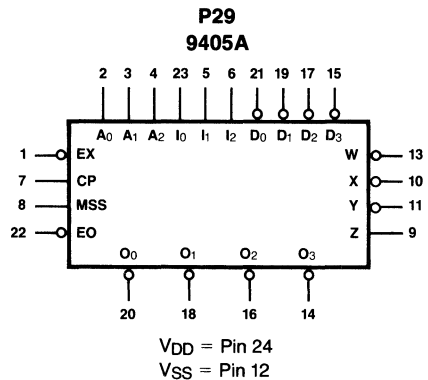
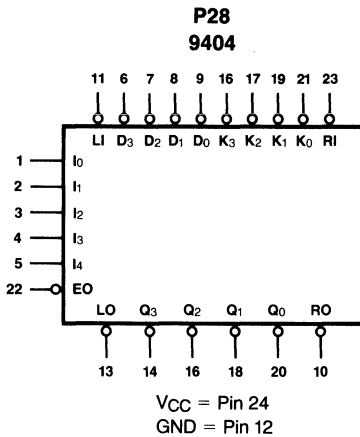
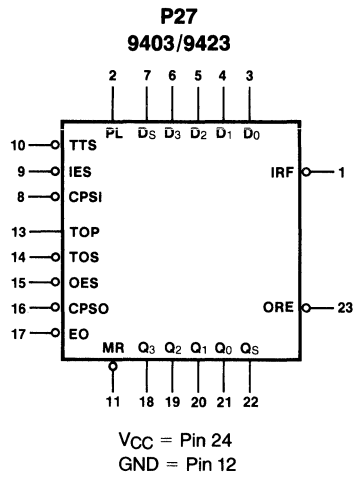
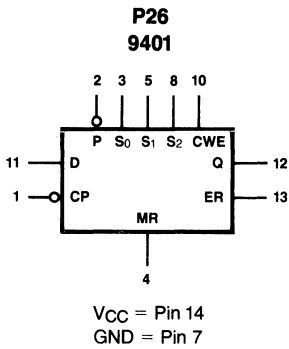
**P25  
F68488**





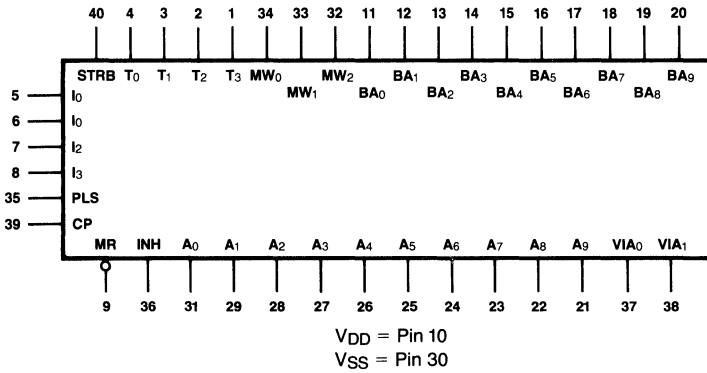
# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## MICROCOMPUTERS

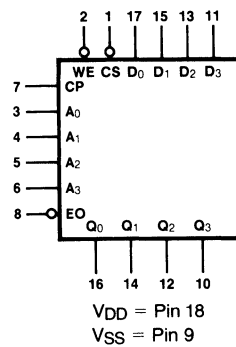


MICROCOMPUTERS

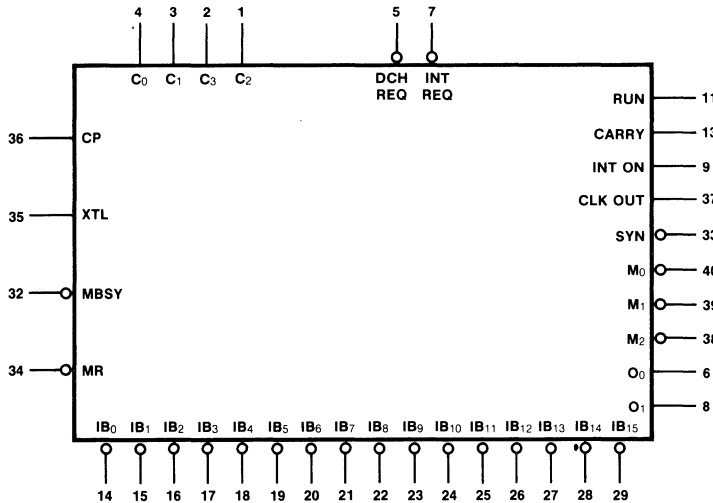
**P32**  
**9408/9408A**



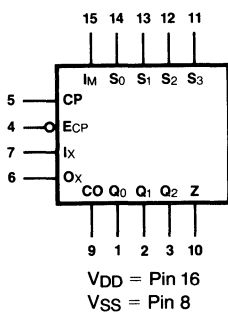
**P33**  
**9410**



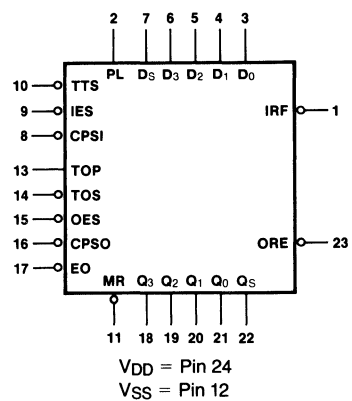
**P34**  
**9440**



**P35**  
**4702B**

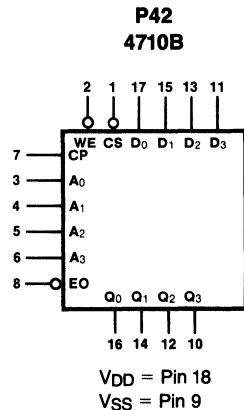
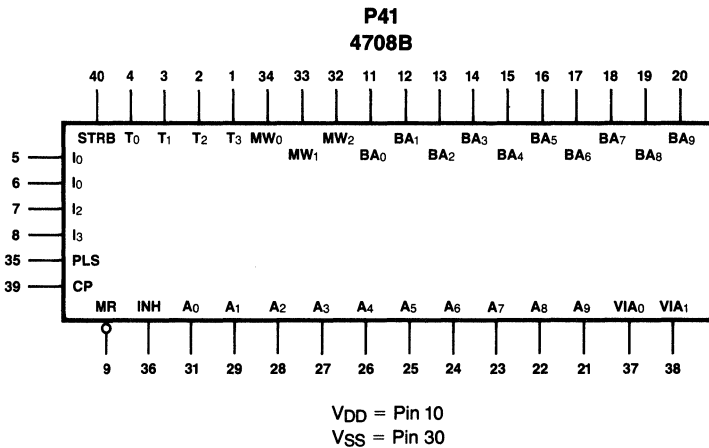
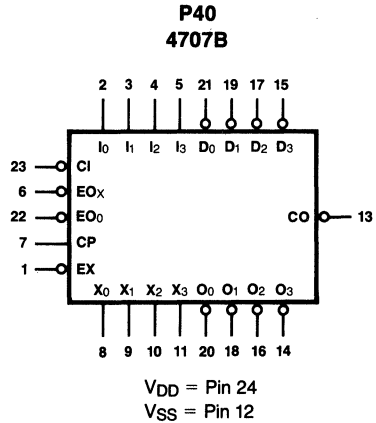
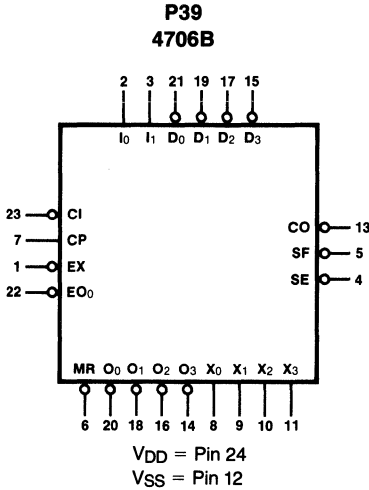
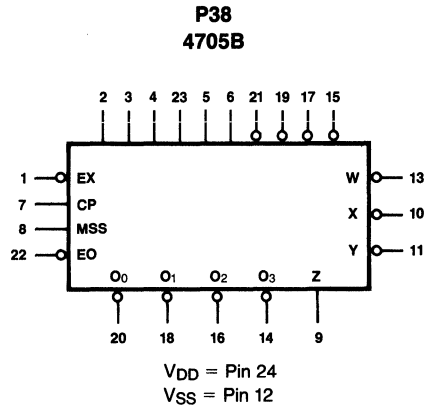
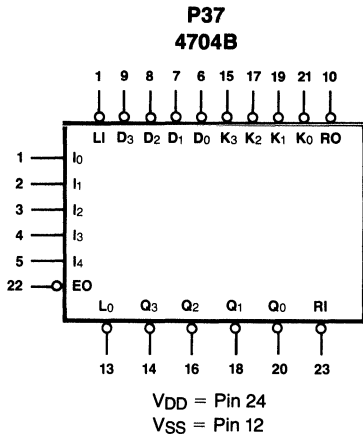


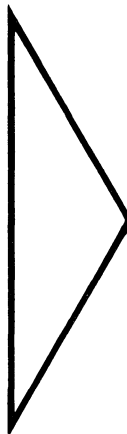
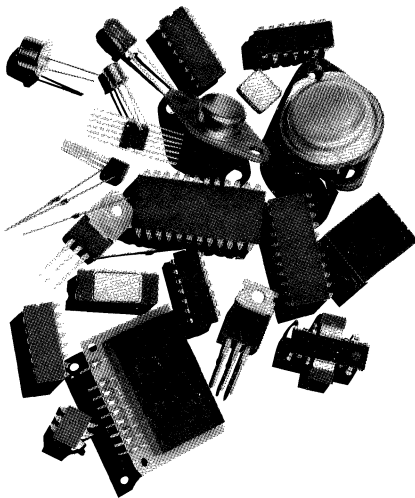
**P36**  
**4703B**



# FAIRCHILD LOGIC/CONNECTION DIAGRAMS

## MICROCOMPUTERS





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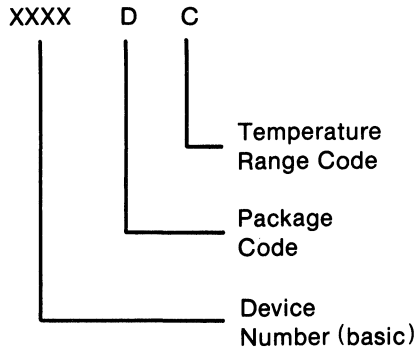
**ORDERING INFORMATION**

**DISCRETE PRODUCTS**

Fairchild discrete products may be ordered by the Device Number listed in either the Product Index (Section 1) or the selection guides (Sections 2 through 4).

**INTEGRATED CIRCUITS**

Specific ordering codes are given in the Product Index in Section 1. The selection guides given in Section 5 through 11 list only "basic" Device Numbers. This basic number is used to form part of a simplified purchasing code where the package style and temperature range are defined as follows:



Coding will differ on second-source devices. If questions arise on the proper ordering code on any Fairchild device, check with your local Fairchild Salesperson or Representative before ordering.

**Temperature Range**

Four basic temperature grades are in common use:

C = Commercial  
 0° C to +70/75° C (exc. CMOS)  
 -40° C to +85° C (CMOS)

V = Vehicular  
 -40° C to +85° C

L = Limited Military  
 -20° C to +85° C (LIC)  
 -55° C to +85° C (MOS)

M = Military  
 -55° C to +125° C

## FAIRCHILD ORDERING INFORMATION AND PACKAGE OUTLINES

### ORDERING INFORMATION (Cont'd)

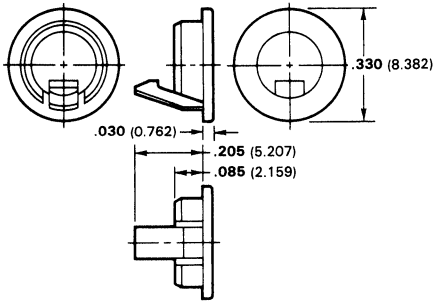
#### Package Code

One letter represents the basic package style. Different package outlines exist within each package style to accommodate varying die sizes and number of leads.

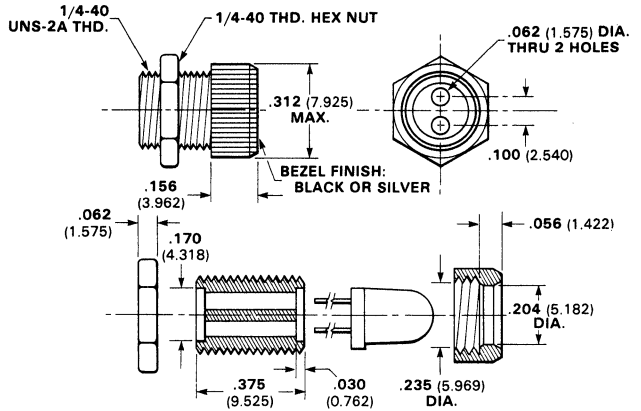
- D — Ceramic/Hermetic Dual In-line  
QA, QB, TO-116, 6A, 6B, 6D, 6E, 6F, 6I, 6J, 6M, 6N, 6Q, 6Z, 7A, 7B, 7D, 7F, 7H, 7I, 7L, 7M, 7R, 7Y, 8E, 8F, 8I, 8R, 8T
  
- E — Epoxy Cylindrical  
TO-105, TO-106
  
- F — Flatpak  
TO-86, TO-91, 3D, 3F, 3I, 3M, 4B, 4L, 4M, 4Q, 4R, 8U
  
- H — Metal Can (TO-5 type)  
TO-5, TO-18, TO-33, TO-39, TO-52, TO-71, TO-72, TO-78, TO-96, TO-99, TO-100, TO-101, 5B, 5E, 5F, 5G, 5S, 5U
  
- J — Metal Power Package  
TO-66
  
- K — Metal Power Package  
TO-3
  
- P — Plastic Dual In-line  
TO-116, 4K, 6V, 8K, 8P, 9A, 9B, 9C, 9H, 9J, 9M, 9N, 9U, 9Y, 9Z
  
- R — Ceramic Mini-DIP  
6T
  
- T — Plastic Mini-DIP  
9T, 9V (T1), 9V (T2), 9V (T3), 9W (P3), 9W (P4), 9W (P5), 9W (P6)
  
- H — Plastic Power Package  
TO-220
  
- U1 — Power Watt, Dynawatt  
TO-220, 8Y, 8Z
  
- W — Epoxy  
TO-92

# FAIRCHILD PACKAGE OUTLINES

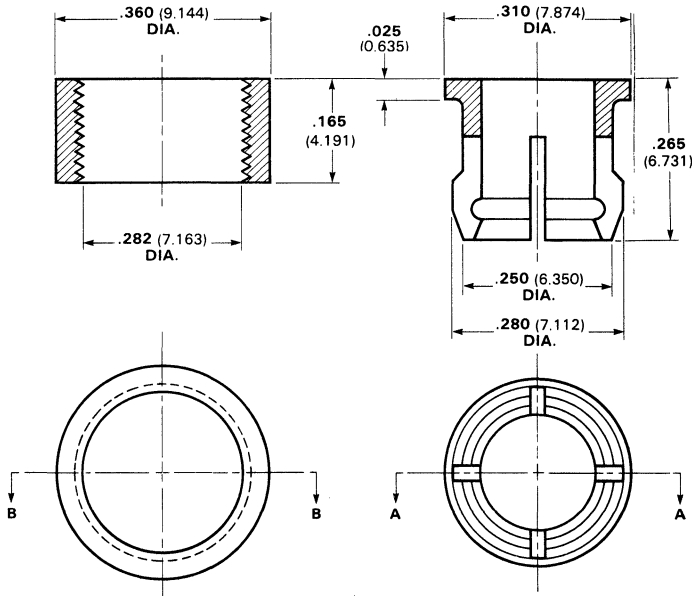
**Opto - 1**



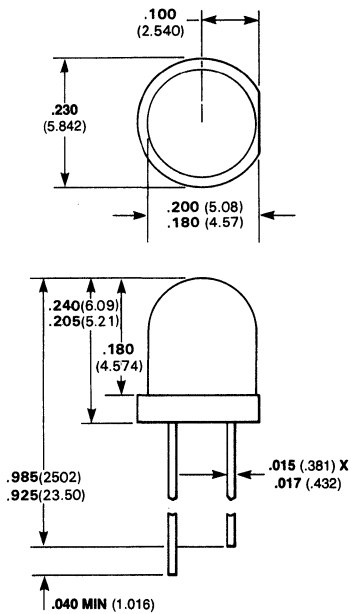
**Opto - 2**



**Opto - 3**



**Opto - 4**



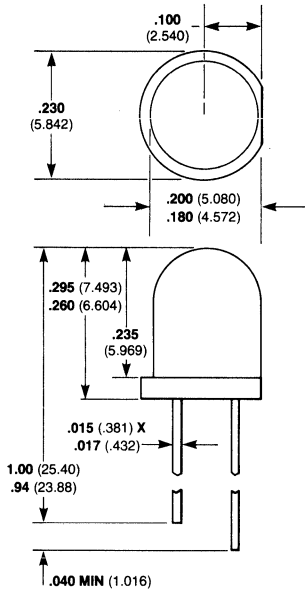
**NOTE:**  
Tolerance unless specified =  $\pm .015 (\pm .381)$

All dimensions in inches (bold) and millimeters (parentheses)

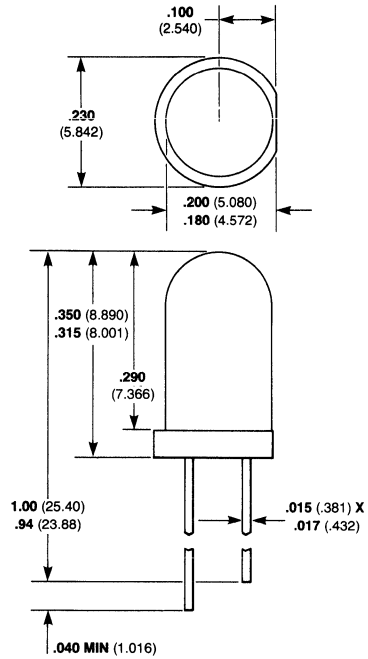


# FAIRCHILD PACKAGE OUTLINES

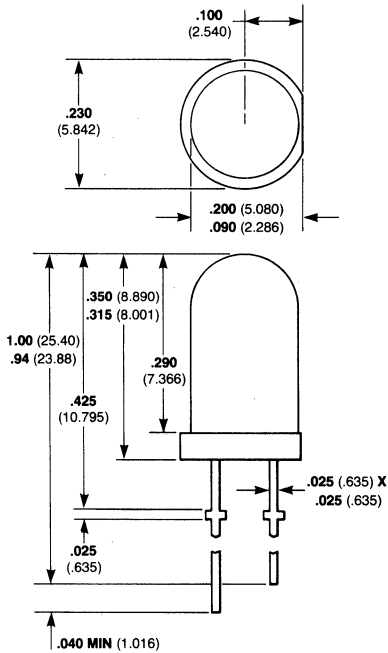
### Opto-5



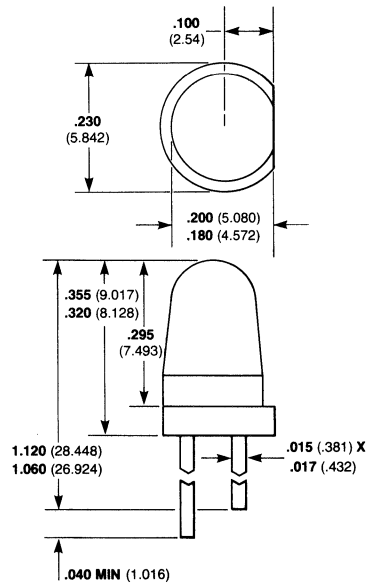
### Opto-6



### Opto-7



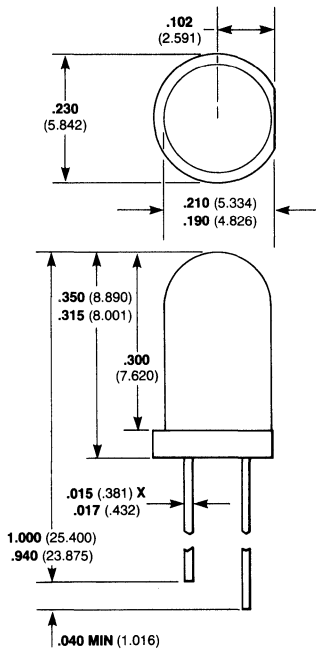
### Opto-8



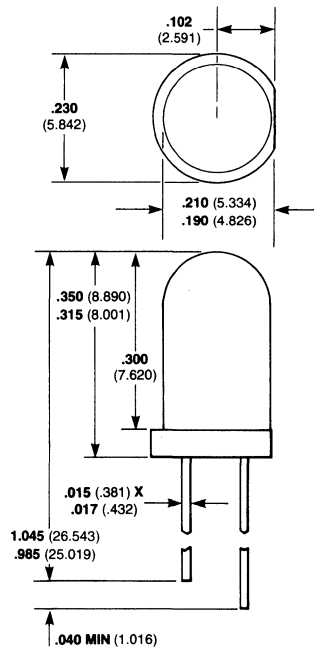
All dimensions in inches (bold) and millimeters (parentheses)  
Tolerance unless specified =  $\pm .015$  ( $\pm .381$ )

# FAIRCHILD PACKAGE OUTLINES

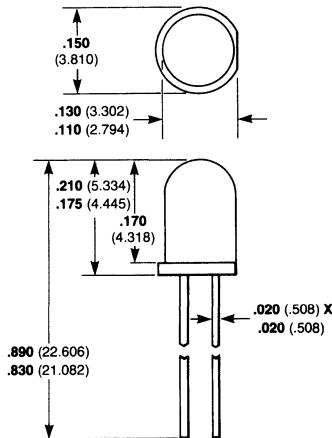
## Opto - 9



## Opto - 10



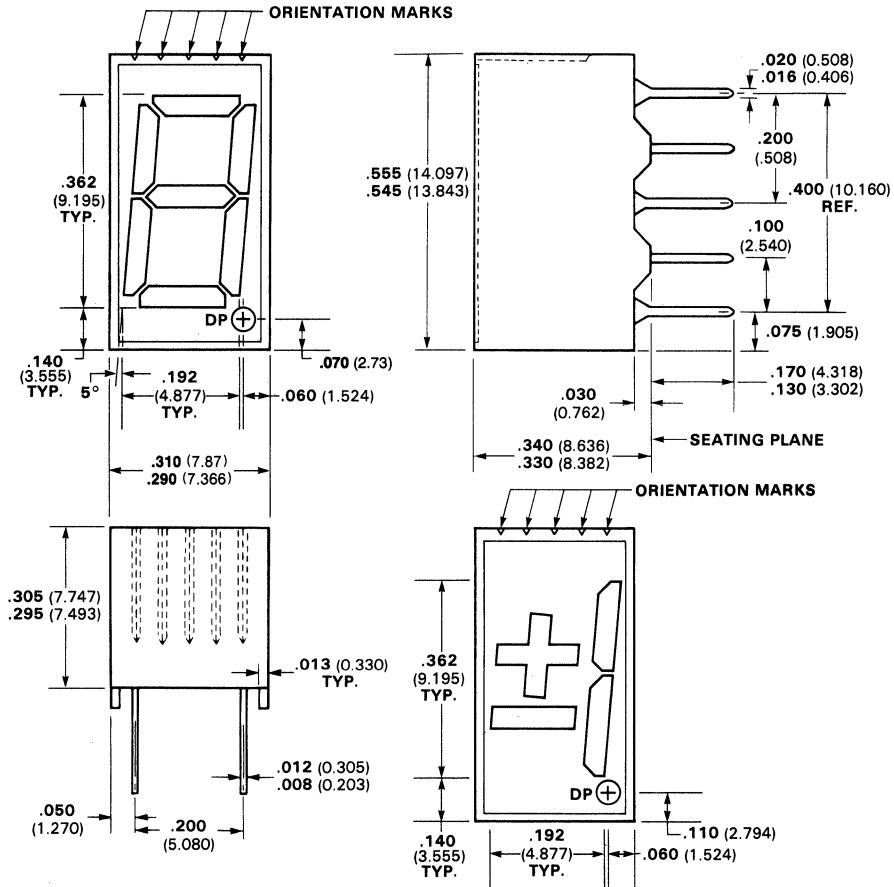
## Opto - 11



All dimensions in inches (bold) and millimeters (parentheses)  
Tolerance unless specified =  $\pm .015$  ( $\pm .381$ )

# FAIRCHILD PACKAGE OUTLINES

## Opto - 12



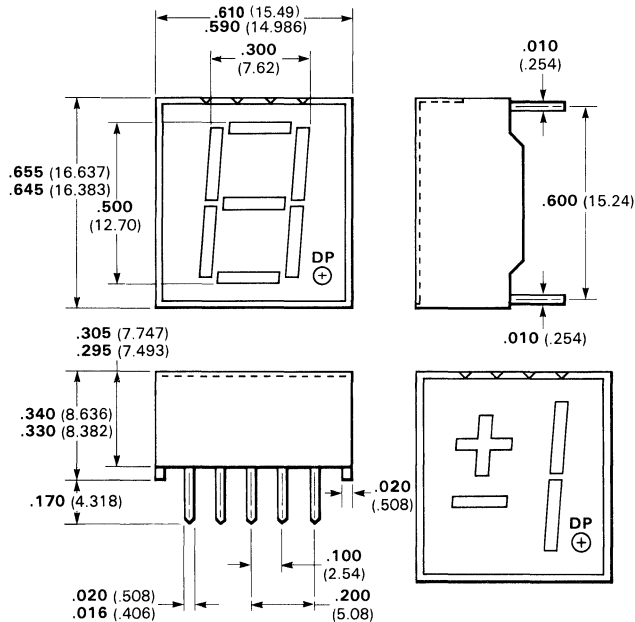
### NOTES:

- For polarity indication the top surface is ribbed.
- The unit LED segments cannot necessarily be seen through the lens cap.
- Lens cap color is red for red LED.
- Pins 1 and 6 are common.
- All dimensions are  $\pm .015$  inch.

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## Opto - 13



**NOTES:**

For polarity indication the surface is ribbed.

The unlit LED segments cannot necessarily be seen through the lens cap.

Lens cap color is red for red LED

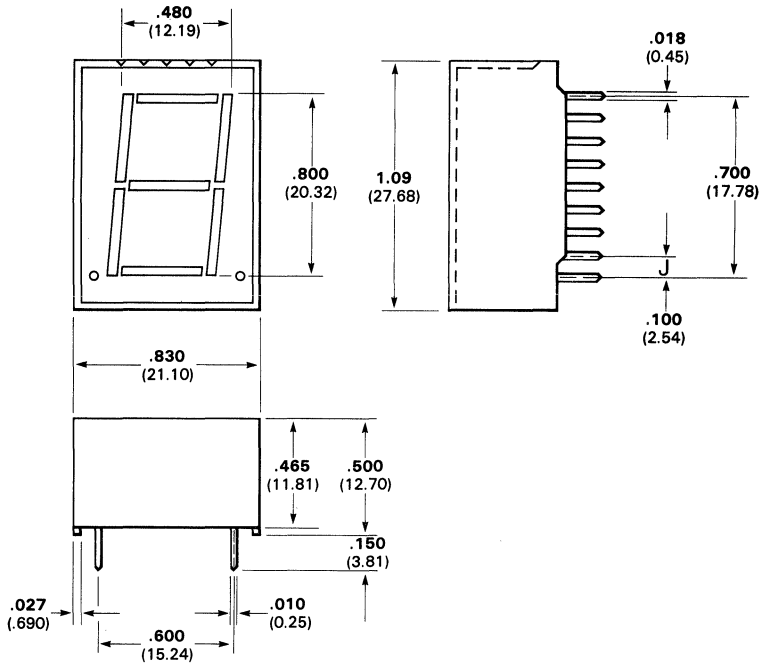
Pins 3 and 8 are common

All dimensions are ±.015 inch

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## Opto - 14



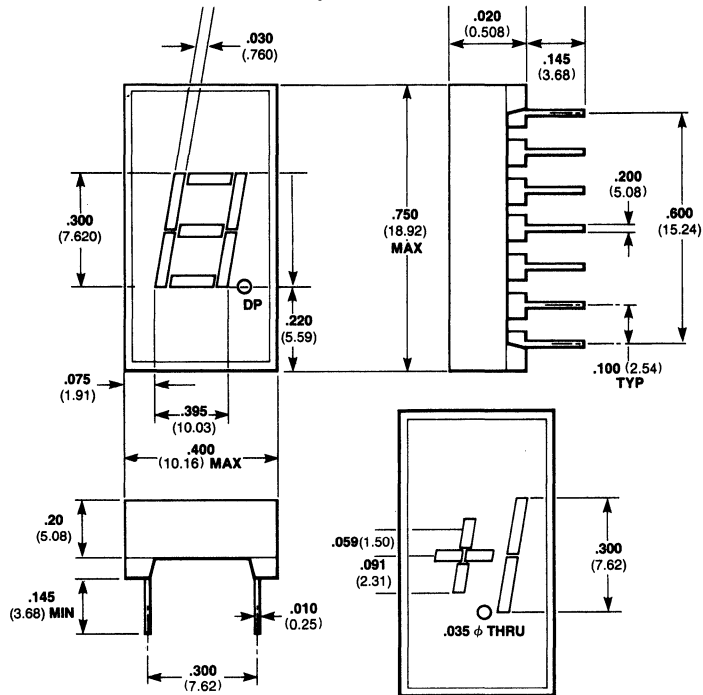
### NOTES:

- For polarity indication the surface is ribbed.
- The unlit LED segments cannot necessarily be seen through the lens cap.
- Lens cap color is red for red LED
- Pins 4, 6, 12 and 17 are common
- All dimensions are  $\pm 0.015$  inch

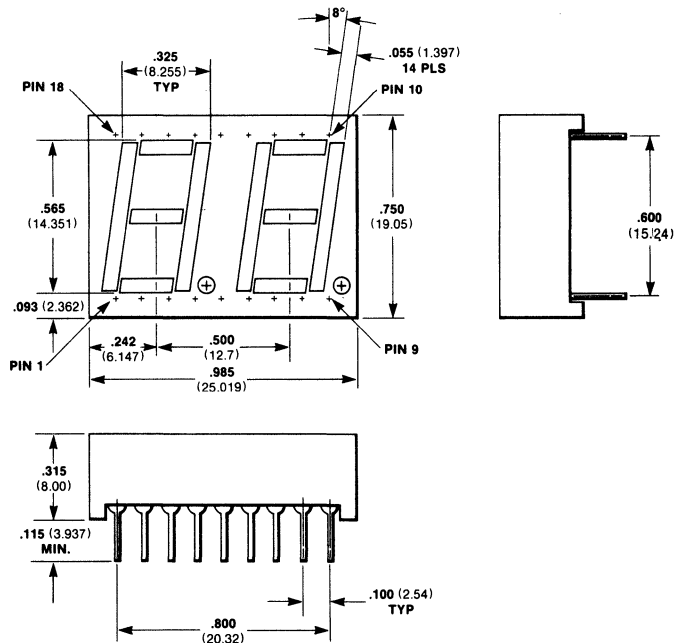
All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## Opto - 15



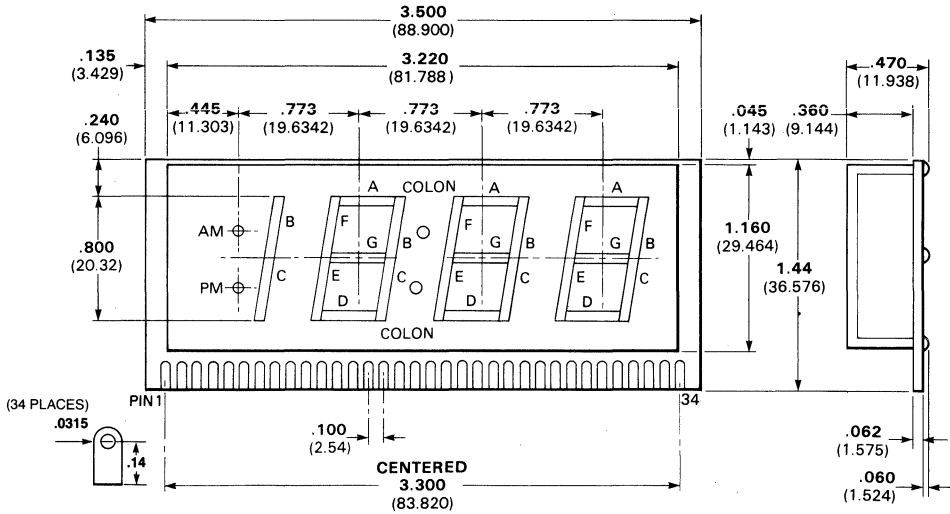
## Opto - 16



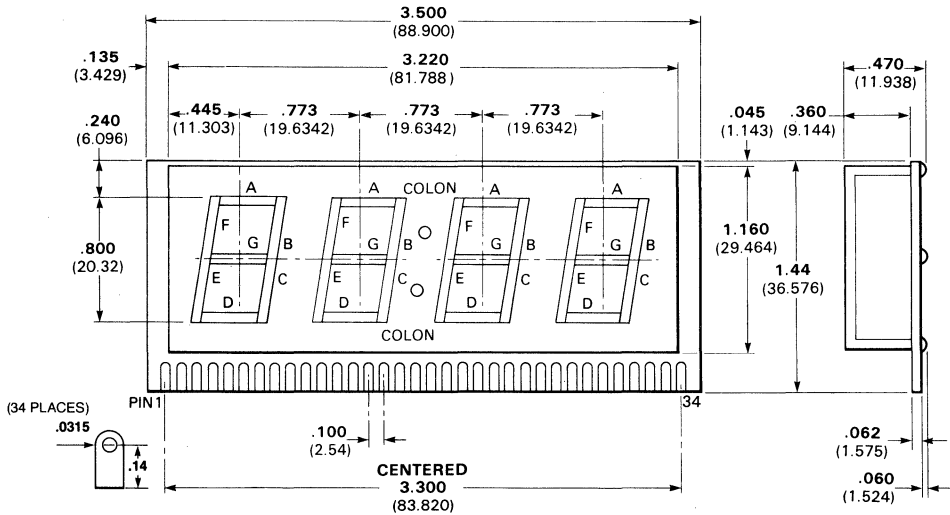
All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## Opto - 17



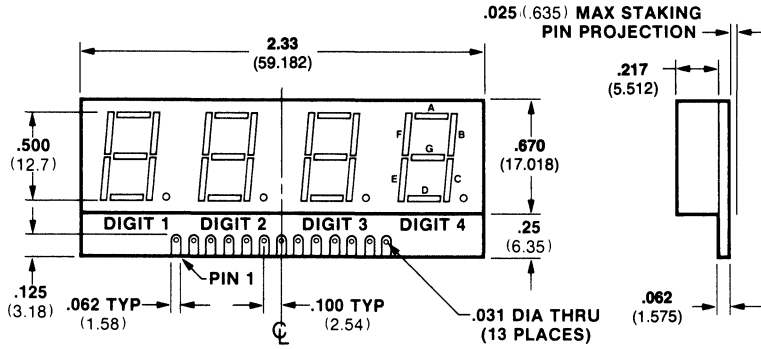
## Opto - 18



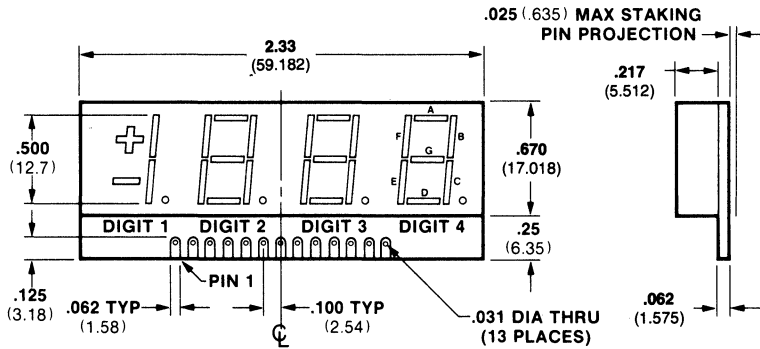
All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## Opto - 20



## Opto - 21

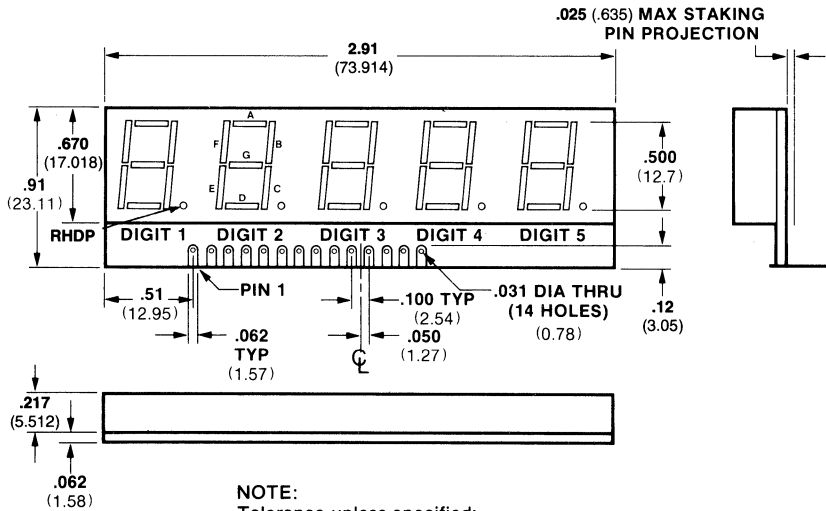


All dimensions in inches (bold) and millimeters (parentheses)

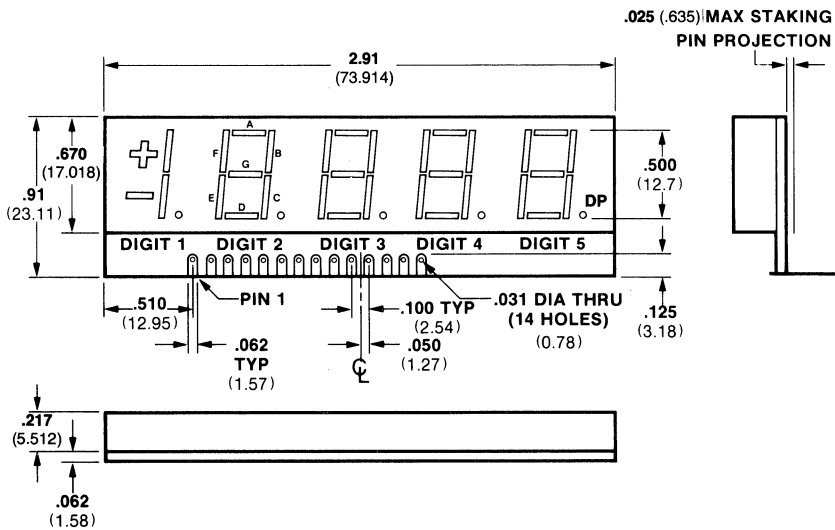


# FAIRCHILD PACKAGE OUTLINES

## Opto - 22



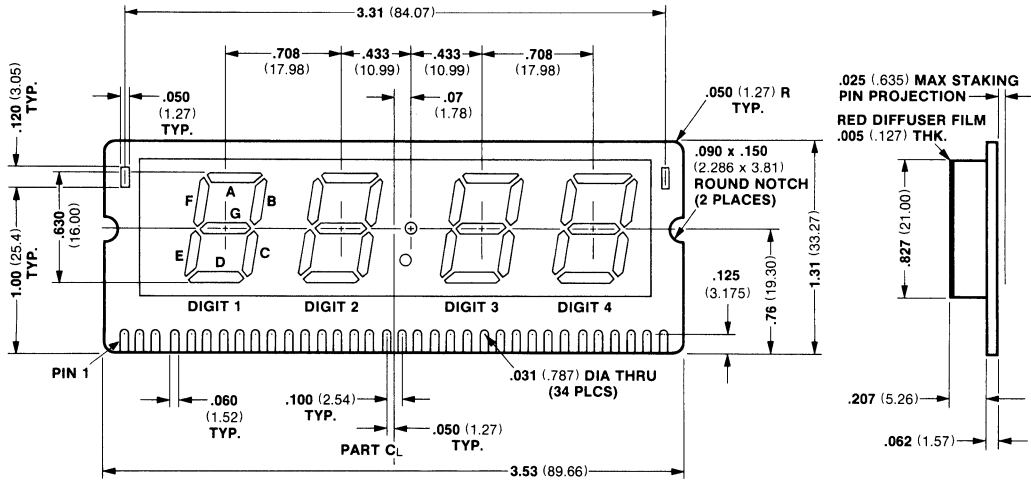
## Opto - 23



All dimensions in inches (bold) and millimeters (parentheses)

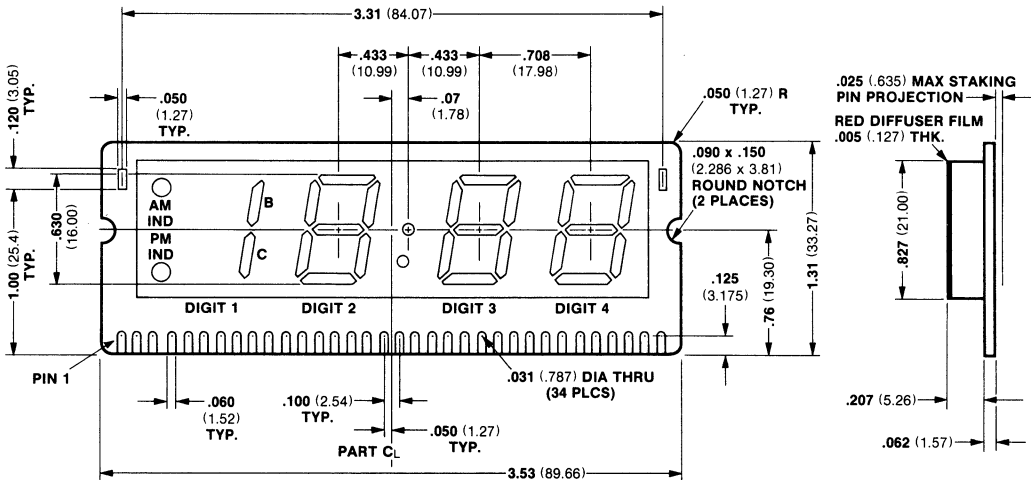
# FAIRCHILD PACKAGE OUTLINES

## Opto-24



**NOTE:**  
Colon cathodes tied to digits 3 & 4

## Opto-25

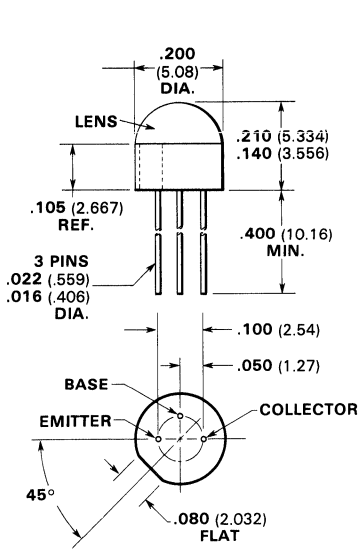


**NOTE:**  
AM/PM Ind. cathodes tied to digits 1 & 2.  
Colon cathodes tied to digits 3 & 4.

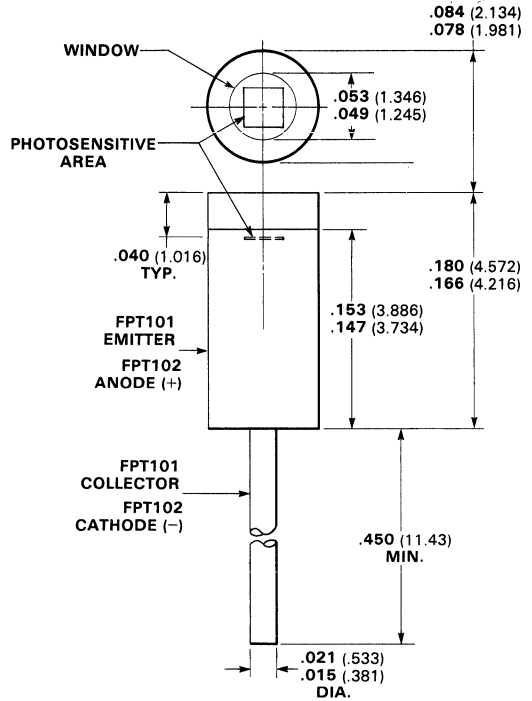
All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

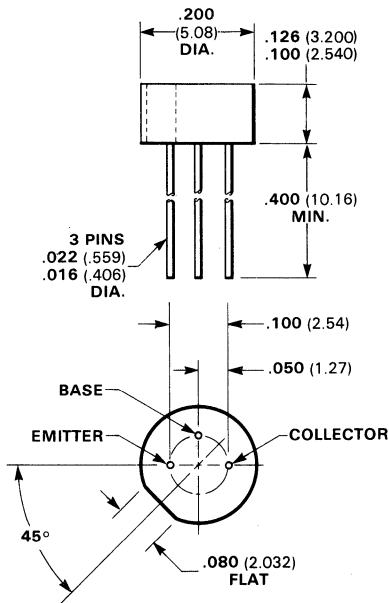
### Opto - 26



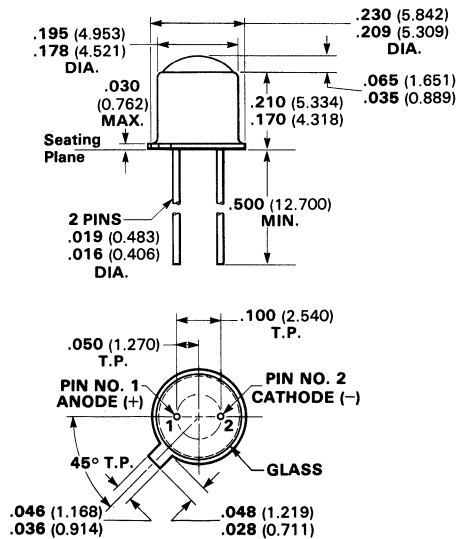
### Opto - 27



### Opto - 28



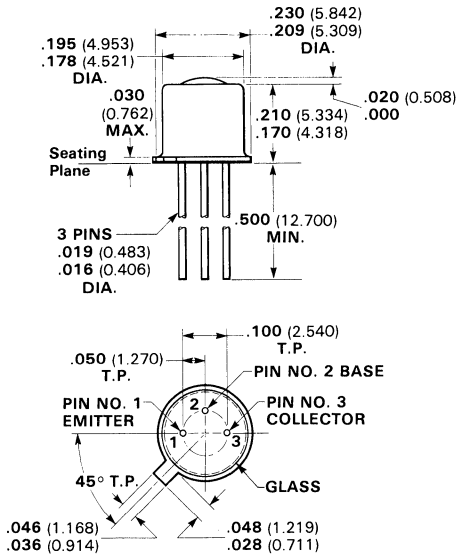
### Opto - 29



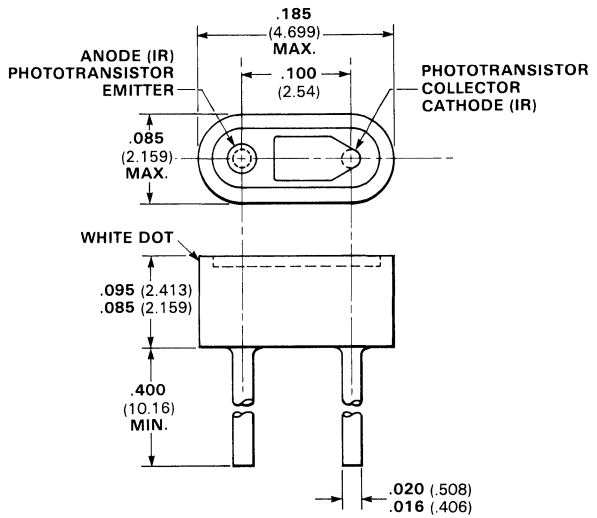
All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

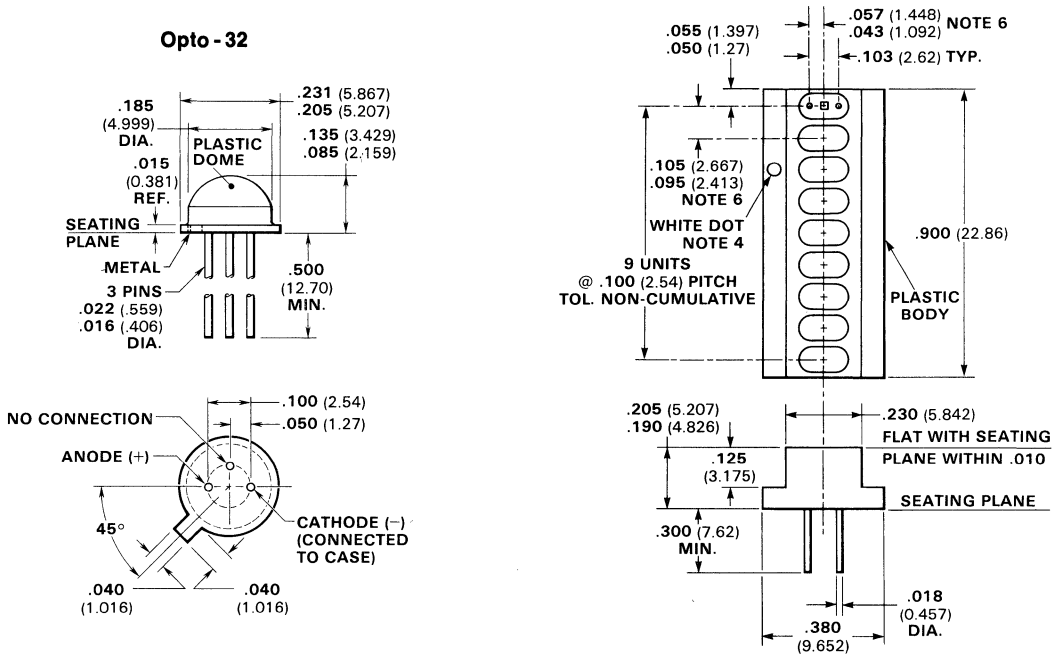
### Opto - 30



### Opto - 31



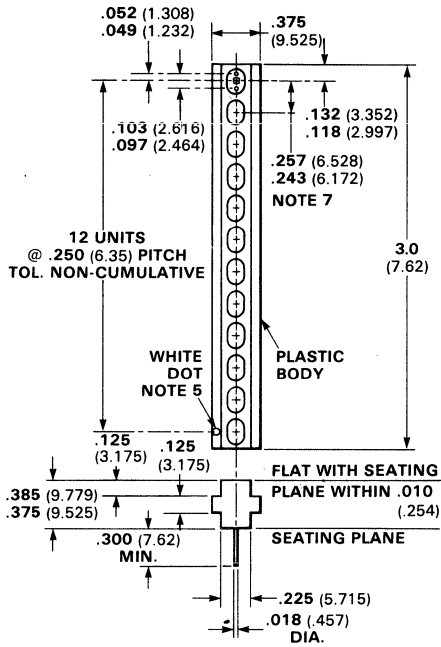
### Opto - 33



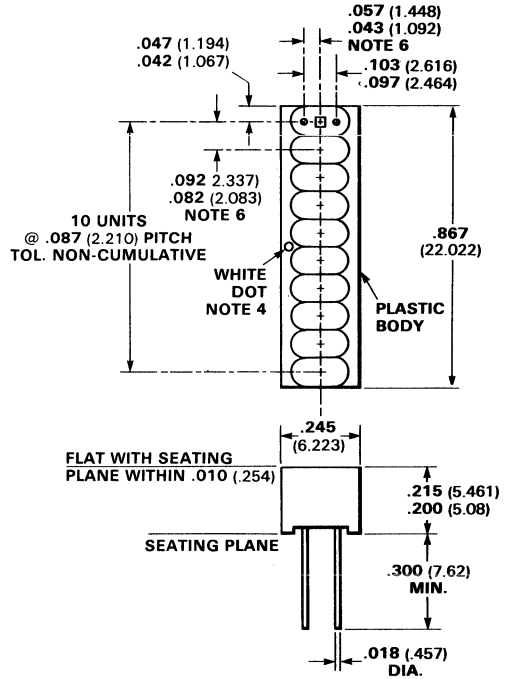
All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

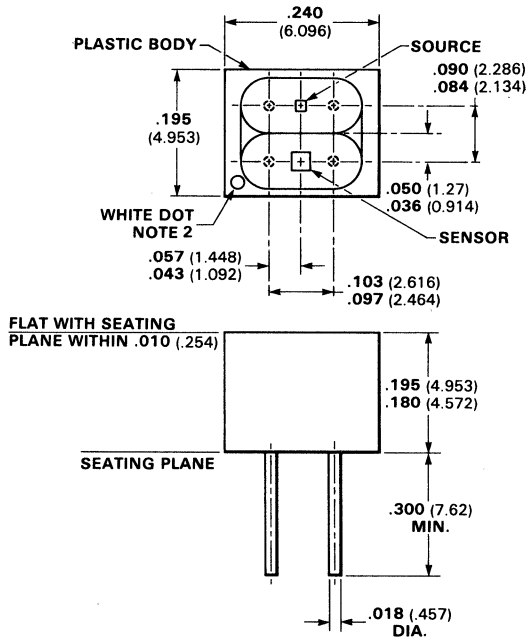
### Opto - 34



### Opto - 35



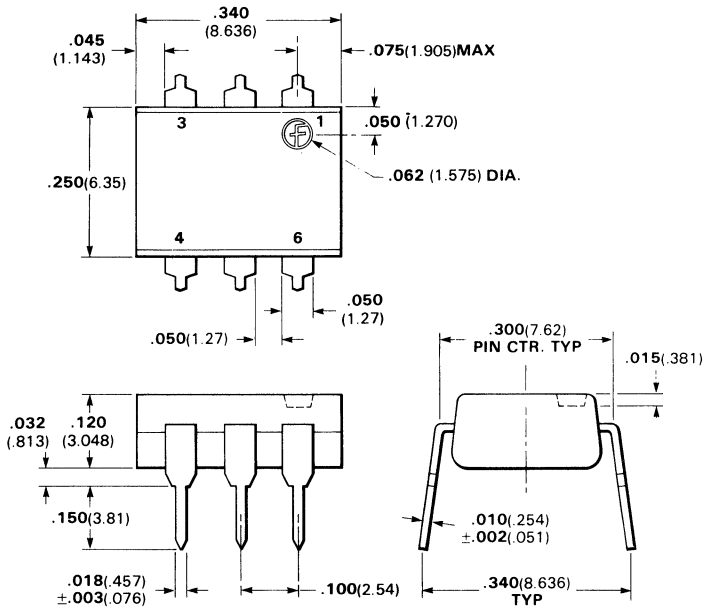
### Opto - 36



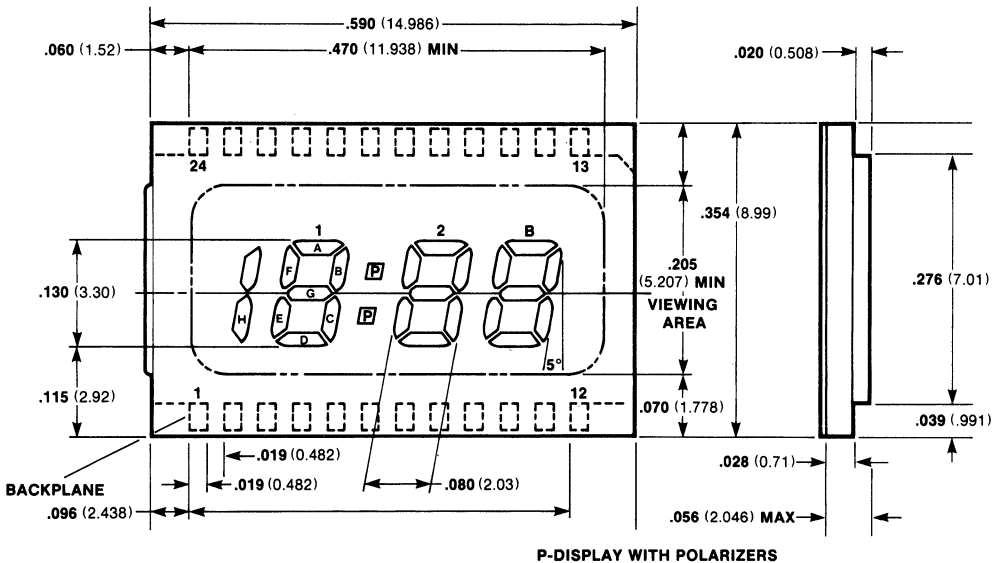
All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## Opto - 37



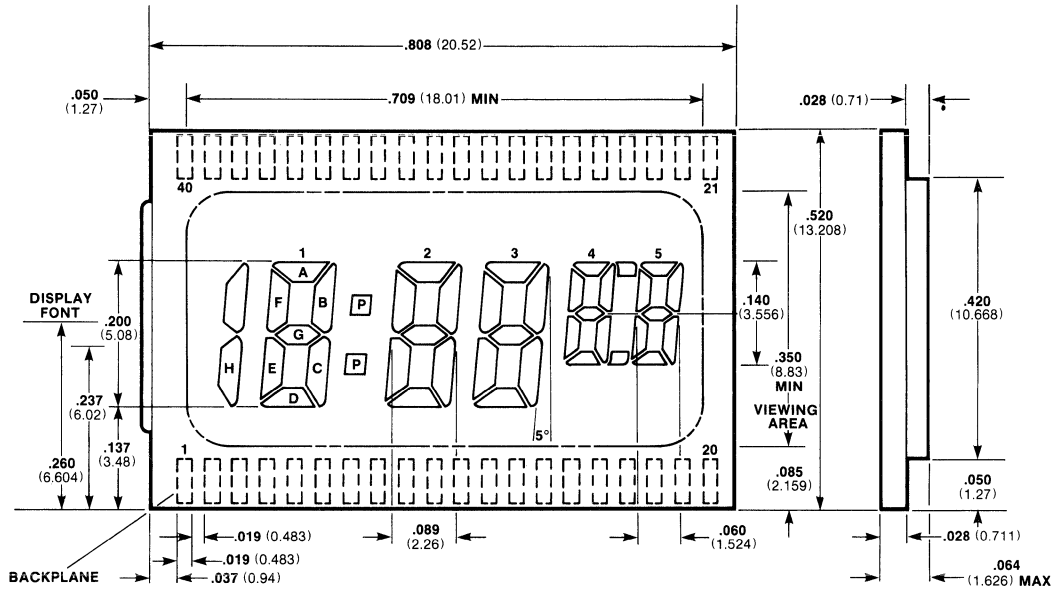
## Opto - 38



All dimensions in inches (bold) and millimeters (parentheses)

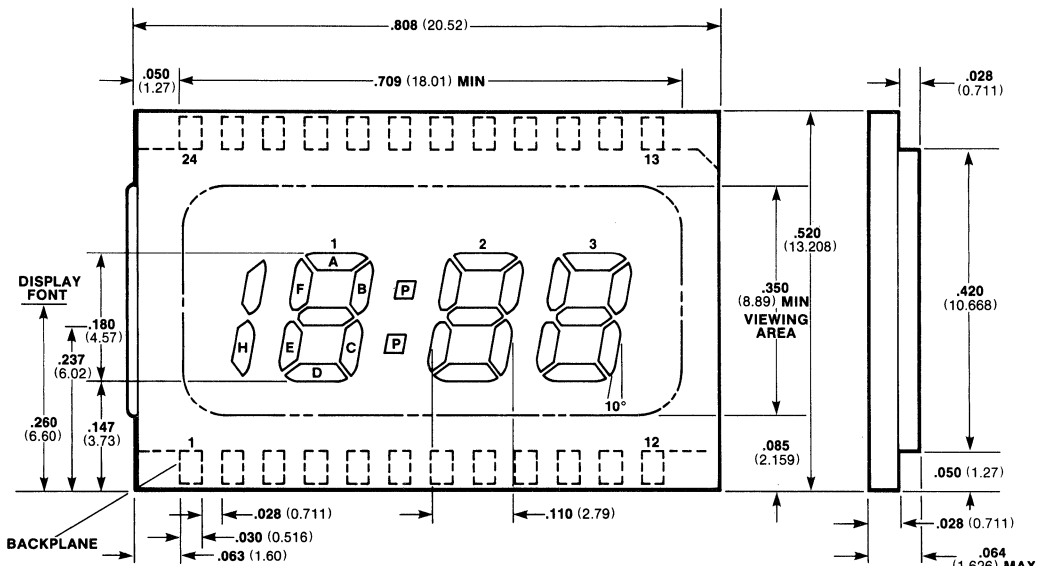
# FAIRCHILD PACKAGE OUTLINES

## Opto - 39



P-DISPLAY WITH POLARIZERS

## Opto - 40



P-DISPLAY WITH POLARIZERS

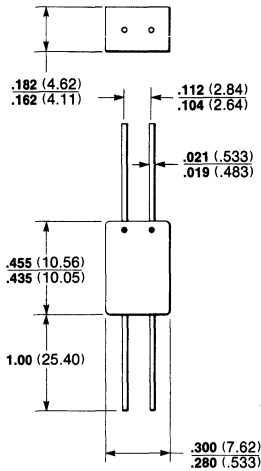
All dimensions in inches (bold) and millimeters (parentheses)



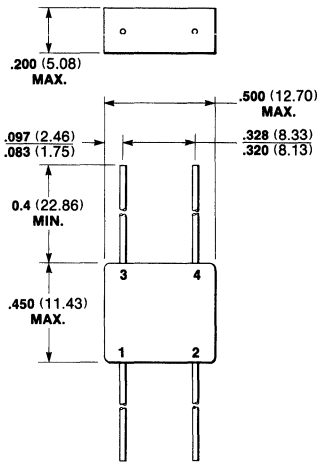


# FAIRCHILD PACKAGE OUTLINES

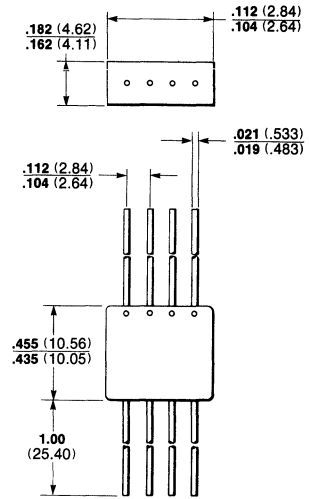
**308**



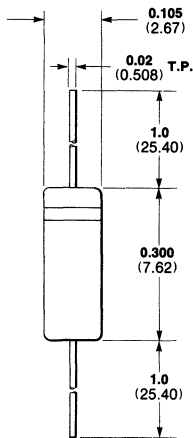
**309**



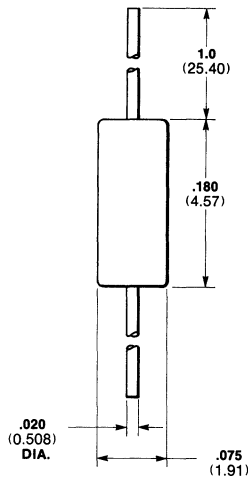
**310**



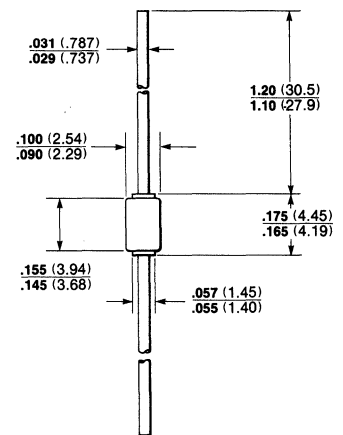
**JEDEC DO-7 OUTLINE**



**JEDEC DO-35 OUTLINE**



**JEDEC DO-41 OUTLINE**



**NOTES:**

**.020** diameter dumet pins, tinned or gold-plated  
 Hermetically sealed glass  
 Package weight is 0.25 grams

**NOTES:**

**.020** diameter dumet leads, tinned or gold-plated  
 Hermetically sealed glass  
 Package weight is 0.14 grams

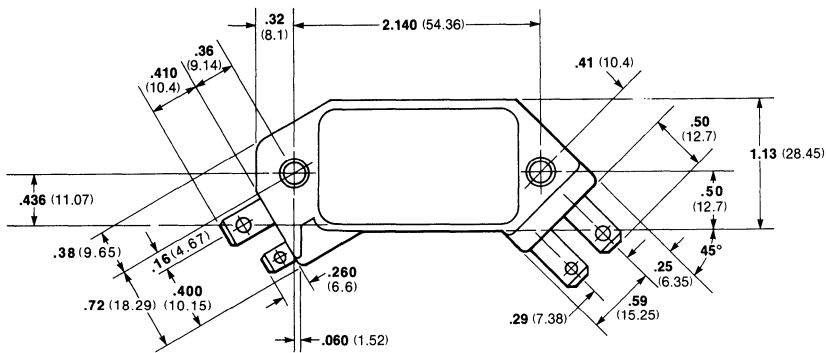
**NOTES:**

Hermetically sealed glass  
 Package weight is 0.14 grams

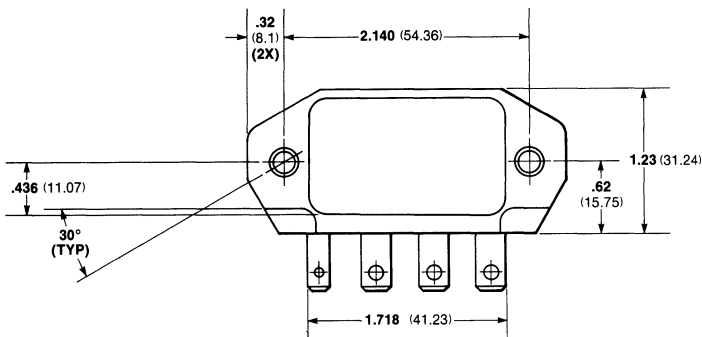
All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

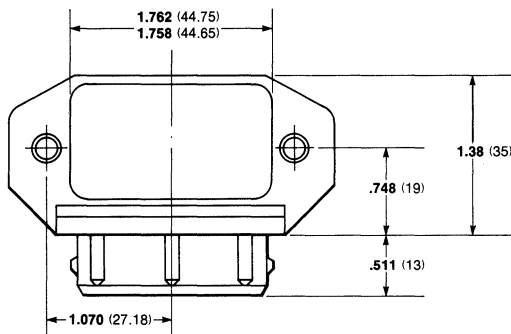
## MODULE A



## MODULE B



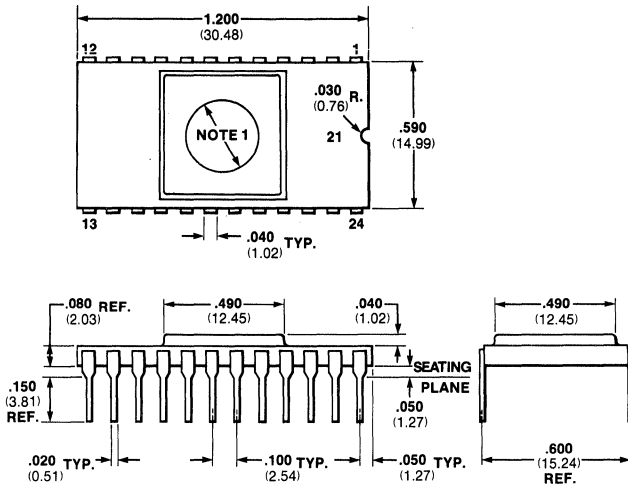
## MODULE C



All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 24-PIN SIDE-BRAZED

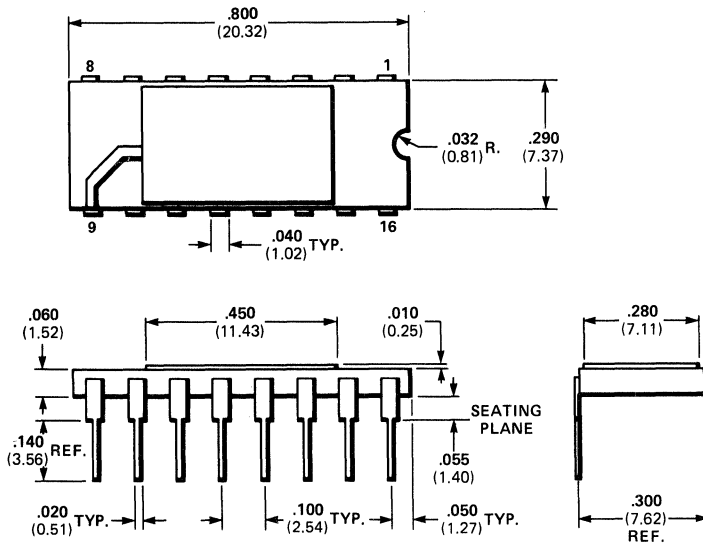


## QA

**NOTES:**

- Optical aperture is .300 (7.62) dia.
- Header is white ceramic
- Lid is gold-plated kovar with glass window
- Pin No. 21 is common to substrate
- Package is hermetic
- Package weight is 4.5 grams

## 24-PIN SIDE-BRAZED



## QB

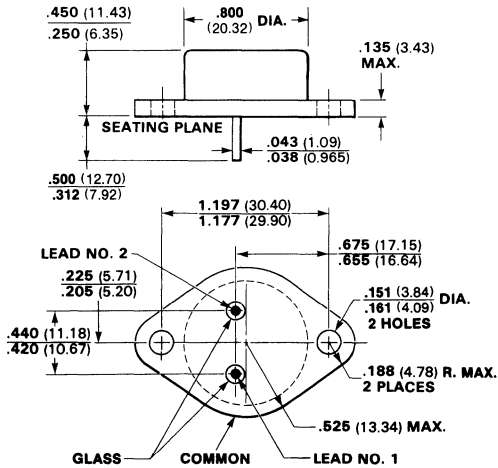
**NOTES:**

- Header body is black ceramic
- Lid is gold-plated kovar
- Pin No. 9 is common to substrate
- Package is hermetic
- Package weight is 1.1 grams

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## JEDEC TO-3 OUTLINE

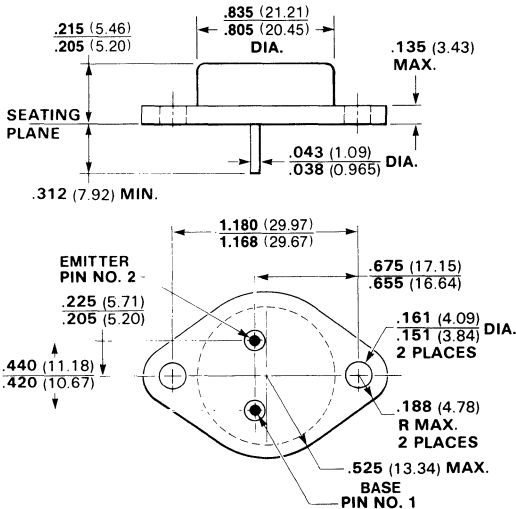


### AW

#### NOTES:

- Leads 1 and 2 electrically isolated from case
- Case is third electrical connection
- Steel base
- Package weight: 12.27 grams

## JEDEC TO-3 OUTLINE



### GD

#### NOTES:

- Pins are solder-dipped copper
- Pins 1 and 2 electrically isolated from case
- Case is third electrical connection
- Copper base with braised moly disc. Pins are soldered in
- Package weight is 18.0 grams
- Aluminum cap

### GF

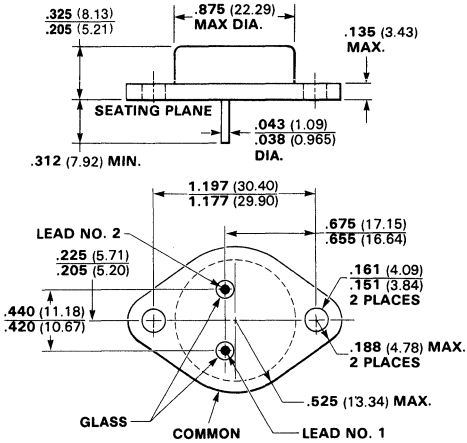
#### NOTES:

- Pins are alloy 52
- Pins 1 and 2 electrically isolated from case
- Case is third electrical connection
- Copper base with soldered in pins
- Aluminum cap
- Package weight is 17.9 grams

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## JEDEC TO-3 OUTLINE\*

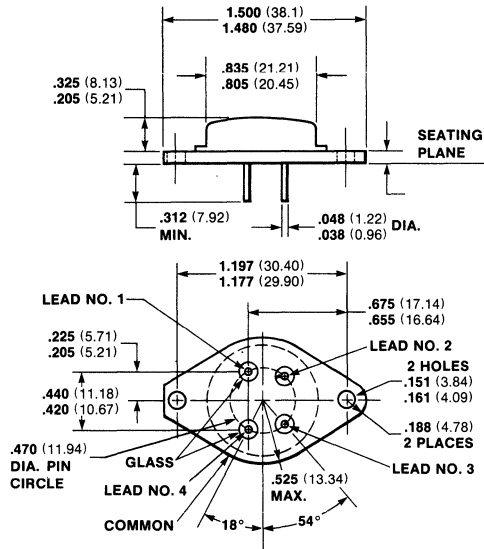


### GJ

#### NOTES:

- Leads are gold-plated or solder dipped alloy 52
- Leads 1 and 2 electrically isolated from case
- Case is third electrical connection
- Aluminum package with copper slug, pins are soldered in
- Package weight is 7.4 grams
- Aluminum cap (may be dome-type, depending prod. line)
- \*Except lead diameter

## JEDEC TO-3 OUTLINE\*

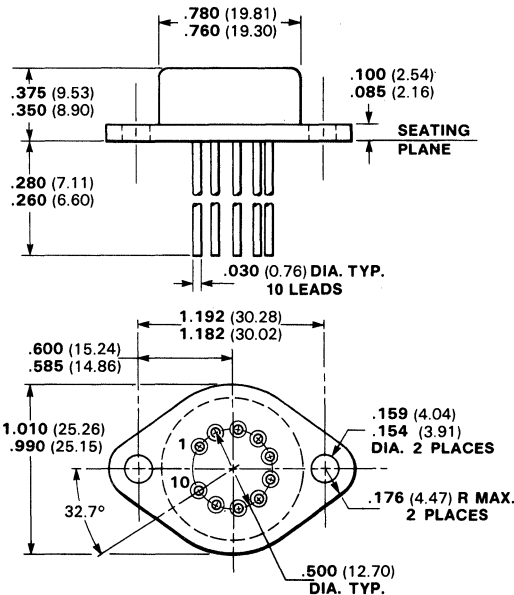


### GK

#### NOTES:

- Leads are gold-plated or solder dipped alloy 52
- All leads electrically isolated from case
- Package weight is 7.4 grams
- \*Except number of leads and lead diameter

## JEDEC TO-3 OUTLINE\*



### 5H

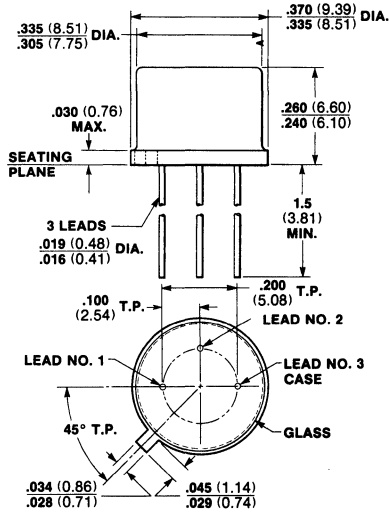
#### NOTES:

- Package material is nickel-plated CRS
- Lead material is alloy 52
- Glass material is corning 9010
- Lead, post and base gold-plated
- \*Except height and number of leads

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## JEDEC TO-5 OUTLINE

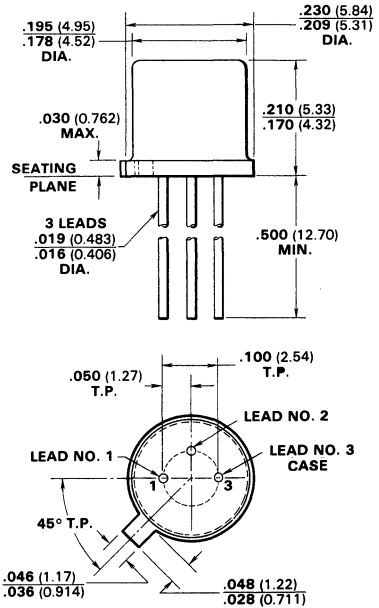


**XA**

**NOTES:**

- Leads are gold-plated kovar
- Lead 3 connected to case
- 15 mil kovar header
- Package weight is 1.11 grams

## JEDEC TO-18 OUTLINE

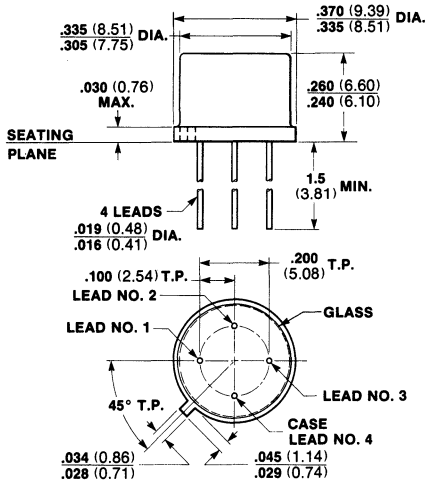


**XB**

**NOTES:**

- Leads are gold-plated kovar
- Lead 3 connected to case
- 8 mil kovar header
- Package weight is 0.44 gram

## JEDEC TO-33 OUTLINE



**XR**

**NOTES:**

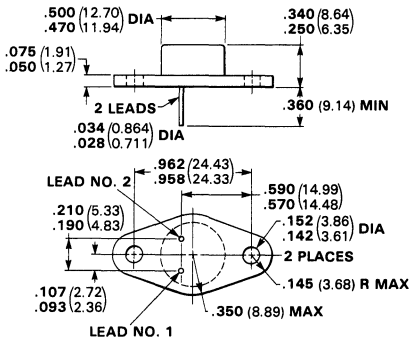
- Leads are gold-plated kovar
- Lead 4 is connected to case
- Internal collector lead length is 75 mils
- Island is 60 mils wide, 80 mils long and 15 mils thick
- Package weight is 1.22 grams

All dimensions in inches (bold) and millimeters (parentheses)



# FAIRCHILD PACKAGE OUTLINES

## JEDEC TO-66 OUTLINE

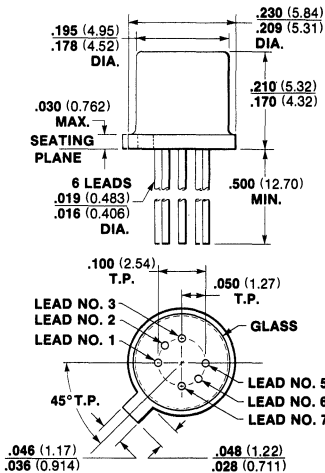


## GB

### NOTES:

- Leads are gold-plated kovar
- Leads 1 and 2 electrically isolated from case
- Case is third electrical connection
- Nickel-plated steel base and cap
- Package weight is 6.5 grams

## JEDEC TO-71 OUTLINE



## AB

### NOTES:

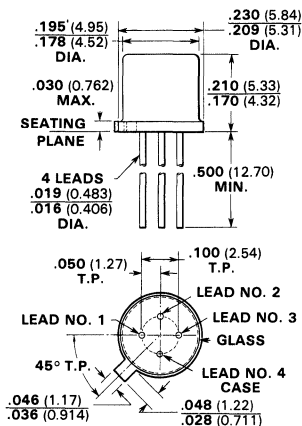
- Leads are gold-plated kovar
- Lead 3 internally connected to one island
- Lead 7 internally connected to other island
- Leads 4 and 8 omitted
- 8 mil kovar header
- Package weight is 0.60 gram

## HM

### NOTES:

- Leads are gold-plated kovar
- Leads 4 and 8 omitted
- No island
- 8 mil kovar header
- Package weight is 0.60 gram

## JEDEC TO-72 OUTLINE



## CR

### NOTES:

- Leads are gold-plated kovar
- Lead 4 connected to case
- Collector electrically isolated from case
- Package weight is 0.36 gram

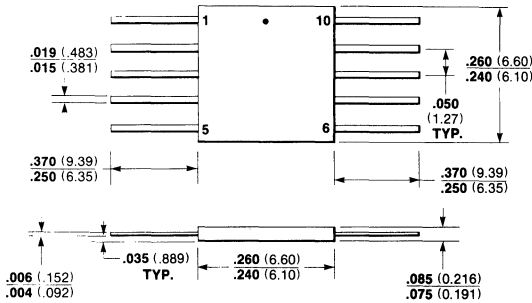
All dimensions in inches (bold) and millimeters (parentheses)





# FAIRCHILD PACKAGE OUTLINES

## JEDEC TO-91 OUTLINE

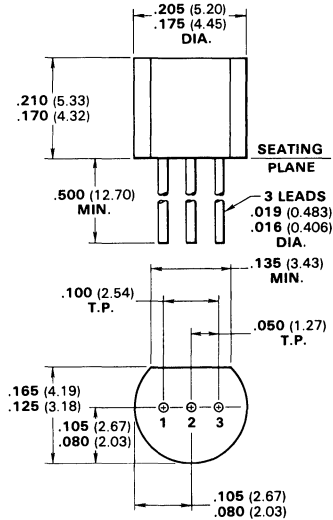


**3F**

**NOTES:**

- Leads are tin plated 42 alloy
- Hermetically sealed alumina package
- Cavity size is .130 (3.30) diameter
- Package weight is 0.26 grams

## JEDEC TO-92 OUTLINE

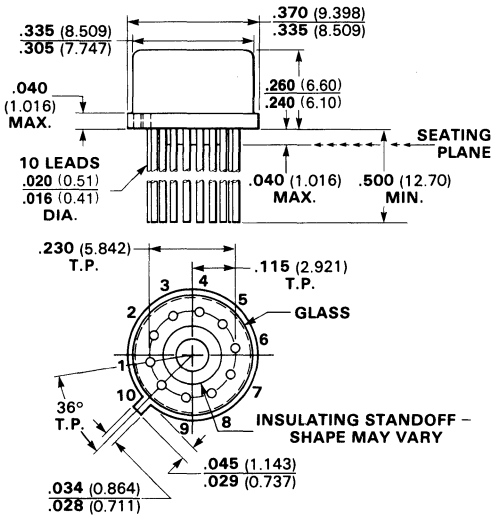


**EG**

**NOTES:**

- Package material is transfer molded thermosetting plastic
- Package weight is 0.25 gram

## JEDEC TO-96 OUTLINE\*



**5R**

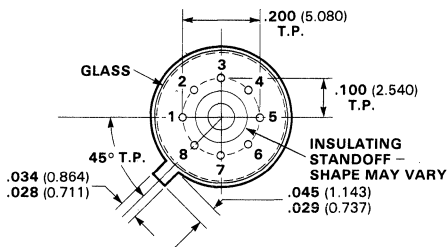
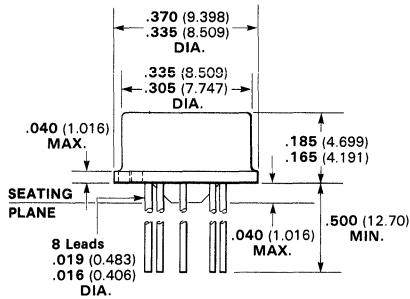
**NOTES:**

- Leads are gold-plated kovar.
- Nine leads thru, Lead No. 5 is connected to case
- 15 mil kovar header
- Package weight is 1.32 grams.
- \*Dimensions similar to JEDEC TO-96 except for standoff.

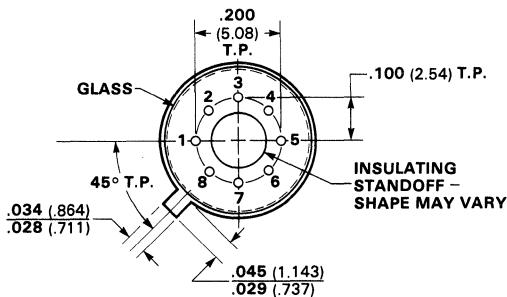
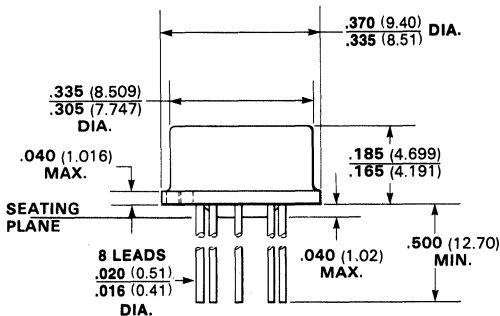
All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## JEDEC TO-99 OUTLINE



## JEDEC TO-99 OUTLINE



## 5B

**NOTES:**  
 Leads are gold-plated kovar  
 Seven leads thru leads No. 4 connected  
 to case  
 15 mil kovar header  
 Package weight is 1.22 grams

## 5L

**NOTES:**  
 Leads are gold-plated kovar  
 Eight leads thru  
 15 mil kovar header  
 Package weight is 1.22 grams

## 5M

**NOTES:**  
 Leads are solder dipped to seating plane  
 Eight leads thru  
 15 mil kovar header  
 Package weight is 1.22 grams

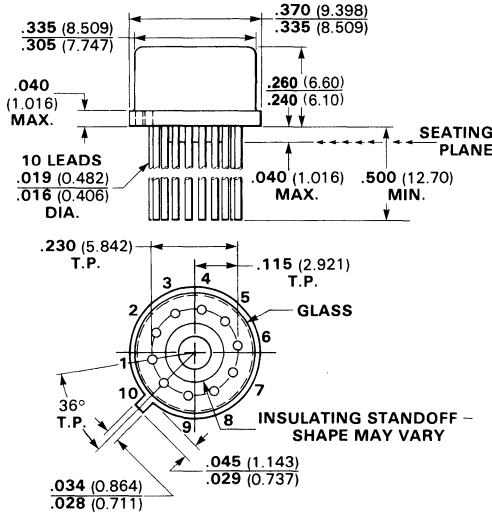
## 5S

**NOTES:**  
 Leads are solder dipped to seating plane  
 Seven leads thru, leads No. 4 connected  
 to case  
 15 mil kovar header  
 Package weight is 1.22 grams

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## JEDEC TO-100 OUTLINE



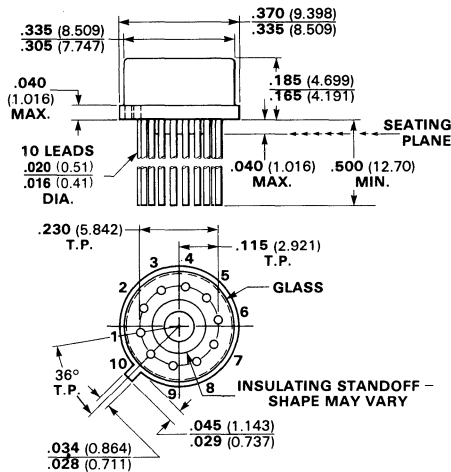
### 5E

**NOTES:**  
 Leads are gold-plated kovar  
 Ten leads thru  
 15 mil kovar header  
 Package weight is 1.32 grams

### 5F

**NOTES:**  
 Leads are gold-plated kovar  
 Nine leads through, lead 5 connected to case  
 15 mil kovar header  
 Package weight is 1.32

## JEDEC TO-100 OUTLINE



### 5I

**NOTES:**  
 Leads are solder dipped to the seating plane  
 Ten leads thru  
 High RTH package  
 15 mil kovar header  
 Package weight is 1.32 grams

### 5N

**NOTES:**  
 Leads are solder-dipped to the seating plane  
 Nine leads through, lead 5 connected to case  
 15 mil kovar header  
 Package weight is 1.32 grams

### 5Q

**NOTES:**  
 Leads are solder dipped to the seating plane  
 Ten leads thru  
 15 mil kovar header  
 Package weight is 1.32 grams

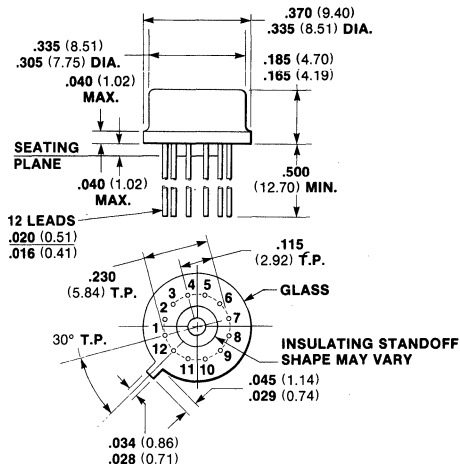
### 5U

**NOTES:**  
 Leads are gold-plated kovar  
 Ten leads through  
 High RTH package  
 15 mil kovar header  
 Package weight is 1.32 grams

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## JEDEC TO-101 OUTLINE

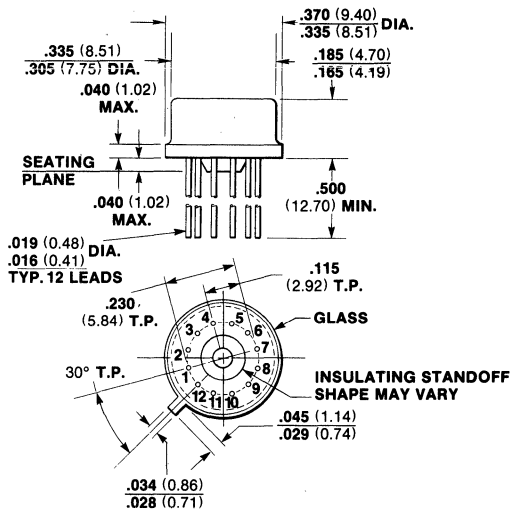


### 5D

#### NOTES:

Leads are solder dipped to the seating plane  
 Twelve leads through  
 15 mil kovar header  
 Package weight is 1.4 grams

## JEDEC TO-101 OUTLINE

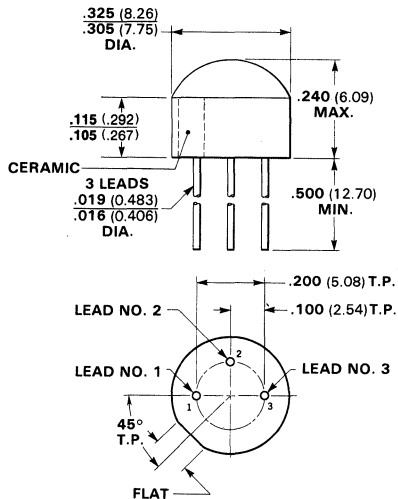


### 5G

#### NOTES:

Leads are gold-plated kovar  
 Twelve leads thru  
 15 mil kovar header  
 Package weight is 1.08 grams

## JEDEC TO-105 OUTLINE



### CZ

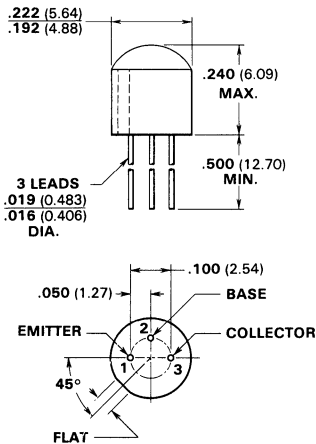
#### NOTES:

Leads 1 and 2 are gold-plated nickel  
 Lead No. 3 is gold-plated copper alloy  
 Internal lead No. 3 length is 110 mils  
 Lead No. 3 club head length is 180 mils  
 Package weight is 0.66 grams

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## JEDEC TO-106 OUTLINE

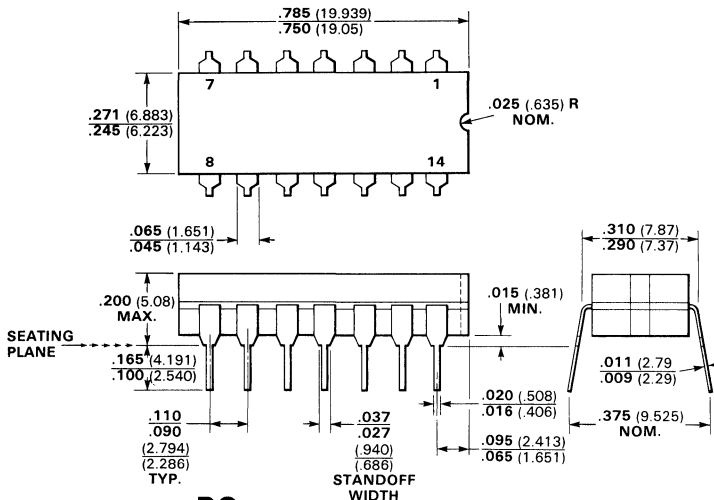


**CY**

**NOTES:**

- Leads 1 and 2 are gold-plated nickel
- Lead No. 3 is gold-plated copper alloy
- Lead No. 3 club head length is 85 mils
- Internal lead No. 3 length is 110 mils
- Package weight is 0.31 grams

## JEDEC TO-116 OUTLINE

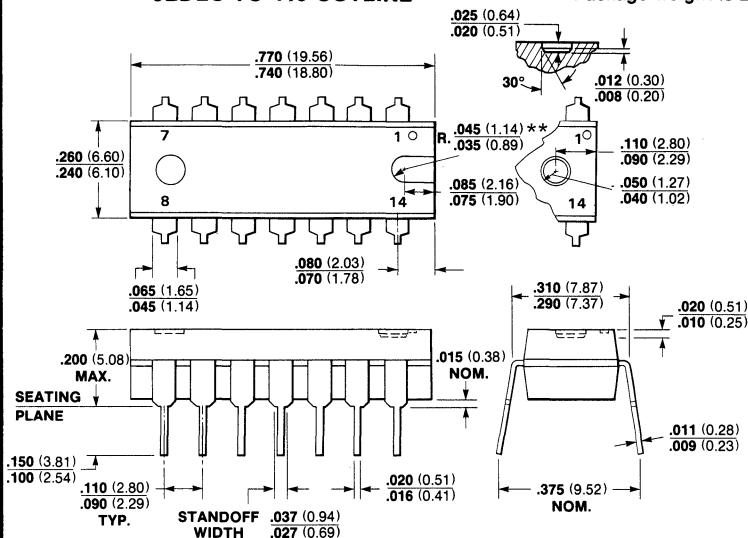


**DG**

**NOTES:**

- Pins are tin-plated kovar
- Pins are intended for insertion in hole rows on .300" centers
- They are purposely shipped with 'positive' misalignment to facilitate insertion
- Board-drilling dimensions should equal your practice for .020 inch diameter pin
- Hermetically sealed alumina ceramic package
- Gain IC's
- Package weight is 2.0 grams

## JEDEC TO-116 OUTLINE



**9A**

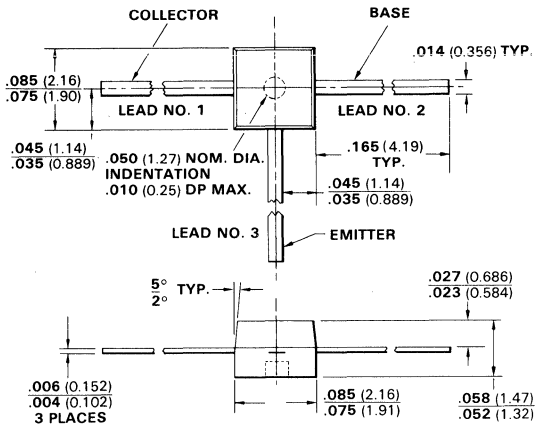
**NOTES:**

- Pins are tin plated kovar
- \*Package material varies depending on the product line
- Pins are intended for insertion in hole rows on .300" (7.62) centers
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Board-drilling dimensions should equal your practice for .020 (0.508) inch diameter pin
- \*\*Notch or ejector hole varies depending on the product line
- Package weight is 0.9 gram

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## JEDEC TO-120 OUTLINE

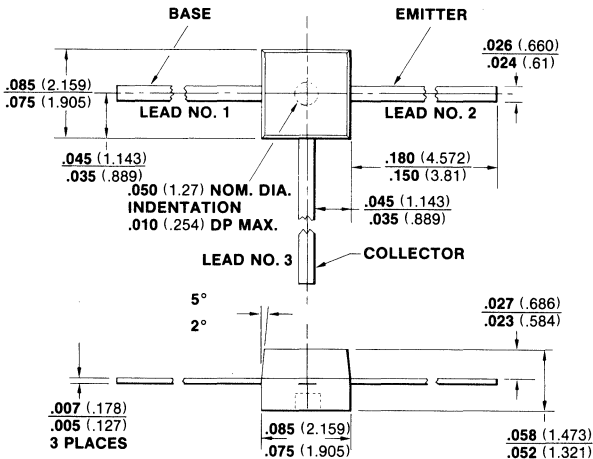


**EE**

**NOTES:**

- Leads are gold-platd nickel alloy
- Body is transfer molded thermosetting plastic
- Package weight is 0.015 gram

## JEDEC TO-120 OUTLINE



**EF**

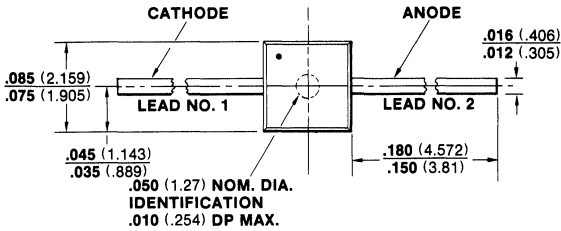
**NOTES:**

- Leads are gold-plated
- Body is transfer molded thermosetting plastic
- Package weight is 0.015 gram

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

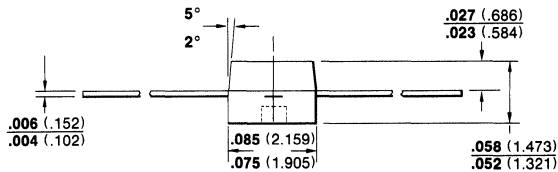
## JEDEC TO-120 OUTLINE



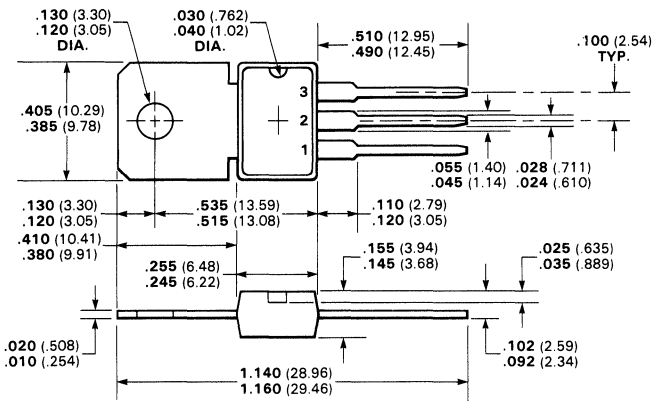
### EK

#### NOTES:

- Leads are nickel-plated copper alloy
- Package material is plastic
- Package weight is 0.015 gram



## JEDEC TO-202 OUTLINE DYNAWATT



### NT

#### NOTES:

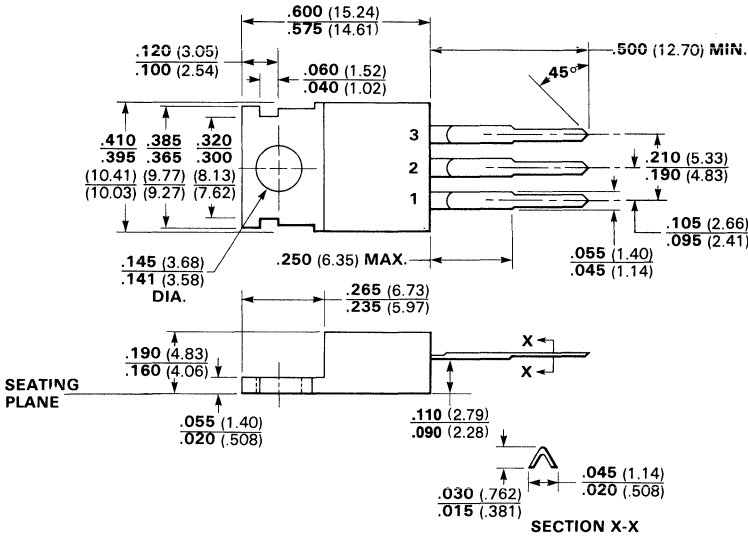
- Pin out
- Emitter - 1
- Base - 2
- Collector - 3/4
- Assembled weight 0.7 grams
- Tab and leads - tin plated copper
- Plastic - epoxy

All dimensions in inches (bold) and millimeters (parentheses)



# FAIRCHILD PACKAGE OUTLINES

## JEDEC TO-220 OUTLINE\*



### GH

#### NOTES:

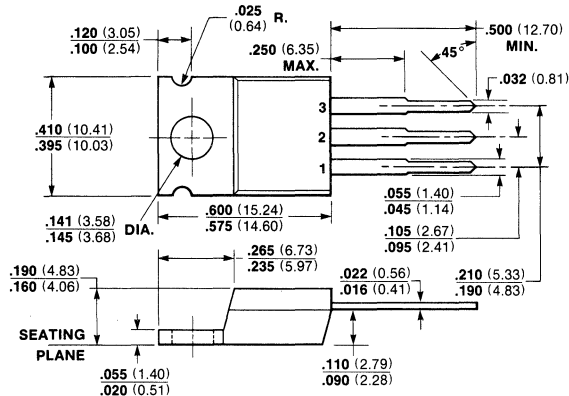
Package is silicone plastic with nickel-plated copper tab and pins

Center pin is electrical contact with the mounting tab

Package weight is 2.1 grams

\*Mechanically interchangeable with TO-66

## JEDEC TO-220 OUTLINE\*



### GH(-3)

#### NOTES:

Package is epoxy plastic with plated copper tab and pins

Center pin is electrical contact with the mounting tab

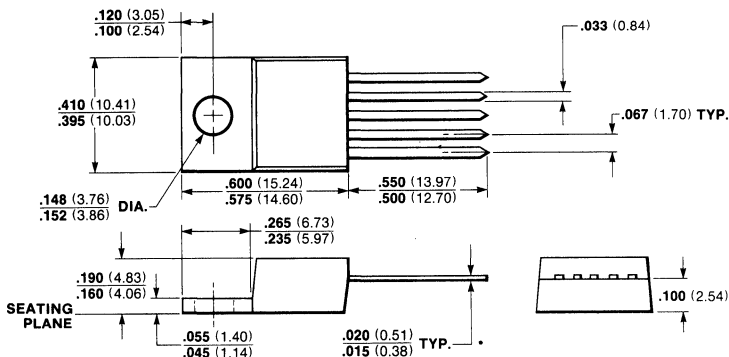
Package weight is 2.1 grams

\*Mechanically interchangeable with TO-66

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## JEDEC TO-220 OUTLINE



### GO

#### NOTES:

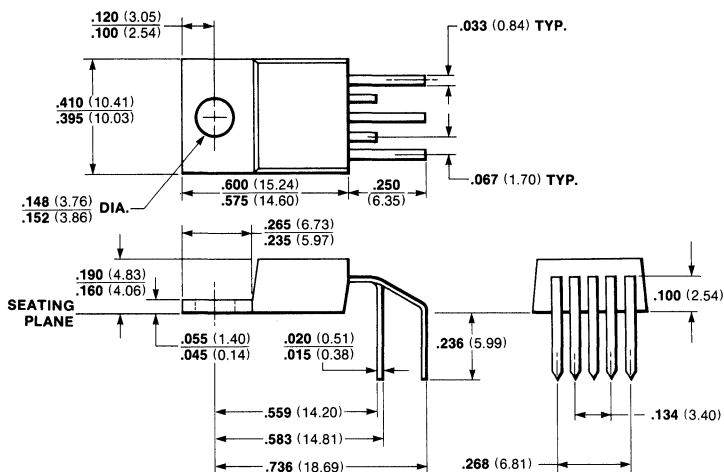
Mounting tab electrically connected to center pin

Package is molded over a copper base material with solderable pins

Package weight is 2.1 grams

\*Except number of pins

## JEDEC TO-220 OUTLINE\*



### GO(H)

#### NOTES:

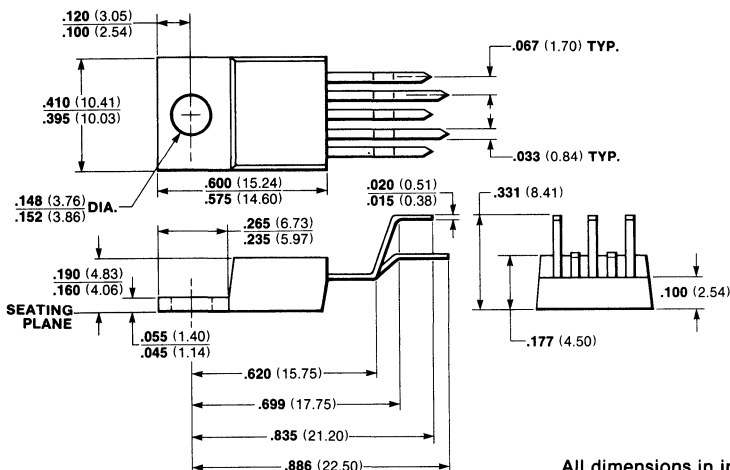
Mounting tab electrically connected to center pin

Package is molded over a copper base material with solderable pins

Package weight is 2.1 grams

\*Except pin number and formation

## JEDEC TO-220 OUTLINE\*



### GO(V)

#### NOTES:

Mounting tab electrically connected to center pin

Package is molded over a copper base material with solderable pins

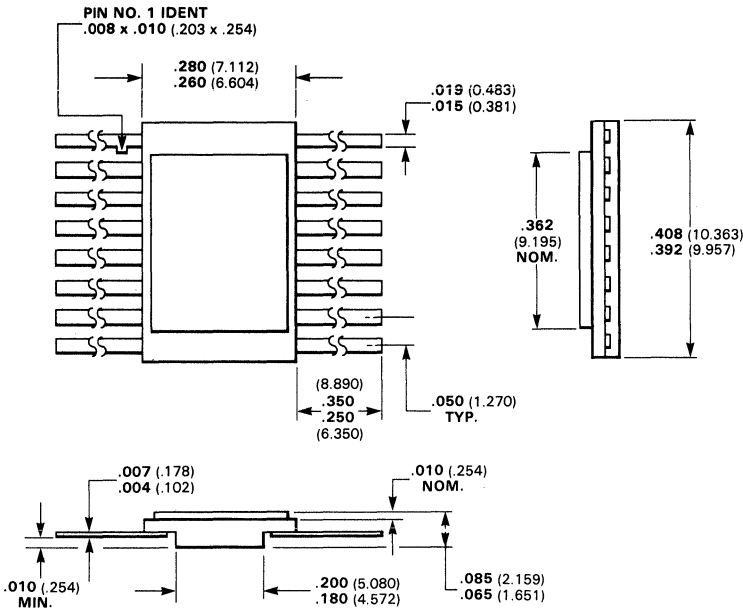
Package weight is 2.1 grams

\*Except pin number and formation

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 16-PIN SIDE-BRAZED CERPAK

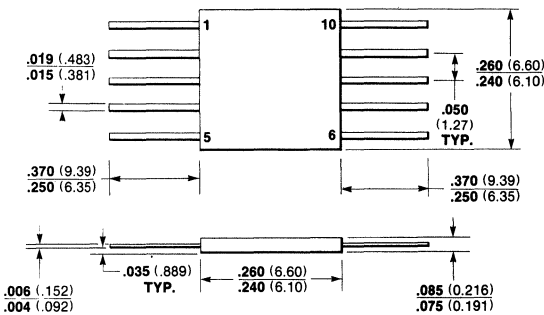


**3D**

**NOTES:**

- Header body is black ceramic
- Lid is gold plated kovar
- Pin No. 9 is common to substrate
- Package is hermetic
- Package weight is 1.1 grams

## 10-PIN CERPAK (JEDEC TO-91 OUTLINE)

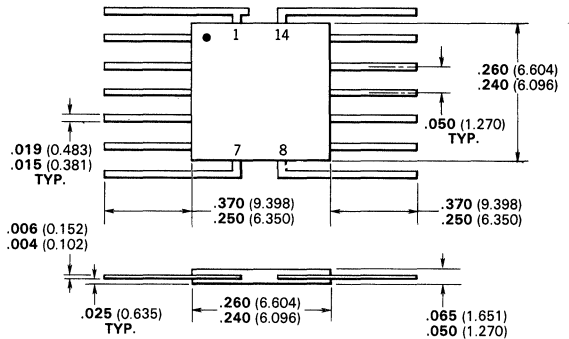


**3F**

**NOTES:**

- Leads are tin plated 42 alloy
- Hermetically sealed alumina package
- Cavity size is .130 diameter
- Package weight is 0.26 grams

## 14-PIN CERPAK (JEDEC TO-86 OUTLINE)



**3I**

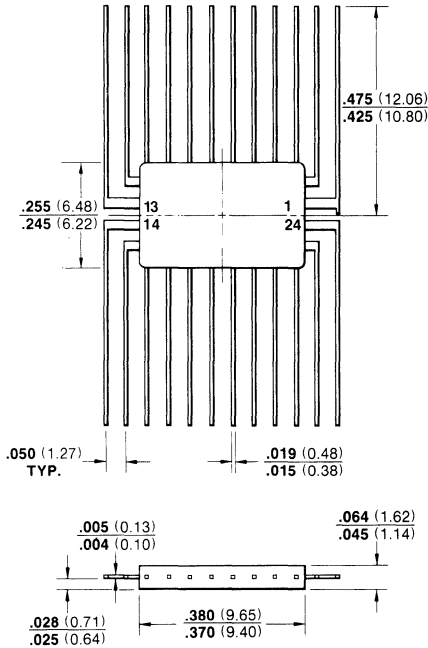
**NOTES:**

- Leads are tin-plated 42 alloy
- Hermetically sealed alumina package
- Lead 1 orientation may be either tab or dot
- Cavity size is .130 (3.30)
- Package weight is 0.26 gram

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 24-PIN FLATPAK

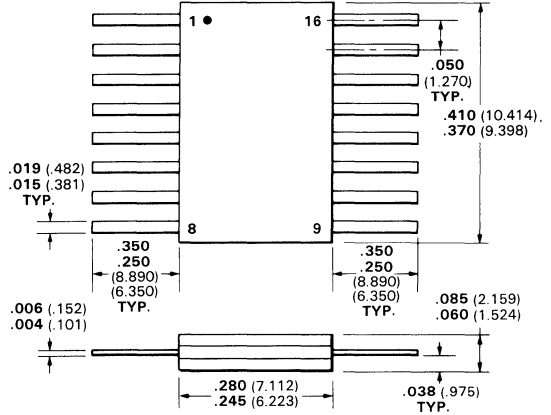


### 3M

**NOTES:**

- Pins are gold-plated kovar
- Package material is kovar
- Cavity size is .120 x .235 (3.05 x 5.97)
- Package weight is 0.8 gram

## 16-PIN CERPAK

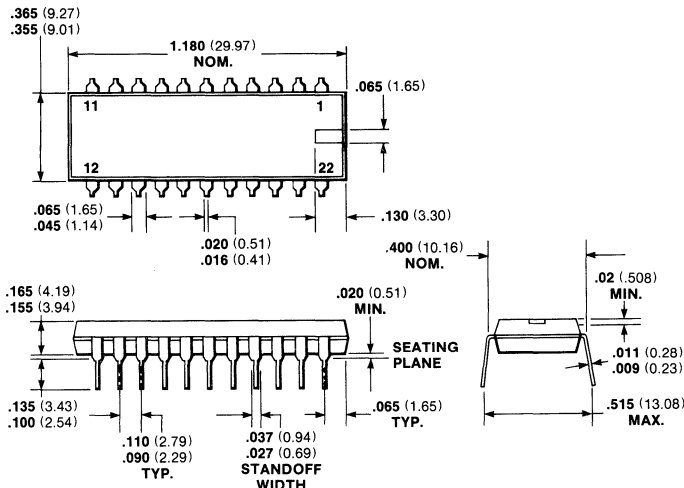


### 4B

**NOTES:**

- Pins are gold-plated kovar
- Cap and base are alumina
- Package weight is 0.4 gram

## 22-PIN PLASTIC DUAL IN-LINE



### 4K

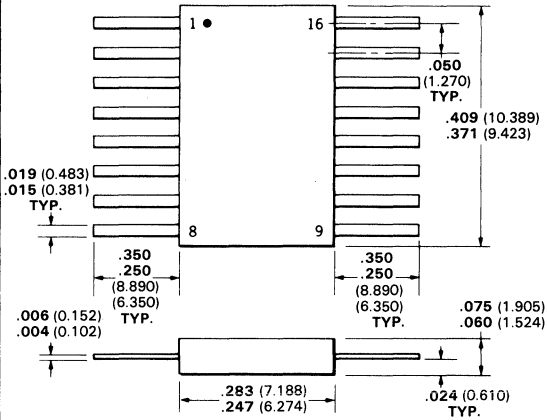
**NOTES:**

- Pins are tin-plated 42 alloy
- Package material is plastic
- Pins are intended for insertion in hole rows on 400 (10.16) centers
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Cavity size is .220 x .180 (5.59 x 4.57)

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

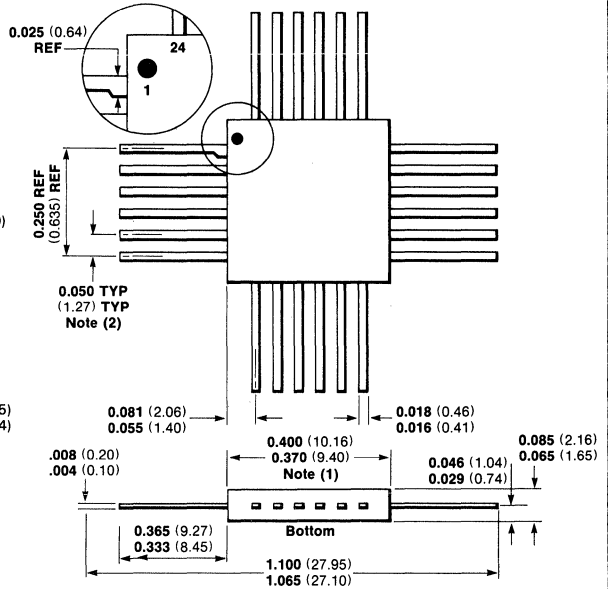
## 16-PIN BeO CERPAK



### 4L

NOTES:  
 Pins are alloy 42  
 Package weight is 0.4 gram  
 Hermetically sealed beryllia package

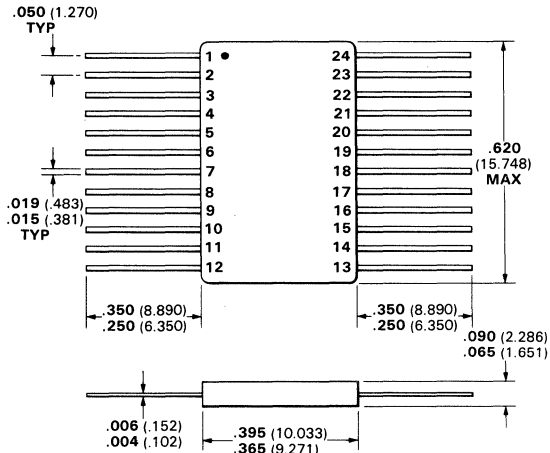
## 24-PIN FLATPAK



### 4M

NOTES:  
 Pins are tin plated nickel alloy  
 Base is AL203 or BeO  
 Cavity size is 200 x 200  
 Package weight is ≈ 0.8 grams

## 24-PIN CERPAK



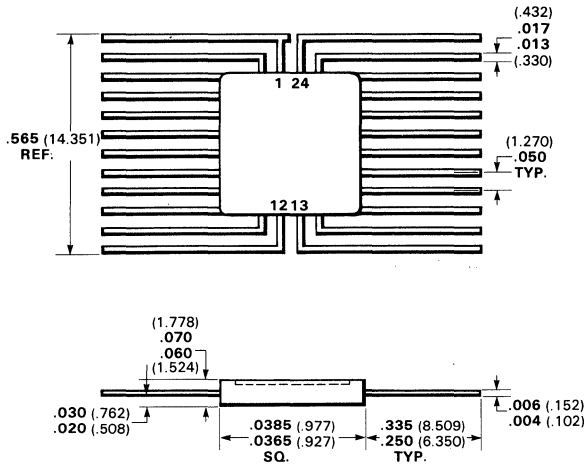
### 4Q

NOTES:  
 Pins are alloy 42  
 Package weight is 0.8 gram  
 Hermetically sealed beryllia package

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

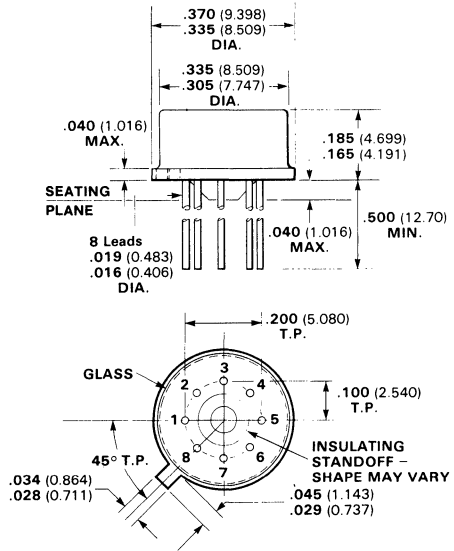
## 24-PIN FLATPAK



### 4R

NOTES:  
 Metal cap and base  
 Pins are gold plated kovar  
 Package weight is 0.6 gram

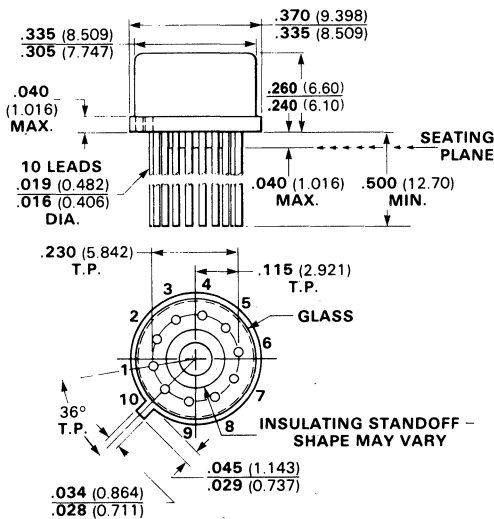
## (JEDEC TO-99 OUTLINE)



### 5B

NOTES:  
 Leads are gold-plated kovar  
 Seven leads thru  
 Seven leads thru leads No. 4 connected to case  
 15 mil kovar header  
 Package weight is 1.22 grams

## (JEDEC TO-100 OUTLINE)



### 5E

NOTES:  
 Leads are gold-plated kovar  
 Ten leads thru  
 15 mil kovar header  
 Package weight is 1.32 grams

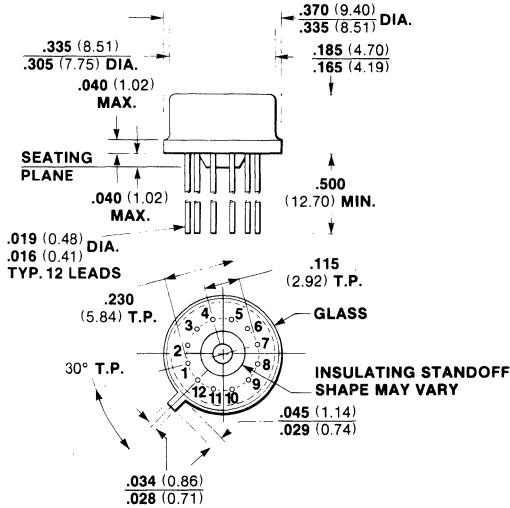
### 5F

NOTES:  
 Leads are gold-plated kovar  
 Nine leads through, lead 5 connected to case  
 15 mil kovar header  
 Package weight is 1.32

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## (JEDEC TO-101 OUTLINE)

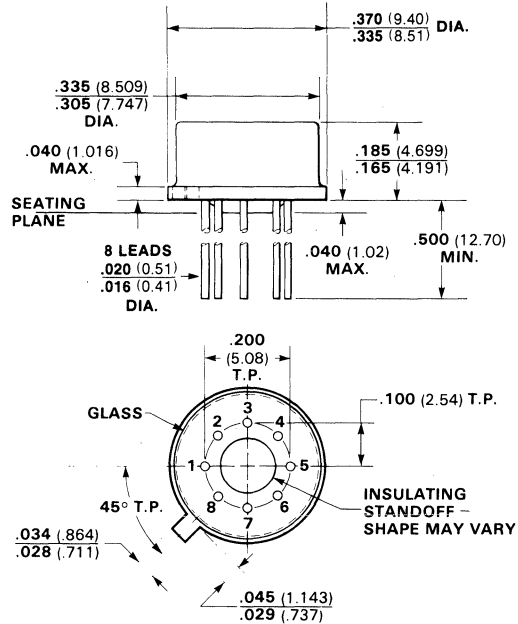


### 5G

#### NOTES:

- Leads are gold-plated kovar
- Twelve leads thru
- 15 mil kovar header
- Package weight is 1.08 grams

## (JEDEC TO-99 OUTLINE)

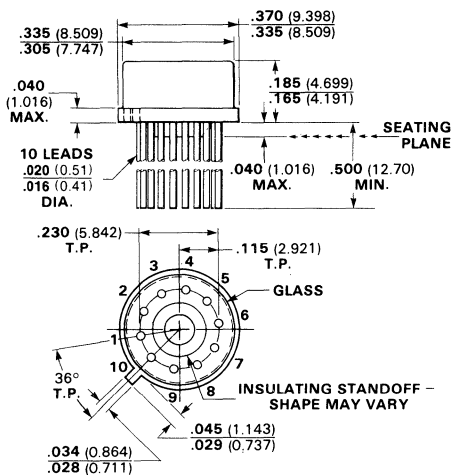


### 5S

#### NOTES:

- Leads are solder dipped to seating plane
- Seven leads thru, leads No. 4 connected to case
- 15 mil kovar header
- Package weight is 1.22 grams.

## (JEDEC TO-100 OUTLINE)



### 5U

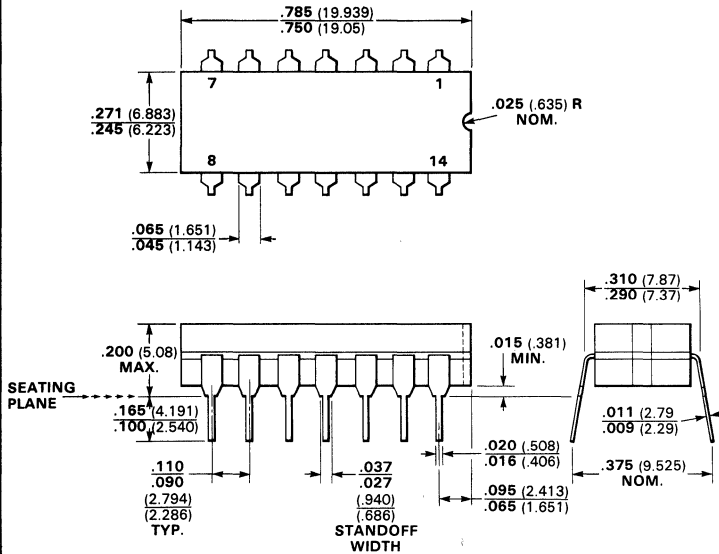
#### NOTES:

- Leads are gold-plated kovar
- Ten leads through
- High RTH package
- 15 mil kovar header
- Package weight is 1.32 grams

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 14-PIN HERMETIC DUAL IN-LINE (JEDEC TO-116 OUTLINE)

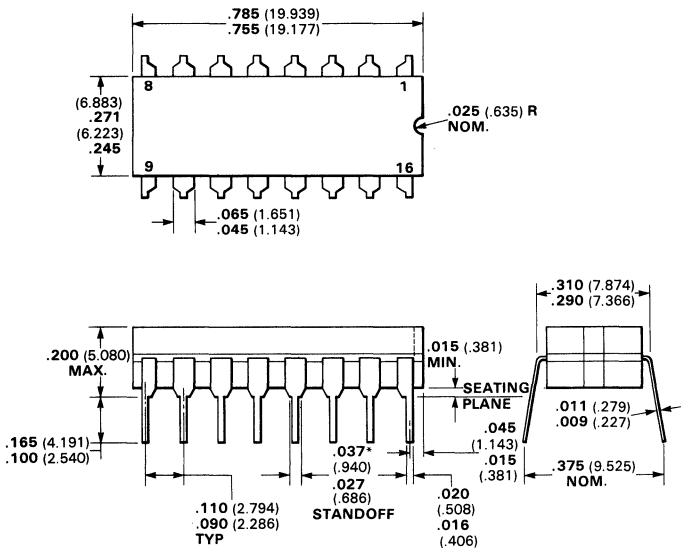


### 6A

#### NOTES:

- Pins are intended for insertion in hole rows on .300" (7.620) centers
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Board-drilling dimensions should equal your practice for .020" (0.508) diameter pin
- Pins are alloy 42
- Package weight is 2.0 grams

## 16-PIN DUAL IN-LINE



### 6B

#### NOTES:

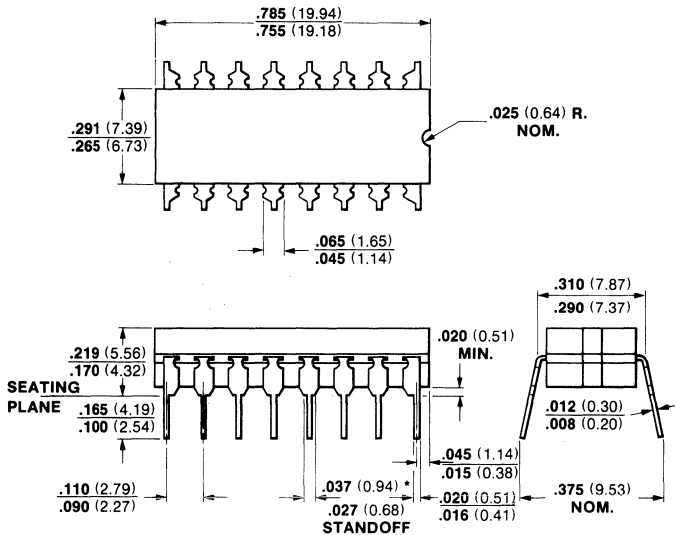
- Pins are tin-plated 42 alloy
- Pins are intended for insertion in hole rows on .300" centers (7.62)
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Board-drilling dimensions should equal your practice for .020 inch diameter pin (0.51)
- Hermetically sealed alumina package
- Cavity size is .110 x .140 (2.79 x 3.56)
- Package weight is 2.0 grams
- \*The .037-.027 dimension does not apply to the corner pins

All dimensions in inches (bold) and millimeters (parentheses)



# FAIRCHILD PACKAGE OUTLINES

## 16-PIN VITREOUS GLASS DUAL IN-LINE



### 6D

#### NOTES:

Pins are tin-plated kovar or nickel alloy 42  
Pins are intended for insertion in hole rows  
on .300" (7.62) centers.

They are purposely shipped with "positive"  
misalignment to facilitate insertion.

Board-drilling dimensions should equal  
your practice for .030 (0.76) inch  
diameter pins.

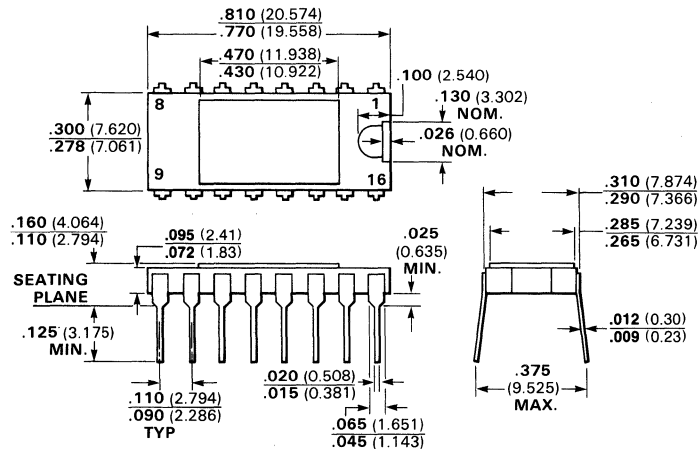
Hermetically sealed alumina package  
(black).

Cavity size is .130 x .230 (3.30 x 5.84)

\*The .037-.027 dimension does not apply to  
the corner pins.

Package weight is 2.2 grams.

## 16-PIN DUAL IN-LINE (METAL CAP)



### 6E

#### NOTES:

Pins gold-plated nickel alloy 42.

Base is AL203

Cap is kovar

Pins are intended for insertion in hole rows  
on .300" (7.62) centers. They are purposely  
shipped with positive misalignment to  
facilitate insertion.

Board-drilling dimensions should equal  
your practice for .020" (0.51)  
diameter pin.

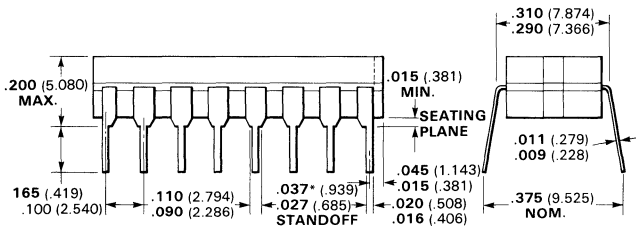
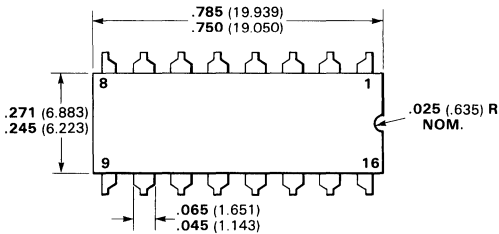
Cavity size is .175 x .220 (4.44 x 5.59).

Package weight is 2.0 grams.

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 16-PIN DUAL IN-LINE



**6F**

**NOTES:**

Pins are tin-plated kovar or nickel alloy 42  
 Pins are intended for insertion in hole rows  
 on .300" centers (7.62)

They are purposely shipped with "positive"  
 misalignment to facilitate insertion

Board-drilling dimensions should equal  
 your practice for .030 inch diameter  
 pins (0.76)

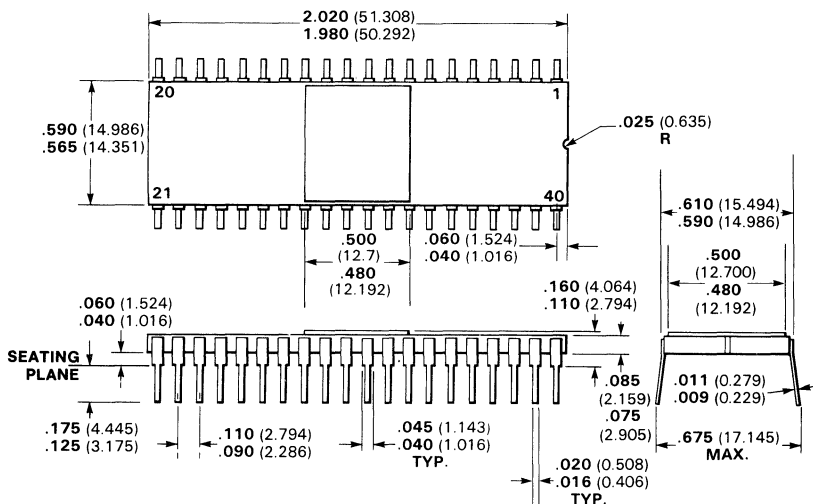
Hermetically sealed alumina package  
 (black)

Cavity size is .110 x .140 (2.79 x 3.56)

\*The .037-.027 dimension does not apply to  
 the corner pins

Package weight is 2.0 grams

## 40-PIN DUAL IN-LINE SIDE-BRAZED DUAL IN-LINE



**6I**

**NOTES:**

Pin material nickel gold-plated kovar

Cap is kovar

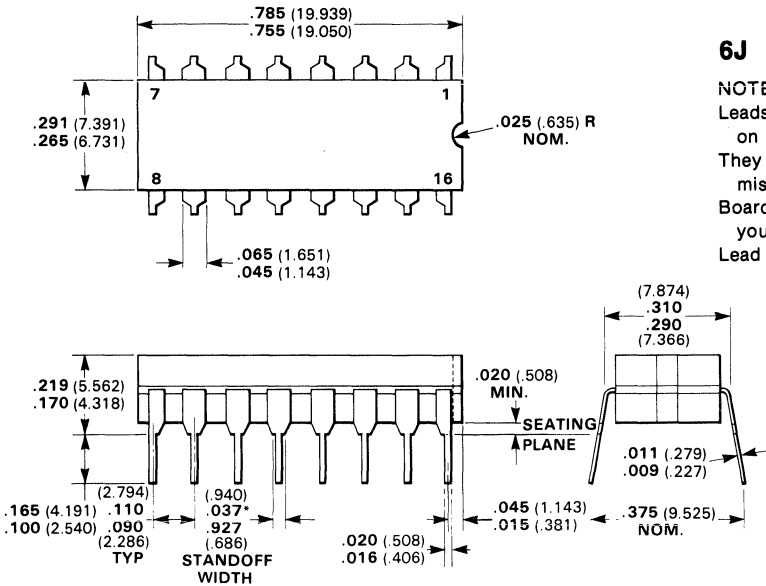
Base is ceramic

Package weight is 6.5 grams

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 16-PIN DUAL IN-LINE

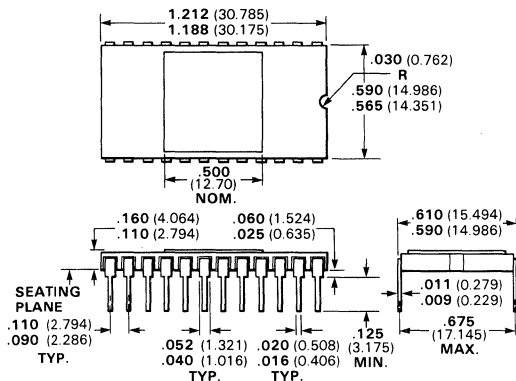


### 6J

#### NOTES:

Leads are intended for insertion in hole rows on .300" centers  
They are purposely shipped with "positive" misalignment to facilitate insertion  
Board-drilling dimensions should equal your practice for .020 inch diameter lead  
Lead No. 4 is internally grounded

## 24-PIN DUAL IN-LINE SIDE-BRAZED PACKAGE



### 6M

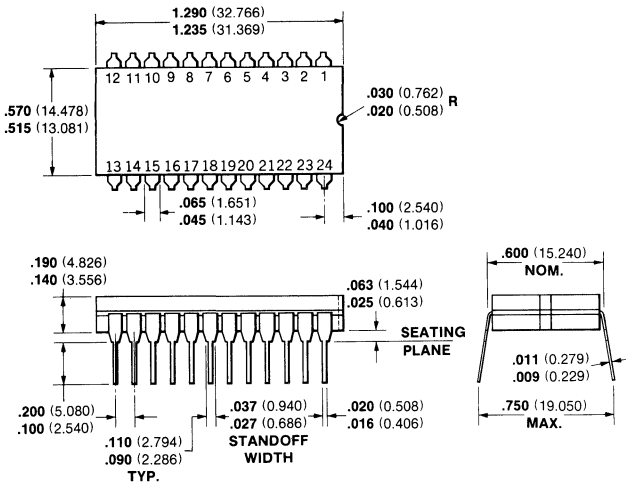
#### NOTES:

Pins are nickel-gold plated kovar  
Cap is gold plated kovar  
Base is ceramic  
Cavity size is .250" x .250" (6.35 x 6.35)  
Board drilling dimensions should equal your practice for .020" (0.50) diameter pin  
Pins are intended for insertion in hole rows on .600" (15.24) centers. They are purposely shipped with "positive" misalignment to facilitate insertion  
Package weight is 4 grams

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 24-PIN DUAL IN-LINE

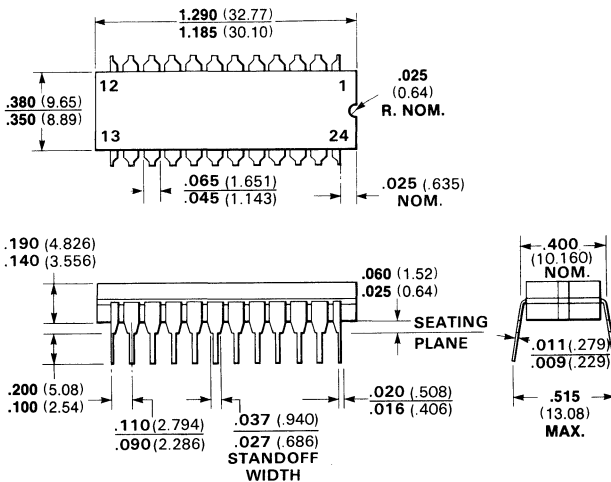


### 6N

**NOTES:**

- Pins are tin-plated 42 alloy
- Package material is alumina
- Pins are intended for insertion in hole rows on .600 (15.24) centers
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Cavity size is .230 x .230 (5.84 x 5.84)
- Package weight is 6.5 grams

## 24-PIN DUAL IN-LINE



### 6Q

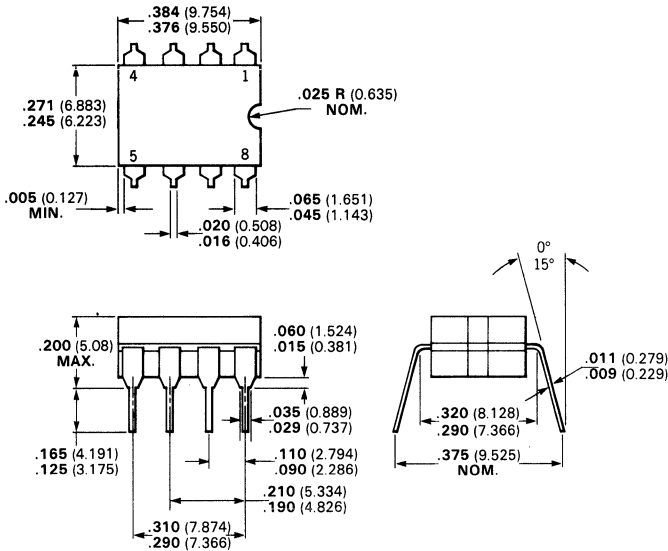
**NOTES:**

- Pins are tin-plated 42 alloy
- Package material is alumina
- Pins are intended for insertion in hole rows on .400 (10.16) centers
- They are purposely shipped with "positive" misalignment to facilitate insertion.
- Cavity size is .195 x .195 (4.95 x 4.95)
- Package weight is 6.0 grams

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 8-PIN DUAL IN-LINE

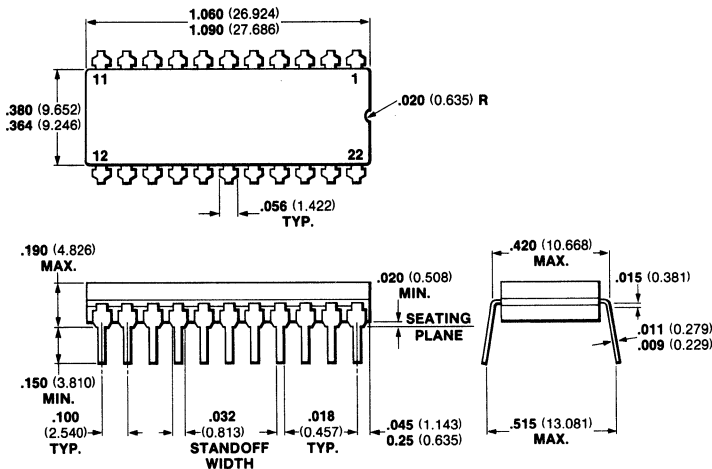


**6T**

**NOTES:**

- Pins are tin-plated kovar
- Pins are intended for insertion in hole rows on .300" centers
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Board-drilling dimensions should equal your practice for .020 inch diameter pin
- Hermetically sealed alumina package
- Cavity size is .110 x .140
- Package weight is 1.0 grams

## 22-PIN CERAMIC DUAL IN-LINE



**6V**

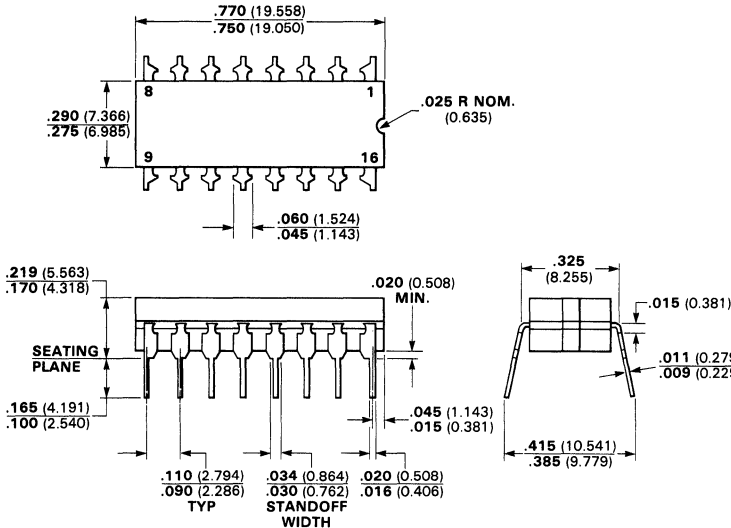
**NOTES:**

- Pins are tin-plated 42 alloy
- Package material is alumina
- Pins are intended for insertion in hole rows on .400 centers
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Cavity size is .200 x .250 (5.08 x 6.35)
- Package weight is 6.0 grams

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 16-PIN DUAL IN-LINE

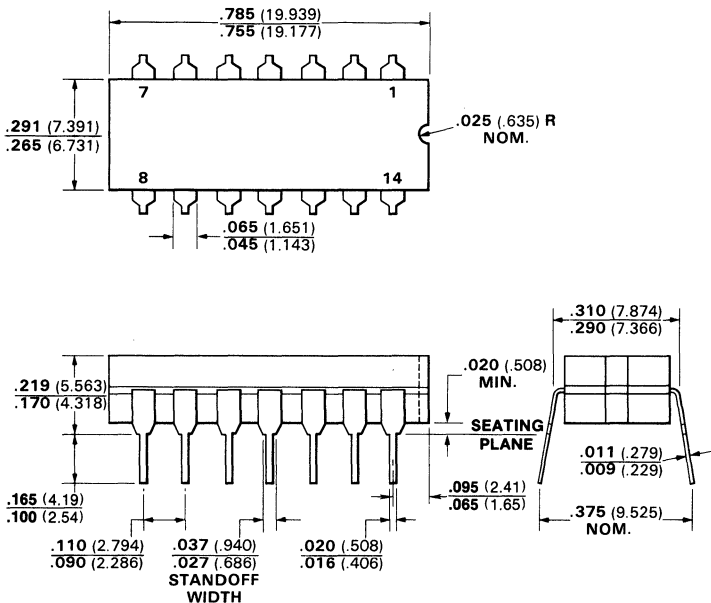


## 6Z

### NOTES:

- Pins are tin-plated kovar
- Pins are intended for insertion in hole rows on .300" centers
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Board-drilling dimensions should equal your practice for .020 inch diameter pin
- Hermetically sealed alumina package
- Cavity size is .160 x .250
- \*The .034-.030 dimension does not apply to the corner pins
- Package weight is 2.2 grams

## 14-PIN DUAL IN-LINE (JEDEC TO-116 OUTLINE)



## 7A

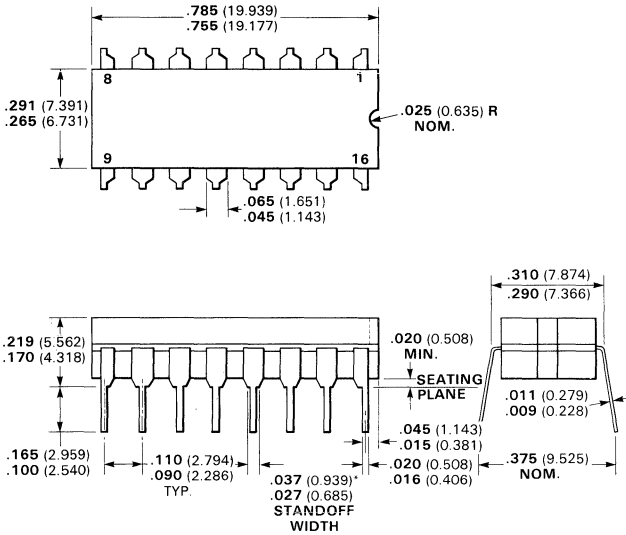
### NOTES:

- Pins are tin-plated 42 alloy
- Pins are intended for insertion in hole rows on .300" (7.62) centers.
- They are purposely shipped with "positive" misalignment to facilitate insertion.
- Board-drilling dimensions should equal your practice for a conventional .020" (0.51) diameter pin.
- Hermetically sealed alumina package.
- Cavity size is .130 x .250 (3.30 x 6.35)
- \*Similar to JEDEC TO-116 except for package width.
- Package weight is 2.2 grams.

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 16-PIN DUAL IN-LINE

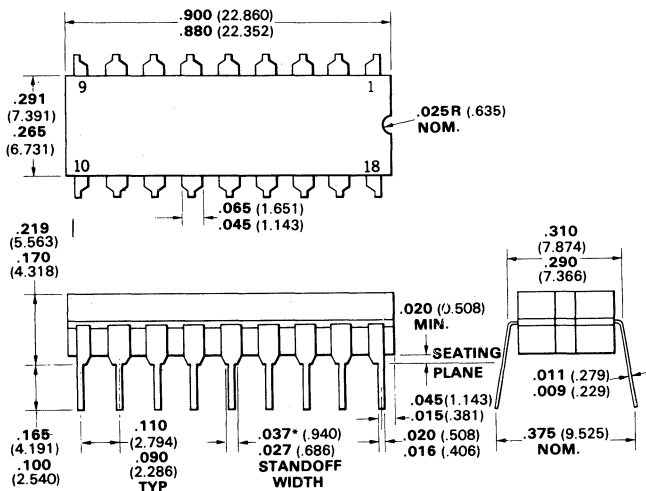


### 7B

**NOTES:**

- Pins are tin-plated 42 alloy
- Pins are intended for insertion in hole rows on .300" (7.62) centers.
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Board-drilling dimensions should equal your practice for .020 (0.51) inch diameter pin
- Hermetically sealed alumina package
- Cavity size is .130 x .230
- \*The .037-.027 (0.94-0.69) dimension does not apply to the corner pins
- Package weight is 2.2 grams

## 18-PIN CERAMIC DUAL IN-LINE



### 7D

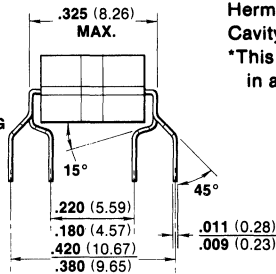
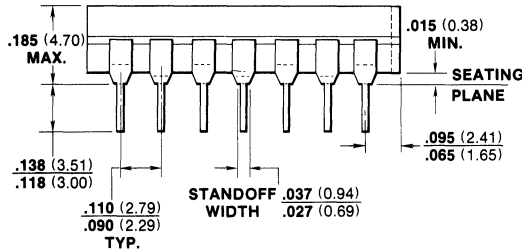
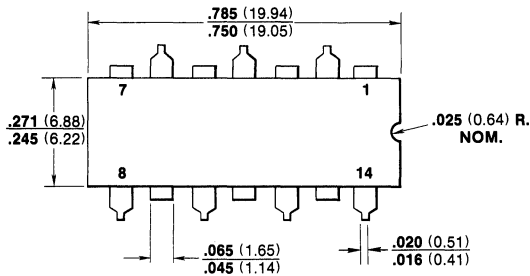
**NOTES:**

- Pins are intended for insertion in hole rows on .300" (7.620) centers
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Board-drilling dimensions should equal your practice for .020 inch (0.508) diameter pin
- Pins are alloy 42

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 14-PIN QUAD IN-LINE (JEDEC TO-116 OUTLINE)\*

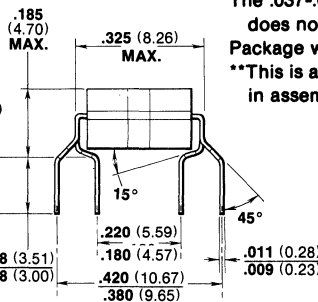
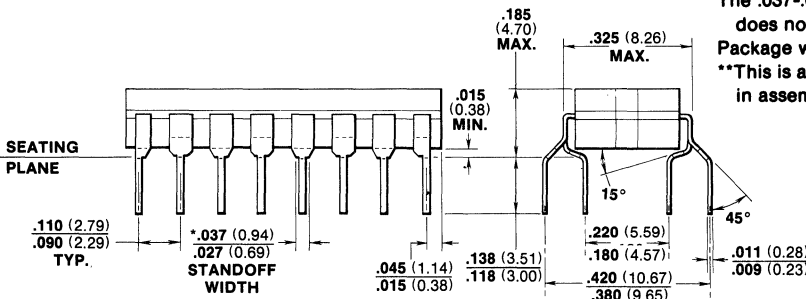
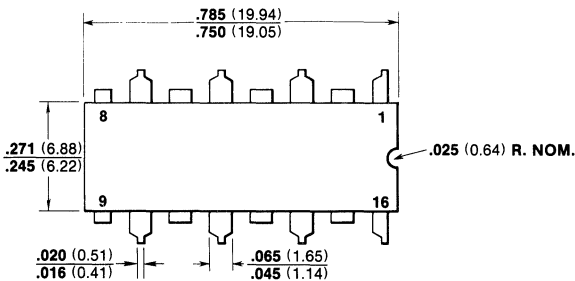


**7F**

**NOTES:**

- Pins are tin-plated kovar
- Board-drilling dimensions should equal your practice for .020 (0.51) inch diameter pin
- Hermetically sealed alumina package
- Cavity size is .110 x .140 (2.79 x 3.56)
- \*This is a 6A package with the pins formed in assembly

## 16-PIN QUAD\*\* IN-LINE



**7H**

**NOTES:**

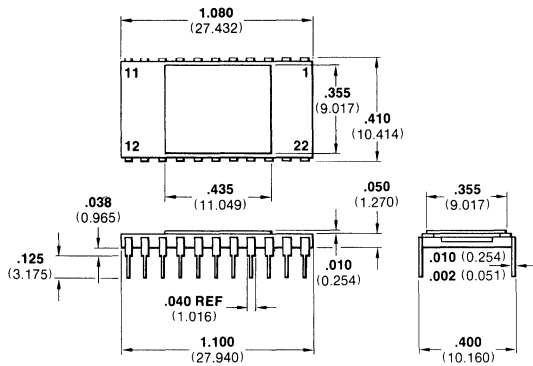
- Pins are tin plated kovar
- Board-drilling dimensions should equal your practice for .020 (0.51) inch diameter pin
- Hermetically sealed alumina package
- Cavity size is .110 x .140 (2.79 x 3.56)
- The .037-.027 (0.94-0.69) dimension does not apply to the corner pins
- Package weight is 2.0 grams.
- \*\*This is a 6B package with the pins formed in assembly.

All dimensions in inches (bold) and millimeters (parentheses)



# FAIRCHILD PACKAGE OUTLINES

## 22-PIN SIDE-BRAZED (METAL CAP)

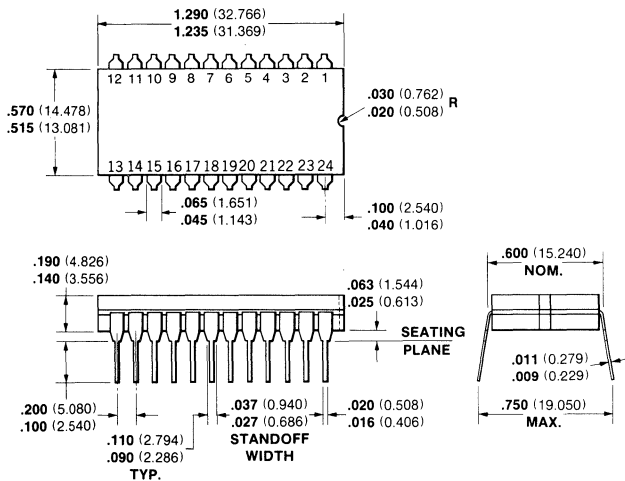


**71**

**NOTES:**

- Pins are Au-plated kovar
- Cap is kovar
- Base is ceramic
- Cavity size .220 x .250 (5.588 x 6.35)
- Package weight is 4.0 grams

## 24-PIN VITREOUS GLASS CerdIP (MSI)



**7L**

**NOTES:**

- Pins are tin-plated 42 alloy
- Package material is alumina
- Pins are intended for insertion in hole rows on .600 (15.24) centers
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Cavity size is .230 x .230 (5.84 x 5.84)
- Package weight is 6.5 grams

**7M**

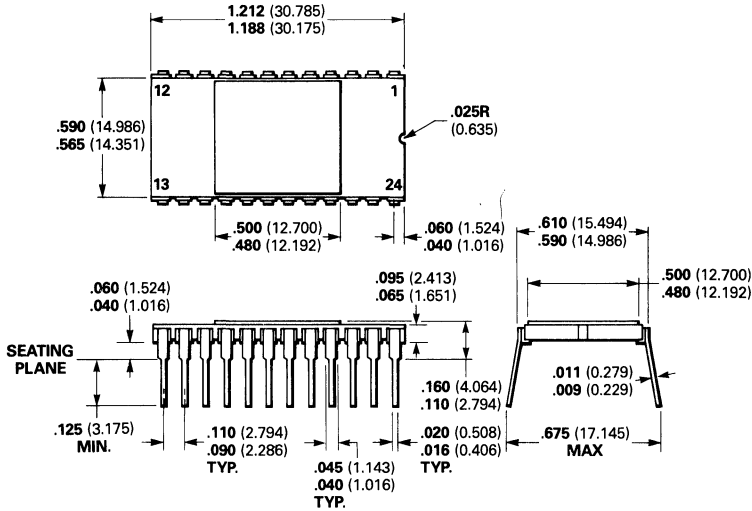
**NOTES:**

- Pins are tin-plated alloy 42
- Package material is alumina
- Pins are intended for insertion in hole rows on .600 (15.24) centers
- They are purposely shipped with "positive" misalignment to facilitate insertion
- Cavity size is .245 x .245
- Package weight is 6.5 grams

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 24-PIN SIDE-BRAZED PACKAGE DUAL IN-LINE

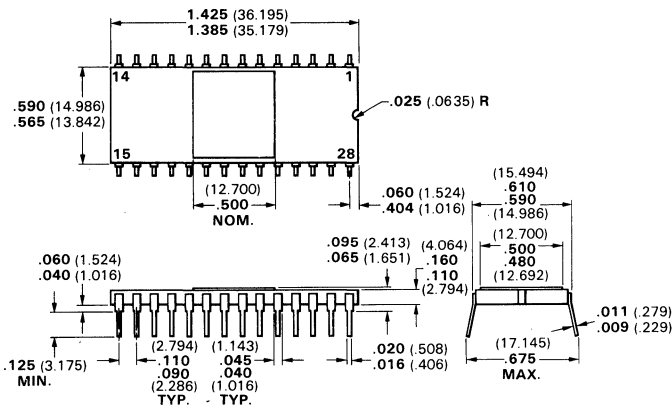


### 7R

#### NOTES:

- Pins are nickel gold-plated kovar
- Cap is kovar
- Base is ceramic
- Cavity size is .250 x .250 (6.35 x 6.35)

## 28-PIN CERAMIC DUAL IN-LINE



### 7Y

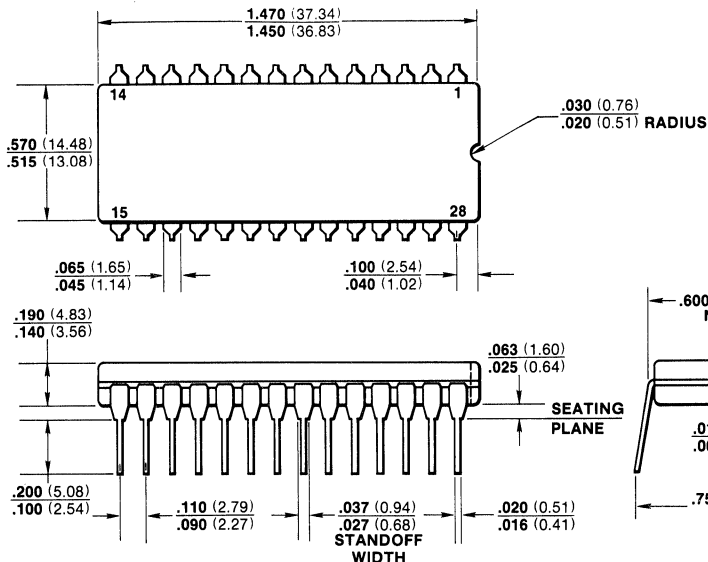
#### NOTES:

- Pins are gold-plated kovar
- Package material is ceramic
- Cavity size is .250 x .250 (6.35 x 6.35)
- Package weight is 4.0 grams

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

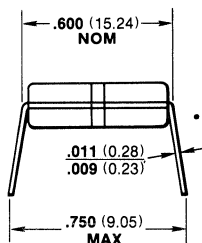
## 28-PIN DUAL IN-LINE SIDE-BRAZED



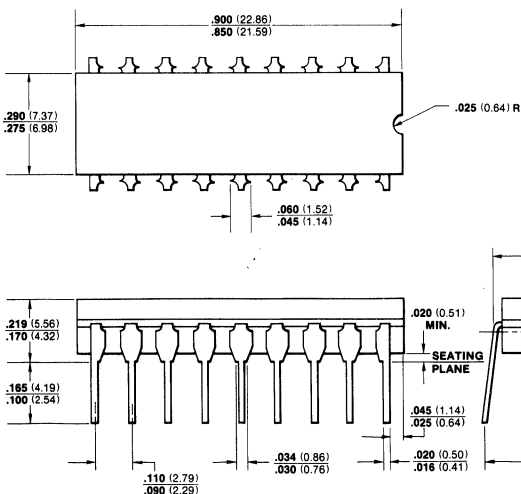
### 8E

#### NOTES:

Pins are tin-plated alloy 42  
 Package material is alumina  
 Pins are intended for insertion in hole rows  
 on .600 (15.24) centers.  
 They are purposely shipped with "positive"  
 misalignment to facilitate insertion.  
 Cavity size is .240 (6.096) x .240 (6.096)  
 Package weight is 7.5 grams



## 18-PIN CERAMIC DUAL IN-LINE



### 8F

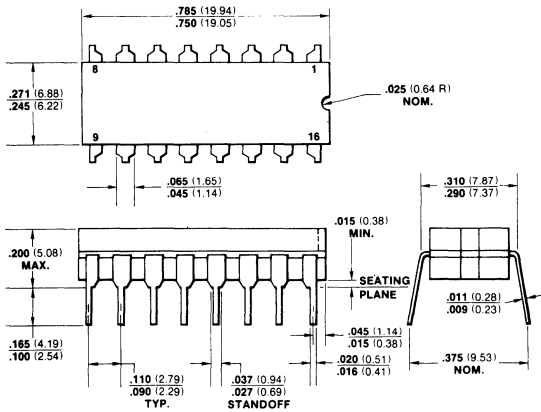
#### NOTES:

Pins are tin-plated kovar  
 Pins are intended for insertion in hole rows  
 on .300" (7.62) centers.  
 They are purposely shipped with "positive"  
 misalignment to facilitate insertion.  
 Board-drilling dimensions should equal  
 your practice for .020 (.508) inch  
 diameter pin.  
 Hermetically sealed alumina package.  
 Cavity size is .160 (4.064) x .250 (6.35).  
 \*The .034-.030 dimension does not apply  
 to the corner pins.  
 Package weight is 3.0 grams.

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 16-PIN CERAMIC DUAL IN-LINE



### 8I

**NOTES:**

Pins are tin-plated 42 alloy  
Pins are intended for insertion in hole rows  
on .300" (7.62) centers.

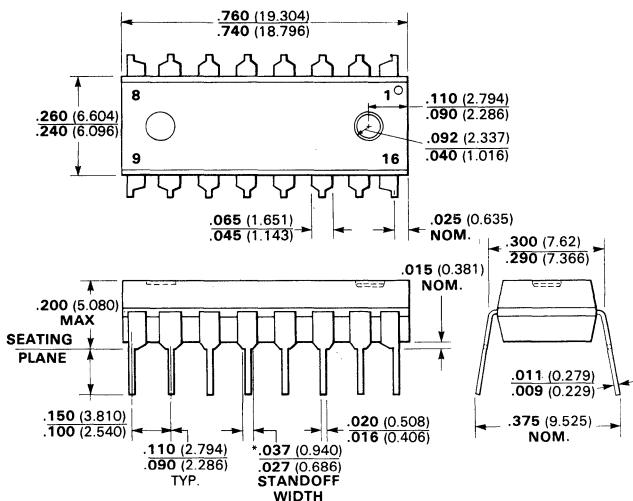
They are purposely shipped with "positive"  
misalignment to facilitate insertion.  
Board-drilling dimensions should equal  
your practice of .020 (0.51) inch  
diameter pin.

Hermetically sealed alumina package.

\*This dimension does not apply to the  
corner pin

Package weight is 2.0 grams.

## 16-PIN PLASTIC DUAL IN-LINE



### 8K

**NOTES:**

Pins are tin-plated kovar or alloy 42 nickel  
\*Package material varies depending on the  
product line

Pins are intended for insertion in hole rows  
on .300" (7.62) centers

They are purposely shipped with "positive"  
misalignment to facilitate insertion

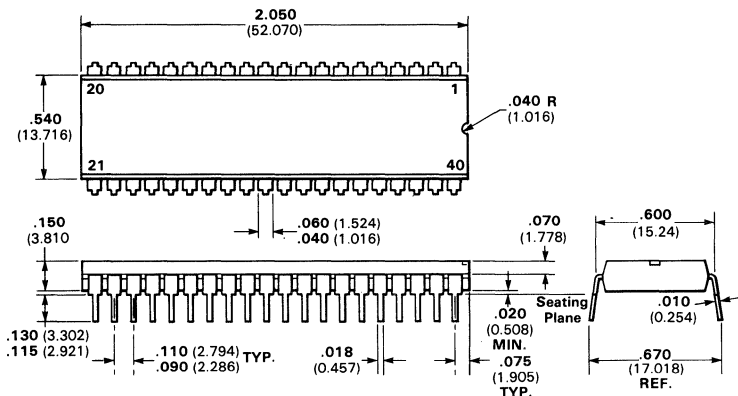
Board-drilling dimensions should equal  
your practice for .020" (0.51) diameter pin

\*\*\*The .037-.027 (0.94-0.69) dimension does  
not apply to the corner leads

\*\*Notch or ejector hole varies depending on  
the product line

Package weight is 0.9 gram

## 40-PIN PLASTIC DUAL IN-LINE



### 8P

**NOTES:**

Pins are tin-platd kovar  
Package material is plastic

Pins are intended for insertion in hole rows  
on .600 centers

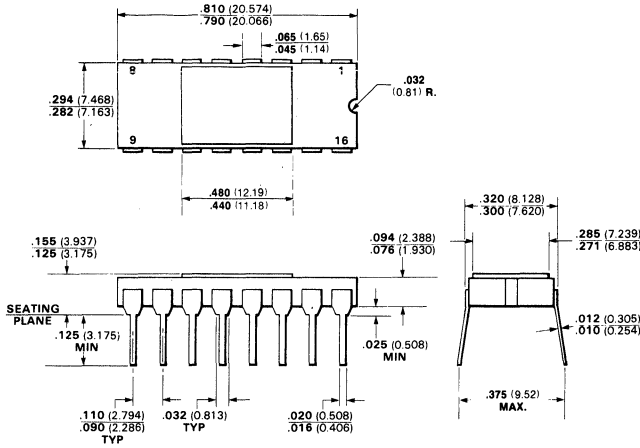
They are purposely shipped with positive  
misalignment to facilitate insertion.

Weight: 7 grams

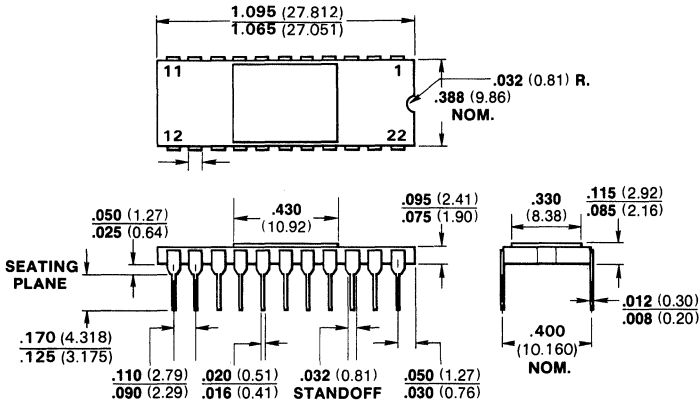
All dimensions in inches (bold) and  
millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

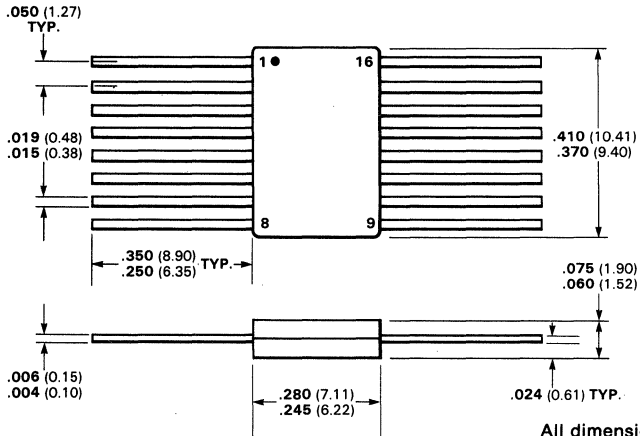
## 16-PIN DUAL IN-LINE (METAL CAP)



## 22-PIN DUAL IN-LINE (METAL CAP)



## 16-PIN CERPAK



### 8R

#### NOTES:

- Pins gold-plated kovar
- Base is AL203, dark ceramic
- Cap is kovar
- Pins are intended for insertion in hole rows on **.300"** centers. They are purposely (**7.62**) shipped with positive misalignment to facilitate insertion
- Board-drilling dimensions should equal your practice for **.020"** diameter pin (5.08)
- Cavity size is **.175 x .240** (4.44 x 6.10)

### 8T

#### NOTES:

- Pins are gold-plated kovar
- Package material is alumina (white)
- Pins are intended for insertion in hole rows on **.400"** centers. (10.16)
- They are purposely shipped "positive" misalignment to facilitate insertion
- Board-drilling dimensions should equal your practice for **.030** inch diameter pin (0.76)
- Low temperature seal
- Cavity size is **.200** square (5.08)
- Weight is 2.0 grams.

### 8U

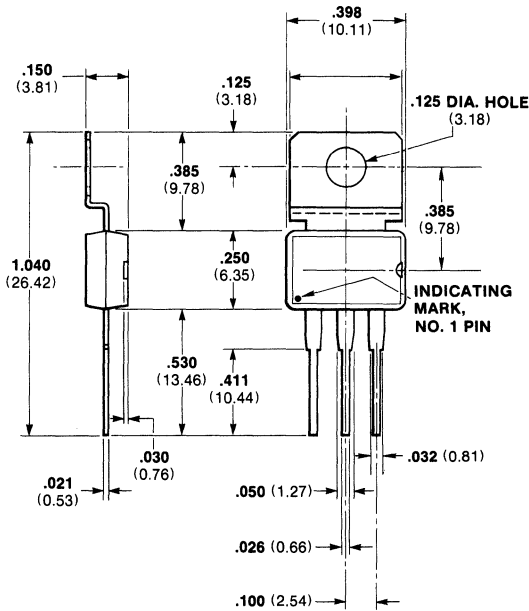
#### NOTES:

- Pins are tin-plated 42 alloy
- Cap and base are alumina
- Cavity size is **.140 x .200**, (3.556 x 5.08)
- silver plated
- Package weight is 0.4 gram

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 3-PIN SINGLE SIDE POWER PLASTIC MINIDIP

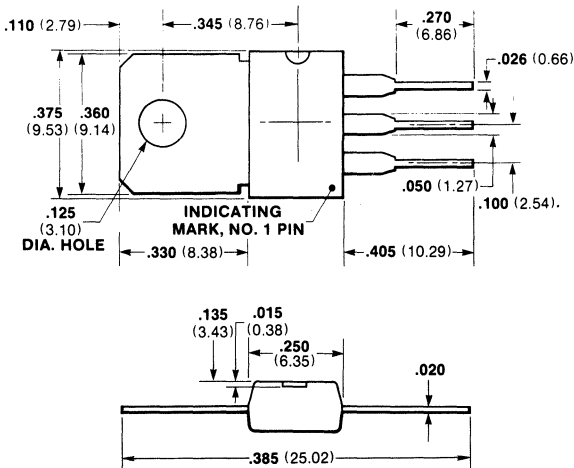


## 8Y (U-1)

### NOTES:

- Pins are tin plated copper
- Package weight is 0.6 gram
- Package material is plastic
- Tab is electrically insulated from pins
- This package is intended to be mounted with the tab flush with the top of the P.C. board or heat sink. A No. 4 screw may be used to secure the package. Thermal compound is recommended.
- All dimensions nominal.

## 3-PIN SINGLE SIDE POWER PLASTIC MINIDIP



## 8Y (U-2)

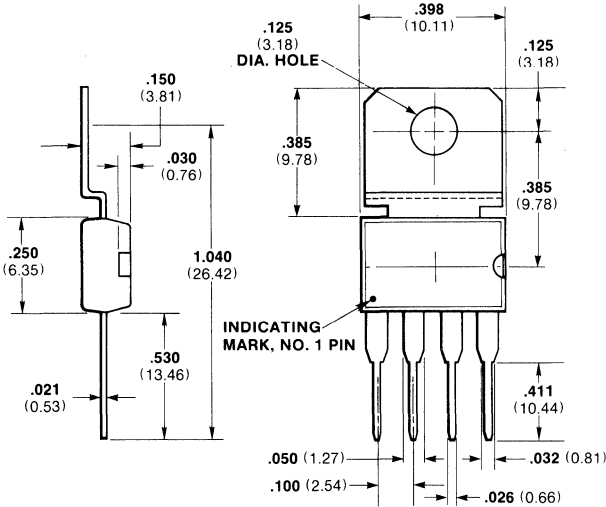
### NOTES:

- Package is plastic with tin-plated copper leads
- Package weight is 0.6 gram
- Center lead is electrical contact with mounting tab
- For detailed package configuration, refer to FSB-90717

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 4-PIN SINGLE SIDE POWER PLASTIC MINIDIP

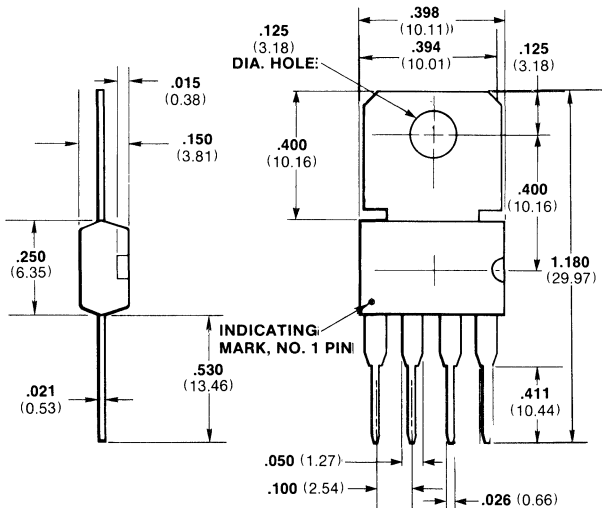


### 8Z (U-1)

**NOTES:**

- Package is plastic with tin-plated copper pins
- Board-drilling dimensions should equal your practice for .033 (0.84) inch diameter pins
- Package weight is 0.6 gram
- Tab is electrically insulated from pins
- This package is intended to be mounted with the tab flush with the top of the PC board or heat sink. A No. 4 screw may be used to secure the package. Thermal compound is recommended.

## 4-PIN SINGLE SIDE POWER PLASTIC MINIDIP



### 8Z (U-2)

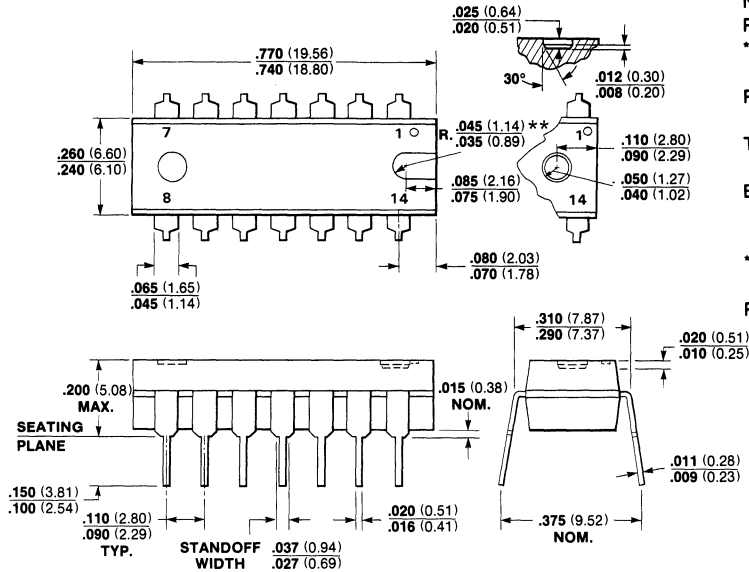
**NOTES:**

- Package is plastic with tin-plated pins
- Board-drilling dimensions should equal your practice for .033 (0.84) inch diameter pin
- Package weight is 0.6 gram
- Tab is electrically insulated from pins

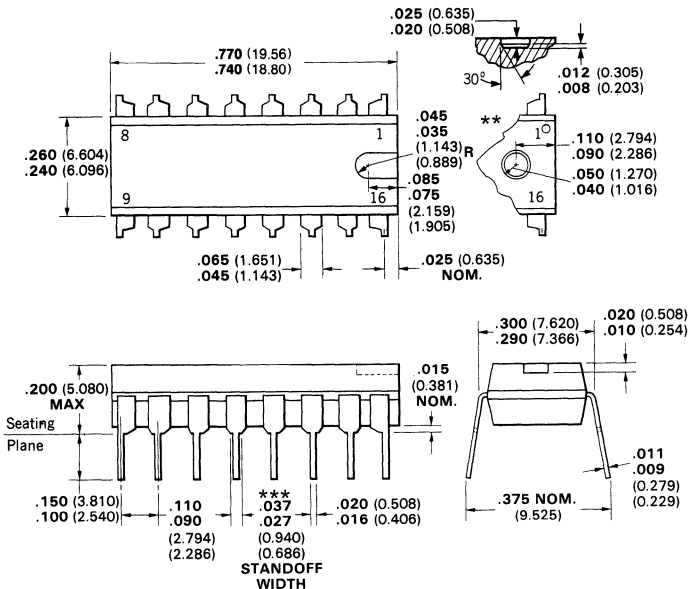
All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 14-PIN \*PLASTIC DUAL IN-LINE (JEDEC TO-116 OUTLINE)



## 16-PIN PLASTIC\* DUAL IN-LINE



### 9A

#### NOTES:

Pins are tin plated kovar

\*Package material varies depending on the product line

Pins are intended for insertion in hole rows on .300" (7.62) centers

They are purposely shipped with "positive" misalignment to facilitate insertion

Board-drilling dimensions should equal your practice for .020 (0.508) inch diameter pin

\*\*Notch or ejector hole varies depending on the product line

Package weight is 0.9 gram

### 9B

#### NOTES:

Pins are tin-plated kovar or alloy 42 nickel.

Pins are intended for insertion in hole rows on .300" (7.62) centers

Leads purposely have a "positive" misalignment to facilitate insertion

Board-drilling dimensions should equal your practice for .020 inch (0.51) diameter pin.

Package weight is 0.9 gram

\*Package material varies depending on the product line

\*\*\*The .037-.027 (0.94-0.69) dimension does not apply to the corner pins

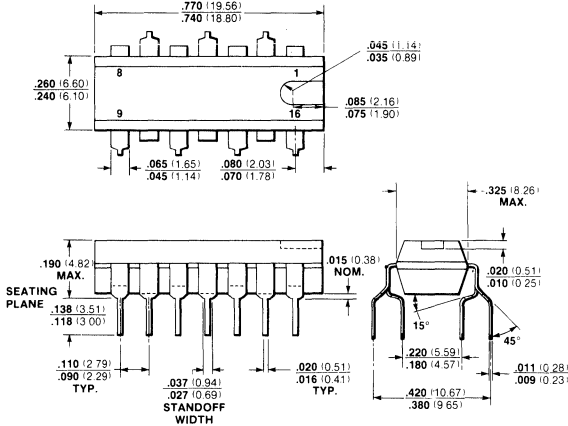
\*\*Notch or ejector hole varies depending on the product line

All dimensions in inches (bold) and millimeters (parentheses)



# FAIRCHILD PACKAGE OUTLINES

## 14-PIN PLASTIC QUAD IN-LINE (JEDEC TO-116 OUTLINE\*)

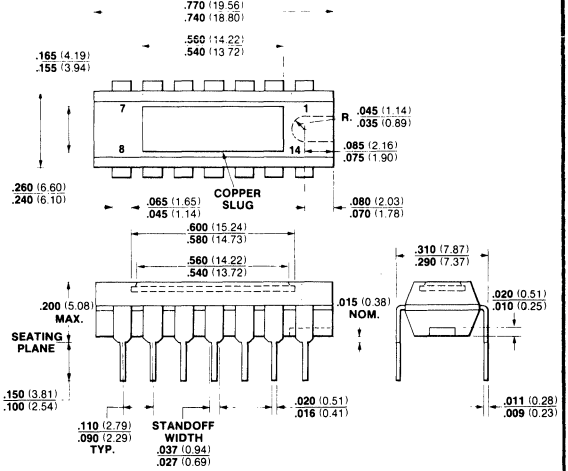


**9C**

**NOTES:**

- Package is epoxy with tin-plated kovar pins
- Board-drilling dimensions should equal your practice for .020 (0.51) inch diameter pin
- Package weight is 0.9 gram
- \*This is a 9A package with the pins formed in assembly. Only the notched and epoxy version is used

## 14-PIN PLASTIC DUAL IN-LINE (WITH COPPER SLUG)

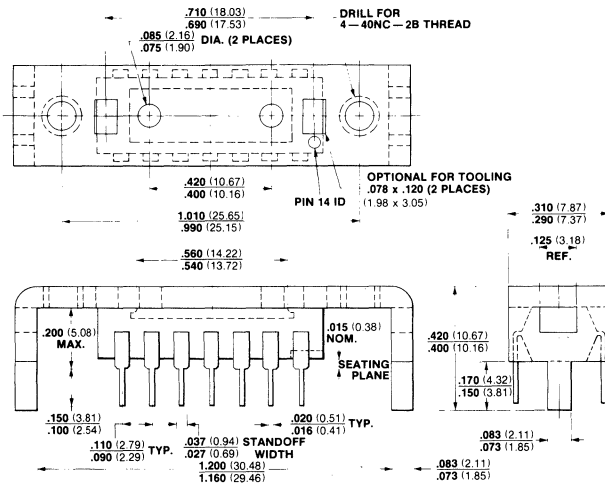


**9H**

**NOTES:**

- Leads are gold-plated kovar
- Board-drilling dimensions should equal your practice for .020 (0.51) inch diameter lead
- Package material is epoxy with copper slug
- Package weight is 0.9 gram

## 14-PIN PLASTIC DUAL IN-LINE (COPPER SLUG AND HEAT BRACKET)\*



**9J**

**NOTES:**

- Pins are gold-plated kovar
- Package material is epoxy with copper slug and tin-plated copper bracket
- Board-drilling dimensions should equal your practice for .020 (0.51) diameter pin
- \*Package is the same as 9H except that a heat bracket is attached

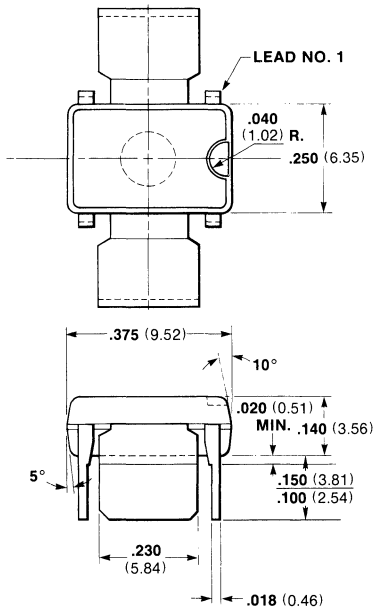
All dimensions in inches (bold) and millimeters (parentheses)





# FAIRCHILD PACKAGE OUTLINES

## 4-PIN POWER MINIDIP



## 9V (T1)

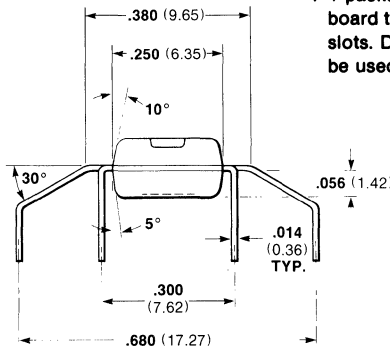
### NOTES:

Package is plastic with tin-plated copper leads

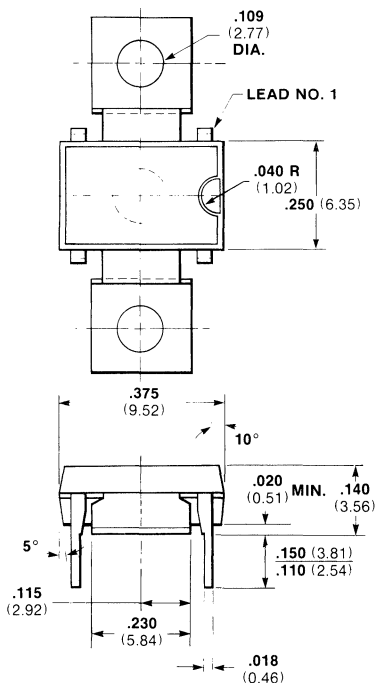
For detailed package configuration refer to FSD-90669

Package weight is 0.6 gram

T-1 package can be soldered to the PC board through .0230" x .020 (0.584 x 0.51) slots. Double or single-sided boards may be used.



## 4-PIN POWER MINIDIP



## 9V (T2)

### NOTES:

Package is plastic with tin-plated copper pins and wings

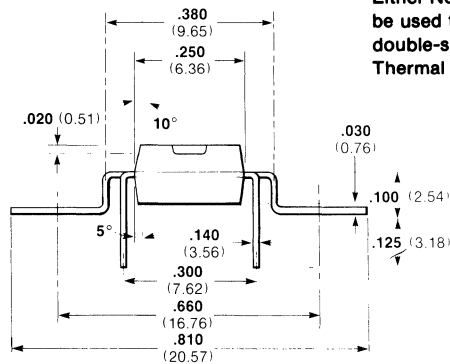
For detailed package configuration refer to FSD-90670.

Package weight is 0.6 gram

T-2 package is intended to be mounted with the tabs flush with the top of the PC board.

Either No. 2-56 screws or No. 2 rivets may be used to secure the package. Single or double-sided PC boards may be used.

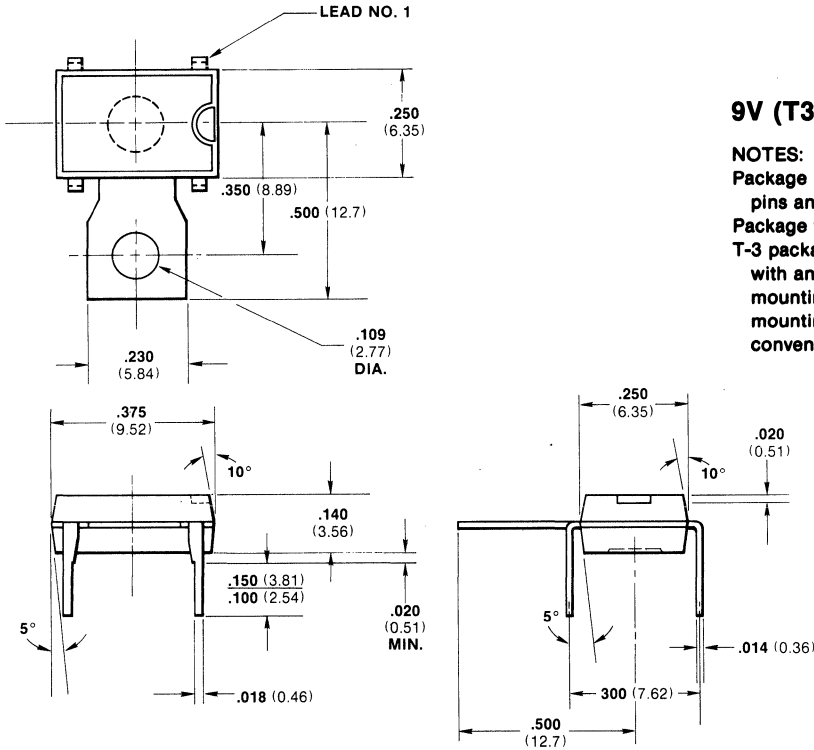
Thermal compound is recommended.



All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 4-PIN POWER MINIDIP



## 9V (T3)

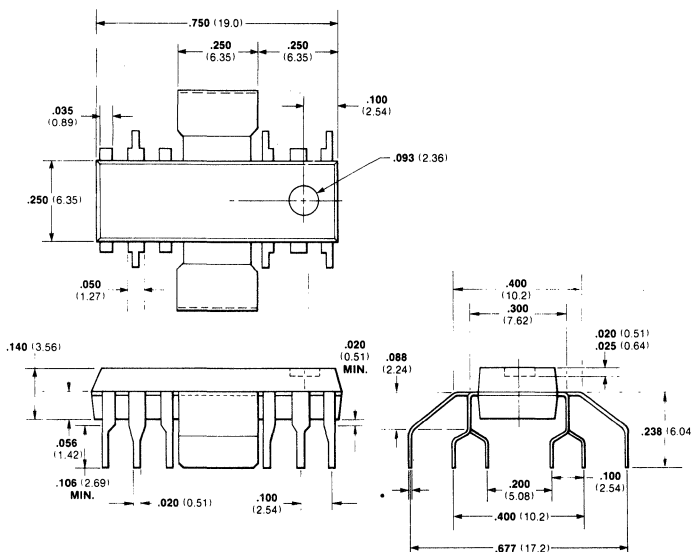
### NOTES:

Package is plastic with tin-plated copper pins and wings

Package weight is 0.6 gram

T-3 package is intended for applications with an external heat sink. A No. 2 mounting hole is provided for case of mounting. The tab may be bent to any convenient angle.

## 12-PIN POWER PLASTIC DUAL IN-LINE



## 9W (P3)

### NOTES:

Package is plastic with tin plated copper pins and wings

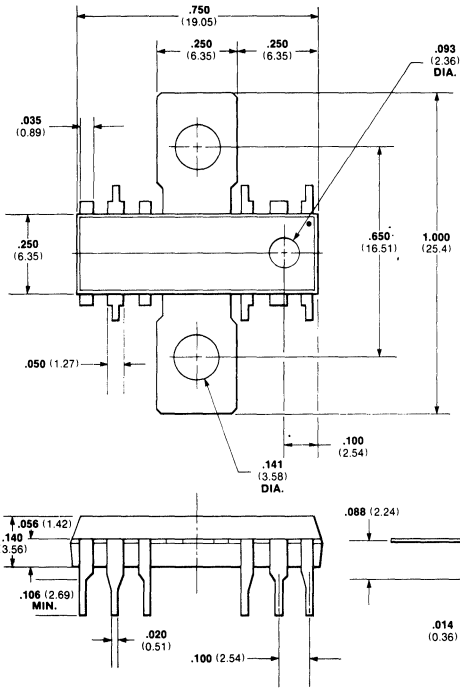
For detailed package configuration refer to FSB-90698

Package weight is 0.9 gram

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 12-PIN POWER PLASTIC DUAL IN-LINE



### 9W (P4)

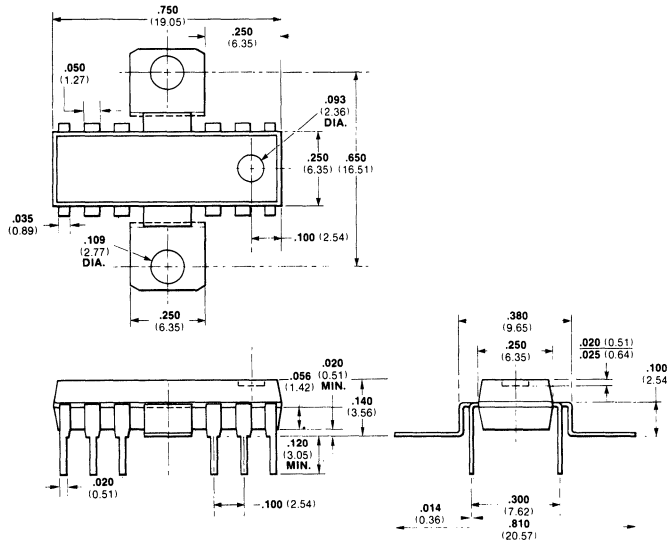
#### NOTES:

Package is plastic with tin-plated copper pins and wings

For detailed package configuration refer to FSB-90699

Package weight is 0.9 gram

## 12-PIN POWER PLASTIC DUAL IN-LINE



### 9W (P5)

#### NOTES:

Package is plastic with tin-plated copper pins and wings

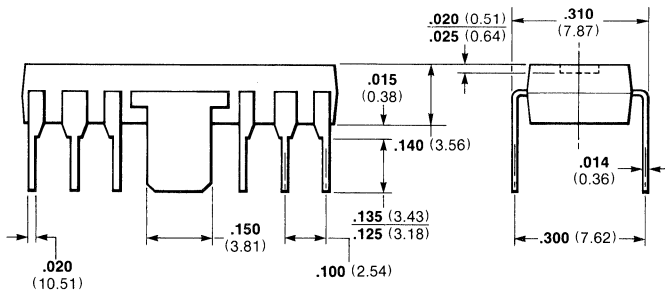
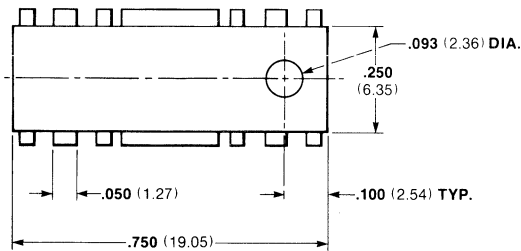
For detailed package configuration refer to FSD-90740.

Package weight is 0.9 gram

All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 12-PIN POWER PLASTIC DUAL IN-LINE

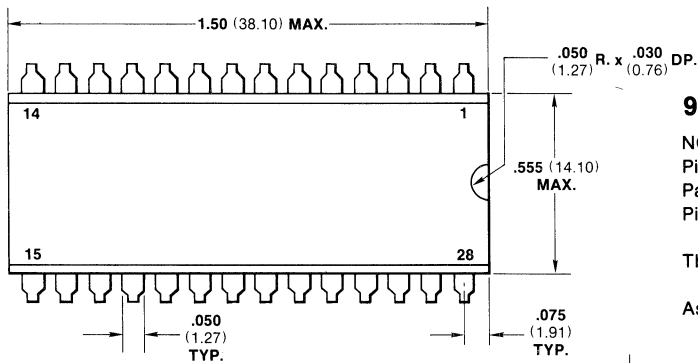


## 9W (P6)

### NOTES:

Package is plastic with tin plated copper pins and wings  
 For detailed package configuration refer to FSB-90126  
 Package weight is 0.9 gram

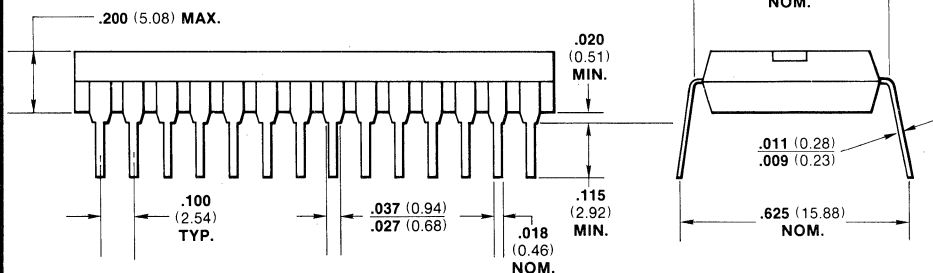
## 28-PIN PLASTIC DUAL IN-LINE



## 9Y

### NOTES:

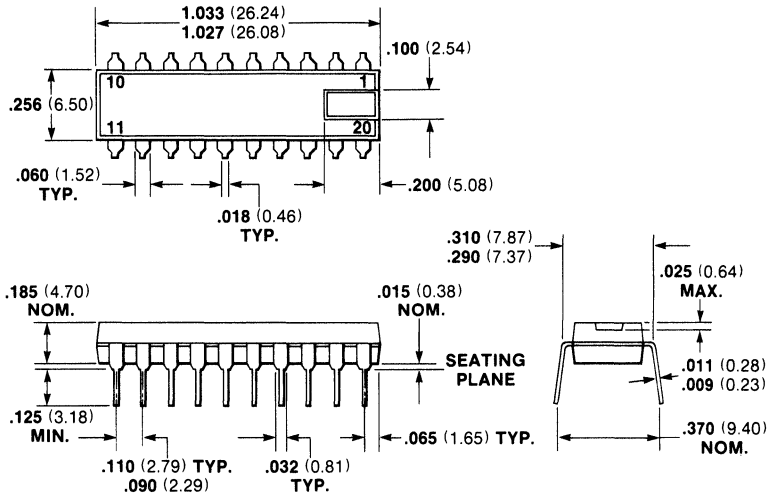
Pins are tin-plated kovar, alloy 42 or copper  
 Package material is plastic  
 Pins are intended for insertion in hole rows on **.600 (15.24)** centers  
 They are purposely shipped positive misalignment to facilitate insertion  
 Assembled package weight 4.8 grams



All dimensions in inches (bold) and millimeters (parentheses)

# FAIRCHILD PACKAGE OUTLINES

## 20-PIN PLASTIC DUAL IN-LINE



### 9Z

#### NOTES:

Pins are tin plated alloy 42 or copper (oin 195)

Package material varies depending on the product line

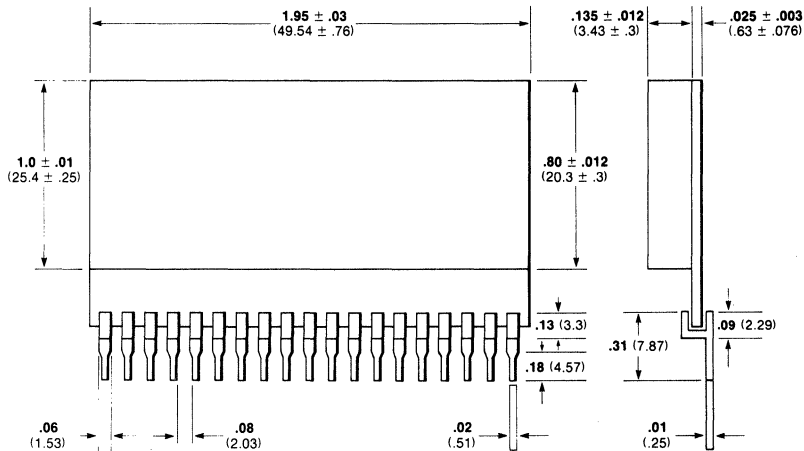
Pins are intended for insertion in hole rows on .300 (7.62) centers

They are purposely shipped with "positive" misalignment to facilitate insertion

Board drilling dimensions should equal your practice for .020" (0.51) diameter pin

Package weight is a little over 1.0 grams

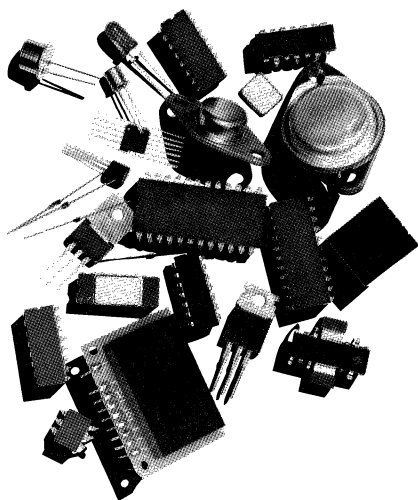
## 19-PIN SINGLE IN-LINE



All dimensions in inches (bold) and millimeters (parentheses)







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# FAIRCHILD FRANCHISED DISTRIBUTORS UNITED STATES AND CANADA

## ALABAMA

**HALLMARK ELECTRONICS**  
4739 Commercial Drive  
Huntsville, Alabama 35805  
Tel: 205-837-8700 TWX: 810-726-2187

**HAMILTON/AVNET ELECTRONICS**  
805 Oster Drive, N.W.  
Huntsville, Alabama 35805  
Tel: 205-533-1170  
Telex: None — use HAMAVELECB DAL 73-0511  
(Regional Hq. in Dallas, Texas)

## ARIZONA

**HAMILTON/AVNET ELECTRONICS**  
2615 S. 21st Street  
Phoenix, Arizona 85034  
Tel: 602-275-7851 TWX: 910-951-1535

**LIBERTY ELECTRONICS**  
8155 North 24th Ave.  
Phoenix, Arizona 85021  
Tel: 602-249-2232 TWX: 910-951-4282

**STERLING ELECTRONICS**  
P.O. Drawer 20867 (zip code 85036)  
2001 E. University Drive  
Phoenix, Arizona 85034  
Tel: 602-258-4531 Telex: 667317

## CALIFORNIA

**AVNET ELECTRONICS**  
350 McCormick Avenue  
Costa Mesa, California 92626  
Tel: 714-754-6111 (Orange County)  
213-558-2345 (Los Angeles)  
TWX: 910-595-1928

**BELL INDUSTRIES**  
Electronic Distributor Division  
1161 N. Fair Oaks Avenue  
Sunnyvale, California 94086  
Tel: 408-734-8570 TWX: 910-339-9378

**ELMAR ELECTRONICS**  
2288 Charleston Rd.  
Mountain View, California 94042  
Tel: 415-961-3611 TWX: 910-379-6437

**G.S. MARSHALL COMPANY**  
8005 Deering Avenue  
Canoga Park, California 91304  
Tel: 213-999-5001

**G.S. MARSHALL COMPANY**  
9674 Telstar Avenue  
El Monte, California 91731  
Tel: 213-686-0141 TWX: 910-587-1565

**G.S. MARSHALL COMPANY**  
17975 Skypark Blvd.  
Irvine, California 92707  
Tel: 714-556-6400

**G.S. MARSHALL COMPANY**  
8057 Raytheon Rd. Suite 1  
San Diego, California 92111  
Tel: 714-278-6350 TWX: 910-335-1191

**HAMILTON ELECTRO SALES**  
10912 W. Washington Blvd.  
Culver City, California 90230  
Tel: 213-558-2121 TWX: 910-340-6364

**HAMILTON/AVNET ELECTRONICS**  
575 E. Middlefield Road  
Mountain View, California 94040  
Tel: 415-961-7000 TWX: 910-379-6486

**HAMILTON/AVNET ELECTRONICS**  
8917 Complex Drive  
San Diego, California 92123  
Tel: 714-279-2421  
Telex HAMAVELEC SDG 69-5415

**LIBERTY ELECTRONICS**  
124 Maryland Street  
El Segundo, California 90245  
Tel: 213-322-8100 TWX: 910-348-7111

**LIBERTY ELECTRONICS/SAN DIEGO**  
8248 Mercury Court  
San Diego, California 92111  
Tel: 714-565-9171 TWX: 910-335-1590

## COLORADO

**CENTURY ELECTRONICS**  
8155 West 48th Avenue  
Wheatridge, Colorado 80033  
Tel: 303-424-1985 TWX: 910-938-0393

**CRAMER ELECTRONICS**  
5465 East Evans Place at Hudson  
Denver, Colorado 80222  
Tel: 303-758-2100

**ELMAR ELECTRONICS**  
6777 E. 50th Avenue  
Commerce City, Colorado 80022  
Tel: 303-287-9611 TWX: 910-936-0770

**G.S. MARSHALL COMPANY**  
5633 Kendall Court  
Arvada, Colorado 80002  
Tel: 303-423-9670 TWX: 910-938-2902

**HAMILTON/AVNET ELECTRONICS**  
5921 N. Broadway  
Denver, Colorado 80216  
Tel: 303-534-1212 TWX: 910-931-0510

## CONNECTICUT

**CRAMER ELECTRONICS**  
35 Dodge Avenue  
Wharton Brook Industrial Center  
North Haven, Connecticut 06473  
Tel: 203-239-5641

**HAMILTON/AVNET ELECTRONICS**  
643 Danbury Road  
Georgetown, Connecticut 06829  
Tel: 203-762-0361  
TWX: None — use 710-897-1405  
(Regional Hq. in Mt. Laurel, N.J.)

**HARVEY ELECTRONICS**  
112 Main Street  
Norwalk, Connecticut 06851  
Tel: 203-853-1515

**SCHWEBER ELECTRONICS**  
Finance Drive  
Commerce Industrial Park  
Danbury, Connecticut 06810  
Tel: 203-792-3500

## FLORIDA

**ARROW ELECTRONICS**  
1001 Northwest 62nd Street  
Suite 402  
Ft. Lauderdale Florida 33309  
Tel: 305-776-7790

**ARROW ELECTRONICS**  
115 Palm Bay Road N.W.  
Suite 10  
Palm Bay, Florida 32905  
Tel: 305-725-1408

**CRAMER ELECTRONICS**  
345 North Graham Avenue  
Orlando, Florida 32814  
Tel: 305-894-1511

**HALLMARK ELECTRONICS**  
1302 W. McNab Road  
Ft. Lauderdale, Florida 33309  
Tel: 305-971-9280 TWX: 510-956-3092

**HALLMARK ELECTRONICS**  
7233 Lake Ellenor Drive  
Orlando, Florida 32809  
Tel: 305-855-4020 TWX: 810-850-0183

**HAMILTON/AVNET ELECTRONICS**  
6800 N.W. 20th Avenue  
Ft. Lauderdale, Florida 33309  
Tel: 305-971-2900 TWX: 510-954-9808

**SCHWEBER ELECTRONICS**  
2830 North 28th Terrace  
Hollywood, Florida 33020  
Tel: 305-927-0511 TWX: 510-954-0304

## GEORGIA

**ARROW ELECTRONICS**  
3406 Oak Cliff Road  
Doraville, Georgia 30340  
Tel: 404-455-4054

**HAMILTON/AVNET ELECTRONICS**  
6700 Interstate 85 Access Road, Suite 1E  
Norcross, Ga. 30071  
Tel: 404-448-0800  
Telex: None — use HAMAVELECB DAL 73 0511  
(Regional Hq. in Dallas, Texas)

**LYKES ELECTRONICS CORP.**  
6447 Atlantic Blvd.  
Norcross, Georgia 30071  
Tel: 404-449-9400

## ILLINOIS

**HALLMARK ELECTRONICS INC.**  
180 Crossen Avenue  
Elk Grove Village, Illinois 60007  
Tel: 312-437-8800

**HAMILTON/AVNET ELECTRONICS**  
3901 N. 25th Avenue  
Schiller Park, Illinois 60176  
Tel: 312-678-6310 TWX: 910-227-0060

**KIERULFF ELECTRONICS**  
85 Gordon Street  
Elk Grove Village, Illinois 60007  
Tel: 312-640-0200 TWX: 910-227-3166

**SCHWEBER ELECTRONICS, INC.**  
1275 Bummel Avenue  
Elk Grove Village, Ill. 60007  
Tel: 312-593-2740 TWX: 910-222-3453

**SEMICONDUCTOR SPECIALISTS, INC.**  
(mailing address)  
O'Hare International Airport  
P.O. Box 66125  
Chicago, Illinois 60666

(shipping address)  
195 Spangler Avenue  
Elmhurst Industrial Park  
Elmhurst, Illinois 60126  
Tel: 312-279-1000 TWX: 910-254-0169

## INDIANA

**GRAHAM ELECTRONICS SUPPLY, INC.**  
133 So. Pennsylvania Street  
Indianapolis, Indiana 46204  
Tel: 317-634-8486 TWX: 810-341-3481

**PIONEER INDIANA ELECTRONICS, INC.**  
6408 Castleplace Drive  
Indianapolis, Indiana 46250  
Tel: 317-849-7300 TWX: 810-260-1794

## KANSAS

**HALLMARK ELECTRONICS, INC.**  
11870 West 91st Street  
Shawnee Mission, Kansas 66214  
Tel: 913-888-4746

**HAMILTON/AVNET ELECTRONICS**  
9219 Guivira Road  
Overland Park, Kansas 66215  
Tel: 913-888-8900  
Telex: None — use HAMAVELECB DAL 73-0511  
(Regional Hq. in Dallas, Texas)

## LOUISIANA

**STERLING ELECTRONICS CORP.**  
4613 Fairfield  
Metairie, Louisiana 70002  
Tel: 504-887-7610  
Telex: STERLE LEC MRE 58-328

## MARYLAND

**HALLMARK ELECTRONICS, INC.**  
6655 Amberton Drive  
Baltimore, Maryland 21227  
Tel: 301-796-9300

**HAMILTON/AVNET ELECTRONICS**  
(mailing address)  
Friendship International Airport  
P.O. Box 8647  
Baltimore, Maryland 21240

(shipping address)  
7235 Standard Drive  
Hanover, Maryland 21076  
Tel: 301-796-5000 TWX: 710-862-1861  
Telex: HAMAVELECA HNVE 87-968

**PIONEER WASHINGTON ELECTRONICS, INC.**  
9100 Gathier Road  
Gaithersburg, Maryland 20760  
Tel: 301-948-0710 TWX: 710-828-9784

**SCHWEBER ELECTRONICS**  
5640 Fisher Lane  
Rockville, Maryland 20852  
Tel: 301-881-2970 TWX: 710-828-0536

## MASSACHUSETTS

**CRAMER ELECTRONICS**  
85 Wells Avenue  
Newton Centre, Massachusetts 02159  
Tel: 617-964-4000

# FAIRCHILD FRANCHISED DISTRIBUTORS (Cont'd)

## UNITED STATES AND CANADA

**GERBER ELECTRONICS**  
852 Providence Highway  
U.S. Route 1  
Dedham, Massachusetts 02026  
Tel: 617-329-2400

**HAMILTON/AVNET ELECTRONICS**  
100 E. Commerce Way  
Woburn, Massachusetts 01801  
Tel: 617-933-8000 TWX: 710-332-1201

**HARVEY ELECTRONICS**  
44 Hartwell Ave.  
Lexington, Massachusetts 02173  
Tel: 617-861-9200 TWX: 710-326-6617

**SCHWEBER ELECTRONICS**  
213 Third Avenue  
Waltham, Massachusetts 02154  
Tel: 617-890-8484

**MICHIGAN**  
**HAMILTON/AVNET ELECTRONICS**  
32487 Schoolcraft  
Livonia, Michigan 48150  
Tel: 313-522-4700 TWX: 810-242-8775

**PIONEER/DETROIT**  
13485 Stamford  
Livonia, Michigan 48150  
Tel: 313-525-1800

**SCHWEBER ELECTRONICS**  
33540 Schoolcraft  
Livonia, Michigan 48150  
Tel: 313-525-8100

**SHERIDAN SALES CO.**  
24543 Indoplex Drive  
(P.O. Box 529)  
Farmington, Mich. 48024  
Tel: 313-477-3800

**MINNESOTA**  
**HAMILTON/AVNET ELECTRONICS**  
7683 Washington Ave. South  
Edina, Minnesota 55435  
Tel: 612-941-3801  
TWX: None — use 910-227-0060  
(Regional Hq. in Chicago, Ill.)

**SCHWEBER ELECTRONICS**  
7402 Washington Ave. South  
Eden Prairie, Minnesota 55343  
Tel: 612-941-5280

**SEMICONDUCTOR SPECIALISTS, INC.**  
8030 Cedar Avenue South  
Minneapolis, Minnesota 55420  
Tel: 612-854-8841 TWX: 910-576-2812

**MISSOURI**  
**HALLMARK ELECTRONICS, INC.**  
13789 Rider Trail  
Earth City, Missouri 63045  
Tel: 314-291-5350

**HAMILTON/AVNET ELECTRONICS**  
364 Brooks Lane  
Hazelwood, Missouri 63042  
Tel: 314-731-1144 TWX: 910-762-0606

**NEW JERSEY**  
**HAMILTON/AVNET ELECTRONICS**  
218 Little Falls Road  
Cedar Grove, New Jersey 07009  
Tel: 201-239-0800 TWX: 710-994-5787

**HAMILTON/AVNET ELECTRONICS**  
113 Gaither Drive  
East Gate Industrial Park  
Mt. Laurel, N.J. 08057  
Tel: 609-234-2133 TWX: 710-897-1405

**SCHWEBER ELECTRONICS**  
43 Belmont Drive  
Somerset, N.J. 08873  
Tel: 201-469-6008 TWX: 710-480-4733

**STERLING ELECTRONICS**  
774 Pfeiffer Blvd.  
Perth Amboy, N.J. 08861  
Tel: 201-442-8000 Telex: 138-679

**WILSHIRE ELECTRONICS**  
855 Industrial Highway, Unit 5  
Cinnaminson, New Jersey 08077  
Tel: 215-627-1920

**WILSHIRE ELECTRONICS**  
1111 Paulison Avenue  
Clifton, New Jersey 07015  
Tel: 201-365-2600 TWX: 710-989-7052

**NEW MEXICO**  
**CENTURY ELECTRONICS**  
11728 Linn Ave.  
Albuquerque, New Mexico 87123  
Tel: 505-292-2700 TWX: 910-989-0625

**HAMILTON/AVNET ELECTRONICS**  
2450 Baylor Dr. S.E.  
Albuquerque, New Mexico 87119  
Tel: 505-765-1500  
TWX: None — use 910-379-6486  
(Regional Hq. in Mt. View, Ca.)

**NEW YORK**  
**ARROW ELECTRONICS**  
399 Conklin Street  
Farmingdale, New York 11735  
Tel: 516-694-6800

**CRAMER ELECTRONICS**  
129 Oser Avenue  
Hauppauge, N.Y. 11787  
Tel: 516-231-5682

**CRAMER ELECTRONICS**  
8716 Joy Road  
E. Syracuse, N.Y. 13057  
Tel: 315-437-6671

**COMPONENTS PLUS, INC.**  
40 Oser Avenue  
Hauppauge, L.I., New York 11787  
Tel: 516-231-9200 TWX: 510-227-9869

**HAMILTON/AVNET ELECTRONICS**  
167 Clay Road  
Rochester, New York 14623  
Tel: 716-442-7820  
TWX: None — use 710-332-1201  
(Regional Hq. in Burlington, Ma.)

**HAMILTON/AVNET ELECTRONICS**  
6500 Joy Road  
E. Syracuse, New York 13057  
Tel: 315-437-2642 TWX: 710-541-0959

**HAMILTON/AVNET ELECTRONICS**  
70 State Street  
Westbury, L.I., New York 11590  
Tel: 516-333-5800 TWX: 510-222-8237

**ROCHESTER RADIO SUPPLY CO., INC.**  
140 W. Main Street  
(P.O. Box 1971)  
Rochester, New York 14603  
Tel: 716-454-7800

**SCHWEBER ELECTRONICS**  
Jericho Turnpike  
Westbury, L.I., New York 11590  
Tel: 516-334-7474 TWX: 510-222-3660

**SCHWEBER ELECTRONICS, INC.**  
2 Town Line Circle  
Rochester, New York 14623  
Tel: 716-461-4000

**JACO ELECTRONICS, INC.**  
145 Oser Ave.  
Hauppauge, L.I., New York 11787  
Tel: 516-273-1234 TWX: 510-227-6232

**SUMMIT DISTRIBUTORS, INC.**  
916 Main Street  
Buffalo, New York 14202  
Tel: 716-884-3450 TWX: 710-522-1692

**NORTH CAROLINA**  
**CRAMER ELECTRONICS**  
938 Burke Street  
Winston Salem, N.C. 27102  
Tel: 919-725-8711

**HAMILTON/AVNET**  
2803 Industrial Drive  
Raleigh, North Carolina 27609  
Tel: 919-829-8030

**HALLMARK ELECTRONICS**  
1208 Front Street, Bldg. K  
Raleigh, North Carolina 27609  
Tel: 919-832-4465 TWX: 510-928-1831

**RESCO**  
Highway 70 West  
Rural Route 8, P.O. Box 118-B  
Raleigh, North Carolina 27612  
Tel: 919-781-5700

**PIONEER/CAROLINA ELECTRONICS**  
2906 Ballic Avenue  
Greensboro, North Carolina 27406  
Tel: 919-273-4441

**OHIO**  
**HAMILTON/AVNET ELECTRONICS**  
761 Beta Drive, Suite E  
Cleveland, Ohio 44143  
Tel: 216-461-1400  
TWX: None — use 910-227-0060  
(Regional Hq. in Chicago, Ill.)

**HAMILTON/AVNET ELECTRONICS**  
118 Westpark Road  
Dayton, Ohio 45459  
Tel: 513-433-0610 TWX: 810-450-2531

**PIONEER/CLEVELAND**  
4800 East 131st Street  
Cleveland, Ohio 44105  
Tel: 216-587-3600

**PIONEER/DAYTON**  
1900 Troy Street  
Dayton, Ohio 45404  
Tel: 513-236-9900 TWX: 810-459-1622

**SCHWEBER ELECTRONICS**  
23880 Commerce Park Road  
Beachwood, Ohio 44122  
Tel: 216-464-2970 TWX: 810-427-9441

**SHERIDAN SALES COMPANY**  
23224 Commerce Park Road  
Beachwood, Ohio 44122  
Tel: 216-831-0130 TWX: 810-427-2957

**SHERIDAN SALES CO.**  
(mailing address)  
P.O. Box 37826  
Cincinnati, Ohio 45222

(shipping address)  
10 Knollcrest Drive  
Reading, Ohio 45237  
Tel: 513-761-5432 TWX: 810-461-2670

**OKLAHOMA**  
**HALLMARK ELECTRONICS**  
4846 South 83rd East Avenue  
Tulsa, Oklahoma 74145  
Tel: 918-835-8458 TWX: 910-845-2290

**RADIO INC. INDUSTRIAL ELECTRONICS**  
1000 South Main  
Tulsa, Oklahoma 74119  
Tel: 918-587-9123

**PENNSYLVANIA**  
**HALLMARK ELECTRONICS, INC.**  
458 Pike Road  
Huntingdon Valley, Pennsylvania 19006  
Tel: 215-355-7300 TWX: 510-667-1727

**PIONEER/DELAWARE VALLEY ELECTRONICS**  
141 Gibraltar Road  
Horsham, Pa. 19044  
Tel: 609-541-1120 TWX: 510-665-6778

**PIONEER ELECTRONICS, INC.**  
560 Alpha Drive  
Pittsburgh, Pennsylvania 15238  
Tel: 412-782-2300 TWX: 710-795-3122

**SCHWEBER ELECTRONICS**  
101 Rock Road  
Horsham, Pennsylvania 19044  
Tel: 215-441-0600

**SHERIDAN SALES COMPANY**  
1717 Penn Ave.  
Suite 5009  
Pittsburgh, Pennsylvania 15221  
Tel: 412-244-1640

**SOUTH CAROLINA**  
**DIXIE ELECTRONICS, INC.**  
P.O. Box 408 (Zip Code 29202)  
1900 Barnwell Street  
Columbia, South Carolina 29201  
Tel: 803-779-5332

**TEXAS**  
**ALLIED ELECTRONICS**  
401 East 8th Street  
Fort Worth, Texas 76102  
Tel: 817-336-5401

**CRAMER ELECTRONICS**  
13740 Midway Road, Suite 700  
Dallas, Texas 75240  
Tel: 214-661-9300

**HALLMARK ELECTRONICS CORP.**  
10109 McKalla Place Suite F  
Austin, Texas 78758  
Tel: 512-837-2814

# FAIRCHILD FRANCHISED DISTRIBUTORS (Cont'd)

## UNITED STATES AND CANADA

**HALLMARK ELECTRONICS**  
9333 Forest Lane  
Dallas, Texas 75231  
Tel: 214-231-6111

**HALLMARK ELECTRONICS, INC.**  
8000 Westglenn  
Houston, Texas 77063  
Tel: 713-781-6100

**HAMILTON/AVNET ELECTRONICS**  
4445 Sigma Road  
Dallas, Texas 75240  
Tel: 214-661-8661  
Telex: HAMAVLECB DAL 73-0511

**HAMILTON/AVNET ELECTRONICS**  
3939 Ann Arbor  
Houston, Texas 77042  
Tel: 713-780-1771  
Telex: HAMAVLECB HOU 76-2589

**SCHWEBER ELECTRONICS, INC.**  
14177 Proton Road  
Dallas, Texas 75240  
Tel: 214-661-5010 TWX: 910-860-5493

**SCHWEBER ELECTRONICS, INC.**  
7420 Harwin Drive  
Houston, Texas 77036  
Tel: 713-784-3600 TWX: 910-881-1109

**STERLING ELECTRONICS**  
4201 Southwest Freeway  
Houston, Texas 77027  
Tel: 713-627-9800 TWX: 901-881-5042  
Telex: STELECO HOUA 77-5299

**UTAH**  
**CENTURY ELECTRONICS**  
2258 South 2700 West  
Salt Lake City, Utah 84119  
Tel: 801-487-8551 TWX: 910-925-5686

**HAMILTON/AVNET ELECTRONICS**  
1585 West 2100 South  
Salt Lake City, Utah 84119  
Tel: 801-972-2800  
TWX: None — use 910-379-6486  
(Regional Hq. in Mt. View, Ca.)

**WASHINGTON**  
**HAMILTON/AVNET ELECTRONICS**  
13407 Northrup Way  
Bellevue, Washington 98005  
Tel: 206-746-8750 TWX: 910-443-2449

**LIBERTY ELECTRONICS**  
1750 132nd Ave. N.E.  
Bellevue, Washington 98005  
Tel: 206-453-8300 TWX: 910-444-1379

**RADAR ELECTRIC CO., INC.**  
168 Western Avenue West  
Seattle, Washington 98119  
Tel: 206-282-2511 TWX: 910-444-2052

**WISCONSIN**  
**HAMILTON/AVNET ELECTRONICS**  
2975 Moorland Road  
New Berlin, Wisconsin 53151  
Tel: 414-784-4510

**MARSH ELECTRONICS, INC.**  
1563 South 100 Street  
Milwaukee, Wisconsin 53214  
Tel: 414-475-6000

**SEMICONDUCTOR SPECIALISTS, INC.**  
10855 W. Potter Road  
Wauwatosa, Wisconsin 53226  
Tel: 414-257-1330 TWX: 910-262-3022

**CANADA**  
**CAM GARD SUPPLY LTD.**  
640 42nd Avenue S.E.  
Calgary, Alberta, T2G 1Y6, Canada  
Tel: 403-287-0520 Telex: 03-822811

**CAM GARD SUPPLY LTD.**  
10505 111th Street  
Edmonton, Alberta T5H 3E8, Canada  
Tel: 403-426-1805 Telex: 03-72960

**CAM GARD SUPPLY LTD.**  
4910 52nd Street  
Red Deer, Alberta, T4N 2C8, Canada  
Tel: 403-346-2088

**CAM GARD SUPPLY LTD.**  
825 Notre Dame Drive  
Kamloops, British Columbia, V2C 5N8, Canada  
Tel: 604-372-3338

**CAM GARD SUPPLY LTD.**  
1777 Ellice Avenue  
Winnipeg, Manitoba, R3H 0W5, Canada  
Tel: 204-786-8401 Telex: 07-57622

**CAM GARD SUPPLY LTD.**  
Rookwood Avenue  
Fredericton, New Brunswick, E3B 4Y9, Canada  
Tel: 506-455-8891

**CAM GARD SUPPLY LTD.**  
15 Mount Royal Blvd.  
Moncton, New Brunswick, E1C 8N6, Canada  
Tel: 506-855-2200

**CAM GARD SUPPLY LTD.**  
Courtenay Center  
Saint John, New Brunswick, E2L 2X6, Canada  
Tel: 506-657-4666 Telex: 01-447489

**CAM GARD SUPPLY LTD.**  
3065 Robie Street  
Halifax, Nova Scotia, B3K 4P6, Canada  
Tel: 902-454-8581 Telex: 01-921528

**CAM GARD SUPPLY LTD.**  
1303 Scarth Street  
Regina, Saskatchewan, S4R 2E7, Canada  
Tel: 306-525-1317 Telex: 07-12667

**CAM GARD SUPPLY LTD.**  
1501 Ontario Avenue  
Saskatoon, Saskatchewan, S7K 1S7, Canada  
Tel: 306-652-6424 Telex: 07-42825

**ELECTRO SONIC INDUSTRIAL SALES (TORONTO) LTD.**  
1100 Gordon Baker Rd  
Willowdale, Ontario, M2H 3B3, Canada  
Tel: 416-494-1666  
Telex: ESSCO TOR 06-22030

**FUTURE ELECTRONICS CORPORATION**  
130 Albert Street  
Ottawa, Ontario, K1P 5G4, Canada  
Tel: 613-232-7757

**FUTURE ELECTRONICS CORPORATION**  
44 Fasket Drive, Unit 24  
Rexdale, Ontario, M9W 1K5, Canada  
Tel: 416-677-7820

**FUTURE ELECTRONICS CORPORATION**  
5647 Ferrier Street  
Montreal, Quebec, H4P 2K5, Canada  
Tel: 514-735-5775

**HAMILTON/AVNET INTERNATIONAL (CANADA) LTD.**  
6291 Dorman Rd., Unit 16  
Mississauga, Ontario, L4V 1H2, Canada  
Tel: 416-677-7432 TWX: 610-492-8867

**HAMILTON/AVNET INTERNATIONAL (CANADA) LTD.**  
1735 Courtwood Crescent  
Ottawa, Ontario, K1Z 5L9, Canada  
Tel: 613-226-1700

**HAMILTON/AVNET INTERNATIONAL (CANADA) LTD.**  
2670 Paulus Street  
St. Laurent, Quebec, H4S 1G2, Canada  
Tel: 514-331-6443 TWX: 610-421-3731

**R.A.E. INDUSTRIAL ELECTRONICS, LTD.**  
1629 Main Street  
Vancouver, British Columbia, V6A 2W5, Canada  
Tel: 604-687-2621 TWX: 610-929-3065  
Telex: RAE-VCR 04-54550

**SEMAD ELECTRONICS LTD.**  
625 Marshall Ave., Suite 2  
Dorval, Quebec, H9P 1E1, Canada  
Tel: 514-636-4614 TWX: 610-422-3048

**SEMAD ELECTRONICS LTD.**  
1111 Finch Avech Ave. W., Suite 102  
Downsview, Ontario, M3J 2E5, Canada  
Tel: 416-635-9880 TWX: 610-492-2510

**SEMAD ELECTRONICS LTD.**  
1485 Laperriere Ave.  
Ottawa, Ontario, K1Z 7S8, Canada  
Tel: 613-722-6571 TWX: 610-562-8966

# FAIRCHILD SALES REPRESENTATIVES UNITED STATES AND CANADA

## ALABAMA

CARTWRIGHT & BEAN, INC.  
2400 Bob Wallace Ave., Suite 201  
Huntsville, Alabama 35805  
Tel: 205-533-3509

## CALIFORNIA

CELTEC COMPANY  
18009 Sky Park Circle Suite B  
Irvine, California 92715  
Tel: 714-557-5021 TWX: 910-595-2512

CELTEC COMPANY  
15300 Ventura Blvd., Room 200  
Sherman Oaks, California 91403  
Tel: 213-990-3440 TWX: 910-495-2010

CELTEC COMPANY  
7867 Convo Court, Suite 312  
San Diego, California 92111  
Tel: 714-279-7961 TWX: 910-335-1512

MAGNA SALES, INC.  
3212 Scott Blvd.  
Santa Clara, California 95050  
Tel: 408-985-1750 TWX: 910-338-0241

## COLORADO

SIMPSON ASSOCIATES, INC.  
2552 Ridge Road  
Littleton, Colorado 80120  
Tel: 303-794-8381 TWX: 910-935-0719

## CONNECTICUT

PHOENIX SALES COMPANY  
389 Main Street  
Ridgefield, Connecticut 06877  
Tel: 203-436-9644 TWX: 710-467-0662

## FLORIDA

LECTROMECH, INC.  
303 Whooping Loop  
Altamonte Springs, Florida 32701  
Tel: 305-831-1577 TWX: 810-853-0262

LECTROMECH, INC.  
2741 North 29th Avenue, Suite 218  
Hollywood, Florida 33020  
Tel: 305-920-2291 TWX: 510-954-9793

LECTROMECH, INC.  
2280 U.S. Highway 19 North  
Suite 119 Bldg L  
Clearwater, Florida 33515  
Tel: 813-726-0541

## GEORGIA

CARTWRIGHT & BEAN, INC.  
P.O. Box 52846 (Zip Code 30355)  
90 W. Wieuca Square, Suite 155  
Atlanta, Georgia 30342  
Tel: 404-255-5262 TWX: 810-751-3220

## ILLINOIS

MICRO SALES, INC.  
2258-B Landwehr Road  
Elk Grove Village, Illinois 60007  
Tel: 312-956-1000 TWX: 910-222-1833

## INDIANA

LESLIE M. DEVOE COMPANY  
4215 East 82nd Street Suite D  
Indianapolis, Indiana 46250  
Tel: 317-842-3245 TWX: 810-260-1435

## IOWA

B.C. ELECTRONICS SALES, INC.  
4403 First Avenue S.E., Suite 412  
Cedar Rapids, Iowa 52402  
Tel: 319-393-5818

## KANSAS

B.C. ELECTRONIC SALES, INC.  
P.O. Box 788  
11495 Lenexa Drive  
Olathe, Kansas 66061  
Tel: 913-888-6680 TWX: 910-749-6414

## MARYLAND

DELTA III ASSOCIATES  
5801 Annapolis Road, Suite 500  
Bladensburg, Maryland 20710  
Tel: 301-779-0977 TWX: 710-826-9654

## MASSACHUSETTS

SPECTRUM ASSOCIATES, INC.  
888 Worcester Street  
Wellesley, Massachusetts 02181  
Tel: 617-237-2796 TWX: 710-348-0424

## MICHIGAN

RATHSBURG ASSOCIATES  
16621 E. Warren Ave.  
Detroit, Michigan 48224  
Tel: 313-882-1717 Telex: 23-5229

## MINNESOTA

PSI COMPANY  
7710 Computer Avenue  
Minneapolis, Minnesota 55435  
Tel: 612-835-1777 TWX: 910-576-3483

## MISSISSIPPI

CARTWRIGHT & BEAN, INC.  
P.O. Box 16728  
5250 Galaxy Drive, Suite J  
Jackson, Mississippi 39207  
Tel: 601-981-1368

## MISSOURI

B.C. ELECTRONIC SALES, INC.  
300 Brookes Drive, Suite 206  
Hazelwood, Missouri 63042  
Tel: 314-731-1255 TWX: 910-762-0600

## NEW JERSEY

LORAC SALES, INC.  
580 Valley Road  
Wayne, New Jersey 07470  
Tel: 201-696-8875 TWX: 710-988-5846

## NEW YORK

LORAC SALES, INC.  
550 Old Country Road, Room 410  
Hicksville, New York 11801  
Tel: 516-681-8746 TWX: 510-224-6480

## TRI-TECH ELECTRONICS, INC.

3215 East Main Street  
Endwell, New York 13760  
Tel: 607-754-1094 TWX: 510-252-0891

## TRI-TECH ELECTRONICS, INC.

290 Perinton Hills Office Park  
Fairport, New York 14450  
Tel: 716-223-5720

## TRI-TECH ELECTRONICS, INC.

6836 East Genesee Street  
Fayetteville, New York 13066  
Tel: 315-446-2881 TWX: 710-541-0604

## TRI-TECH ELECTRONICS, INC.

15 College View Avenue  
Poughkeepsie, New York 12603  
Tel: 914-473-3880

## NORTH CAROLINA

CARTWRIGHT & BEAN, INC.  
1185 Commercial Ave.  
Charlotte, North Carolina 28205  
Tel: 704-377-5673

## CARTWRIGHT & BEAN, INC.

P.O. Box 18465  
3948 Browning Place  
Raleigh, North Carolina 27609  
Tel: 919-781-6560

## OHIO

THE LYONS CORPORATION  
4812 Frederick Road, Suite 105  
Dayton, Ohio 45414  
Tel: 513-278-0714

THE LYONS CORPORATION  
6151 Wilson Mills Road, Suite 101  
Highland Heights, Ohio 44143  
Tel: 216-461-8288

## OKLAHOMA

TECHNICAL MARKETING  
9717 East 42nd Street, Suite 210  
Tulsa, Oklahoma 74101  
Tel: 918-622-5984

## OREGON

QUADRA CORPORATION  
19145 S.W. Murphy Ct.  
Aloha, Oregon 97005  
Tel: 503-225-0350 TWX: 910-443-2318

## PENNSYLVANIA

BGR ASSOCIATES  
2500 Office Center  
2500 Maryland Road  
Willow Grove, Pennsylvania 19090  
Tel: 215-657-3301

## TENNESSEE

CARTWRIGHT & BEAN, INC.  
P.O. Box 4760  
560 S. Cooper Street  
Memphis, Tennessee 38104  
Tel: 901-276-4442

CARTWRIGHT & BEAN, INC.  
8501 Kingston Pike  
Knoxville, Tennessee 37919  
Tel: 615-693-7450

## TEXAS

TECHNICAL MARKETING  
4445 Alpha Road, Suite 102  
Dallas, Texas 75240  
Tel: 214-387-3601 TWX: 910-860-5158

## TECHNICAL MARKETING

6430 Hillcroft, Suite 104  
Houston, Texas 77036  
Tel: 713-777-9228

## UTAH

SIMPSON ASSOCIATES, INC.  
P.O. Box 151430  
Salt Lake City, Utah 84115  
Tel: 801-486-3731

## WASHINGTON

QUADRA CORPORATION  
14825 N.E. 40th Street  
Suite 340  
Redmond, Washington 98052  
Tel: 206-883-3550 TWX: 910-449-2592

## WISCONSIN

LARSEN ASSOCIATES  
10855 West Potter Road  
Wauwatosa, Wisconsin 53226  
Tel: 414-258-0529 TWX: 910-262-3160

## CANADA

R.N. LONGMAN SALES, INC. (L.S.I.)  
1590 Matheson Blvd, Unit 26-A  
Mississauga, Ontario, L4W 1J1, Canada  
Tel: 416-625-6770 TWX: 610-492-4311

R.N. LONGMAN SALES, INC. (L.S.I.)  
1385 Mazurette Street West, Suite 3  
Montreal, Quebec, H4N 1G8, Canada  
Tel: 514-382-2552 TWX: 610-421-3178

# FAIRCHILD SALES OFFICES UNITED STATES AND CANADA

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Huntsville Office\*  
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Suite 107  
4717 University Drive, N.W.  
Huntsville, Alabama 35805  
Tel: 205-837-8960

## ARIZONA

Phoenix Office  
4414 N. 19th Avenue 85015  
Suite G  
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Overland Park 66210  
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## MASSACHUSETTS

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Farmington Hills 48024  
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## MINNESOTA

Minneapolis Office\*  
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Room 251  
Edina 55435  
Tel: 612-835-3322 TWX: 910-576-2944

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Wayne Office  
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Suite 1  
Tel: 201-696-7070

## NEW MEXICO

Albuquerque Office  
2403 San Mateo N.E. 87110  
Plaza 13  
Tel: 505-265-5601 TWX: 910-989-1186

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Tel: 716-223-7700

## OHIO

Dayton Office  
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Suite 105  
Tel: 513-278-8278 TWX: 810-459-1803

## PENNSYLVANIA

Philadelphia Office\*  
2500 Office Center  
2500 Maryland Road  
Willow Grove, Pa. 19090  
Tel: 215-657-2711

## TEXAS

Dallas Office\*  
13771 N. Central Expressway 75231  
Suite 809  
Tel: 214-234-3391 TWX: 910-867-4757

## Houston Office\*

6430 Hillcroft 77081  
Suite 102  
Tel: 713-771-3547 TWX: 910-881-6278

## CANADA

Toronto Regional Office  
Fairchild Semiconductor  
1590 Matheson Blvd, Unit 26  
Mississauga, Ontario L4W 1J1, Canada  
Tel: 416-625-7070 TWX: 610-492-4311



## INTERNATIONAL FAIRCHILD SALES OFFICES

### AUSTRALIA

Fairchild Australia Pty Ltd.  
72 Whiting Street  
Artarmon 2064  
New South Wales  
Australia  
Tel: Sydney (02)-438-2733

(mailing address)  
P.O. Box 450  
North Sydney 2060  
New South Wales  
Australia

### AUSTRIA AND EASTERN EUROPE

Fairchild Electronics  
A-1010 Wien  
Schwedenplatz 2  
Tel: 0222 635821 Telex: 75096

### BRAZIL

Fairchild Semicondutores Ltda  
Caixa Postal 30407  
Rua Alagoas, 663  
01242 Sao Paulo, Brazil  
Tel: 66-9092 Telex: 011-23831  
Cable: FAIRLEC

### FRANCE

Fairchild Camera & Instrument S.A.  
121, Avenue d'Italie  
750013-Paris, France  
Tel: 00331-584 55 66  
Telex: 0042 200614 or 260937

### GERMANY

Fairchild Camera and Instrument (Deutschland)  
Daimlerstr 15  
8046 Garching Hochbruck  
Munich, Germany  
Tel: (089) 320031 Telex: 52 4831 fair d

Fairchild Camera and Instrument (Deutschland)  
Koenigsworther Strasse 23  
3000 Hannover  
W-Germany  
Tel: 0511 17844 Telex: 09 22922

Fairchild Camera and Instrument (Deutschland)  
Postrasse 37  
7251 Leonberg  
W-Germany  
Tel: 07152 41026 Telex: 07 245711

Fairchild Camera and Instrument (Deutschland)  
Waldluststrasse 1  
8500 Nuernberg  
W-Germany  
Tel: 0911 407005 Telex: 06 23665

### HONG KONG

Fairchild Semiconductor (HK) Ltd.  
135 Hoi Bun Road  
Kwun Tong  
Kowloon, Hong Kong  
Tel: K-890271 Telex: HKG-531

### ITALY

Fairchild Semiconduttori, S.P.A.  
Via Fiamena Vecchia 653  
00191 Roma, Italy  
Tel: 06 327 4006 Telex: 63046 (FAIR ROM)

Fairchild Semiconduttori S.P.A.  
Via Rosellini, 12  
20124 Milano, Italy  
Tel: 02 6887451 Telex: 36522

### JAPAN

TDK-Fairchild  
Pola Bldg. 7th Floor 1-15-21 Shibuya  
Tokyo 150, Japan  
Tel: 03 400 8351 Telex: 242173

### KOREA

Fairchild Semikor Ltd.  
K2 219-6 Kari Bong Dong  
Young Dug Po-Ku  
Seoul 150-06, Korea  
Tel: 86-6751 through 55 Telex: FAIRKOR 22705

(mailing address)  
Central P.O. Box 2806

### MEXICO

Fairchild Mexicana S.A.  
Blvd. Adolfo Lopez Mateos No. 163  
Mexico 19, D.F.  
Tel: 905-563-5411 Telex: 017-71-038

### SCANDINAVIA

Fairchild Semiconductor AB  
Svarfensgatan 6  
S-11620 Stockholm  
Sweden  
Tel: 8-449255 Telex: 17759

### SINGAPORE

Fairchild Semiconductor Pty Ltd.  
No. 11, Lorong 3  
Toa Payoh  
Singapore 12  
Tel: 531-066 Telex: FAIRSIN-RS 21376

### TAIWAN

Fairchild Semiconductor (Taiwan) Ltd.  
Hsietsu Building, Room 502  
47 Chung Shan North Road  
Sec. 3 Taipei, Taiwan  
Tel: 573205 thru 573207

### BENELUX

Fairchild Semiconductor  
Paradijslaan 39  
Eindhoven, Holland  
Tel: 00-31-40-446909 Telex: 00-1451024

### UNITED KINGDOM

Fairchild Camera and Instrument (UK) Ltd.  
Semiconductor Division  
230 High Street  
Potters Bar  
Hertfordshire EN6 5BU  
England  
Tel: 0707 51111 Telex: 0051 262835

Fairchild Semiconductor Ltd.

Shiel House  
Craigshill  
Livingston  
West Lothian, Scotland  
Tel: Livingston 0589 32891 Telex: 72629

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