

**LC895198**



**ATAPI/IDE-Interface CD-ROM Error Correction IC**

**Preliminary**

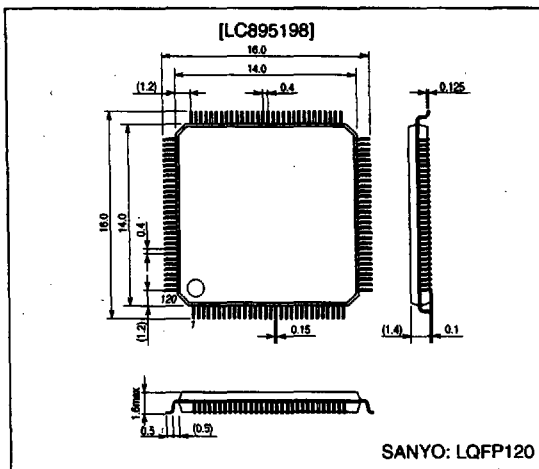
**Functions and Features**

- CD-ROM ECC function
- Sub-code read function
- Built-in ATAPI (IDE) I/F
- Built-in DVD-ROM I/F (8-bit width)
- Built-in 1-Mbit DRAM
- 32x speed supported  
16.6MBytes/s (with IORDY)  
Operation frequency: 33.8688 MHz
- 32x speed supported  
16.6MBytes/s (without IORDY)  
Operation frequency: 36 MHz
- CD main channel, C2 flag, and subcode areas in buffer RAM can be set freely by user
- Built-in batch transfer function (function for sending CD main channel, C2 flag, subcode, etc., at one time)
- Built-in multi transfer function (function for sending several blocks at one time)
- Built-in CAV-AUDIO function
- Built-in intelligent functions (auto buffering, auto decoding, CD-R support, etc.)
- Built-in subcode P to W buffering function (NO-ECC) and CD-TEXT support

**Package Dimensions**

unit: mm

**3237-LQFP120**



**Specifications**

**Absolute Maximum Ratings at V<sub>SS</sub> = 0 V**

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V <sub>DD max</sub>	T <sub>a</sub> = 25°C	-0.3 to +7.0	V
Input/output voltage	V <sub>I/O</sub>	T <sub>a</sub> = 25°C	-0.3 to V <sub>DD</sub> + 0.3	V
Allowable power dissipation	P <sub>d max</sub>	T <sub>a</sub> ≤ 70°C	400	mW
Operating temperature	T <sub>opr</sub>		0 to +70	°C
Storage temperature	T <sub>stg</sub>		-55 to +125	°C
Soldering temperature (pin part only)		10 s	235	°C
Input/output power	I <sub>i</sub> , I <sub>o</sub>		±20 *1	mA

Note: \*1 Per 1 input/cell reference cell

## LC895198

### Allowable Operating Ranges at $T_a = 0$ to $+70^\circ\text{C}$ , $V_{SS} = 0$ V

#### IO cell 5.0 V supply voltage

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply voltage	$V_{DD}$		4.5	5.0	5.5	V
Input voltage range	$V_{IN}$		0		$V_{DD}$	V

#### Internal cell 3.3 V supply voltage

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply voltage	$V_{DD}$		3.0	3.3	3.6	V
Input voltage range	$V_{IN}$		0		$V_{DD}$	V

### DC Characteristics at $V_{SS} = 0$ V, $V_{DD} = 4.5$ to $5.5$ V, $T_a = 0$ to $70^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit	Applicable pins *2
			min	typ	max		
High-level input voltage	$V_{IH}$	TTL levels	2.2	—	—	V	(1)
Low-level input voltage	$V_{IL}$		—	—	0.8	V	
High-level input voltage	$V_{IH}$	TTL levels with pull-up resistor	2.2	—	—	V	(9)
Low-level input voltage	$V_{IL}$		—	—	0.8	V	
High-level input voltage	$V_{IH}$	TTL levels with pull-down resistor	2.2	—	—	V	DRESP HDB0 to 7
Low-level input voltage	$V_{IL}$		—	—	0.8	V	
High-level input voltage	$V_{IH}$	TTL levels Schmitt	2.4	—	—	V	(2), (3), (10)
Low-level input voltage	$V_{IL}$		—	—	0.8	V	
High-level output voltage	$V_{OH}$	$I_{OH} = -2$ mA	$V_{DD} - 2.1$	—	—	V	(9)
Low-level output voltage	$V_{OL}$	$I_{OL} = 2$ mA	—	—	0.4	V	
High-level output voltage	$V_{OH}$	$I_{OH} = -8$ mA	$V_{DD} - 2.1$	—	—	V	(4)
Low-level output voltage	$V_{OL}$	$I_{OL} = 8$ mA	—	—	0.4	V	
High-level output voltage	$V_{OH}$	$I_{OH} = -4$ mA	$V_{DD} - 2.1$	—	—	V	(7), (10)
Low-level output voltage	$V_{OL}$	$I_{OL} = 24$ mA	—	—	0.4	V	
Low-level output voltage	$V_{OL}$	$I_{OL} = 24$ mA	—	—	0.4	V	(8)
Low-level output voltage	$V_{OL}$	$I_{OL} = 8$ mA	—	—	0.4	V	(5), (6)
Input leak current	$I_{IL}$	$V_I = V_{SS}, V_{DD}$	-10		10	$\mu\text{A}$	(1), (2), (3), (10)
Output leak current	$I_{OZ}$	During high-impedance output	-10		10	$\mu\text{A}$	(5), (7), (8), (10)
Pull-up resistance	$R_{UP}$		40	80	160	$\text{k}\Omega$	(6), (9)
Pull-down resistance	$R_{DN}$		40	80	160	$\text{k}\Omega$	DRESP, DREQ, HDB0 to 7

Note: \*2. The applicable pin sets are as follows.

#### INPUT

- (1) ATPINSEL, CSCTRL, SUA0 to 6, BCK, C2PO, LRCK, DSDATA, SBSO, SCOR, WFCK, TEST0 to 1, AUDIOCK
- (2) ZRESET, ZCS, ZRD, ZWR, CSEL
- (3) DA0 to 2, ZCS1FX, ZCS3FX, ZDIOR, ZDIOW, ZDMACK, ZHRST

#### OUTPUT

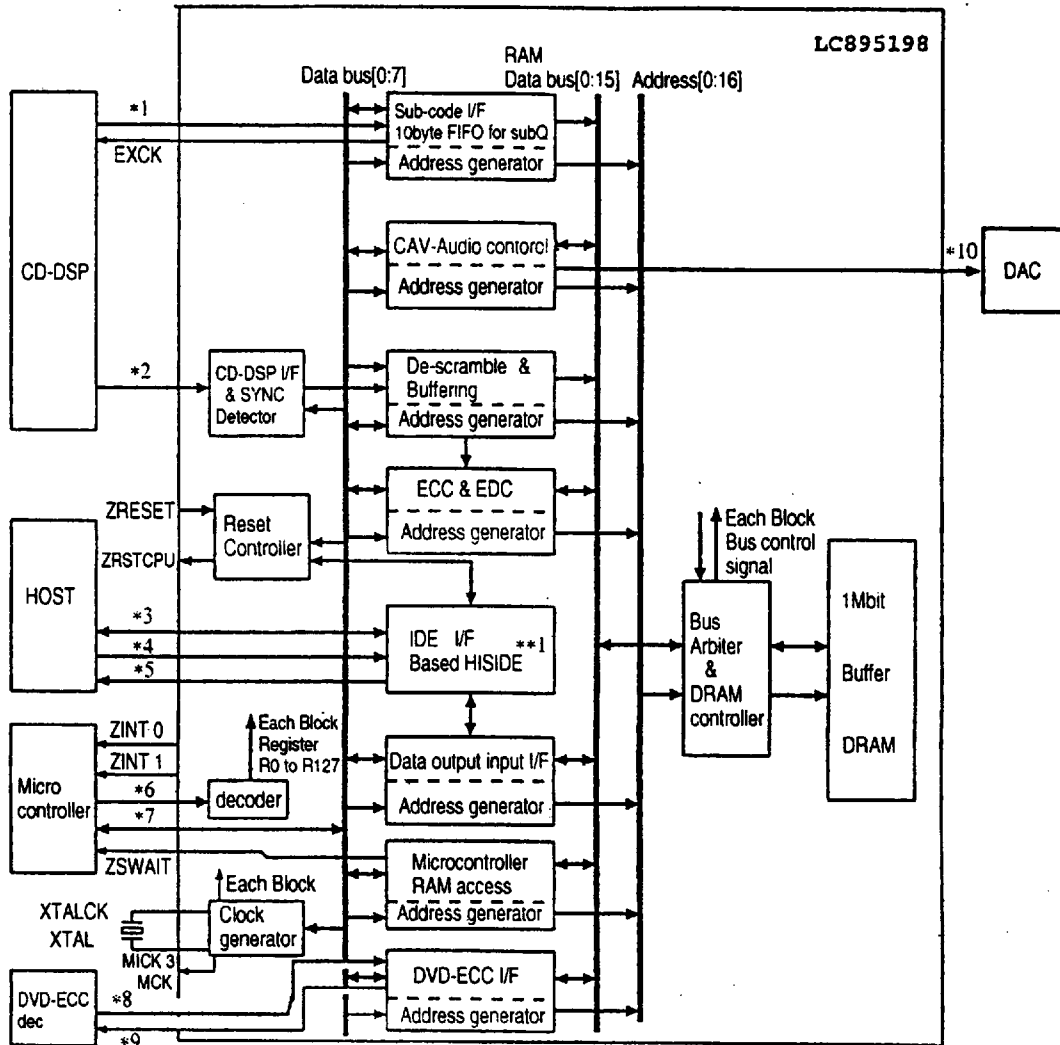
- (4) EXCK, DREQ, MCK, MCK3
- (5) ZRSTCPU
- (6) ZINT, ZINT1, ZSWAIT
- (7) DMARQ, HINTRQ
- (8) IORDY, ZIACS16

#### INOUT

- (9) D0 to 7
- (10) DD0 to 15, ZDASP, ZPDIAG

Note: Pins other than XTAL and XTALCK are not included in DC characteristics.

Block Diagram



- \*1 WFCK, SBSO, SCOR
- \*2 BCK, SDATA, LRCK, C2PO
- \*3 CD0 to CD15, ZDASP, ZPDIAG
- \*4 ZCS1FX, ZCS3FX, DA0 to 2, ZDIOR, ZDIOW, ZDMACK, CSEL
- \*5 DMARQ, HINTRQ, ZIOCS16, IORDY, ZHRST
- \*6 ZRD, ZWR, SUA0 to 6, ZCS, CSCTRL
- \*7 D0 to D7
- \*8 HDB0 to HDB7, DRESP
- \*9 DREQ
- \*10 DBCK, DLACK, DSDATA
- \*\*1 HISIDE(WD25C32) is made by WESTERN DIGITAL