Ordering number : EN ———

CMOS IC

LC895199K

ATAPI / IDE-Interface CD-ROM Error Correction IC

Preliminary

Functions

- CD-ROM ECC function, Subcode read function, ATAPI (IDE) I/F (register block, etc.), CAV audio function

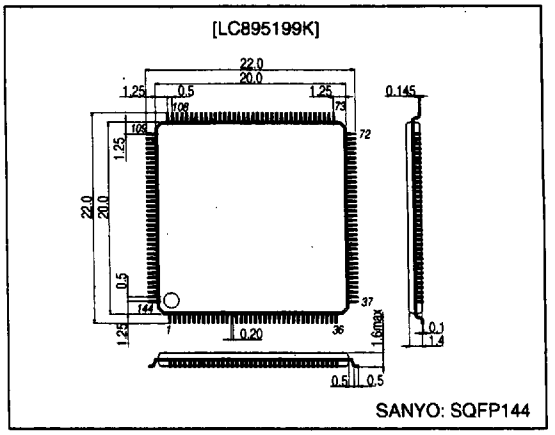
Features

- Built-in ATAPI (IDE) I/F
- 32× speed supported
  using EDO-DRAM (×16, 50 ns)
  16.6 Mbytes/s (with IORDY)
  Operating frequency: 33.8688 MHz
- 32× speed supported
  using EDO-DRAM (×16, 45 ns)
  16.6 Mbytes/s (without IORDY)
  Operating frequency: 33.8688 MHz
- 24× speed supported
  using EDO-DRAM (×16, 50 ns)
  16.6 Mbytes/s (without IORDY)
  Operating frequency: 33.8688 MHz
- 1 Mbit to 4 Mbits of buffer RAM connectable in case of DRAM
- CD main channel, C2 flag, and subcode areas in buffer RAM can be freely set by user
- Built-in batch transfer function (function for sending CD main channel, C2 flag, subcode, etc. at one time)
- Built-in multi block 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
- Ultra DMA, MODE2, MODE1, MODE0 support

Package Dimensions

unit: mm

3214-SQFP144



Specifications

Absolute Maximum Ratings at V_{SS} = 0 V

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	V_{DD} max	Ta = 25°C	−0.3 to +7.0	V
Input/output voltage	$V_I V_O$	Ta = 25°C	−0.3 to V_{DD} + 0.3	V
Allowable power dissipation	Pd max	Ta ≤ 70°C	550	mW
Operating temperature	Topr		−30 to +70	°C
Storage temperature	Tstg		−55 to +125	°C
Soldering temperature (pin part only)		10 s	235	°C
Input/output power	I_I, I_O		±20 *	mA

Note: * Per 1 input/output reference cell

Allowable Operating Range at Ta = –30 to +70°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 Ta = –30 to +70°C, V_{SS} = 0 V, V_{DD} = 4.5 to 5.5 V

Parameter	Symbol	Conditions	Ratings			Unit	Applicable pins *1
			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	2.2	—	—	V	(10)
Low-level input voltage	V_{IL}	with pull-down resistor	—	—	0.8	V	
High-level input voltage	V_{IH}	TTL levels	2.4	—	—	V	(2), (3), (11)
Low-level input voltage	V_{IL}	Schmitt	—	—	0.8	V	
High-level output voltage	V_{OH}	I_{OH1} = –4 mA	V_{DD} – 2.1	—	—	V	(4)
Low-level output voltage	V_{OL}	I_{OL1} = 4 mA	—	—	0.4	V	
High-level output voltage	V_{OH}	I_{OH1} = –8 mA	V_{DD} – 2.1	—	—	V	(10), (12)
Low-level output voltage	V_{OL}	I_{OL1} = 8 mA	—	—	0.4	V	
High-level output voltage	V_{OH}	I_{OH1} = –12 mA	V_{DD} – 2.1	—	—	V	(5)
Low-level output voltage	V_{OL}	I_{OL1} = 12 mA	—	—	0.4	V	
High-level output voltage	V_{OH}	I_{OH1} = –12 mA	V_{DD} – 2.1	—	—	V	(5)
Low-level output voltage	V_{OL}	I_{OL1} = 12 mA	—	—	0.4	V	
High-level output voltage	V_{OH}	I_{OH1} = –4 mA	V_{DD} – 2.1	—	—	V	(8), (11)
Low-level output voltage	V_{OL}	I_{OL1} = 24 mA	—	—	0.4	V	
Low-level output voltage	V_{OL}	I_{OL1} = 24 mA	—	—	0.4	V	(9)
Low-level output voltage	V_{OL}	I_{OL1} = 8 mA	—	—	0.4	V	(6), (7)
Input leak current	I_{IL}	V_I = V_{SS}, V_{DD}	–10		+10	μA	(1), (2), (3), (11)
Output leak current	I_{OZ}	During high-impedance output	–10		+10	μA	(6), (8), (9), (11)
Pull-up resistance	R_{UP}		40	80	160	kΩ	(10)
Pull-up resistance	R_{UP}		20	40	80	kΩ	(7), ZDMACK *2

Note: *1 The applicable pin sets are as follows.
*2 When ZDMACK is reset, internal pull-up resistor is OFF.
When Config-Reg-R46 (PULON)-bit 0 (ZDMACK) = 1, pull-up resistor becomes ON.

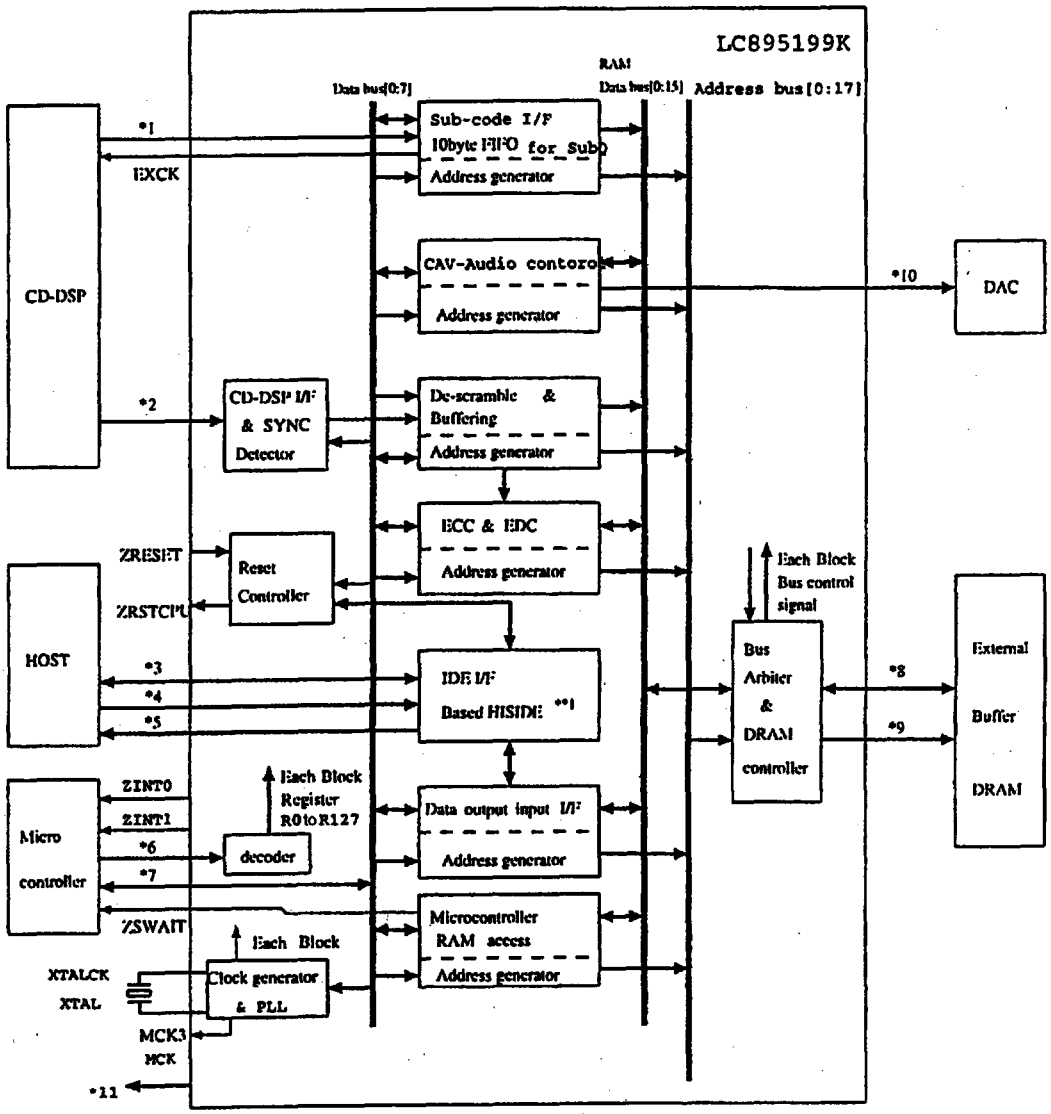
INPUT
(1) ATPINSEL, CSCTRL, SUA0 to 6, BCK, C2PO, LRCK, SDATA, SBSO, SCOR, WFCK, TEST0 to 1
(2) ZRESET, ZCS, ZRD, ZWR, CSEL
(3) DA0 to 2, ZCS1FX, ZCS3FX, ZDIOR, ZDIOW, ZDMACK, ZHRST

OUTPUT
(4) RA0 to 8, ZRAS0, ZCAS0 to 1, ZUWE, ZLWE, ZOE
(5) MCK, MCK3
(6) ZRSTCPU
(7) ZINT, ZINT1, ZSWAIT
(8) DMARQ, HINTRQ
(9) IORDY, ZIOCS16

INOUT
(10) D0 to 7, IO0 to 15, HDB0 to 7
(11) DD0 to 15, ZDASP, ZPDIAG
(12) EXCK

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

Block Diagram



*1 WFCK, SBSO, SCOR
*2 BCK, SDATA, LRCK, C2PO
*3 DD0 to DD15, 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 IO0 to IO15
*9 RA0 to RA8, ZRAS0, ZCAS0, ZCAS1, ZOE, ZUWE, ZLWE
*10 DBCK, DLRCK, DSDATA
*11 IOP0 to IOP7
**1 HISIDE(WD25C32) is made by WESTERN DIGITAL