



# LC895125Q, 895125W

## CD-ROM Driver with On-Chip SCSI Interface and Subcode Functions

### Preliminary

### Functions

CD-ROM ECC function, subcode read function, SCSI interface

### Features

- On-chip SCSI interface (with built-in SCAM selection register)
- Supports 8× playback - Using ×16 80-ns DRAMs
- Supports 4× playback - Using ×16 80-ns DRAMs or ×8 70-ns DRAMs
- Transfer rates: 10 MB/s (synchronous), 5 MB/s (asynchronous) using ×16 80-ns DRAMs\*1
- Transfer rates: 8.467 MB/s (synchronous), 4.2336 MB/s (asynchronous) using ×8 70-ns DRAMs\*2
- Supports the connection of up to 32 Mb of buffer RAM (using DRAM)
- The user can freely set the CD main channel, C2 flag, and other areas in buffer RAM.
- Batch transfer function (transfers the CD main channel and C2 flag data in a single operation)
- Multi-block transfer function (automatically transfers multiple blocks in a single operation)
- High-speed transfer mode supports a 10-MB/s (synchronous) transfer rate using ×8 80-ns DRAMs
- Subcode ECC function

Note: 1. For speeds up to 8× speed, use a SCSI master clock frequency of 20 MHz.

2. For speeds up to 4× speed, use a SCSI master clock frequency of 16.9344 MHz.

### Specifications

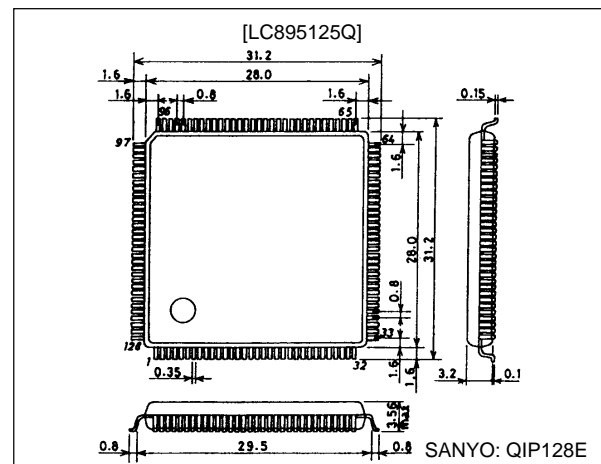
#### Absolute Maximum Ratings at $V_{SS} = 0$ V

Parameter	Symbol	Conditions	Ratings	Unit
Maximum supply voltage	$V_{DD}$ max	$T_a = 25^\circ\text{C}$	-0.3 to +7.0	V
I/O voltages	$V_i, V_o$	$T_a = 25^\circ\text{C}$	-0.3 to $V_{DD} + 0.3$	V
Allowable power dissipation	$P_d$ max	$T_a \leq 70^\circ\text{C}$	450	mW
Operating temperature	$T_{opr}$		-30 to +70	$^\circ\text{C}$
Storage temperature	$T_{stg}$		-55 to +125	$^\circ\text{C}$
Soldering heat resistance (pins only)		10 seconds	260	$^\circ\text{C}$

### Package Dimensions

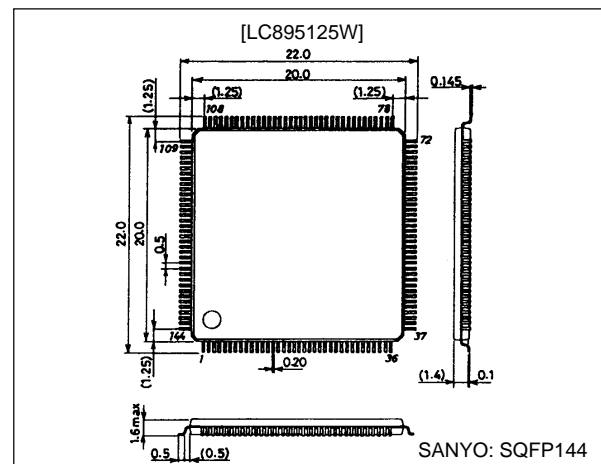
unit: mm

#### 3182-QIP128E



unit: mm

#### 3214-SQFP144



**SANYO Electric Co., Ltd. Semiconductor Business Headquarters**

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-0005 JAPAN

22896HA (OT) No. 5241-1/11

## LC895125Q, 895125W

### Allowable Operating Ranges at $T_a = -30$ to $+70^\circ\text{C}$ , $V_{SS} = 0$ V

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

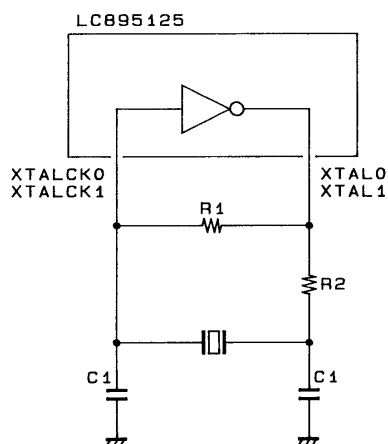
### DC Characteristics at $V_{SS} = 0$ V, $V_{DD} = 4.5$ to $5.5$ V, $T_a = -30$ to $+70^\circ\text{C}$

Parameter	Symbol	Applicable Pins* (See below)	min	typ	max	Unit
Input high level voltage	$V_{IH1}$	All input pins other than (1), (3), and XTALCK	2.2			V
Input low level voltage	$V_{IL1}$		0.8			V
Input high level voltage	$V_{IH2}$	$\overline{\text{RESET}}$ , IO0 to IO15, D0 to D7, $\overline{\text{RD}}$ , $\overline{\text{CS}}$ , $\overline{\text{WR}}$ , WFCK, SBSO, SCOR (1)	2.5			V
Input low level voltage	$V_{IL2}$		0.6			V
Input high level voltage	$V_{IH3}$	Input pins (3), $\overline{\text{ACK}}$ , and $\overline{\text{ATN}}$	2.0			V
Input low level voltage	$V_{IL3}$		0.8			V
Output high level voltage	$V_{OH1}$	$I_{OH1} = -2$ mA: All output pins except (2), (3), and XTALCK, IO0 to IO15, and D0 to D7	2.4			V
Output low level voltage	$V_{OL1}$	$I_{OL1} = 2$ mA: All output pins except (2), (3), and XTALCK, IO0 to IO15, and D0 to D7			0.4	V
Output low level voltage	$V_{OL2}$	$I_{OL2} = 2$ mA: INT1, INT0, and ZSWAIT (open-drain outputs with pull-up resistors) (2)			0.4	V
Output low level voltage	$V_{OL3}$	$I_{OL3} = 48$ mA: $\overline{\text{DB0}}$ , to $\overline{\text{DB7}}$ , $\overline{\text{DBP}}$ , BSY, I/O, MSG, SEL, RST, REQ, C/D (3)			0.4	V
Input leakage current	$I_L$	$V_I = V_{SS}$ , $V_{DD}$ : All input pins	-25		+25	$\mu\text{A}$
Pull-up resistance	$R_{UP}$	IO0 to IO15, D0 to D7, $\overline{\text{INT0}}$ , $\overline{\text{INT1}}$ , ZSWAIT	40	80	160	k $\Omega$

### SCSI Pin Input Characteristics

Parameter	Symbol	Conditions	min	typ	max	Unit
Input threshold voltage	$V_{t+t1}$	$V_{DD} = 4.5$ to $5.5$ V		1.60	2.00	V
	$V_{t-t1}$		0.80	1.11	V	
Hysteresis width	$\Delta V_{tt1}$	$V_{DD} = 5.0$ V	0.41	0.49		V

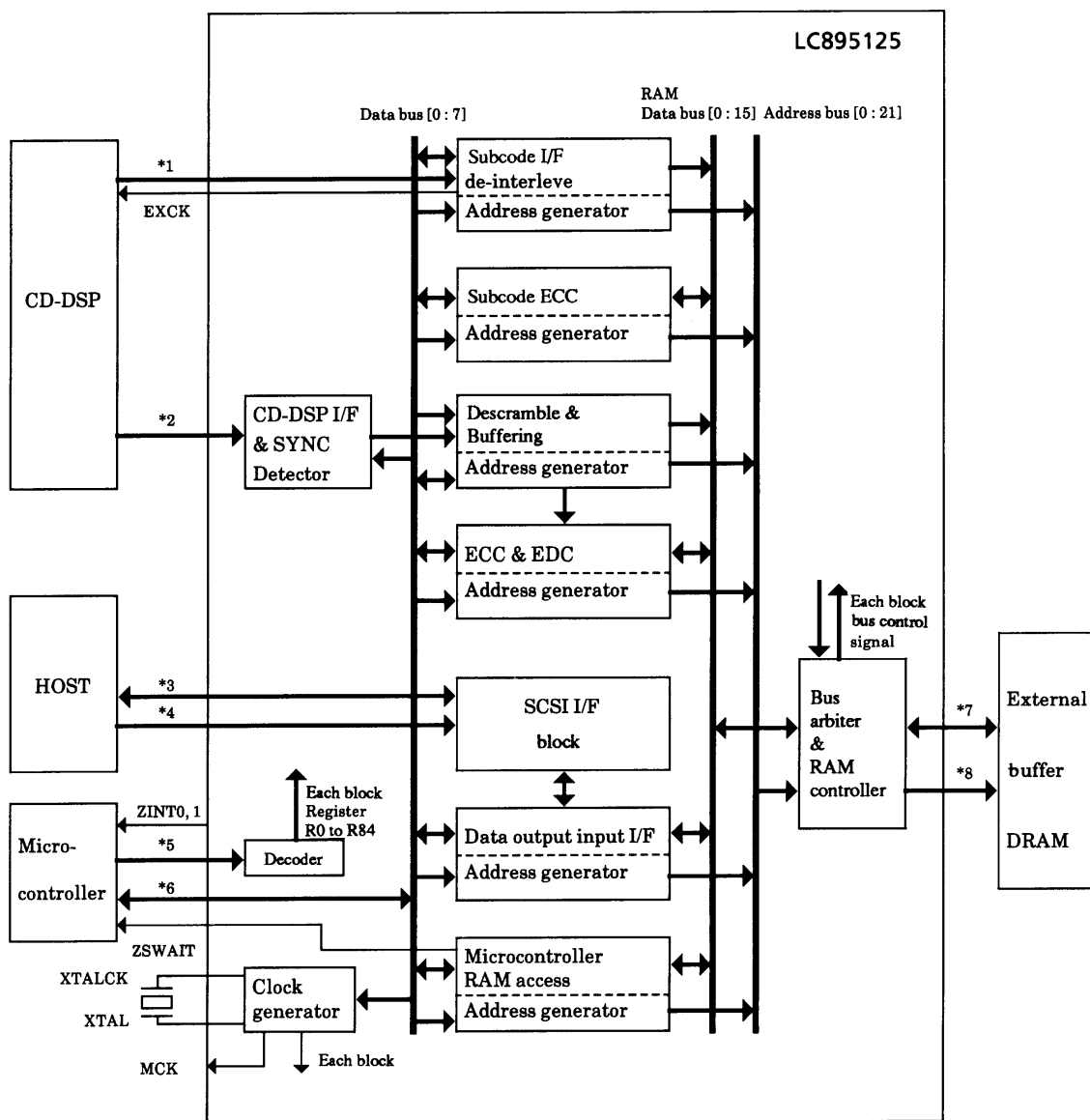
### Sample Recommended Oscillator Circuit



A04740

$R1 = 120$  k $\Omega$   
 $R2 = 47$   $\Omega$   
 $C1 = 30$  pF  
 Crystal oscillator frequencies: XTALCK0 = 16.9344 MHz and XTALCK1 = 20 MHz  
 or:  
 $R1 = 3.3$  k $\Omega$   
 $R2 = \text{None}$   
 $C1 = 5$  pF  
 Crystal oscillator frequency: XTALCK0 = 33.8688 MHz  
 If third harmonic overtones appear when using a 33.8688 MHz frequency with the recommended circuit example, consult with the manufacturer of the crystal element, since detailed values of the circuit constants will be influenced by the printed circuit board.

Block Diagram



- Note: 1. WFCK, SBSO, SCOR  
 2. BCK, SDATA, LRCK, C2PO  
 3. DB0 to DB7, DBP, BSY, MSG, SEL, RST, REQ, I/O, C/D  
 4. ACK, ATN  
 5. ZRD, ZWR, SUA0 to SUA6, ZCS, CSCTRL  
 6. D0 to D7  
 7. IO0 to IO15  
 8. RA0 to RA16, ZRAS0, ZRAS1, ZCAS0, ZCAS1, ZOE, ZUWE, ZLWE
- Note: IO8 to IO15 and RA9 to RA16 are the same pins.

## LC895125Q, 895125W

### Pin Functions (LC895125Q)

Type: I: Input pin, O: Output pin, B: Bidirectional pin, P: Power supply pin, NC: No connection pin

Pin No.	Symbol	Type	Function
1	V <sub>DD</sub>	P	
2	V <sub>SS0</sub>	P	
3	RA5	O	Address outputs for the buffer RAM
4	RA6	O	
5	RA7	O	
6	RA8	O	
7	RA9 (IO15)	B	Address outputs for the buffer RAM or data I/O pins The pin circuits include pull-up resistors.
8	RA10 (IO14)	B	
9	V <sub>SS0</sub>	P	
10	RA11 (IO13)	B	Address outputs for the buffer RAM or data I/O pins The pin circuits include pull-up resistors.
11	RA12 (IO12)	B	
12	RA13 (IO11)	B	
13	RA14 (IO10)	B	
14	RA15 (IO9)	B	
15	RA16 (IO8)	B	
16	IO7	B	Buffer RAM data I/O. The pin circuit includes a pull-up resistor.
17	V <sub>SS0</sub>	P	
18	IO6	B	Buffer RAM data I/O. The pin circuits include pull-up resistors.
19	IO5	B	
20	IO4	B	
21	IO3	B	
22	IO2	B	
23	IO1	B	
24	IO0	B	
25	V <sub>SS0</sub>	P	
26	TEST0	I	Test pins. These pins must be connected to V <sub>SS0</sub> .
27	TEST1	I	
28	TEST2	I	
29	TEST3	I	
30	TEST4	I	
31	ZRESET	I	LSI reset. The LSI is reset on a 0 input.
32	V <sub>DD</sub>	P	
33	V <sub>SS0</sub>	P	
34	CSCTRL	I	Selects active-high or active-low for the microcontroller CS logic.
35	XTALCK0	I	Crystal oscillator input
36	XTAL0	O	Crystal oscillator output
37	V <sub>SS0</sub>	P	
38	D0	B	Microcontroller data signals
39	D1	B	
40	D2	B	
41	D3	B	
42	D4	B	
43	D5	B	
44	D6	B	
45	D7	B	
46	V <sub>SS0</sub>	P	
47	ZSWAIT	O	WAIT signal output to the microcontroller
48	ZINT0	O	Interrupt request output to the microcontroller (ECC side. Set with a register.)
49	V <sub>DD</sub>	P	
50	ZINT1	O	Interrupt request output to the microcontroller (SCSI side. Set with a register.)

Note: 1. NC pins must be left open. Do not connect any signal to these pins.

2. Pin names that start with Z are negative-logic signals.

3. V<sub>SS0</sub> is the logic system ground and V<sub>SS1</sub> is the SCSI interface ground.

4. Applications that use DRAM must insert resistors in the CAS and RAS lines, connect capacitors between these lines and ground, and take any other measures necessary to prevent undershoot in the DRAM related circuits.

5. Since these circuits include buffers that sink 48 mA, adequate noise prevention measures must be applied.

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## LC895125Q, 895125W

Continued from preceding page.

Type: I: Input pin, O: Output pin, B: Bidirectional pin, P: Power supply pin, NC: No connection pin

Pin No.	Symbol	Type	Function
51	ZRD	I	Microcontroller data read signal input
52	ZWR	I	Microcontroller data write signal input
53	ZCS	I	Register chip select signal from the microcontroller
54	SUA0	I	Microcontroller register selection signals
55	SUA1	I	
56	SUA2	I	
57	SUA3	I	
58	SUA4	I	
59	SUA5	I	
60	SUA6	I	
61	V <sub>SS0</sub>	P	
62	X1EN	I	Selection pin that must be set to 1 when XTALCK1 is used.
63	XTALCK1	I	SCSI block oscillator circuit input. Selected by X1EN.
64	XTAL1	O	SCSI block oscillator circuit output.
65	V <sub>DD</sub>	P	
66	V <sub>SS1</sub>	P	
67	$\overline{DB0}$	B	SCSI connection
68	$\overline{DB1}$	B	
69	V <sub>SS1</sub>	P	
70	$\overline{DB2}$	B	SCSI connection
71	$\overline{DB3}$	B	
72	V <sub>DD</sub>	P	
73	V <sub>SS1</sub>	P	
74	$\overline{DB4}$	B	SCSI connection
75	$\overline{DB5}$	B	
76	V <sub>SS1</sub>	P	
77	$\overline{DB6}$	B	SCSI connection
78	$\overline{DB7}$	B	
79	V <sub>SS1</sub>	P	
80	$\overline{DBP}$	B	SCSI connection
81	V <sub>SS1</sub>	P	
82	ATN	B	SCSI connection
83	V <sub>DD</sub>	P	
84	$\overline{BSY}$	B	SCSI connection
85	$\overline{ACK}$	B	
86	V <sub>SS1</sub>	P	
87	$\overline{RST}$	B	SCSI connection
88	$\overline{MSG}$	B	
89	V <sub>DD</sub>	P	
90	$\overline{SEL}$	B	SCSI connection
91	C/D	B	
92	V <sub>SS1</sub>	P	
93	$\overline{REQ}$	B	SCSI connection
94	I/O	B	
95	V <sub>SS1</sub>	P	
96	V <sub>DD</sub>	P	
97	V <sub>SS0</sub>	P	
98		NC	
99	V <sub>SS0</sub>	P	
100	V <sub>SS0</sub>	P	

Note: 1. NC pins must be left open. Do not connect any signal to these pins.

2. Pin names that start with Z are negative-logic signals.

3. V<sub>SS0</sub> is the logic system ground and V<sub>SS1</sub> is the SCSI interface ground.

4. Applications that use DRAM must insert resistors in the CAS and RAS lines, connect capacitors between these lines and ground, and take any other measures necessary to prevent undershoot in the DRAM related circuits.

5. Since these circuits include buffers that sink 48 mA, adequate noise prevention measures must be applied.

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## LC895125Q, 895125W

Continued from preceding page.

Type: I: Input pin, O: Output pin, B: Bidirectional pin, P: Power supply pin, NC: No connection pin

Pin No.	Symbol	Type	Function
101	V <sub>SS0</sub>	P	
102		NC	
103		NC	
104	C2PO	I	CD DSP interface
105	SDATA	I	
106	BCK	I	
107	LRCK	I	
108	MCK	O	Outputs the XTALCK0 frequency, or that frequency divided by 2.
109	V <sub>SS0</sub>	P	
110	EXCK	O	Subcode I/O
111	WFCK	I	
112	SBSO	I	
113	V <sub>DD</sub>	P	
114	SCOR	I	Subcode I/O
115	V <sub>SS0</sub>	P	
116	ZRAS0	O	Buffer RAM RAS signal output pin 0 (Normally, pin 0 is used)
117	ZRAS1	O	Buffer RAM RAS signal output pin 1
118	ZCAS0	O	Buffer RAM CAS signal output pin 0 (Normally, pin 0 is used)
119	ZCAS1	O	Buffer RAM CAS signal output pin 1
120	ZOE	O	Buffer RAM output enable
121	ZUWE	O	Buffer RAM upper write enable
122	ZLWE	O	Buffer RAM lower write enable
123	V <sub>SS0</sub>	P	
124	RA0	O	Buffer RAM address signal outputs
125	RA1	O	
126	RA2	O	
127	RA3	O	
128	RA4	O	

- Note:
1. NC pins must be left open. Do not connect any signal to these pins.
  2. Pin names that start with Z are negative-logic signals.
  3. V<sub>SS0</sub> is the logic system ground and V<sub>SS1</sub> is the SCSI interface ground.
  4. Applications that use DRAM must insert resistors in the CAS and RAS lines, connect capacitors between these lines and ground, and take any other measures necessary to prevent undershoot in the DRAM related circuits.
  5. Since these circuits include buffers that sink 48 mA, adequate noise prevention measures must be applied.

## LC895125Q, 895125W

### Pin Functions (LC895125W)

Type: I: Input pin, O: Output pin, B: Bidirectional pin, P: Power supply pin, NC: No connection pin

Pin No.	Symbol	Type	Function
1	V <sub>SS0</sub>	P	
2	V <sub>DD</sub>	P	
3	V <sub>SS0</sub>	P	
4	RA5	O	Buffer RAM address signal outputs
5	RA6	O	
6	RA7	O	
7	RA8	O	
8	RA9 (IO15)	B	Address outputs for the buffer RAM or data I/O pins The pin circuits include pull-up resistors.
9	RA10 (IO14)	B	
10	V <sub>SS0</sub>	P	
11	RA11 (IO13)	B	Address outputs for the buffer RAM or data I/O pins The pin circuits include pull-up resistors.
12	RA12 (IO12)	B	
13	RA13 (IO11)	B	
14	RA14 (IO10)	B	
15	RA15 (IO9)	B	
16	RA16 (IO8)	B	
17	IO7	B	Buffer RAM data I/O. The pin circuit includes a pull-up resistor.
18	V <sub>DD</sub>	P	
19	V <sub>SS0</sub>	P	
20		NC	
21	IO6	B	Buffer RAM data I/O. The pin circuit includes a pull-up resistor.
22	IO5	B	
23	IO4	B	
24	IO3	B	
25	IO2	B	
26	IO1	B	
27	IO0	B	
28	V <sub>SS0</sub>	P	
29	TEST0	I	Test pins. These pins must be connected to V <sub>SS0</sub> .
30	TEST1	I	
31	TEST2	I	
32	TEST3	I	
33	TEST4	I	
34	ZRESET	I	LSI reset. The LSI is reset on a 0 input.
35	V <sub>DD</sub>	P	
36	V <sub>SS0</sub>	P	
37	V <sub>DD</sub>	P	
38	V <sub>SS0</sub>	P	
39	CCTRL	I	Selects active-high or active-low for the microcontroller CS logic.
40	XTALCK0	I	Crystal oscillator input
41	XTAL0	O	Crystal oscillator output
42	V <sub>SS0</sub>	P	
43	D0	B	Microcontroller data signals
44	D1	B	
45	D2	B	
46	D3	B	
47	D4	B	
48	D5	B	
49	D6	B	
50	D7	B	

Note: 1. NC pins must be left open. Do not connect any signal to these pins.

2. Pin names that start with Z are negative-logic signals.

3. V<sub>SS0</sub> is the logic system ground and V<sub>SS1</sub> is the SCSI interface ground.

4. Applications that use DRAM must insert resistors in the CAS and RAS lines, connect capacitors between these lines and ground, and take any other measures necessary to prevent undershoot in the DRAM related circuits.

5. Since these circuits include buffers that sink 48 mA, adequate noise prevention measures must be applied.

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## LC895125Q, 895125W

Continued from preceding page.

Type: I: Input pin, O: Output pin, B: Bidirectional pin, P: Power supply pin, NC: No connection pin

Pin No.	Symbol	Type	Function
51	V <sub>SS0</sub>	P	
52	ZSWAIT	O	WAIT signal output to the microcontroller
53	ZINT0	O	Interrupt request output to the microcontroller (ECC side. Set with a register.)
54	V <sub>DD</sub>	P	
55	V <sub>SS0</sub>	P	
56	ZINT1	O	Interrupt request output to the microcontroller (SCSI side. Set with a register.)
57	ZRD	I	Microcontroller data read signal input
58		NC	
59	ZWR	I	Microcontroller data write signal input
60	ZCS	I	Input for the register chip select signal from the microcontroller
61	SUA0	I	Microcontroller register selection signals
62	SUA1	I	
63	SUA2	I	
64	SUA3	I	
65	SUA4	I	
66	SUA5	I	
67	SUA6	I	
68	V <sub>SS0</sub>	P	
69	X1EN	I	Selection pin that must be set to 1 when XTALCK1 is used
70	XTALCK1	I	SCSI block oscillator circuit input. Selected by X1EN.
71	XTAL1	O	SCSI block oscillator circuit output
72	V <sub>SS0</sub>	P	
73	V <sub>DD</sub>	P	
74	V <sub>SS1</sub>	P	
75	$\overline{DB0}$	B	SCSI connection
76	$\overline{DB1}$	B	
77	V <sub>SS1</sub>	P	
78	$\overline{DB2}$	B	SCSI connection
79	$\overline{DB3}$	B	
80		NC	
81	V <sub>DD</sub>	P	
82	V <sub>SS1</sub>	P	
83	$\overline{DB4}$	B	SCSI connection
84	$\overline{DB5}$	B	
85	V <sub>SS1</sub>	P	
86	$\overline{DB6}$	B	SCSI connection
87	$\overline{DB7}$	B	
88	V <sub>SS1</sub>	P	
89	$\overline{DBP}$	B	SCSI connection
90	V <sub>DD</sub>	P	
91	V <sub>SS1</sub>	P	
92		NC	
93	$\overline{ATN}$	B	SCSI connection
94	V <sub>DD</sub>	P	
95	$\overline{BSY}$	B	SCSI connection
96	$\overline{ACK}$	B	
97	V <sub>SS1</sub>	P	
98	$\overline{RST}$	B	SCSI connection
99	$\overline{MSG}$	B	
100	V <sub>DD</sub>	P	

- Note:
1. NC pins must be left open. Do not connect any signal to these pins.
  2. Pin names that start with Z are negative-logic signals.
  3. V<sub>SS0</sub> is the logic system ground and V<sub>SS1</sub> is the SCSI interface ground.
  4. Applications that use DRAM must insert resistors in the CAS and RAS lines, connect capacitors between these lines and ground, and take any other measures necessary to prevent undershoot in the DRAM related circuits.
  5. Since these circuits include buffers that sink 48 mA, adequate noise prevention measures must be applied.

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## LC895125Q, 895125W

Continued from preceding page.

Type: I: Input pin, O: Output pin, B: Bidirectional pin, P: Power supply pin, NC: No connection pin

Pin No.	Symbol	Type	Function
101	$\overline{\text{SEL}}$	B	SCSI connection
102	C/D	B	
103	$V_{SS1}$	P	
104	REQ	B	SCSI connection
105	I/O	B	
106	$V_{SS1}$	P	
107	$V_{DD}$	P	
108	$V_{SS0}$	P	
109	$V_{DD}$	P	
110	$V_{SS0}$	P	
111		NC	
112	$V_{SS0}$	P	
113	$V_{SS0}$	P	
114	$V_{SS0}$	P	
115		NC	
116		NC	
117	C2PO	I	CD DSP interface
118	SDATA	I	
119	BCK	I	
120	LRCK	I	
121	MCK	O	Outputs the XTALCK0 frequency, or that frequency divided by 2.
122	$V_{SS0}$	P	
123	EXCK	O	Subcode I/O
124	WFCK	I	
125	SBSO	I	
126	$V_{DD}$	P	
127	$V_{SS0}$	P	
128	SCOR	I	Subcode I/O
129	$V_{SS0}$	P	
130		NC	
131	ZRAS0	O	Buffer RAM RAS signal output pin 0 (Normally, pin 0 is used)
132	ZRAS1	O	Buffer RAM RAS signal output pin 1
133	ZCAS0	O	Buffer RAM CAS signal output pin 0 (Normally, pin 0 is used)
134	ZCAS1	O	Buffer RAM CAS signal output pin 1
135	ZOE	O	Buffer RAM output enable
136	ZUWE	O	Buffer RAM upper write enable
137	ZLWE	O	Buffer RAM lower write enable
138	$V_{SS0}$	P	
139	RA0	O	Buffer RAM address signal outputs
140	RA1	O	
141	RA2	O	
142	RA3	O	
143	RA4	O	
144	$V_{DD}$	P	

Note: 1. NC pins must be left open. Do not connect any signal to these pins.

2. Pin names that start with Z are negative-logic signals.

3.  $V_{SS0}$  is the logic system ground and  $V_{SS1}$  is the SCSI interface ground.

4. Applications that use DRAM must insert resistors in the CAS and RAS lines, connect capacitors between these lines and ground, and take any other measures necessary to prevent undershoot in the DRAM related circuits.

5. Since these circuits include buffers that sink 48 mA, adequate noise prevention measures must be applied.

## Pin Functions

### 1. SCSI Pins

- $\overline{\text{BSY}}$ ,  $\overline{\text{ACK}}$ ,  $\overline{\text{MSG}}$ ,  $\overline{\text{SEL}}$ ,  $\overline{\text{REQ}}$ ,  $\overline{\text{ATN}}$ , I/O, C/D (input and output)  
SCSI bus control pins.
- $\overline{\text{DB0}}$  to  $\overline{\text{DB7}}$ ,  $\overline{\text{DBPB}}$  (input and output)  
These are the SCSI data bus pins.

### 2. Microcontroller Interface Pins

- ZCS (input)  
Microcontroller chip select line
- CSCTRL (input)  
Microcontroller chip select logic selection signal  
High - ZCS is an active low signal.  
Low - ZCS is an active high signal.
- ZRD, ZWR, SUA0 to SUA6 (input)  
Microcontroller interface control signal  
The SUA0 to SUA6 pins are used for addressing.
- ZSWAIT (output)  
When the microcontroller accesses RAM, it must wait if this pin is low.  
This is a built-in pull-up resistor open-drain output.
- D7 to D0 (input and output)  
Microcontroller data bus. Pull-up resistors are built in.
- ZINT0, ZINT1 (output)  
Interrupt request output to the microcontroller. A SCSI-side interrupt can be output from ZINT1 by setting the C register (bit 7 in R11).  
This is a built-in pull-up resistor open-drain output.

### 3. Buffer RAM Pins

- IO0 to IO15 (input and output)  
Buffer RAM data bus. Pull-up resistors are built in. The IO8 to IO15 pins have shared functions as the RA9 to RA16 pins.  
This means that 16-bit PSRAM cannot be used.
- RA0 to RA16 (output)  
Buffer RAM address lines. RA9 to RA16 have shared functions as the IO8 to IO15 pins.  
This means that 16-bit PSRAM cannot be used.
- ZRAS0, ZRAS1, (ZCS0), (ZCS1) (output)  
Buffer DRAM RAS outputs. Normally, ZRAS0 is used. However, when two 1-MB (64k × 16-bit) DRAM chips are used, the respective DRAM RAS pins are connected to ZRAS0 and ZRAS1. Connected to the CS pin if PSRAM is used.
- ZCAS0, ZCAS1 (output)  
Buffer DRAM CAS outputs. Normally, ZCAS0 is used. However, when two 1-MB (64k × 16-bit) DRAM chips are used, the respective DRAM CAS pins are connected to ZCAS0.
- ZOE (output)  
Buffer RAM read output signal
- ZUWE, ZLWE (output)  
Buffer RAM write output signals. Connected to the corresponding pins on the RAM chip.  
Leave ZUWE open if an 8-bit RAM is used.

### 4. Subcode Interface Pins

- EXCK, WFCK, SBSO, SCOR (input and output)  
Subcode interface pins. Connecting a CD DSP using these pins allows the LC895125 to read in subcode data and transfer it to the host.

5. CD DSP Data Pins

- BCK, SDATA, LRCK, C2PO (input)

The LC895125 reads in CD-ROM data over these pins connected to a CD DSP.

C2PO is the C2 flag pin.

6. Other Pins

- ZRESET (input)

Reset input to the LC895125. The LC895125 is reset by a low-level input.

This pin must be held low for a period of at least 1  $\mu$ s when power is first applied.

- XTALCK0, XTAL0

The main clock for the ECC and SCSI blocks. These pins support frequencies from 16.9344 to 25 MHz.

When a double-frequency input is used, these pins accept frequencies up to 38 MHz.

Use a double-frequency input when a ceramic oscillator and DRAM are used.

(This is because the internal clock must have a 50% duty.)

An external clock may input to the XTALCK pin.

The SCSI block main clock can also be provided from XTALCK1 and XTAL1 if so specified by the setting of X1EN (pin 89).

- XTALCK1, XTAL1

The main clock for the ECC and SCSI blocks. These pins are enabled for oscillator operation by setting X1EN (pin 89). The LC895125 is designed so that the ECC and SCSI blocks can also be operated asynchronously.

This means that precise 10-MB/s synchronous transfers can be achieved by providing a 20-MHz input to XTALCK1 and XTAL1.

A ceramic oscillator may be used here since only the rising edge of this signal is used.

In applications that do not use these pins, XTALCK1 must be tied to  $V_{SS}$  and XTAL1 must be left open.

- X1EN (input)

Set this pin to 1 to use XTALCK1 and XTAL1 for the SCSI block main clock.

Set this pin to 0 to drive both the ECC and SCSI blocks from XTALCK0 and XTAL0.

- MCK (output)

Outputs either the XTALCK0 frequency or that frequency divided by 2. This pin's output can also be stopped if desired.

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