

S1R72U16

Evaluation Board Manual

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Scope

This document applies to the “S1R72U16” IDE device - USB 2.0 host bridge LSI.

Notice

Before using the S1R72U16, carefully read the sections “Special use case for S1R72U16” and “S1R72U16 Errata.”

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1. Overview

This board is an evaluation board for the S1R72U16. This manual describes how to use the board.

2. Connector Connections

2. Connector Connections

The connectors provided on this board are shown below.

Connector No.	Usage
CN1	Connects to main CPU system
CN2	Connects to PORT00 to PORT02 (not included)
CN3	Monitors PORT10 to PORT17 (not included)
CN4	For S1R72U16 maintenance (not included)
CN5	USB connector
CN6	Power supply connector
CN7	RS232 connector

CN1

Use Connector CN1 to connect the board to the main CPU system.

Pin assignment conforms to the IDE bus when connecting in IDE mode, enabling use of a commercially-available IDE bus 40-pin cable. The cable should support at least ATA100.

The same cable may be used when connecting in CPU mode. Check the pin assignment when connecting.

In either case, avoid using long cables in which the individual signal wires are not guarded by GND, since degraded signal quality or incorrect operations may result.

CN6

The power supply to the board should be connected to connector CN6 as shown below. Note that the power should be turned on only after connecting to the main CPU and making the settings described further below.

1pin	+5V
2pin	0V
3pin	N.C.
4pin	N.C.

CN7

Use Connector CN7 for RS-232 connections to a PC. Commercially-available RS-232 cross cables may be used.

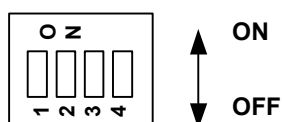
3. Switches

Set the S1R72U16 operating mode using the DIP switches (SW1) provided on the board.

SW1 (Factory default settings shown shaded)

Switch		Function selection		Remarks
No.1	Command system setting	ON	ATA mode	PORT00 pin = High
		OFF	ATAPI mode	PORT00 pin = Low (Pull Down)
No.2	Connected device number setting	ON	Two-device mode	PORT01 pin = High
		OFF	One-device mode	PORT01 pin = Low (Pull Down)
No.3	Interface setting	ON	CPU mode	PORT02 pin = High
		OFF	IDE mode	PORT02 pin = Low (Pull Down)
No.4	Not used	ON	Not used	Not used
		OFF	Not used	Not used

On/Off is as shown in the diagram below.



Note:

The pins of CN2 (not mounted) are connected to PORT00 to PORT02. When using these pins, set the corresponding position on SW1 to Off, and set the input signal level to CN2 to the same as for IOVDD.

SW2 is for resetting the S1R7U16 chip.

4. LEDs

4. LEDs

The LEDs provided on the board allow the output status of the S1R72U16's PORT10 to PORT17 to be checked. The LEDs illuminate when the PORT output is High (1). The LEDs and PORTs correspond as shown below.

LED No.	S1R72U16	Description	Remarks (see note below)
LED1	PORT10 (XChgInt)	Storage device connection/disconnection detection interrupt 1: -, 0: Connection/disconnection detected	CN3/1pin
LED2	PORT11 (XCD0)	Storage device 0 detection 1: -, 0: Detected	CN3/2pin
LED3	PORT12 (XCD1)	Storage device 1 detection 1: -, 0: Detected	CN3/3pin
LED4	PORT13 (PLL_Locked)	PLL oscillation start 1: Oscillation started, 0: No oscillation	CN3/4pin
LED5	PORT14 (ComplianceErr0)	Unsupported Device 1: Error, 0: -	CN3/5pin
LED6	PORT15 (ComplianceErr1)	Too Many Devices 1: Error, 0: -	CN3/6pin
LED7	PORT16 (ComplianceErr2)	Too Many Hubs 1: Error, 0: -	CN3/7pin
LED8	PORT17 (ComplianceErr3)	VBUS Over Current 1: Error, 0: -	CN3/8pin

Note:

The pins of CN3 (not mounted) are connected directly to each PORT of the S1R72U16 as shown in the table above. These can be probed to monitor the signals for PORT10 to PORT 17. The output level will be the level supplied to the IOVDD pin.

5. Jumper Pins

The jumpers on the board are set as shown below. Factory default settings are shown shaded.

JP1 must be used as Short (CSEL = Low) when using the LSI in two-device mode

JP3 should be used as 1-2 Short when using the interface settings in IDE mode.

JP4 to JP10 are soldered jumpers and normally do not need to be changed.

No.	Details	Setting (Factory default settings shown shaded)	
JP1	"CSEL" level selection	Short	CSEL = Low (IDE Master)
		Open	CSEL = High (IDE Slave)
JP2			
JP3	Power supply for interface with main CPU	1-2:	IOVDD = 3.3V
		2-3:	IOVDD = 1.8V
JP4	Clock selection	Short	For 12MHz
		Open	For 24MHz
JP5-JP8	Current consumption measurement jumper (normally used shorted)	Short	Normal
		Open	Not permitted
JP9	MAX8586 automatic restart function selection (Refer to Maxim data sheet for details)	1-2:	MAX8586-ENRESET pin = High
		1-3:	MAX8586-ENRESET pin = Low
JP10	USB host VBUS output 122 [uF] layout selection	1-2:	Located at MAX8586-OUT pin
		1-3:	Located at MAX8586-IN pin

6. Product Code

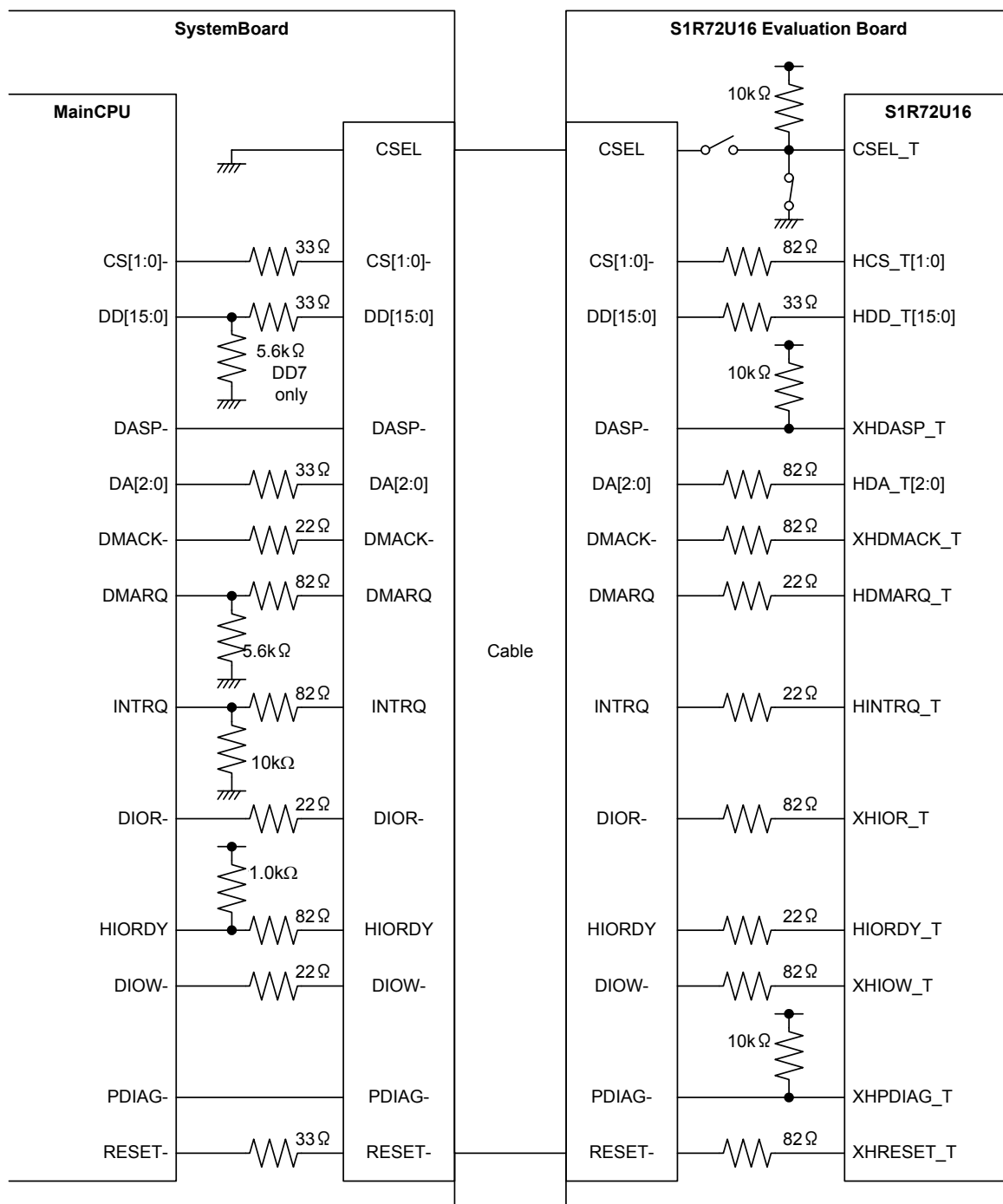
6. Product Code

The product code for the board is as follows:

S5U1R72U16F0100

7. Appendix

7.1 Connection Example 1 (IDE I/F Connection Example)

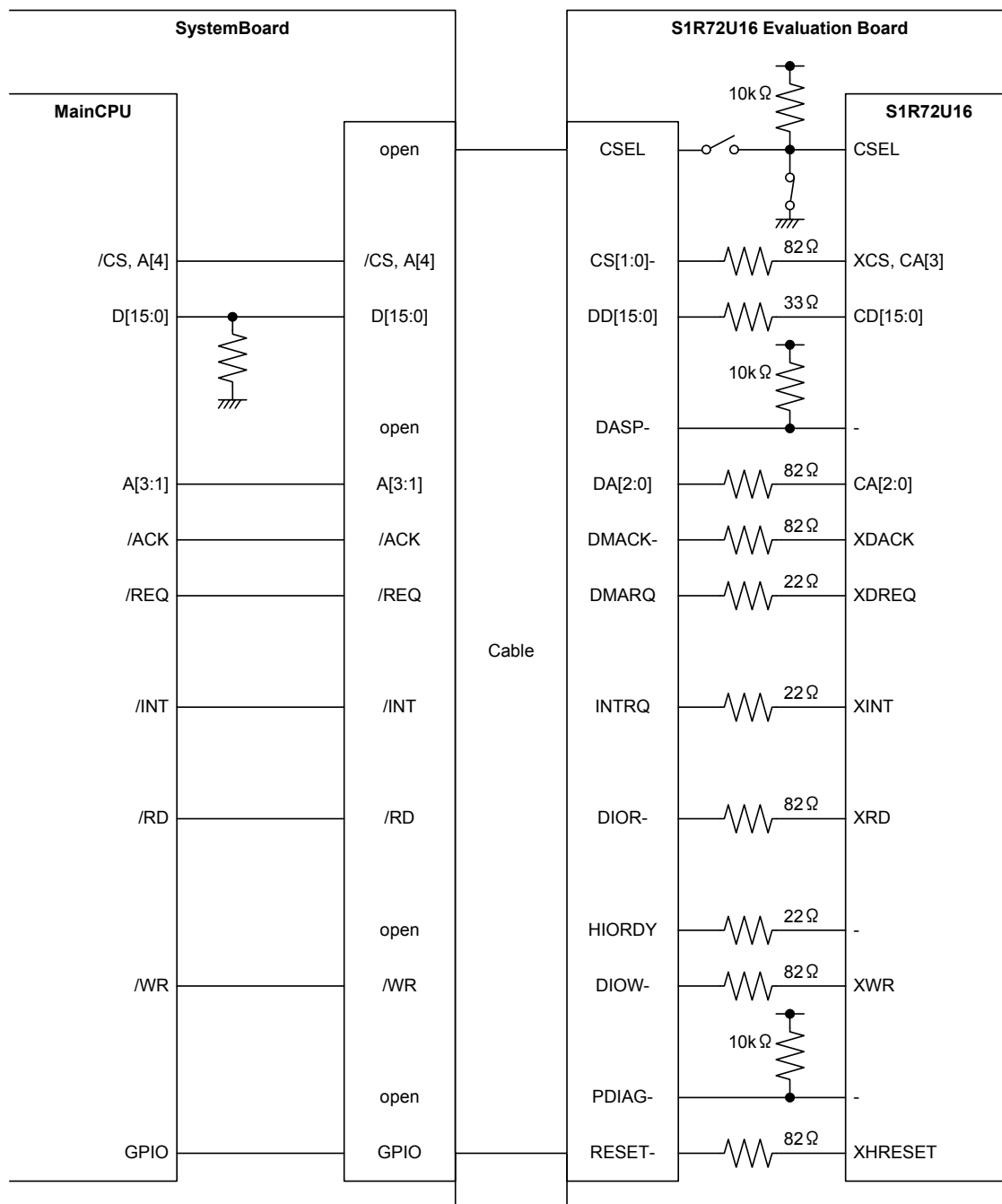


Connect to connector if using with cable select.

CSEL_T

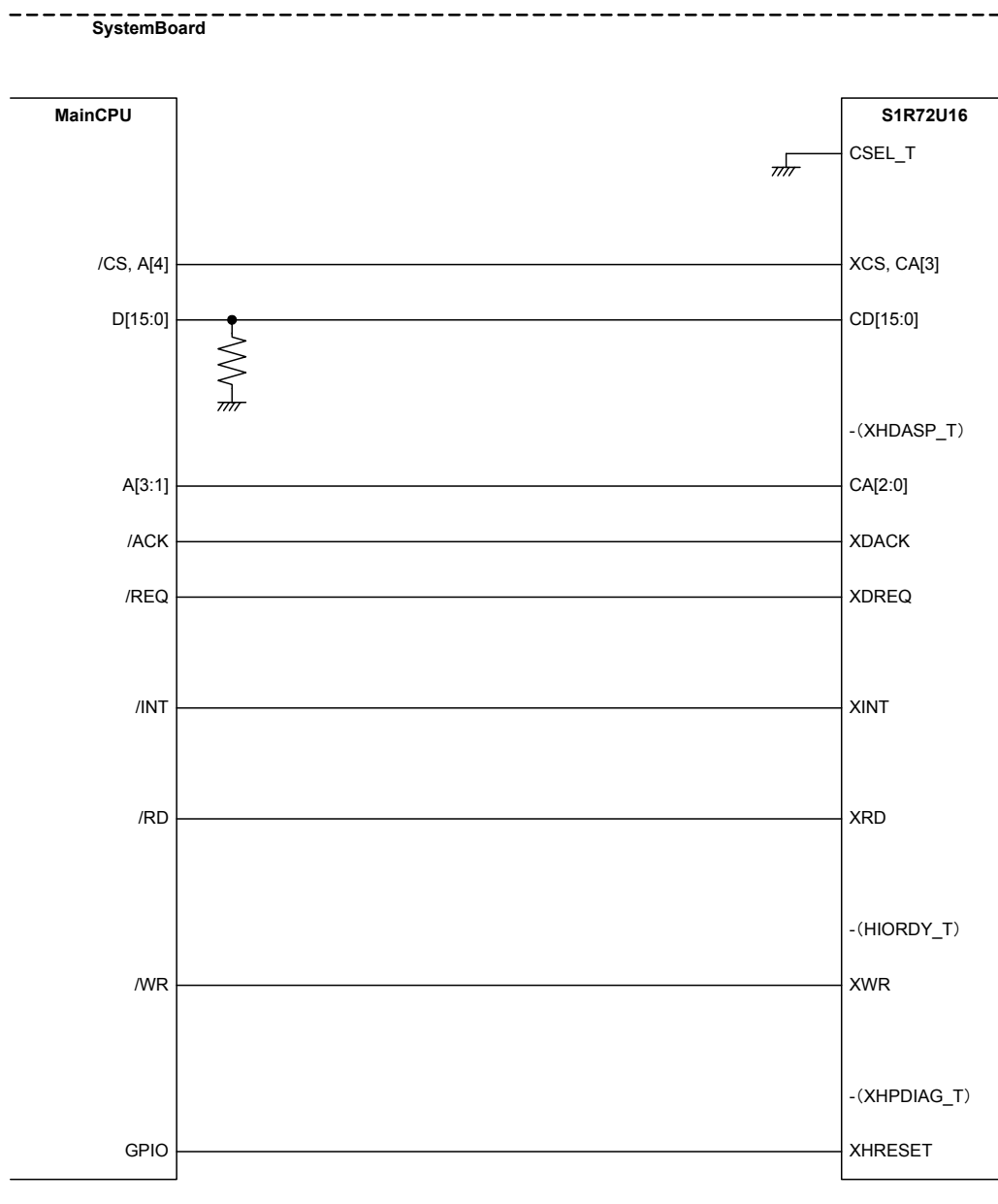
The cables and connectors described here should be replaced by circuit board wiring if the S1R72U16 is mounted on the system board (board designed by user).

7.2 Connection Example 2 (CPUIF Connection Example)



/CS, A[4]	S1R72U16 addresses are word addresses. The addresses should be offset as necessary for connection.
D[15:0]	Add pull-up/pull-down resistors as necessary.
A[3:1]	S1R72U16 addresses are word addresses. The addresses should be offset as necessary for connection.
/ACK	Connect to negative logic ACK signal when using main CPU DMAC.
/REQ	Connect to negative logic REQ signal when using main CPU DMAC.
/INT	Connect to interrupt signal.
/RD	Connect to negative logic read strobe signal.
/WR	Connect to negative logic write strobe signal.
GPIO	Bus can be reset by connecting to general purpose output port.

7.3 Connection Example 3 (CPUIF System Connection Example)

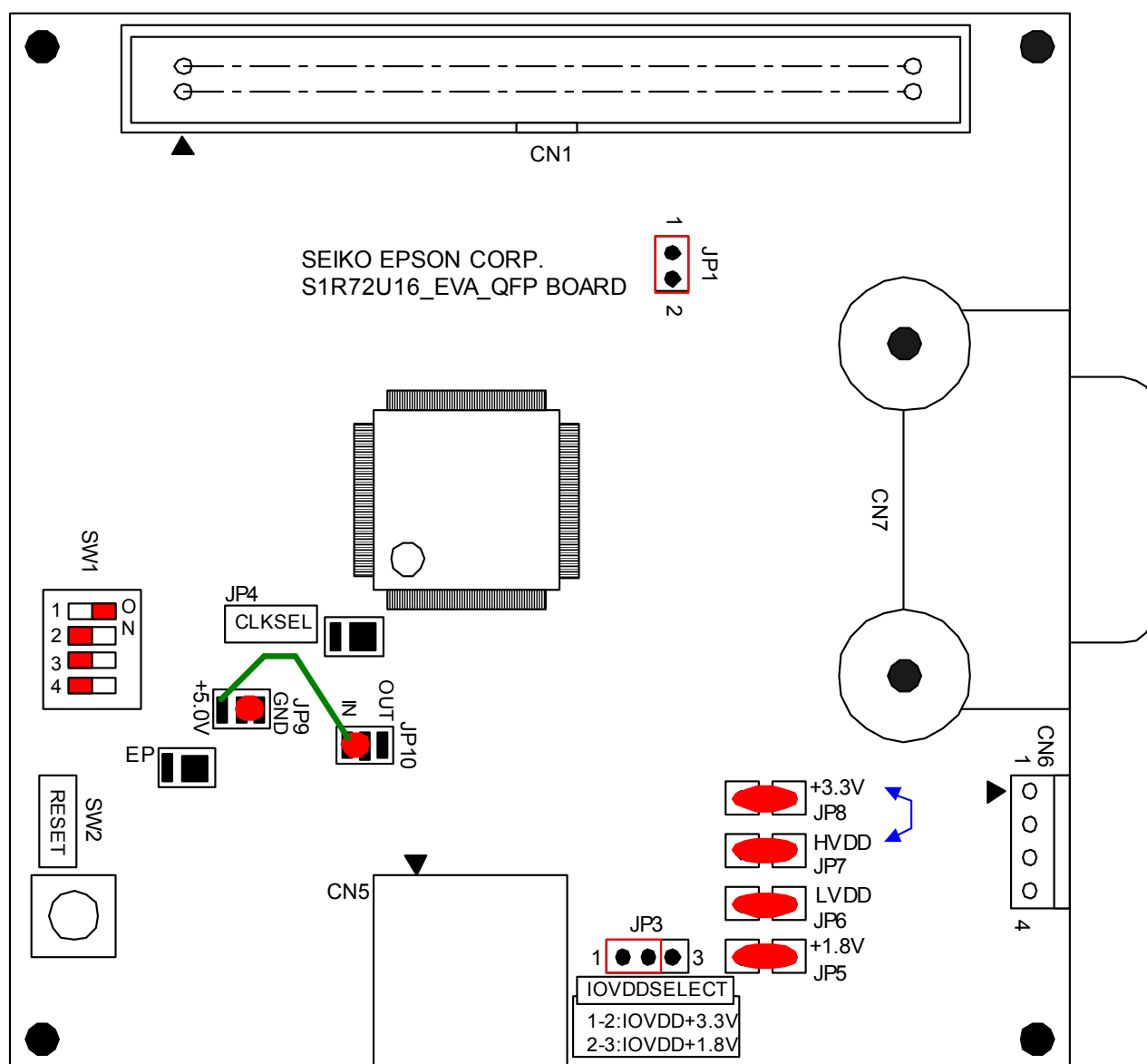


/CS, A[4]	S1R72U16 addresses are word addresses. The addresses should be offset as necessary for connection.
D[15:0]	Add pull-up/pull-down resistors as necessary.
A[3:1]	S1R72U16 addresses are word addresses. The addresses should be offset as necessary for connection.
/ACK	Connect to negative logic ACK signal when using main CPU DMAC.
/REQ	Connect to negative logic REQ signal when using main CPU DMAC.
/INT	Connect to interrupt signal.
/RD	Connect to negative logic read strobe signal.
/WR	Connect to negative logic write strobe signal.
GPIO	Bus can be reset by connecting to regular output port.

Connection example when used as master.	CSEL
Pulled up inside LSI. Set to open.	-(XHDASP_T)
Pulled up inside LSI. Set to open.	-(HIORDY_T)
Pulled up inside LSI. Set to open.	-(XHPDIAG_T)

7.4 JP and SW Settings

The factory default settings are shown below.



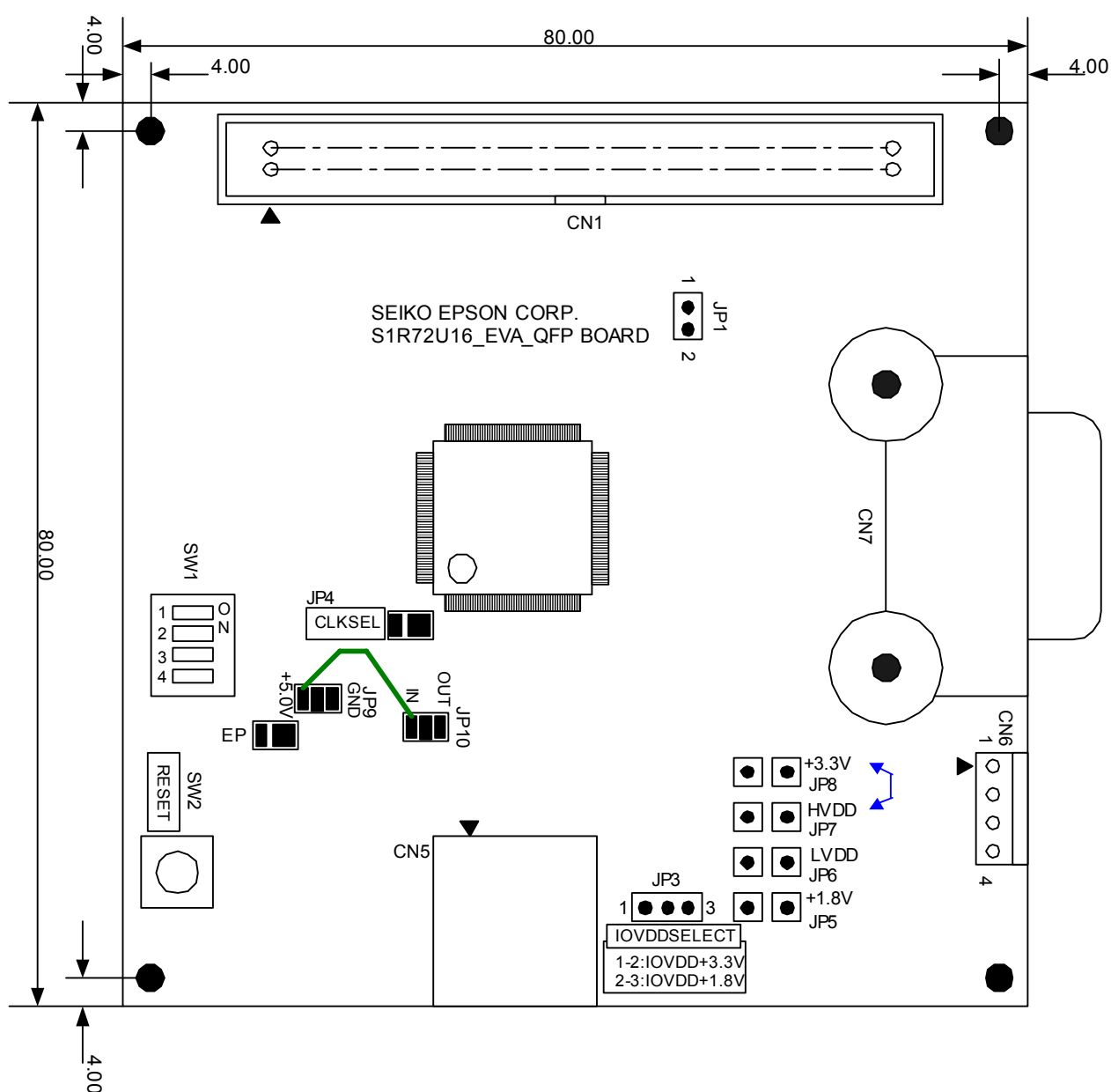
7.5 Circuit Diagram

Refer to the diagram included at the end of this document.

7.6 Component Chart

Refer to the chart included at the end of this document.

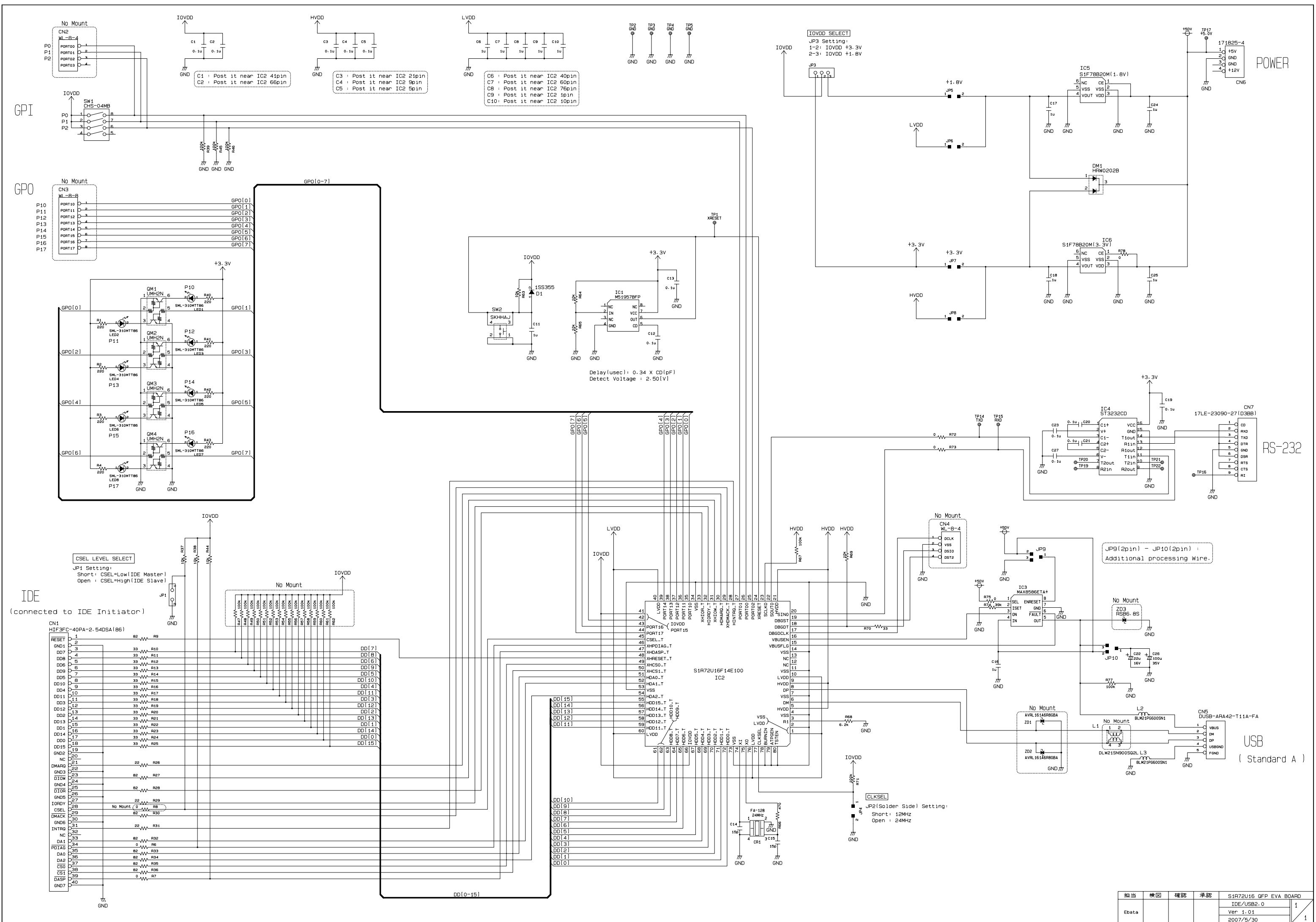
7.7 Dimensional Diagram



Revision History

Revision History

Date	Revision details			
	Rev.	Page	Type	Details
06/06/2007	1.00	All	New	Newly established
10/15/2007	1.10	Scope	Add	Added "notice."



担当	検図	確認	承認	S172U16 GPP EVA BOARD	
Ebata				IDE/USB2.0	1
				Ver. 1.01	
				2007/5/30	
セイコーエプソン 株式会社				1	

S1R72U16 QFP EVA BOARD RoHS Parts List

Attention: A red letter of 'Reference' is nonimplement.

PartName	Quantity	Maker	Value	Rating	Tolerance	Reference
GRM188R11H104JA01	12	Murata	0.1u	50V	5%	C1,C2,C3,C4,C5,C12,C13,C19,C20,C21,C23,C27
GRM1882C1H150JZ01	2	Murata	15p	50V	5%	C14,C15
EMVA160ADA220MD55G	1	NIPPON CHEMI-CON	22u	16V	20%	C22
GRM188F11A105ZA01	11	Murata	1u	10V	-400	C6,C7,C8,C9,C10,C11,C16,C17,C18,C24,C25
EEEV1VA101XP	1	Panasonic	100u	35V	20%	C26
HIF3FC-40PA-2.54DSA(86)	1	HIROSE				CN1
WL-8-8	1	MAC8				CN3
WL-8-4	2	MAC8				CN2,CN4
DUSB-ARA42-T11A-FA	1	DDK				CN5
171825-4	1	AMP				CN6
17LE-23090-27(D3BB)-FA	1	DDK				CN7
FA-128(24MHz)	1	EPSON TOYOCOM	24MHz	CL=10pF	±50ppm	CR1
1SS355	1	ROHM				D1
HRW0202B	1	RENESAS				DM1
M51957BFP	1	RENESAS				IC1
S1R72U16F14E100	1	EPSON				IC2
MAX8586ETA+	1	Maxim				IC3
ST3232CD	1	STMicro				IC4
S1F78B20M18000R	1	EPSON				IC5
S1F78B20M33000R	1	EPSON				IC6
XJ8C-0211	1	OMRON				JP1
XJ8D-0311	1	OMRON				JP3
JP-2-L	5	No_maker				JP4,JP5,JP6,JP7,JP8
JP-3-L	2	No_maker				JP9,JP10
DLW21SN900SQ2L	1	Murata	90			L1
BLM21PG600SN1	2	Murata	60			L2,L3
SML-310MTT86	8	ROHM				LED1,LED2,LED3,LED4,LED5,LED6,LED7,LED8
UMH2N	4	ROHM				QM1,QM2,QM3,QM4
MCR03EZHZJ221	8	ROHM	220	1/16W	5%	R1,R2,R3,R4,R40,R41,R42,R43
MCR03EZHZJ000	7	ROHM	0	1/16W	5%	R6,R7,R8,R72,R73,R75,R78
MCR03EZHZJ330	17	ROHM	33	1/16W	5%	R10,R11,R12,R13,R14,R15,R16,R17,R18,R19,R20,R21,R22,R23,R24,R25,R70
RR0816Q-220-D	3	SSM	22	1/16W	0.50%	R26,R29,R31
MCR03EZHZJ820	9	ROHM	82	1/16W	5%	R9,R27,R28,R30,R32,R33,R34,R35,R36
MCR03EZHZJ104	22	ROHM	100k	1/16W	5%	R39,R45,R46,R47,R48,R49,R50,R51,R52,R53,R54,R55,R56,R57,R58,R59,R60,R61,R62,R67,R71,R77
MCR03EZHZJ103	7	ROHM	10k	1/16W	5%	R37,R38,R44,R63,R64,R65,R69
MCR03EZHZJ471	1	ROHM	470	1/16W	5%	R66
RR0816P-622-D	1	SSM	6.2k	1/16W	0.50%	R68
MCR03EZHZJ393	1	ROHM	39k	1/16W	5%	R74
CHS-04MB	1	COPAL				SW1
SKHHAJ	1	ALPS				SW2
LC-33-S-Black	4	MAC8				TP2,TP3,TP4,TP5
LC-33-S-Yellow	3	MAC8				TP1,TP14,TP15
ROUND_PATTERN	5	No_maker				TP16,TP19,TP20,TP21,TP22
LC-33-S-Red	1	MAC8				TP17
AVRL161A6R8GBA	2	TDK				ZD1,ZD2
RSB6.8S	1	ROHM				ZD3
XJ8A-0211	2	OMRON				JP1, JP3

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