

S1R72V27

Evaluation Board Manual

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Scope

This document applies to the “S1R72V27” USB 2.0 device - host controller LSI.

Table of Contents

1. Overview	1
2. Jumper Settings	2
3. USB Interface Peripheral Circuit	3
4. CPU Interface	4
5. Power Supply	4
6. Precautions	4
7. Appendix	5
7.1 External View	5
7.2 Circuit Diagram	6
7.3 Component List	6
7.4 Circuit Board Dimensional Diagram	6

1. Overview

This “S1R72V27 Evaluation Board” performs evaluations following connection to a CPU via a CPU I/F connector. This document describes how to use the board.

2. Jumper Settings

2. Jumper Settings

Set the jumpers on the board as shown below. Settings marked “*” are default settings.

No.	Details	Setting (* indicates default)		
CN2	+3.3 V supply to CPU board selection	*	1-2	Supplies +3.3 V (Note 1).
			2-3	Does not supply +3.3 V
CN3	+5.0 V supply to CPU board selection	*	1-2	Supplies +5.0 V.
			2-3	Does not supply +5.0 V
JP3	CPU interface voltage setting	*	1-2	+3.3V (Note2)
			1-3	+1.8V
JP8~JP12	S1R72V27 consumption current measuring jumper (should normally be set to form a short-circuit)	*	Short	Normal setting
			Open	Setting prohibited
JP15	USB connector (CN5, CN6) function setting (See section 3 for details.)		Short	CN5: For both device/host
		*	Open	CN5: Device, CN6: Host
JP16	USB host VBUS output 122 μ F location selection	*	1-2	VBUS switch IC output side
			1-3	VBUS switch IC input side
JP17	VBUS switch IC (MAX8586) auto-restart function selection (See Maxim datasheet for details.)	*	1-2	MAX8586-ENRESET pin = High
			1-3	MAX8586-ENRESET pin = Low
JP18	USB host VBUS output 122 μ F capacitor discharge resistor selection	*	Short	With discharge resistor
			Open	Without discharge resistor

Note 1: Due to regulator limitations, avoid using this +3.3 V jumper during normal use.

Note 2: If the CPU I/F level is neither +1.8 V nor +3.3 V, but in between, leave both 1-2 and 1-3 open and apply the voltage to pin 1.

3. USB Interface Peripheral Circuit

This board incorporates the following two USB connectors.

- CN5 (USB Mini B): For device functions
- CN6 (USB Standard A): For host functions

DP/DM pins for these connectors are also connected to the DP/DM pins on this IC to facilitate evaluations, but these circuits are not recommended. This is because mounting components or using wiring patterns like this may affect impedance matching and reduces signal quality, resulting in communication problems. For more information, refer to the “S1R72V Series USB 2.0 Hi-Speed PCB Design Guidelines”.

Jumpers are provided on the USB interface peripheral circuit for this reason, and the jumpers should be set appropriately to suit the evaluation requirements.

Case A: When using CN5 for the device and CN6 for the host

Case B: When using CN5 for both the device and host

Note: CN5 is a Mini B type and can be used only with devices in accordance with USB standards.

	Case A	Case B
JP15	OPEN	Connect
JP16	Connect 1-2	Connect 1-3
JP18	Connect	OPEN
R9, R10	Mount	No Mount

4. CPU Interface

4. CPU Interface

Connect the CPU to the S1R72V27 via CN4. Refer to “7. Appendix: Circuit Diagrams” for pin assignment specifics. The CN4 connector and mating connector (provided) are as shown below.

CN4 : NDP100-002-BF / Yamaichi Electronics

Opposite side : NDS100-002-BF / Yamaichi Electronics

5. Power Supply

Connect the board to a power supply with the following characteristics.

CN7

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

6. Precautions

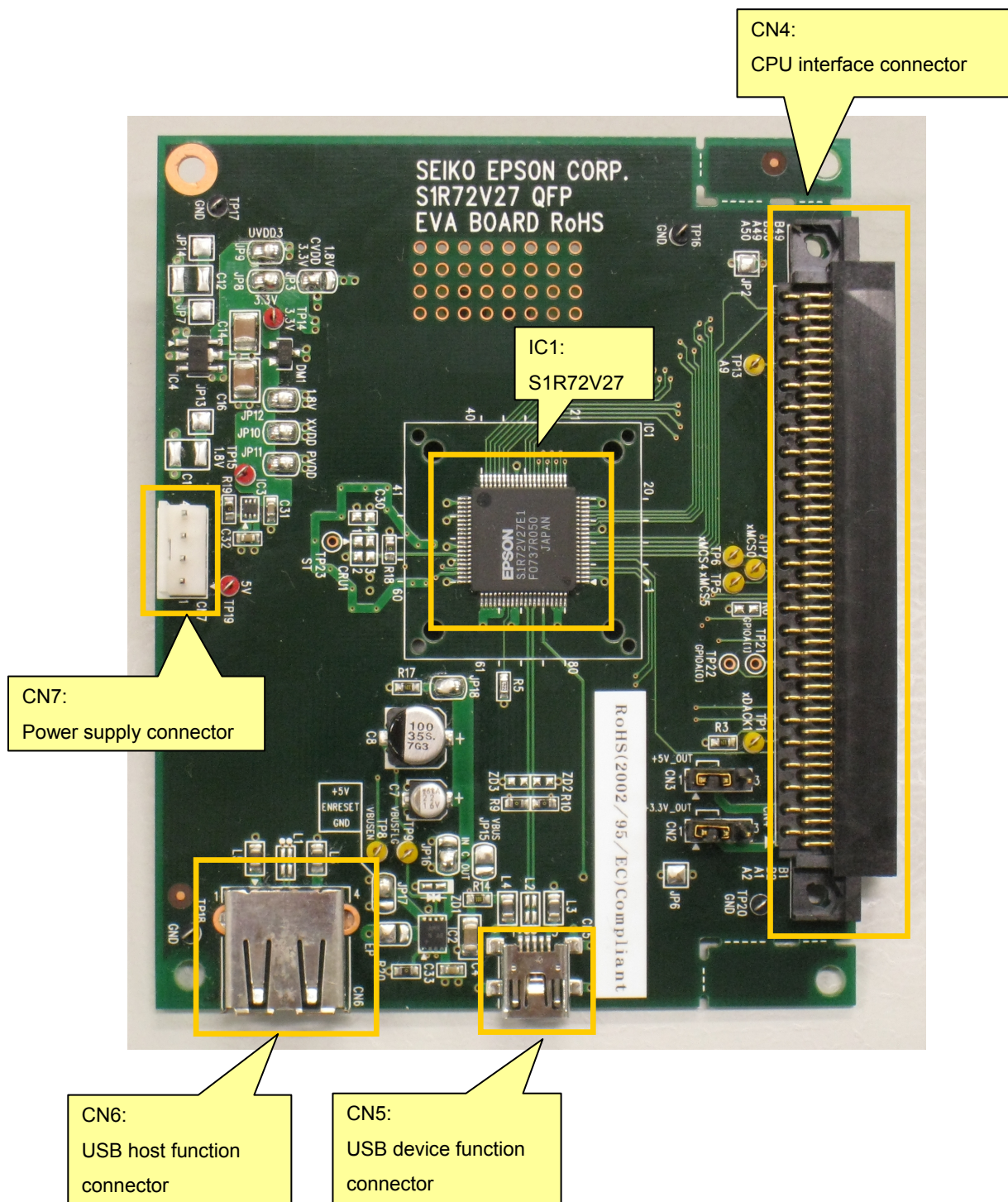
The following measures are required to input a clock signal to the CLKIN pin.

- Mount CRU1.
- Remove C2, C3, R4, and R18.
- Connect pin XI via a jumper to GND. Leave pin XO open.

The input width to the CLKIN pin must be of the same voltage as CPU I/F Level designated with JP3. However, for reasons related to the power supply to CRU1, note that this will be 1.8 V for this board.

7. Appendix

7.1 External View



7. Appendix

7.2 Circuit Diagram

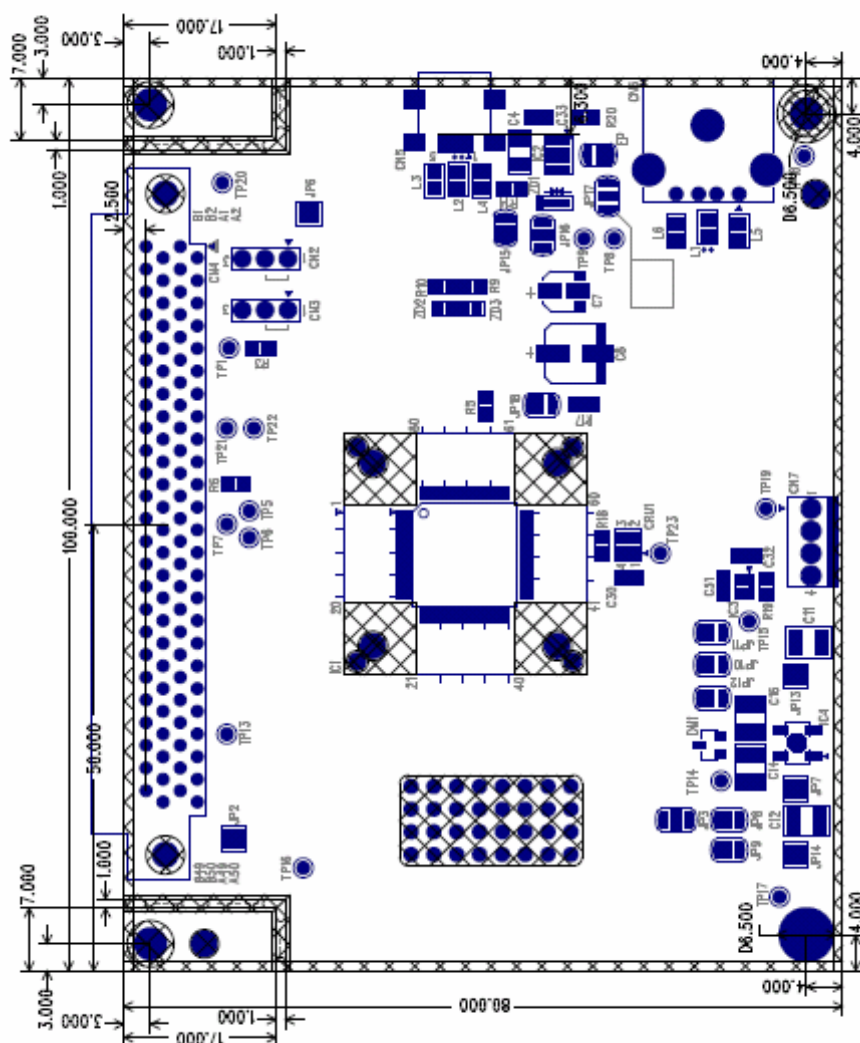
Refer to attachments.

7.3 Component List

Refer to attachments.

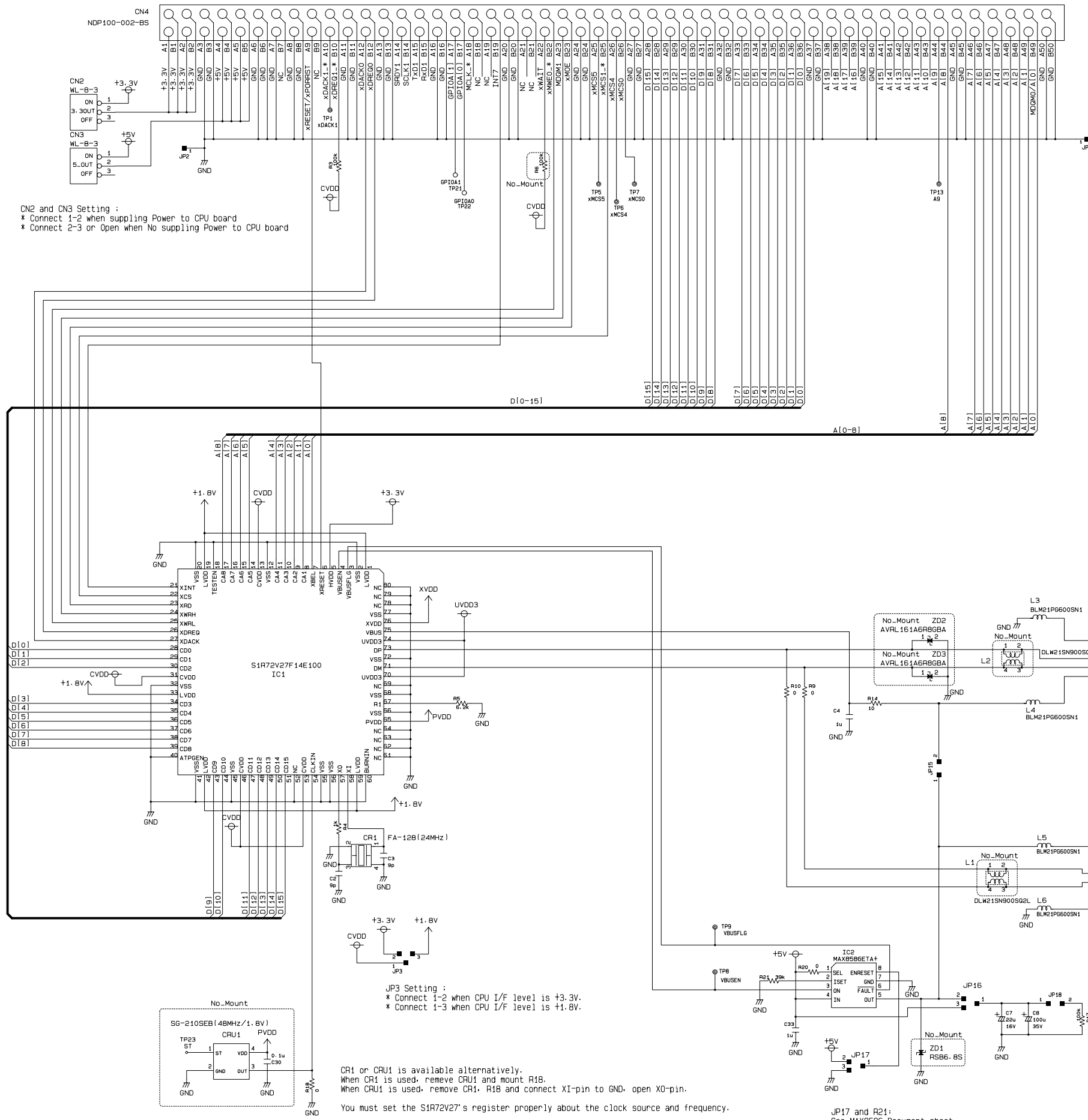
7.4 Circuit Board Dimensional Diagram

External dimensions: 100.00 x 80.00 [mm]



[Unit: mm]

CPU Interface



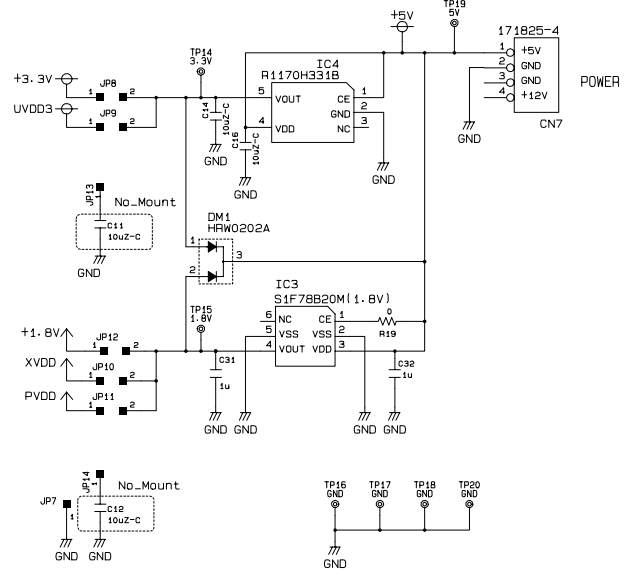
CN2 and CN3 Setting :
* Connect 1-2 when supplying Power to CPU board
* Connect 2-3 or Open when No supplying Power to CPU board

JP3 Setting :
* Connect 1-2 when CPU I/F level is +3.3V.
* Connect 1-3 when CPU I/F level is +1.8V.

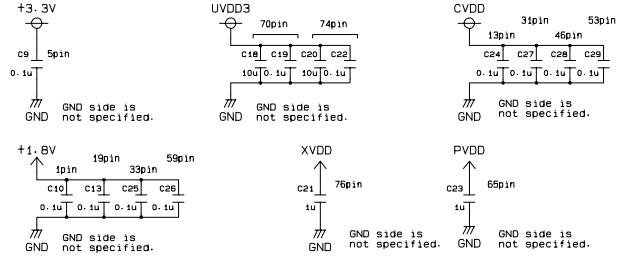
CR1 or CRU1 is available alternatively.
When CR1 is used, remove CRU1 and mount R18.
When CRU1 is used, remove CR1, R18 and connect XI-pin to GND, open XO-pin.

You must set the S1R72V27's register properly about the clock source and frequency.

JP17 and R21:
See MAX8586 Document sheet.



Note: Close the capacitor to the IC's specified pin.



USB Mini_B

When you use CN5 as USB-Device and CN6 as USB-Host:
JP15 = OPEN
JP16 = Connect 1-2
JP18 = Connect

When you use only CN5 as USB-Device/Host :
JP15 = Connect
JP16 = Connect 1-3
JP18 = OPEN
R9, R10 = No Mount is recommended.

USB Standard_A

S1R72V27 QFP EVA BOARD RoHS Parts List

Note: Components with reference numbers indicated in red are not installed on the product.

If multiple part names are assigned one reference number, one of the components corresponding to such are installed.

PartName	Qty	Maker	Value	Rating	Tolerance	Reference
C1608CH1H090D	2	TDK	9pF	50V	0.5pF	C2,C3
GRM31MF11E105ZA01L	1	Murata Manufacturing	1uF	25V	+80/-20%	C4
EMF-160CDA220MD50G	1	Nippon Chemi-con	22uF	16V	20%	C7
EMVA160ADA220MD55G		Nippon Chemi-con				
EEE1VA101XP	1	Matsushita Electric Industrial	100uF	35V	20%	C8
EMVE350ADA101MF80G		Nippon Chemi-con				
GRM188R11H104JA01	11	Murata Manufacturing	0.1uF	50V	5%	C9,C10,C13,C19, C22,C24,C25,C26, C27,C28,C29
GRM188R31H104KA93D		Murata Manufacturing			10%	
GRM188R11H104JA01	1	Murata Manufacturing	0.1uF	50V	5%	C30
GRM188R31H104KA93D		Murata Manufacturing			10%	
EMK325F106ZH	2	Taiyo Yuden	10uF	16V	+80/-20%	C14,C16
GRM32NF11E106ZA01L		Murata Manufacturing		25V		
EMK325F106ZH	2	Taiyo Yuden	10uF	16V	+80/-20%	C11,C12
GRM32NF11E106ZA01L		Murata Manufacturing		25V		
GRM21BB10J106ME01	2	Murata Manufacturing	10uF	6.3V	+10/-10%	C18,C20
GRM188F11A105ZA01	5	Murata Manufacturing	1uF	10V	+80/-20%	C21,C23,C31,C32, C33
GRM188B31C105KA92D		Murata Manufacturing		16V	10%	
WL-8-3	2	Mac Eight				CN2,CN3
NDP100-002-BF	1	Yamaichi Electronics				CN4
CAM-E42F-005-8904A	1	Mitsumi				CN5
DUSB-ARA42-T11A-FA	1	DDK				CN6
171825-4	1	AMP				CN7
FA-128(24MHz)	1	EPSON Toyocom				CR1
			24MHz	CL=10pF	±30ppm /±50ppm(-40~85℃)	
SG-210SEB(48MHz/1.8V)	1	EPSON Toyocom	48MHz			CRU1
HRW0202B	1	Renesas				DM1
S1R72V27F14E100	1	EPSON				IC1
MAX8586ETA+	1	Maxim				IC2
S1F78B20M1800	1	EPSON				IC3
R1170H331B-F	1	RICOH				IC4
JP-1-L	5	No_maker				JP2,JP6,JP7,JP13, JP14
JP-2-L	7	No_maker				JP8,JP9,JP10,JP11, JP12,JP15,JP18
JP-3-L	3	No_maker				JP3,JP16,JP17
DLW21SN900SQ2L	2	Murata Manufacturing	90			L1,L2
BLM21PG600SN1	4	Murata Manufacturing	60			L3,L4,L5,L6
MCR03EZHZ104	2	ROHM	100k	1/16W	5%	R3,R17
MCR03EZHZ104	1	ROHM	100k	1/16W	5%	R6
MCR03EZHZ102	1	ROHM	1k	1/16W	5%	R4
MCR03EZHZJ000	5	ROHM	0	1/16W	5%	R9,R10,R18, R19,R20
RR0816P-622-D	1	SSM	6.2k	1/16W	0.5%	R5
MCR03EZHZ100	1	ROHM	10	1/16W	5%	R14
MCR03EZHZ393	1	ROHM	39k	1/16W	5%	R21
LC-33-S-Yellow	7	Mac Eight				TP1,TP5,TP6,TP7, TP8,TP9,TP13
LC-33-S-Yellow	3	Mac Eight				TP21,TP22,TP23
LC-33-S-Red	3	Mac Eight				TP14,TP15,TP19
LC-33-S-Black	4	Mac Eight				TP16,TP17,TP18, TP20
RSB6.8S	1	ROHM				ZD1
AVRL161A6R8GBA	2	TDK				ZD2,ZD3
JS-1	2	Mac Eight				JS1, JS2

Revision History

Revision History

Date	Revision details			
	Rev.	Page	Type	Details
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