RZ/V2MA Evaluation Board Kit H/W Specification

Rev1.00 20220831

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Shimafuji Electric Inc.

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Notices on use and handling

You should follow those remarks to use this product safely. If you are not following those remarks, you may cause electrical shock, injury, fire or trouble.

Lightning

While lightning has occurred , never installing the product or connecting cables, it may cause an electrical shock by the thunderbolt.

Handle with care

Does not either drop, hit or give a strong shock to the product.

Caution to electrostatic discharge

This product mounted electrostatic sensitive parts.
The parts are possibly destroyed by electrostatic discharge; do not touch directly to contact area of the connectors and the parts.

Caution to connect or dis-connect cables

First turn off the power to this product to connect connecters on board and cables. If connecting or dis-connecting cables to this board without turn off the power, it may destroy this board and connected product.

Pay attention to touch this product

While the product is turned on or straight after the operation, it may cause an electrical shock or scald. (Some parts become higher temp.)

Unplug the Power source

.....ediately unplug from the Power source when it smells or smokes. If continually keep supply power on while it smells or smokes, it may cause fire, an electrical shock or serious influence on this board and other equipments.

Do not use or store in the following places.

-Do not expose in direct sunlight
-Do not place where the temperature changes rapidly and wets with dew.
-Do not expose to rain or moisture.
-Do not place rolled or vibrated.
-Do not place dusty or carpet laid places cause electrostatic obstacles.
-Do not place where corrosive gas outbreaks.
-Do not directly place this product on the electro conductive materials (it may cause trouble)

Remark on operation of this product

The maximum operating temperature of this Microprocessor (EC-4350) is 80 degrees Celsius on case; it has to operate under this temperature (it may need air cooling system to operate in high temp.)

Preface

Readers This manual is intended for users who want to understand the functions of the concerned microcontrollers.

Purpose This manual presents the hardware manual for the concerned microcontrollers.

Organization This system SpecIFication describes the following sections :

- Pin function
- CPU function
- Internal peripheral function

Module instances These microcontrollers may contain several instances of a dedicated module. In general, the dI/Fferent instances of such modules are identI/Fied by the index “n”, where “n” counts from 0 to the number of instances minus one.

Legend Symbols and notation are used as follows :

- Weight in data notation : Left is high order column, right is low order column
- Active low notation : xxx (pin or signal name is over-scored) or /xxx (slash before signal name)
- Memory map address : High order at high stage and low order at low stage

Note Additional remark or tip

Caution Item deserving extra attention

Numeric notation

- Binary : xxxx or xxxB
- Decimal : xxxx
- Hexadecimal : xxxxH or 0x xxxx

Numeric prefixes representing powers of 2 (address space, memory capacity) :

- K (kilo) : 2^{10} = 1024
- M (mega) : 2^{20} = 10242 = 1,048,576
- G (giga) : 2^{30} = 10243 = 1,073,741,824

Register contents X, x = don’t care

Diagrams Block diagrams do not necessarily show the exact wiring in hardware but the functional structure.

Timing diagrams are for functional explanation purposes only, without any relevance to the real hardware implementation.

Revision History

Revision	Date	Contents	Remarks
1.0	2022/08/31	New release	

CONTENTS

1. OVERVIEW

This kit is an RZ/V2MA evaluation kit embedded with Renesas RZ/V2MA.

This kit consists of the following two boards.

- SBEV-RZ/V2MA CPU Module
- SBEV-RZ/V2MA BASE BOARD

There is a board for evaluating PCIe (RC) as an option.

- SBEV-RZ/V2MA PCIe Board

This hardware specification is that summarizes the functions of this kit.

2. SPECIFICATION

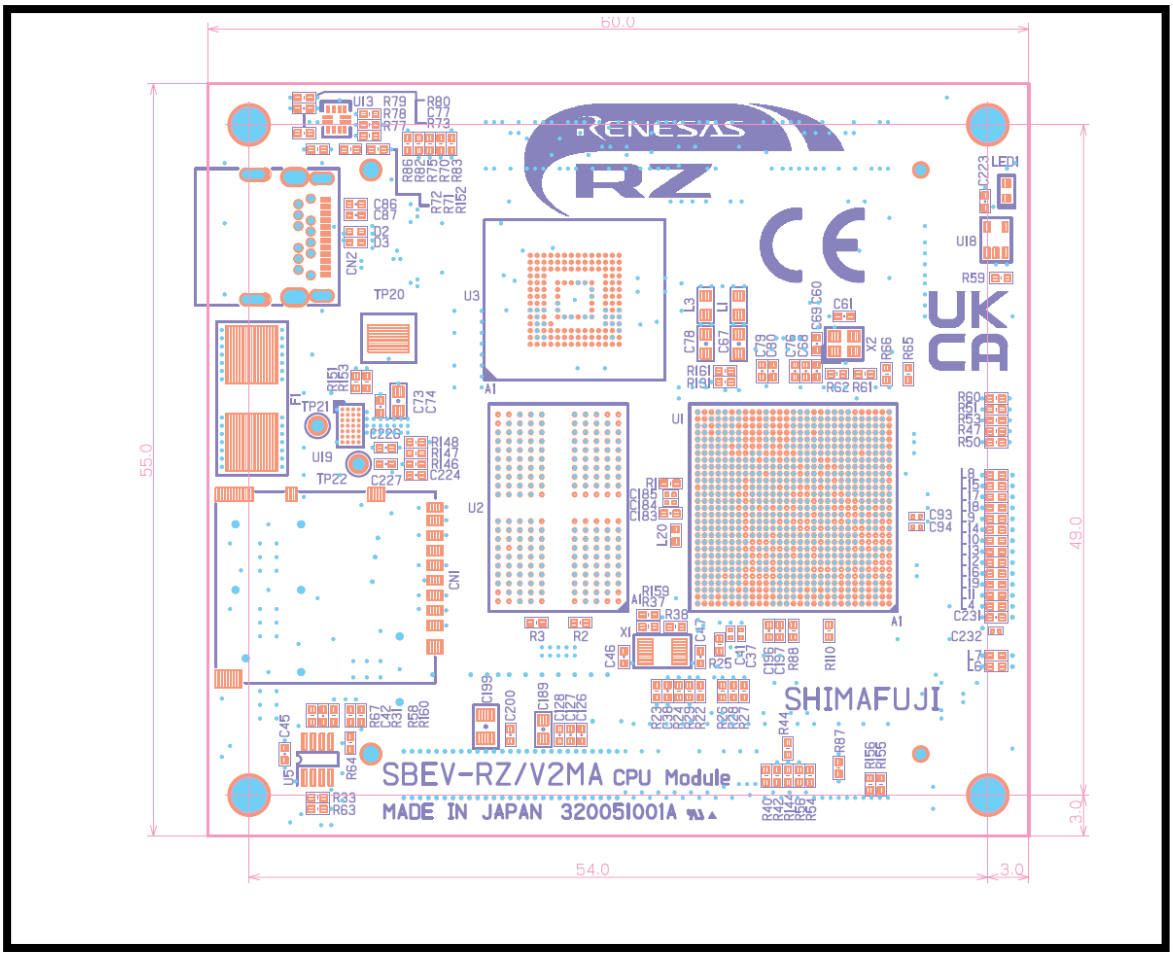
ITEM			Function / Specification
Power			SBEV-RZ/V2MA CPU Module: supplied by SBEV-RZ/V2MA BASE BOARD SBEV-RZ/V2MA BASE BOARD: Power in into DC-Jack or terminal (Supply 12V/5A, recommended)
CPU			R9A09G055MA3GBG CPU Cortex-A53 Dual (1GMHz)
CPU Clock	Main		48MHz (oscillator)
	Sub		32.768KHz (oscillator)
Connector	BASE BOARD/PCIe Board		FX8-120P-SV1 (91)、FX8-120S-SV (21)
Memory		ROM	eMMC 16GB (THGBMJG7C1LBAIL)
		RAM	LPDDR4 4GB (MT53D1024M32D4DT-053 AIT:D)
LED			3.3V IO 1bit (on the CPU Module) 12V Power 1bit(on the BASE BOARD) 5V Power 1bit (on the BASE BOARD) 3.3V IO 4bit (on the BASE BOARD)
USB			Connector: Type-C
Ethernet			Connector: RJ45 Ethernet PHY IC: RTL8211FG-CG
SD Card I/F			Connector: Micro SD
SDIO I/F			Connector(Pin Header):12 pins with 2.54-mm pitch
Debug I/F			Connector: USB Micro-B UART-USB bridge: FT230XS
CSI I/F			Connector (Pin Header):12 (2 x 6) pins with 2.54-mm pitch
Pmod0 SPI (Type2A) I/F			Connector: 12 (2 x 6) pins with 2.54-mm pitch (Female)
GPIO I/F			Connector (Pin Header):12 (2 x 6) pins with 2.54-mm pitch
PWM I/F			Connector (Pin Header):12 (2 x 6) pins with 2.54-mm pitch
I2C I/F			Connector (Pin Header):6 pins with 2.54-mm pitch
Pmod1 I2C (Type6) I/F			Connector :6 pins with 2.54-mm pitch (Female)
UART I/F			Connector (Pin Header):6 pins with 2.54-mm pitch
Interrupt Connector			Connector (Pin Header):12 (2 x 6) pins with 2.54-mm pitch
Operation temperature			TBD
Board Size			CPU Module : 60mm×55mm t=1.6mm BASE BOARD : 80mm×113mm t=1.6mm PCIe Board : 60mm×90mm t=2.0mm

3. BOARD

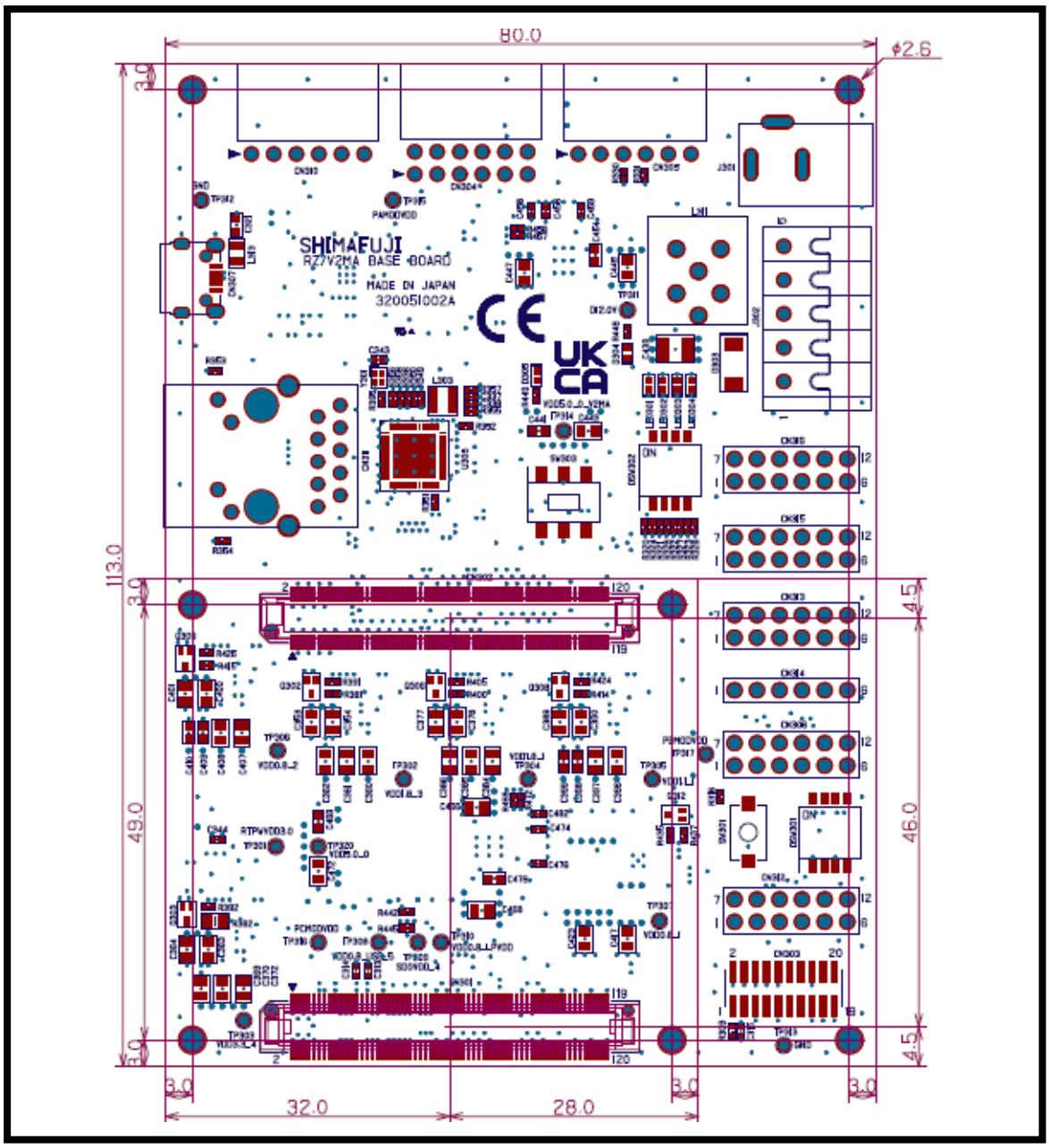
3.1. BOARD SIZE

The board dimensions of each board are shown below.

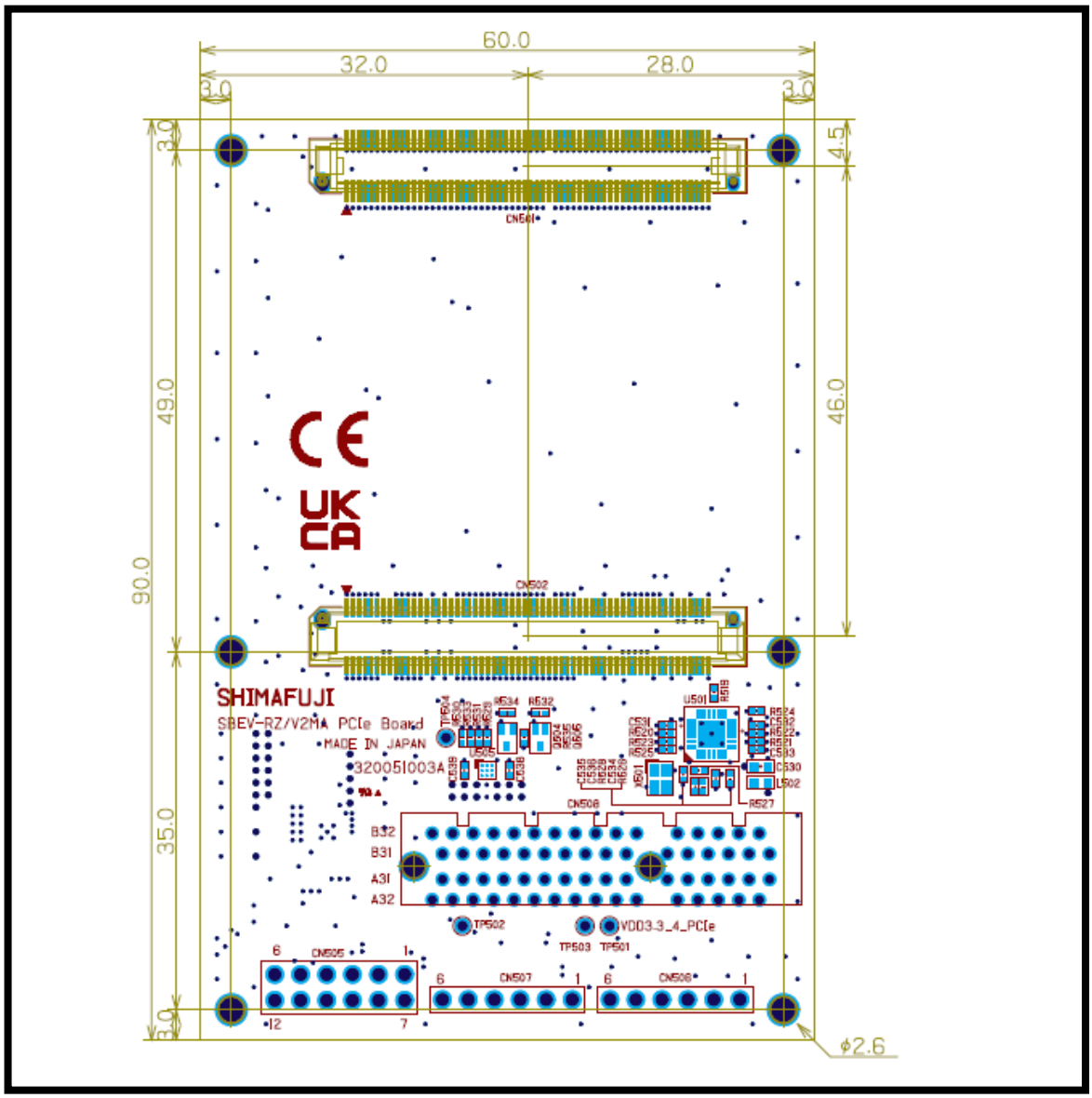
3.1.1. CPU Module (SBEV-RZ/V2MA CPU Module)



3.1.2. BASE BOARD (SBEV-RZ/V2MA BASE BOARD)



3.1.3. PCIe Board (SBEV-RZ/V2MA PCIe Board)

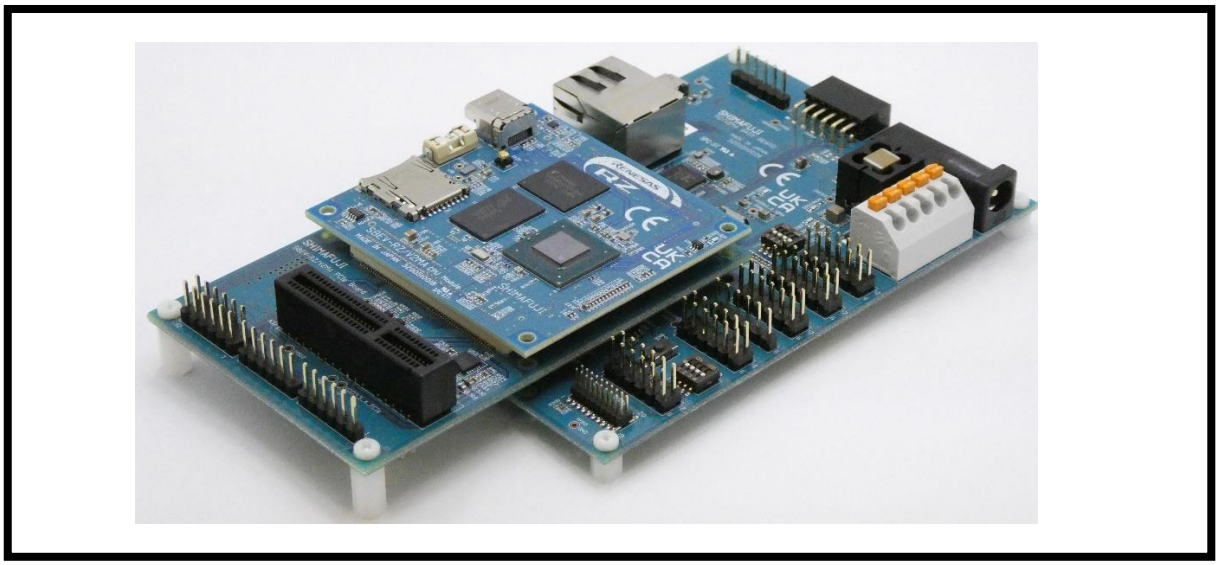


3.2. EXTERNAL VIEW

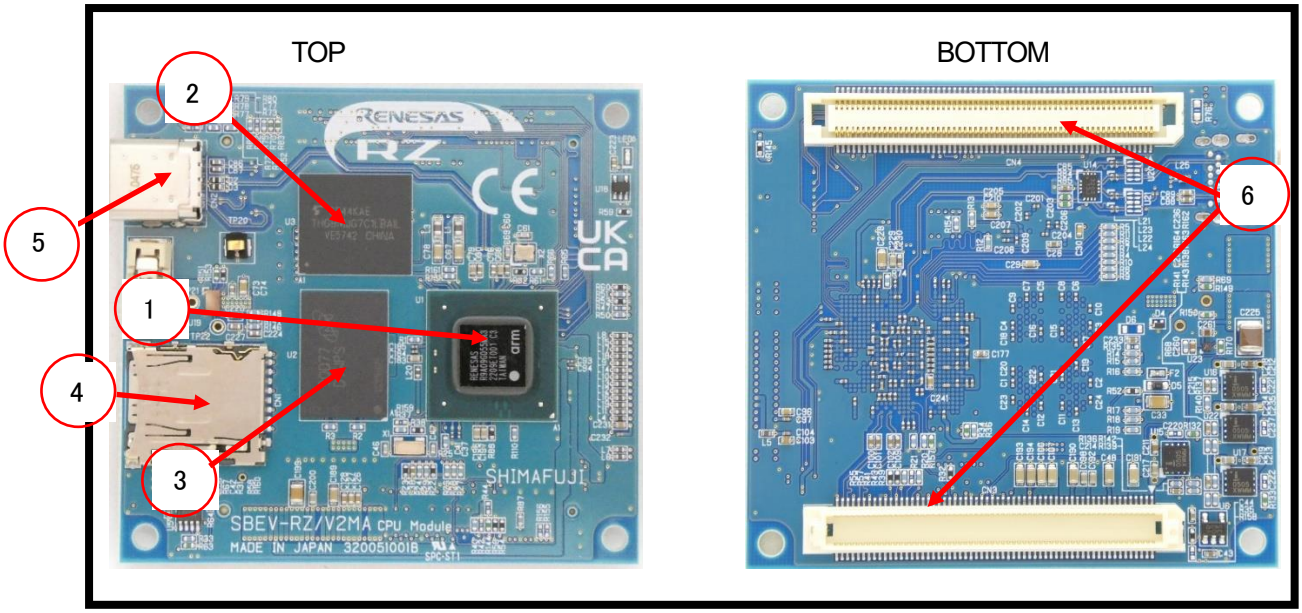
The figure below shows the appearance of this kit.

3.3.1. RZ/V2MA evaluation kit

The appearance of the kit configuration is shown below.

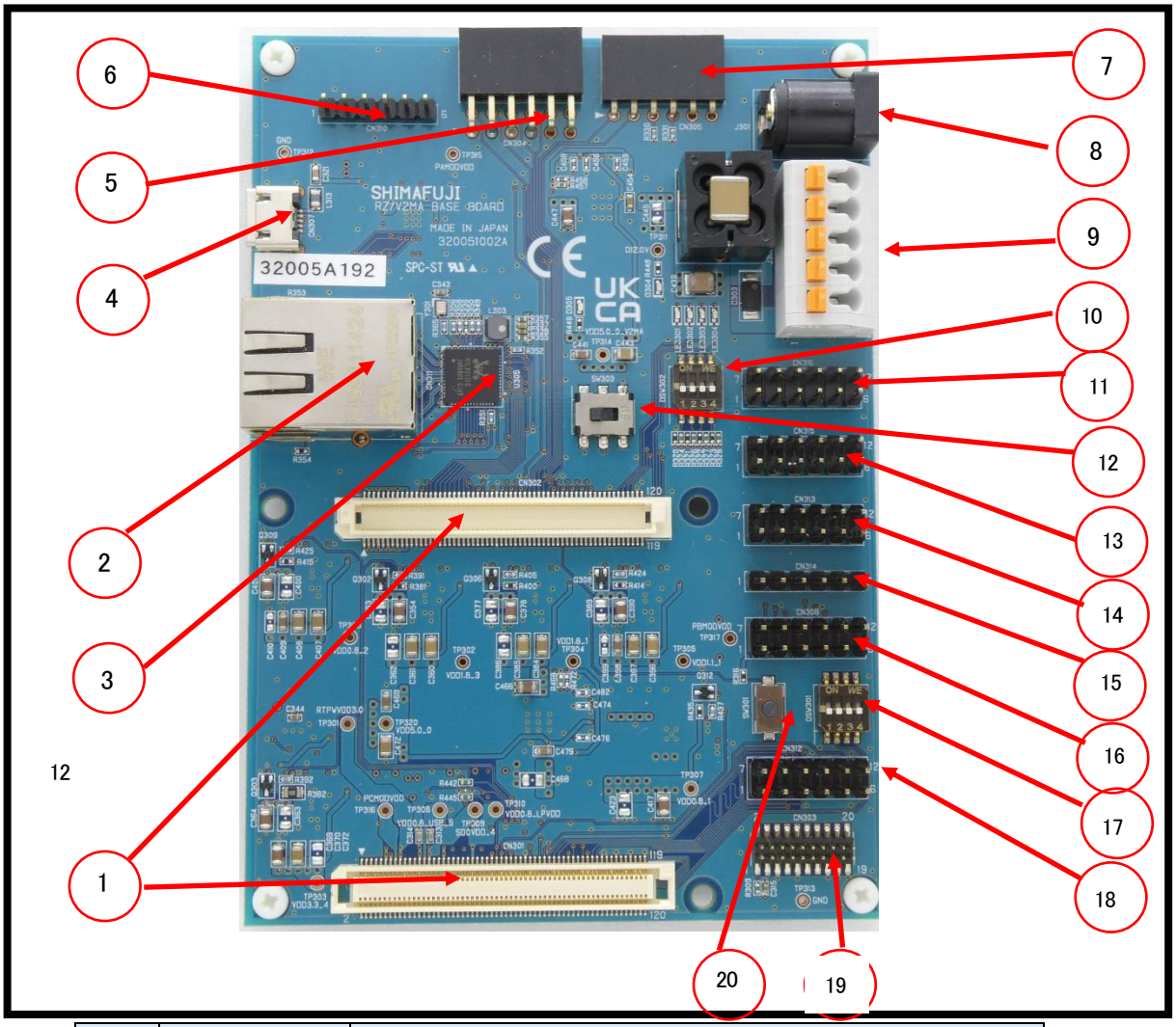


3.3.2. CPU Module (SBEV-RZ/V2MA CPU Module)



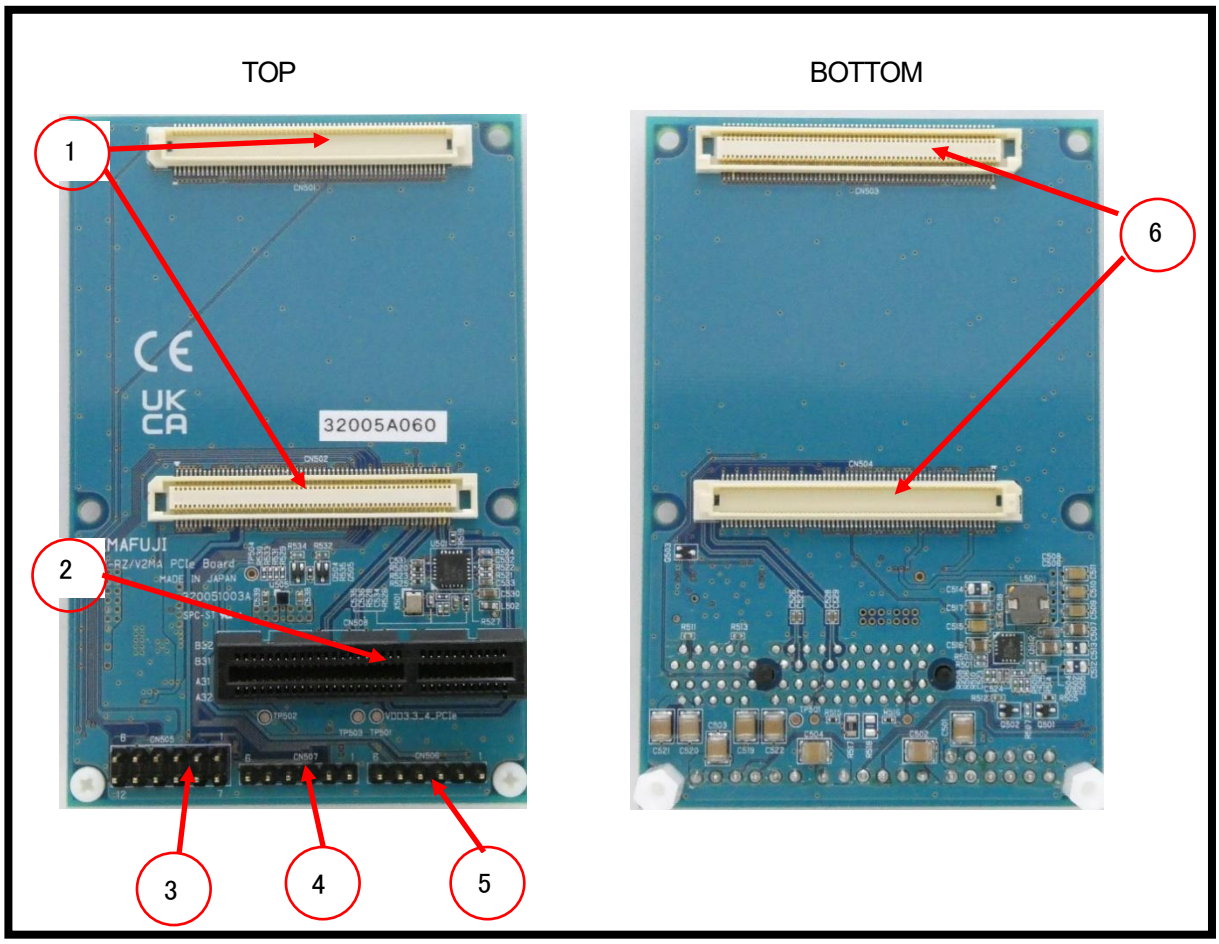
No.	Ref	Component Description
1	U1	RZ/V2MA
2	U3	eMMC
3	U2	LPDDR4
4	CN1	micro SD Card Slot
5	CN2	USB Type-C
6	CN3/CN4	BASE BOARD/PCIe Board I/F Connector

3.3.3. BASE BOARD (SBEV-RZ/V2MA BASE BOARD)



No.	Ref	Component Description
1	CN301/CN302	CPU Module I/F Connector
2	CN311	RJ45(GbE)
3	U305	GbE-PHY
4	CN307	micro-USB Connector
5	CN304	Pmod0 SPI(Type 2A)
6	CN310	GPIO
7	CN305	Pmod1 I2C(Type 6)
8	J301	DC-Jack
9	J302	Terminal
10	DSW301	Mode Setting
11	CN316	GPIO
12	SW303	Power Switch
13	CN315	GPIO
14	CN313	GPIO
15	CN314	GPIO
16	CN306	GPIO
17	DSW302	User DIP-Switch
18	CN312	SDIO
19	CN303	JTAG
20	SW301	User Switch

3.3.4. PCIe Board(SBEV-RZ/V2MA PCIe Board)

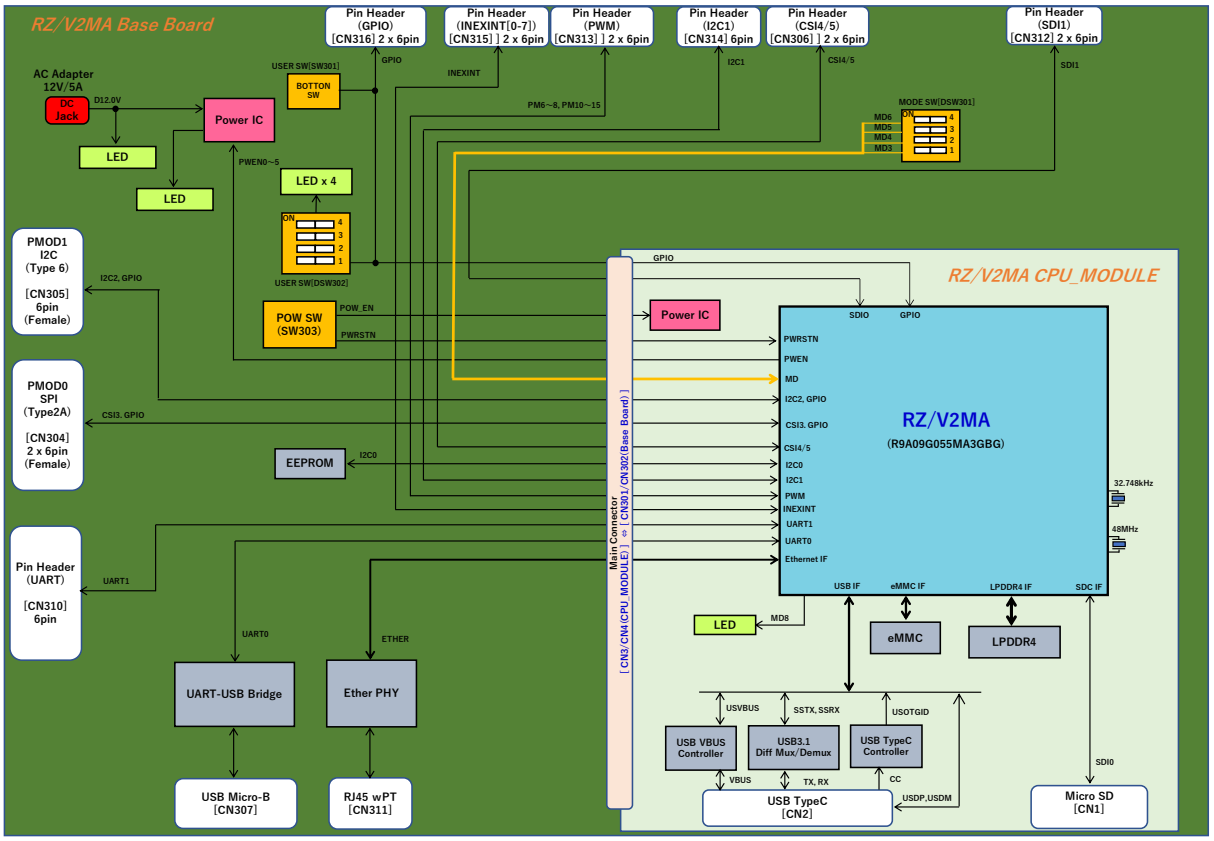


No.	Ref	Component Description
1	CN501/CN502	CPU Module I/F Connector
2	CN508	PCIe x4 Slot
3	CN505	SDIO
4	CN507	GPIO
5	CN506	GPIO
6	CN503/CN504	BASE BOARD I/F Connector

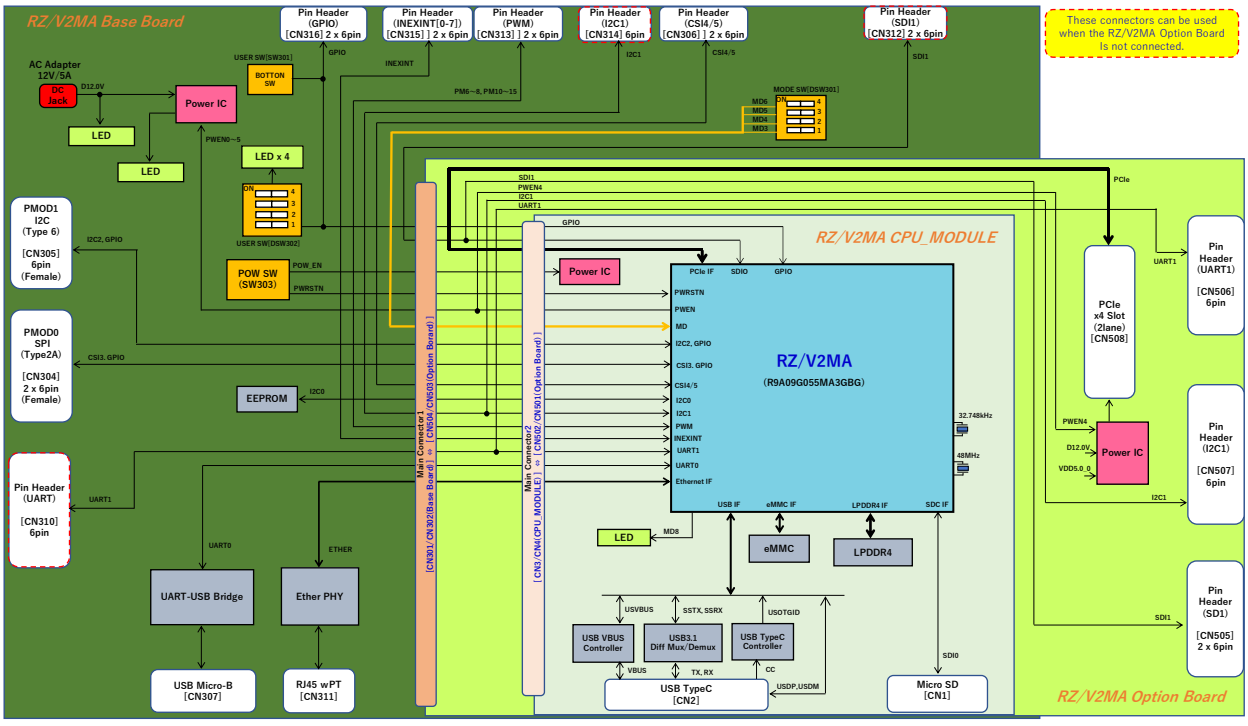
4. BLOCK DIAGRAM

The block diagram of this kit is shown below.

No option board



With optional board



5. FUNCTIONS

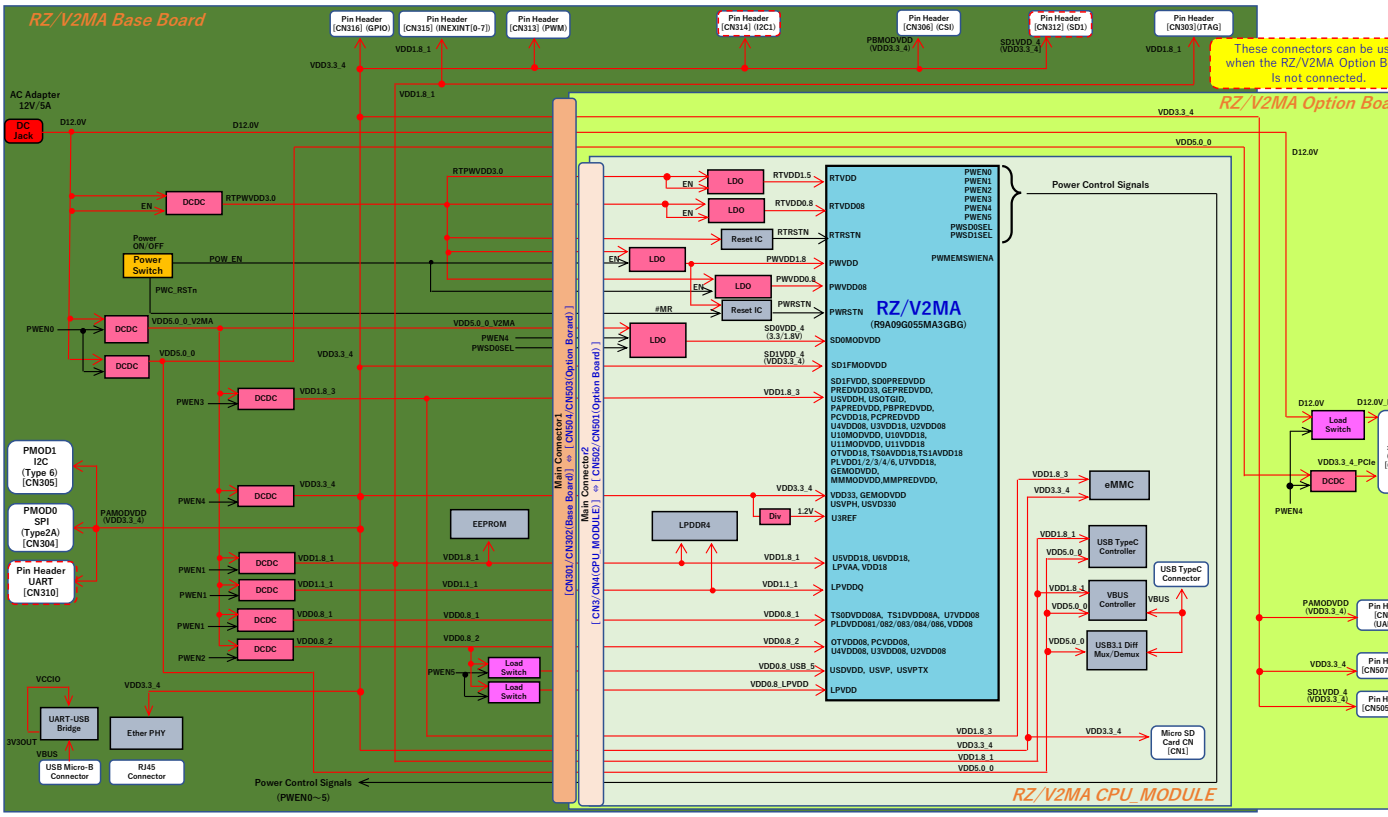
5.1. POWER

The power is supplied from the BASE BOARD.

When 12V is supplied to the BASE BOARD, 1.8V (PWVDD1.8), 1.5V (RTVDD1.5), and 0.8V (PWVDD0.8, RTVDD0.8) are supplied to the microcomputer through the power management IC to start the microcomputer, and then the power control sends power to the BASE BOARD in sequence to generate each power supply (5.0V, 3.3V, 1.8V, 1.1V, 0.8V).

Power input is supplied to J301 (DC-Jack) or J302 (terminal block) of BASE BOARD.　　DC+12V/5A (recommended)

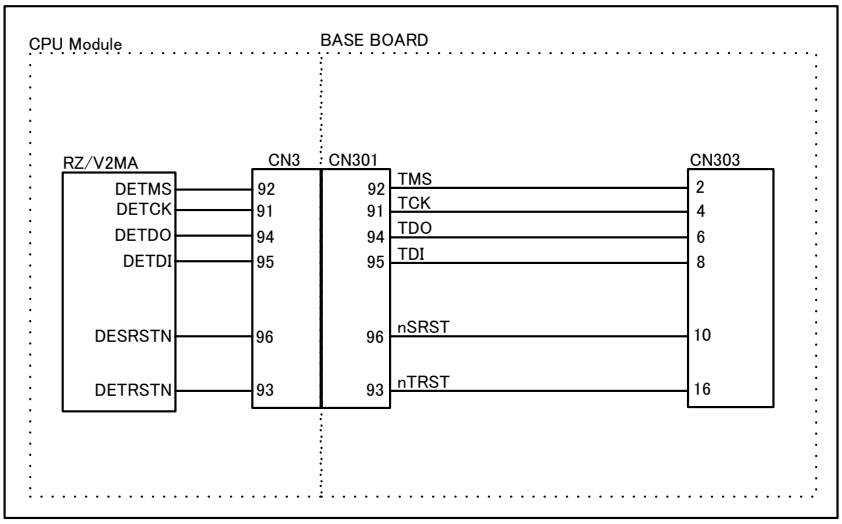
The power configuration of this board is shown in the figure below.



5.2. JTAG

The JTAG signal of this kit is connected via BASE BOARD.

The JTAG configuration diagram of this kit is shown below.

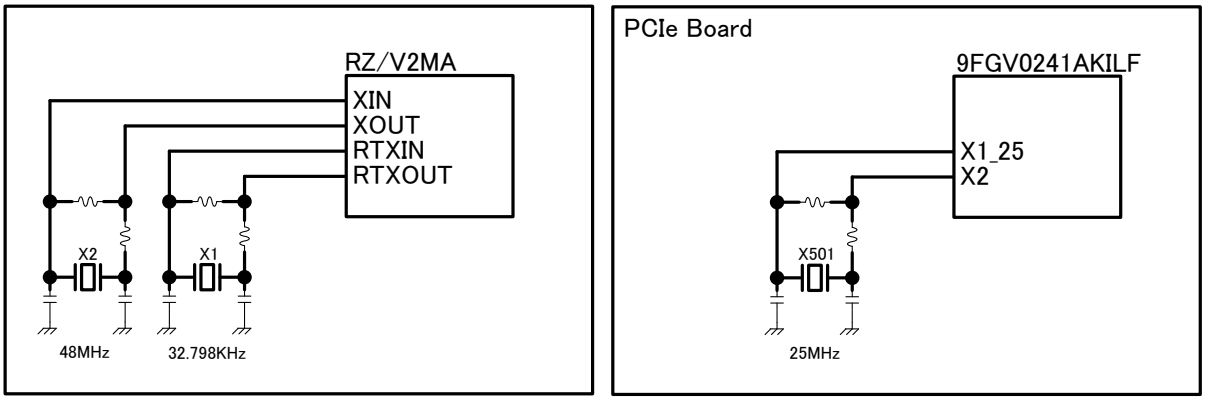


5.3. CLOCK

This kit has a oscillator for the microcomputer system clock and a oscillator for the sub clock. In addition, the optional PCIe_RC compatible board is equipped with a oscillator for PCIe.

oscillator (X2) : CX2016DB48000C0WLLA1
oscillator X1) : ECS-.327-7-34B-TR
oscillator (X501) : ABM10W-25.0000MHZ-7-B1U-T3

The clock configuration diagram of this kit is shown below.

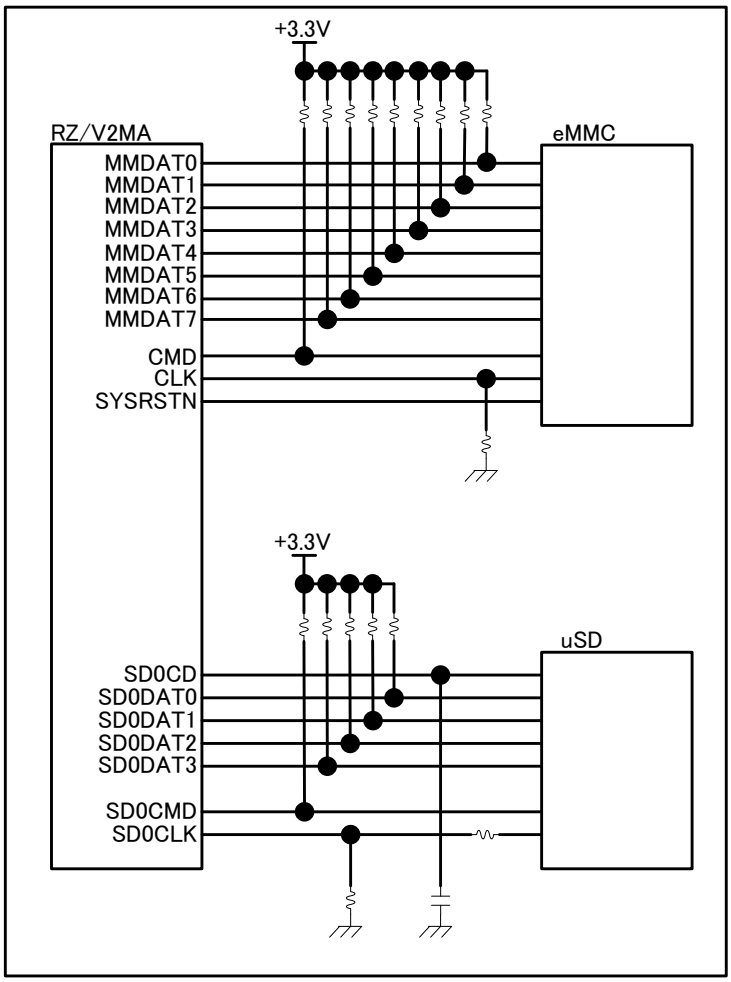


5.4. eMMC and micro-SD

This kit is embedded a eMMC (64GB) and a microSD, for program storage for booting.

eMMC(U3) : THGBMJG7C1LBAIL

The boot memory configuration diagram of this kit is shown below.



The DIP-SW (embedded on BASE BOARD) is installed for boot mode setting.

DSW301(Switch No.)	RZ/V2MA MD Pin
1	MD3
2	MD4
3	MD5
4	MD6

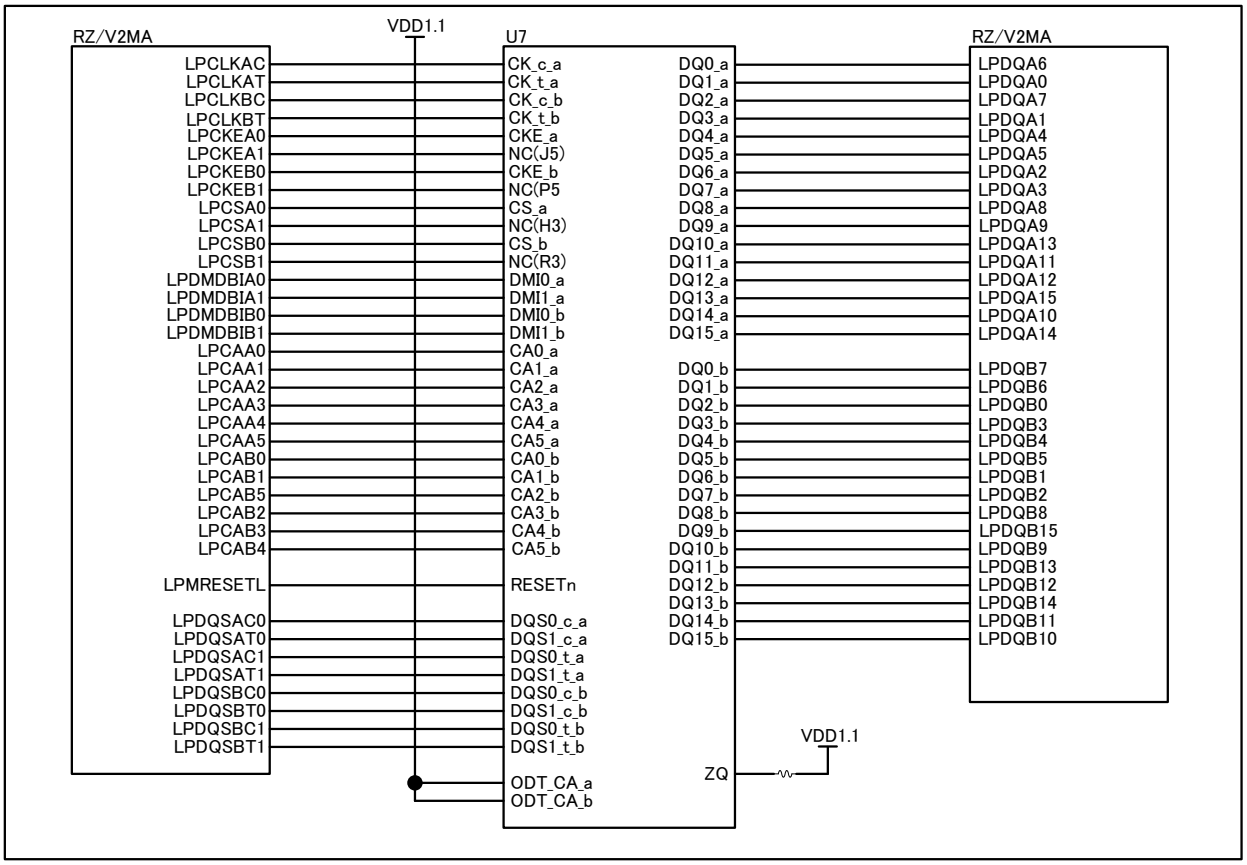
Switch 1	Switch 2	Switch 3	Switch 4	Operation Mode
OFF	OFF	OFF	OFF	Normal mode (initial setting)
OFF	OFF	OFF	ON	Forced write mode from the Micro SD card
Other than above				Setting prohibited

5.5. RAM

This kit is embedded a LPDDR4 (4GB) as general-purpose memory.

LPDDR4(U2) : MT53D1024M32D4DT-053 AIT:D

The LPDDR4 (4GB) configuration diagram of this kit is shown below.



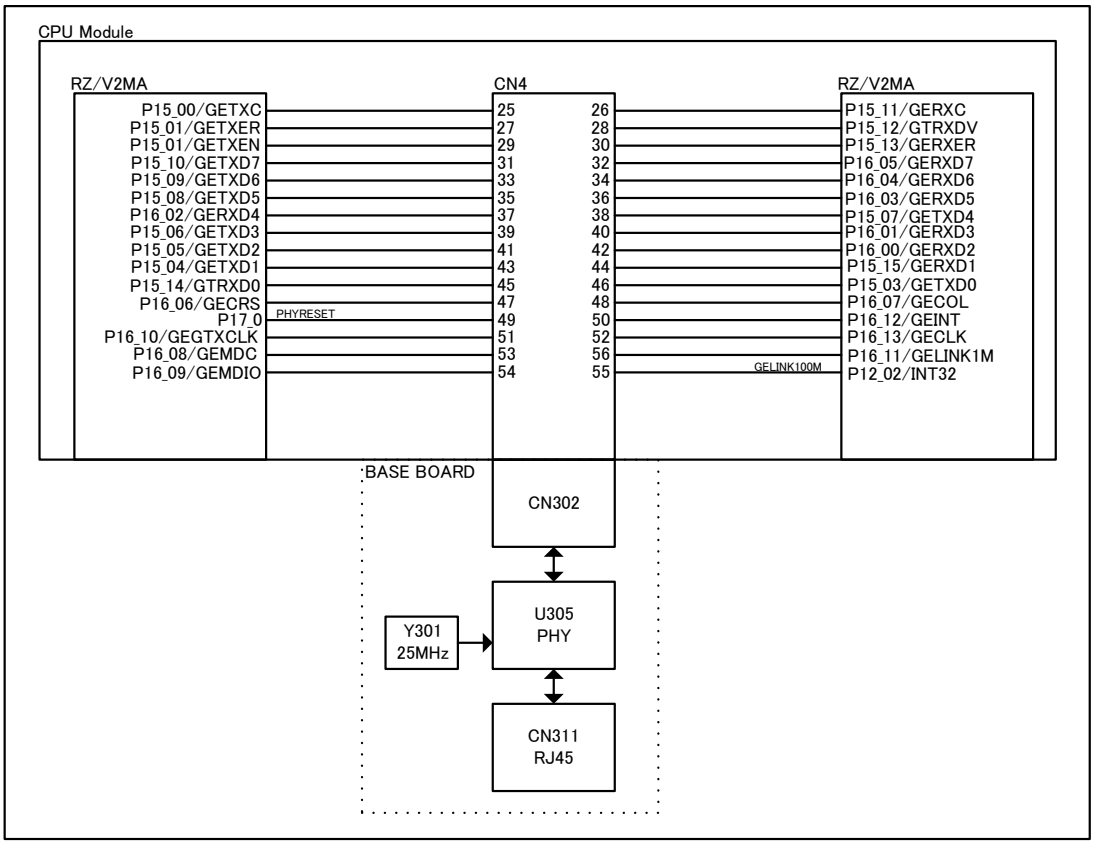
5.6. Ethernet

This kit is embedded a Gigabit-Ethernet-I/F for external communication.

The Gigabit-Ethernet connects to embedded GbE-PHY on BASE BOARD via CN4.

Gigabit-Ethernet PHY(U305) : RTL8211FG-CG

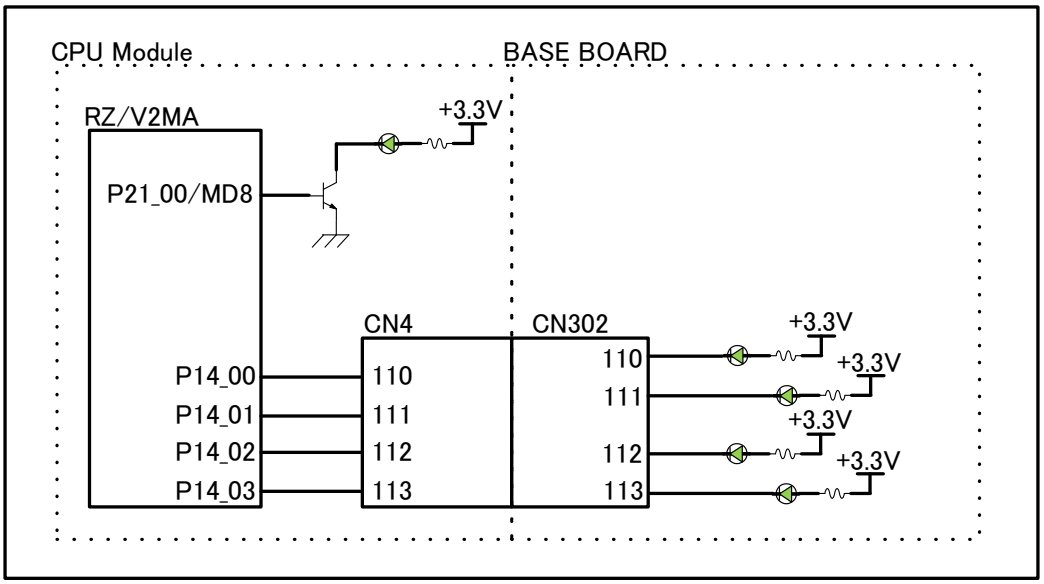
The Giga-Ethernet configuration diagram of this kit is shown below.



5.7. LED

This kit is embedded a LED for microcomputer indicator (mounted on CPU Module) and 4 general-purpose LEDs (mounted on BASE BOARD).

The LED configuration diagram of this kit is shown below.



6. CONNECTORS

The list of connectors mounted on this kit is shown below.

Board	CN-No.	Connector parts number	Remarks
CPU Module	CN1	DM3AT-SF-PEJM5	microSD Card
	CN2	C-ARA1-AK512	USB Type-C
	CN3	FX8-120P-SV1(91)	BASE BOARD
	CN4	FX8-120S-SV(21)	BASE BOARD
BASE BOARD	J302	691417320005S	Power Terminals
	CN301	FX8-120S-SV(21)	CPU Module
	CN302	FX8-120P-SV1(91)	CPU Module
	CN303	62102021021	JTAG
	CN304	613012243121	Pmod0 SPI(Type 2A)
	CN305	613006143121	Pmod1 I2C(Type 6)
	CN306	61301221121	GPIO(SPI)
	CN307	629105150521	USB micro-B
	CN310	61300611121	GPIO(UART)
	CN311	7499111424	RJ45(GbE)
	CN312	61301221121	SDIO
	CN313	61301221121	GPIO(INT)
	CN314	61300611121	GPIO(I2C)
	CN315	61301221121	GPIO(INT)
	CN316	61301221121	GPIO
PCIe Board	CN501	FX8-120P-SV1(91)	CPU Module
	CN502	FX8-120S-SV(21)	CPU Module
	CN503	FX8-120S-SV(21)	BASE BOARD
	CN504	FX8-120P-SV1(91)	BASE BOARD
	CN505	61301221121	SDIO
	CN506	61300611121	GPIO(UART)
	CN507	61300611121	GPIO(I2C)
	CN508	8-1734774-1	PCIe x4 Slot

6.1. CPU Module

6.1.1. CN1

PART NO. : DM3AT-SF-PEJM5

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	P8_4/SD0DAT2		2	P8_5/SD0DAT3	
3	P8_0/SD0CMD		4	VDD3.3_4	
5	P8_1/SD0CLK		6	GND	
7	P8_2/SD0DAT0		8	P8_3/SD0DAT1	
9	P8_7/SD0CD		10	GND	

6.1.2. CN2

PART NO. : C-ARA1-AK512

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
A1	GND		B1	GND	
A2	TXP0		B2	TXP1	
A3	TXN0		B3	TXN1	
A4	VBUS		B4	VBUS	
A5	CC1		B5	CC2	
A6	USDP		B6	USDP	
A7	USDM		B7	USDM	
A8	-	Open	B8	-	Open
A9	VBUS		B9	VBUS	
A10	RXN1		B10	RXN0	
A11	RXP1		B11	RXP0	
A12	GND		B12	GND	

6.1.3. CN3

PART NO. : FX8-120P-SV1(91)

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	VDD3.3_4		2	VDD3.3_4	
3	VDD3.3_4		4	VDD3.3_4	
5	VDD3.3_4		6	VDD3.3_4	
7	VDD3.3_4		8	VDD3.3_4	
9	VDD3.3_4		10	VDD3.3_4	
11	PAMODVDD		12	PAMODVDD	
13	PBMODVDD		14	PBMODVDD	
15	PCMODVDD		16	PCMODVDD	
17	RTPWVDD3.0		18	RTPWVDD3.0	
19	VDD5.0_0		20	VDD5.0_0	
21	VDD5.0_0		22	VDD5.0_0	
23	VDD5.0_0		24	VDD5.0_0	
25	VDD0.8_2		26	VDD0.8_2	
27	VDD0.8_USB_5		28	VDD0.8_USB_5	
29	SD0VDD_4		30	SD1VDD_4	
31	VDD1.8_3		32	VDD1.8_3	
33	VDD1.8_3		34	VDD1.8_3	
35	VDD1.8_1		36	VDD1.8_1	
37	VDD0.8_1		38	VDD0.8_1	
39	VDD0.8_1		40	VDD0.8_1	
41	VDD0.8_1		42	VDD0.8_1	
43	VDD0.8_1		44	VDD0.8_1	
45	VDD0.8_1		46	VDD0.8_1	
47	VDD0.8_LPVDD		48	VDD0.8_LPVDD	
49	VDD1.1_1		50	VDD1.1_1	
51	VDD1.1_1		52	VDD1.1_1	
53	VDD1.1_1		54	VDD1.1_1	
55	GND		56	GND	
57	PWSD0SEL		58	PWSD1SEL	
59	PWEN1		60	PWEN0	
61	PWEN3		62	PWEN2	
63	PWEN5		64	PWEN4	
65	P00_09		66	PWC_RSTN	
67	-	Open	68	POW_EN	
69	GND		70	GND	
71	P3_14/CSCLK3		72	P3_15/CSCS3	
73	P3_12/CSTXD3		74	P3_13/CSRXD3	
75	P5_0/SDA0		76	P5_1/SCL0	
77	P9_1/SD1CLK		78	P9_0/SD1CMD	
79	P9_6/SD1WP		80	P9_7/SD1CD	
81	P9_2/SD1DAT0		82	P9_3/SD1DAT1	
83	P9_4/SD1DAT2		84	P9_5/SD1DAT3	
85	P3_10/SDA3		86	P3_11/SCL3	
87	P3_7/UARTS1		88	P3_6/UACTS1	
89	P3_4/UATX1		90	P3_5/UARX1	
91	V2MA_TCK		92	V2MA_TMS	
93	V2MA_TRSTN		94	V2MA_TDO	
95	V2MA_TDI		96	V2MA_SRSTN	
97	V2MA_MD3		98	V2MA_MD4	

99	V2MA_MD5		100	V2MA_MD6	
101	GND		102	GND	
103	GND		104	PCIE_RX1M	
105	PCIE_RESETo		106	PCIE_RX1P	
107	GND		108	GND	
109	PCIE_TX1M		110	PCIE_RX0M	
111	PCIE_TX1P		112	PCIE_RX0P	
113	GND		114	GND	
115	PCIE_TX0M		116	PCIE_REFCLKM	
117	PCIE_TX0P		118	PCIE_REFCLKP	
119	GND		120	GND	

6.1.4. CN4

PART NO. : FX8-120S-SV(21)

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	-	Open	2	-	Open
3	-	Open	4	-	Open
5	-	Open	6	-	Open
7	-	Open	8	-	Open
9	-	Open	10	-	Open
11	-	Open	12	-	Open
13	-	Open	14	-	Open
15	-	Open	16	-	Open
17	-	Open	18	-	Open
19	-	Open	20	-	Open
21	GND		22	GND	
23	GND		24	GND	
25	P15_0/GETXC		26	P15_11/GERXC	
27	P15_2/GETXER		28	P15_12/GERXDV	
29	P15_1/GETXEN		30	P15_13/GERXER	
31	P15_10/GETXD7		32	P16_5/GERXD7	
33	P15_9/GETXD6		34	P16_4/GERXD6	
35	P15_8/GETXD5		36	P16_3/GERXD5	
37	P15_7/GETXD4		38	P16_2/GERXD4	
39	P15_6/GETXD3		40	P16_1/GERXD3	
41	P15_5/GETXD2		42	P16_0/GERXD2	
43	P15_4/GETXD1		44	P15_15/GERXD1	
45	P15_3/GETXD0		46	P15_14/GERXD0	
47	P16_6/GECRS		48	P16_7/GECOL	
49	P17_0	PHYRESET	50	P16_12/GEINT	
51	P16_10/GEGTXCLK		52	P16_13/GECLK	
53	P16_8/GEMDC		54	P16_9/GEMDIO	
55	P12_2/INT32	GELINK100M	56	P16_11/GELINK1M	
57	GND		58	GND	
59	P4_2/CSCLK4		60	P4_3/CSCS4	
61	P4_0/CSTXD4		62	P4_1/CSRXD4	

63	P4_6/CSCLK5		64	P4_7/CSCS5	
65	P4_4/CSTXD5		66	P4_5/CSRXD5	
67	P5_3/SCL1		68	P5_2/SDA1	
69	P3_9/SCL2		70	P3_8/SDA2	
71	P3_0/UATXD0		72	P3_1/UARXD0	
73	P3_3/UARTS0		74	P3_2/UACTS0	
75	P00_08		76	P1_0/PM0/INT8	
77	P1_1/PM1/INT9		78	P1_2/PM2/INT10	
79	P1_3/PM3/INT11		80	P1_4/PM4/INT12	
81	P1_5/PM5/INT13		82	P1_6/PM6/INT14	
83	P1_7/PM7/INT15		84	P1_8/PM8/INT16	
85	P1_9/PM9/INT17		86	P1_10/PM10/INT18	
87	P1_11/PM11/INT19		88	P1_12/PM12/INT20	
89	P1_13/PM13/INT21		90	P1_14/PM14/INT22	
91	P1_15/PM15/INT23		92	P2_0/INT0	
93	P2_1/INT1		94	P2_2/INT2	
95	P2_3/INT3		96	P2_4/INT4	
97	P2_5/INT5		98	P2_6/INT6	
99	P2_7/INT7		100	P6_0	
101	P6_1		102	P6_2	
103	P6_3		104	P6_4	
105	P6_5		106	P6_6	
107	P12_1/INT31		108	P12_0/INT30	
109	P12_3/INT33		110	P14_0	
111	P14_1		112	P14_2	
113	P14_3		114	P14_4	
115	P14_5		116	P14_6	
117	P14_7		118	GND	
119	GND		120	GND	

6.2. BASE BOARD

6.2.1. J302

PART NO. : 691417320005S

Pin number	Signal Name	Remarks
1	DC12V_IN	
2	DC12V_IN	
3	-	
4	GND	
5	GND	

6.2.2. CN301

PART NO. : FX8-120S-SV(21)

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	VDD3.3_4		2	VDD3.3_4	
3	VDD3.3_4		4	VDD3.3_4	
5	VDD3.3_4		6	VDD3.3_4	
7	VDD3.3_4		8	VDD3.3_4	
9	VDD3.3_4		10	VDD3.3_4	
11	PAMODVDD		12	PAMODVDD	
13	PBMODVDD		14	PBMODVDD	
15	PCMODVDD		16	PCMODVDD	
17	RTPWVDD3.0		18	RTPWVDD3.0	
19	VDD5.0_0		20	VDD5.0_0	
21	VDD5.0_0		22	VDD5.0_0	
23	VDD5.0_0		24	VDD5.0_0	
25	VDD0.8_2		26	VDD0.8_2	
27	VDD0.8_USB_5		28	VDD0.8_USB_5	
29	SD0VDD_4		30	SD1VDD_4	
31	VDD1.8_3		32	VDD1.8_3	
33	VDD1.8_3		34	VDD1.8_3	
35	VDD1.8_1		36	VDD1.8_1	
37	VDD0.8_1		38	VDD0.8_1	
39	VDD0.8_1		40	VDD0.8_1	
41	VDD0.8_1		42	VDD0.8_1	
43	VDD0.8_1		44	VDD0.8_1	
45	VDD0.8_1		46	VDD0.8_1	
47	VDD0.8_LPVDD		48	VDD0.8_LPVDD	
49	VDD1.1_1		50	VDD1.1_1	
51	VDD1.1_1		52	VDD1.1_1	
53	VDD1.1_1		54	VDD1.1_1	
55	GND		56	GND	
57	PWSD0SEL		58	-	Open
59	PWEN1		60	PWEN0	
61	PWEN3		62	PWEN2	

63	PWEN5		64	PWEN4	
65	-	Open	66	PWC_RSTN	
67	-	Open	68	POW_EN	
69	GND		70	GND	
71	P3_14/CSCLK3		72	P3_15/CSCS3	
73	P3_12/CSTXD3		74	P3_13/CSRXD3	
75	P5_0/SDA0		76	P5_1/SCL0	
77	P9_1/SD1CLK		78	P9_0/SD1CMD	
79	P9_6/SD1WP		80	P9_7/SD1CD	
81	P9_2/SD1DAT0		82	P9_3/SD1DAT1	
83	P9_4/SD1DAT2		84	P9_5/SD1DAT3	
85	-	Open	86	-	Open
87	P3_7/UARTS1		88	P3_6/UACTS1	
89	P3_4/UATX1		90	P3_5/UARX1	
91	V2MA_TCK		92	V2MA_TMS	
93	V2MA_TRSTN		94	V2MA_TDO	
95	V2MA_TDI		96	V2MA_SRSTN	
97	V2MA_MD3		98	V2MA_MD4	
99	V2MA_MD5		100	V2MA_MD6	
101	GND		102	GND	
103	GND		104	-	Open
105	-	Open	106	-	Open
107	GND		108	GND	
109	-	Open	110	-	Open
111	-	Open	112	-	Open
113	GND		114	GND	
115	-	Open	116	-	Open
117	-	Open	118	-	Open
119	GND		120	GND	

6.2.3. CN302

PART NO. : FX8-120P-SV1(91)

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	D12.0V		2	D12.0V	
3	D12.0V		4	D12.0V	
5	D12.0V		6	D12.0V	
7	D12.0V		8	D12.0V	
9	D12.0V		10	D12.0V	
11	D12.0V		12	D12.0V	
13	D12.0V		14	D12.0V	
15	D12.0V		16	D12.0V	
17	D12.0V		18	D12.0V	
19	D12.0V		20	D12.0V	
21	GND		22	GND	
23	GND		24	GND	
25	P15_0/GETXC		26	P15_11/GERXC	
27	P15_2/GETXER		28	P15_12/GERXDV	

29	P15_1/GETXEN		30	P15_13/GERXER	
31	P15_10/GETXD7		32	P16_5/GERXD7	
33	P15_9/GETXD6		34	P16_4/GERXD6	
35	P15_8/GETXD5		36	P16_3/GERXD5	
37	P15_7/GETXD4		38	P16_2/GERXD4	
39	P15_6/GETXD3		40	P16_1/GERXD3	
41	P15_5/GETXD2		42	P16_0/GERXD2	
43	P15_4/GETXD1		44	P15_15/GERXD1	
45	P15_3/GETXD0		46	P15_14/GERXD0	
47	P16_6/GECRS		48	P16_7/GECOL	
49	P17_0	PHYRESET	50	P16_12/GEINT	
51	P16_10/GEGTXCLK		52	P16_13/GECLK	
53	P16_8/GEMDC		54	P16_9/GEMDIO	
55	P12_2/INT32	GELINK100M	56	P16_11/GELINK1M	
57	GND		58	GND	
59	P4_2/CSCLK4		60	P4_3/CSCS4	
61	P4_0/CSTXD4		62	P4_1/CSRXD4	
63	P4_6/CSCLK5		64	P4_7/CSCS5	
65	P4_4/CSTXD5		66	P4_5/CSRXD5	
67	P5_3/SCL1		68	P5_2/SDA1	
69	P3_9/SCL2		70	P3_8/SDA2	
71	P3_0/UATXD0		72	P3_1/UARXD0	
73	P3_3/UARTS0		74	P3_2/UACTS0	
75	-	Open	76	P1_0/PM0/INT8	
77	P1_1/PM1/INT9		78	P1_2/PM2/INT10	
79	P1_3/PM3/INT11		80	P1_4/PM4/INT12	
81	P1_5/PM5/INT13		82	P1_6/PM6/INT14	
83	P1_7/PM7/INT15		84	P1_8/PM8/INT16	
85	P1_9/PM9/INT17		86	P1_10/PM10/INT18	
87	P1_11/PM11/INT19		88	P1_12/PM12/INT20	
89	P1_13/PM13/INT21		90	P1_14/PM14/INT22	
91	P1_15/PM15/INT23		92	P2_0/INT0	
93	P2_1/INT1		94	P2_2/INT2	
95	P2_3/INT3		96	P2_4/INT4	
97	P2_5/INT5		98	P2_6/INT6	
99	P2_7/INT7		100	-	Open
101	-	Open	102	-	Open
103	-	Open	104	-	Open
105	-	Open	106	-	Open
107	-	Open	108	-	Open
109	-	Open	110	P14_0	
111	P14_1		112	P14_2	
113	P14_3		114	P14_4	
115	P14_5		116	P14_6	
117	P14_7		118	GND	
119	GND		120	GND	

6.2.4. CN303

PART NO. : 62102021021

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	VDD1.8_1		2	V2MA_TMS	
3	GND		4	V2MA_TCK	
5	GND		6	V2MA_TDO	
7	-	Open	8	V2MA_TDI	
9	GND		10	V2MA_SRSTN	
11	-	Open	12	-	Open
13	-	Open	14	-	Open
15	GND		16	V2MA_TRSTN	
17	GND		18	-	Open
19	GND		20	-	Open

6.2.5. CN304

PART NO. : 613012243121

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	P3_15/CSCS3		7	P1_0	
2	P3_12/CSTXD3		8	P1_1	
3	P3_13/CSRXD3		9	P1_2	
4	P3_14/CSCLK3		10	P1_3	
5	GND		11	GND	
6	PAMODVDD	3.3V/1.8V	12	PAMODVDD	3.3V/1.8V

6.2.6. CN305

PART NO. : 613006143121

Pin number	Signal Name	Remarks
1	P1_4	
2	P1_5	
3	P3_9/SCL2	
4	P3_8/SDA2	
5	GND	
6	PAMODVDD	3.3V/1.8V

6.2.7. CN306

PART NO. : 61301221121

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	PBMODVDD	3.3V/1.8V	7	PBMODVDD	3.3V/1.8V
2	P4_0/CSTXD4		8	P4_1/CSRXD4	
3	P4_2/CSSCLK4		9	P4_3/CSCS4	
4	P4_4/CSTXD5		10	P4_5/CSRXD5	
5	P4_6/CSSCLK5		11	P4_7/CSCS5	
6	GND		12	GND	

6.2.8. CN307

PART NO. : 629105150521

Pin number	Signal Name	Remarks
1	VBUS	VBUS
2	USBDM	DM
3	USBDP	DP
4	GND	ID
5	GND	

6.2.9. CN310

PART NO. : 61300611121

Pin number	Signal Name	Remarks
1	PAMODVDD	3.3V/1.8V
2	P3_4/UATX1	
3	P3_5/UARX1	
4	P3_7/UARTS1N	
5	P3_6/UACTS1N	
6	GND	

6.2.10. CN311

PART NO. : 7499111424

Pin number	Signal Name	Remarks
1	MD0P	
2	MD0N	
3	MD1P	
4	MD1N	
5	GND	CT
6	GND	CT
7	MD2P	
8	MD2N	
9	MD3P	
10	MD3N	
11	GND	LED(A)
12	GELINK100K	LED(K)
13	GELINK1M	LED(K)
14	GND	LED(A)

6.2.11. CN312

PART NO. : 61301221121

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	SD1VDD_4		7	VDD3.3_4	
2	P9_0/SD1CMD		8	P9_5/SD1DAT3	
3	P9_7/SD1CD		9	P9_4/SD1DAT2	
4	P9_6/SD1WP		10	P9_3/SD1DAT1	
5	P9_1/SD1CLK		11	P9_2/SD1DAT0	
6	GND		12	GND	

6.2.12. CN313

PART NO. : 61301221121

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	PAMODVDD	3.3V/1.8V	7	P1_6/PM6/INT14	
2	P1_7/PM7/INT15		8	P1_8/PM8/INT16	
3	P1_11/PM11/INT19		9	P1_10/PM10/INT18	
4	P1_13/PM13/INT21		10	P1_12/PM12/INT20	
5	P1_15/PM15/INT23		11	P1_14/PM14/INT22	
6	GND		12	GND	

6.2.13. CN314

PART NO. : 61300611121

Pin number	Signal Name	Remarks
1	VDD3.3_4	
2	VDD3.3_4	
3	P5_2/SDA1	
4	P5_3/SCL1	
5	GND	
6	GND	

6.2.14. CN315

PART NO. : 61301221121

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	VDD1.8_1		7	VDD1.8_1	
2	P2_0/INT0		8	P2_1/INT1	
3	P2_2/INT2		9	P2_3/INT3	
4	P2_4/INT4		10	P2_5/INT5	
5	P2_6/INT6		11	P2_7/INT7	
6	GND		12	GND	

6.2.15. CN316

PART NO. : 61301221121

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	VDD3.3_4		7	VDD3.3_4	
2	P14_0		8	P14_1	
3	P14_2		9	P14_3	
4	P14_4		10	P14_5	
5	P14_6		11	P14_7	
6	GND		12	GND	

6.3. PCIe Board

6.3.1. CN501

PART NO. : FX8-120P-SV1(91)

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	-	Open	2	-	Open
3	-	Open	4	-	Open
5	-	Open	6	-	Open
7	-	Open	8	-	Open
9	-	Open	10	-	Open
11	-	Open	12	-	Open
13	-	Open	14	-	Open
15	-	Open	16	-	Open
17	-	Open	18	-	Open
19	-	Open	20	-	Open
21	GND		22	GND	
23	GND		24	GND	
25	P15_0/GETXC		26	P15_11/GERXC	
27	P15_2/GETXER		28	P15_12/GERXDV	
29	P15_1/GETXEN		30	P15_13/GERXER	
31	P15_10/GETXD7		32	P16_5/GERXD7	
33	P15_9/GETXD6		34	P16_4/GERXD6	
35	P15_8/GETXD5		36	P16_3/GERXD5	
37	P15_7/GETXD4		38	P16_2/GERXD4	
39	P15_6/GETXD3		40	P16_1/GERXD3	
41	P15_5/GETXD2		42	P16_0/GERXD2	
43	P15_4/GETXD1		44	P15_15/GERXD1	
45	P15_3/GETXD0		46	P15_14/GERXD0	
47	P16_6/GECRS		48	P16_7/GECOL	
49	P17_0	PHYRESET	50	P16_12/GEINT	
51	P16_10/GEGTXCLK		52	P16_13/GECLK	
53	P16_8/GEMDC		54	P16_9/GEMDIO	
55	P12_2/INT32	GELINK100M	56	P16_11/GELINK1M	
57	GND		58	GND	
59	P4_2/CSCLK4		60	P4_3/CSCS4	
61	P4_0/CSTXD4		62	P4_1/CSRXD4	
63	P4_6/CSCLK5		64	P4_7/CSCS5	
65	P4_4/CSTXD5		66	P4_5/CSRXD5	
67	P5_3/SCL1		68	P5_2/SDA1	
69	P3_9/SCL2		70	P3_8/SDA2	
71	P3_0/UATXD0		72	P3_1/UARXD0	
73	P3_3/UARTS0		74	P3_2/UACTS0	
75	P00_08		76	P1_0/PM0/INT8	
77	P1_1/PM1/INT9		78	P1_2/PM2/INT10	
79	P1_3/PM3/INT11		80	P1_4/PM4/INT12	
81	P1_5/PM5/INT13		82	P1_6/PM6/INT14	
83	P1_7/PM7/INT15		84	P1_8/PM8/INT16	
85	P1_9/PM9/INT17		86	P1_10/PM10/INT18	
87	P1_11/PM11/INT19		88	P1_12/PM12/INT20	
89	P1_13/PM13/INT21		90	P1_14/PM14/INT22	
91	P1_15/PM15/INT23		92	P2_0/INT0	
93	P2_1/INT1		94	P2_2/INT2	
95	P2_3/INT3		96	P2_4/INT4	

97	P2_5/INT5		98	P2_6/INT6	
99	P2_7/INT7		100	P6_0	
101	P6_1		102	P6_2	
103	P6_3		104	P6_4	
105	P6_5		106	P6_6	
107	P12_1/INT31		108	P12_0/INT30	
109	P12_3/INT33		110	P14_0	
111	P14_1		112	P14_2	
113	P14_3		114	P14_4	
115	P14_5		116	P14_6	
117	P14_7		118	GND	
119	GND		120	GND	

6.3.2. CN502

PART NO. : FX8-120S-SV(21)

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	VDD3.3_4		2	VDD3.3_4	
3	VDD3.3_4		4	VDD3.3_4	
5	VDD3.3_4		6	VDD3.3_4	
7	VDD3.3_4		8	VDD3.3_4	
9	VDD3.3_4		10	VDD3.3_4	
11	PAMODVDD		12	PAMODVDD	
13	PBMODVDD		14	PBMODVDD	
15	PCMODVDD		16	PCMODVDD	
17	RTPWVDD3.0		18	RTPWVDD3.0	
19	VDD5.0_0		20	VDD5.0_0	
21	VDD5.0_0		22	VDD5.0_0	
23	VDD5.0_0		24	VDD5.0_0	
25	VDD0.8_2		26	VDD0.8_2	
27	VDD0.8_USB_5		28	VDD0.8_USB_5	
29	SD0VDD_4		30	SD1VDD_4	
31	VDD1.8_3		32	VDD1.8_3	
33	VDD1.8_3		34	VDD1.8_3	
35	VDD1.8_1		36	VDD1.8_1	
37	VDD0.8_1		38	VDD0.8_1	
39	VDD0.8_1		40	VDD0.8_1	
41	VDD0.8_1		42	VDD0.8_1	
43	VDD0.8_1		44	VDD0.8_1	
45	VDD0.8_1		46	VDD0.8_1	
47	VDD0.8_LPVDD		48	VDD0.8_LPVDD	
49	VDD1.1_1		50	VDD1.1_1	
51	VDD1.1_1		52	VDD1.1_1	
53	VDD1.1_1		54	VDD1.1_1	
55	GND		56	GND	
57	PWSD0SEL		58	PWSD1SEL	
59	PWEN1		60	PWEN0	
61	PWEN3		62	PWEN2	

63	PWEN5		64	PWEN4	
65	P0_9		66	PWC_RSTN	
67	-	Open	68	POW_EN	
69	GND		70	GND	
71	P3_14/CSCLK3		72	P3_15/CSCS3	
73	P3_12/CSTXD3		74	P3_13/CSRXD3	
75	P5_0/SDA0		76	P5_1/SCL0	
77	P9_1/SD1CLK		78	P9_0/SD1CMD	
79	P9_6/SD1WP		80	P9_7/SD1CD	
81	P9_2/SD1DAT0		82	P9_3/SD1DAT1	
83	P9_4/SD1DAT2		84	P9_5/SD1DAT3	
85	P3_10/SDA3		86	P3_11/SCL3	
87	P3_7/UARTS1		88	P3_6/UACTS1	
89	P3_4/UATX1		90	P3_5/UARX1	
91	V2MA_TCK		92	V2MA_TMS	
93	V2MA_TRSTN		94	V2MA_TDO	
95	V2MA_TDI		96	V2MA_SRSTN	
97	V2MA_MD3		98	V2MA_MD4	
99	V2MA_MD5		100	V2MA_MD6	
101	GND		102	GND	
103	GND		104	PCIE_RX1M	
105	PCIE_RESETo		106	PCIE_RX1P	
107	GND		108	GND	
109	PCIE_TX1M		110	PCIE_RX0M	
111	PCIE_TX1P		112	PCIE_RX0P	
113	GND		114	GND	
115	PCIE_TX0M		116	PCIE_REFCLKM	
117	PCIE_TX0P		118	PCIE_REFCLKP	
119	GND		120	GND	

6.3.3. CN503

PART NO. : FX8-120S-SV(21)

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	D12.0V		2	D12.0V	
3	D12.0V		4	D12.0V	
5	D12.0V		6	D12.0V	
7	D12.0V		8	D12.0V	
9	D12.0V		10	D12.0V	
11	D12.0V		12	D12.0V	
13	D12.0V		14	D12.0V	
15	D12.0V		16	D12.0V	
17	D12.0V		18	D12.0V	
19	D12.0V		20	D12.0V	
21	GND		22	GND	
23	GND		24	GND	
25	P15_0/GETXC		26	P15_11/GERXC	
27	P15_2/GETXER		28	P15_12/GERXDV	
29	P15_1/GETXEN		30	P15_13/GERXER	
31	P15_10/GETXD7		32	P16_5/GERXD7	

33	P15_9/GETXD6		34	P16_4/GERXD6	
35	P15_8/GETXD5		36	P16_3/GERXD5	
37	P15_7/GETXD4		38	P16_2/GERXD4	
39	P15_6/GETXD3		40	P16_1/GERXD3	
41	P15_5/GETXD2		42	P16_0/GERXD2	
43	P15_4/GETXD1		44	P15_15/GERXD1	
45	P15_3/GETXD0		46	P15_14/GERXD0	
47	P16_6/GECRS		48	P16_7/GECOL	
49	P17_0	PHYRESET	50	P16_12/GEINT	
51	P16_10/GEGTXCLK		52	P16_13/GECLK	
53	P16_8/GEMDC		54	P16_9/GEMDIO	
55	P12_2/INT32	GELINK100M	56	P16_11/GELINK1M	
57	GND		58	GND	
59	P4_2/CSCLK4		60	P4_3/CSCS4	
61	P4_0/CSTXD4		62	P4_1/CSRXD4	
63	P4_6/CSCLK5		64	P4_7/CSCS5	
65	P4_4/CSTXD5		66	P4_5/CSRXD5	
67	-	Open	68	-	Open
69	P3_9/SCL2		70	P3_8/SDA2	
71	P3_0/UATXD0		72	P3_1/UARXD0	
73	P3_3/UARTS0		74	P3_2/UACTS0	
75	P00_08		76	P1_0/PM0/INT8	
77	P1_1/PM1/INT9		78	P1_2/PM2/INT10	
79	P1_3/PM3/INT11		80	P1_4/PM4/INT12	
81	P1_5/PM5/INT13		82	P1_6/PM6/INT14	
83	P1_7/PM7/INT15		84	P1_8/PM8/INT16	
85	P1_9/PM9/INT17		86	P1_10/PM10/INT18	
87	P1_11/PM11/INT19		88	P1_12/PM12/INT20	
89	P1_13/PM13/INT21		90	P1_14/PM14/INT22	
91	P1_15/PM15/INT23		92	P2_0/INT0	
93	P2_1/INT1		94	P2_2/INT2	
95	P2_3/INT3		96	P2_4/INT4	
97	P2_5/INT5		98	P2_6/INT6	
99	P2_7/INT7		100	P6_0	
101	P6_1		102	P6_2	
103	P6_3		104	P6_4	
105	P6_5		106	P6_6	
107	P12_1/INT31		108	P12_0/INT30	
109	P12_3/INT33		110	P14_0	
111	P14_1		112	P14_2	
113	P14_3		114	P14_4	
115	P14_5		116	P14_6	
117	P14_7		118	GND	
119	GND		120	GND	

6.3.4. CN504

PART NO. : FX8-120P-SV1(91)

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	VDD3.3_4		2	VDD3.3_4	
3	VDD3.3_4		4	VDD3.3_4	
5	VDD3.3_4		6	VDD3.3_4	
7	VDD3.3_4		8	VDD3.3_4	
9	VDD3.3_4		10	VDD3.3_4	
11	PAMODVDD		12	PAMODVDD	
13	PBMODVDD		14	PBMODVDD	
15	PCMODVDD		16	PCMODVDD	
17	RTPWVDD3.0		18	RTPWVDD3.0	
19	VDD5.0_0		20	VDD5.0_0	
21	VDD5.0_0		22	VDD5.0_0	
23	VDD5.0_0		24	VDD5.0_0	
25	VDD0.8_2		26	VDD0.8_2	
27	VDD0.8_USB_5		28	VDD0.8_USB_5	
29	SD0VDD_4		30	SD1VDD_4	
31	VDD1.8_3		32	VDD1.8_3	
33	VDD1.8_3		34	VDD1.8_3	
35	VDD1.8_1		36	VDD1.8_1	
37	VDD0.8_1		38	VDD0.8_1	
39	VDD0.8_1		40	VDD0.8_1	
41	VDD0.8_1		42	VDD0.8_1	
43	VDD0.8_1		44	VDD0.8_1	
45	VDD0.8_1		46	VDD0.8_1	
47	VDD0.8_LPVDD		48	VDD0.8_LPVDD	
49	VDD1.1_1		50	VDD1.1_1	
51	VDD1.1_1		52	VDD1.1_1	
53	VDD1.1_1		54	VDD1.1_1	
55	GND		56	GND	
57	PWSD0SEL		58	PWSD1SEL	
59	PWEN1		60	PWEN0	
61	PWEN3		62	PWEN2	
63	PWEN5		64	PWEN4	
65	P0_9		66	PWC_RSTN	
67	-	Open	68	POW_EN	
69	GND		70	GND	
71	P3_14/CSCLK3		72	P3_15/CSCS3	
73	P3_12/CSTXD3		74	P3_13/CSRXD3	
75	P5_0/SDA0		76	P5_1/SCL0	
77	-	Open	78	-	Open
79	-	Open	80	-	Open
81	-	Open	82	-	Open
83	-	Open	84	-	Open
85	P3_10/SDA3		86	P3_11/SCL3	
87	-	Open	88	-	Open
89	-	Open	90	-	Open
91	V2MA_TCK		92	V2MA_TMS	
93	V2MA_TRSTN		94	V2MA_TDO	
95	V2MA_TDI		96	V2MA_SRSTN	
97	V2MA_MD3		98	V2MA_MD4	

99	V2MA_MD5		100	V2MA_MD6	
101	GND		102	GND	
103	GND		104	-	Open
105	-	Open	106	-	Open
107	GND		108	GND	
109	-	Open	110	-	Open
111	-	Open	112	-	Open
113	GND		114	GND	
115	-	Open	116	-	Open
117	-	Open	118	-	Open
119	GND		120	GND	

6.3.5. CN505

PART NO. : 61301221121

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
1	SD1VDD_4		7	VDD3.3_4	
2	P9_0/SD1CMD		8	P9_5/SD1DAT3	
3	P9_7/SD1CD		9	P9_4/SD1DAT2	
4	P9_6/SD1WP		10	P9_3/SD1DAT1	
5	P9_1/SD1CLK		11	P9_2/SD1DAT0	
6	GND		12	GND	

6.3.6. CN506

PART NO. : 61300611121

Pin number	Signal Name	Remarks
1	PAMODVDD	
2	P3_5/UARX1	
3	P3_4/UATX1	
4	P3_7/UARTS1	
5	P3_6/UACTS1	
6	GND	

6.3.7. CN507

PART NO. : 61300611121

Pin number	Signal Name	Remarks
1	VDD3.3_4	
2	VDD3.3_4	
3	P5_2/SDA1	
4	P5_3/SCL1	
5	GND	
6	GND	

6.3.8. CN508

PART NO. : 8-1734774-1

Pin number	Signal Name	Remarks	Pin number	Signal Name	Remarks
B1	D12.0V_PCIe		A1	GND	
B2	D12.0V_PCIe		A2	D12.0V_PCIe	
B3	D12.0V_PCIe		A3	D12.0V_PCIe	
B4	GND		A4	GND	
B5	-	Open	A5	-	Open
B6	-	Open	A6	-	Open
B7	GND		A7	-	Open
B8	VDD3.3_4_PCIe		A8	-	Open
B9	-	Open	A9	VDD3.3_4_PCIe	
B10	VDD3.3_4_PCIe		A10	VDD3.3_4_PCIe	
B11	-	Open	A11	PCIE_RESETo	
Key					
B12	-	Open	A12	GND	
B13	GND		A13	CLKp	PCIE_REFCLKP
B14	PCIE_TX0P		A14	CLKn	PCIE_REFCLKM
B15	PCIE_TX0M		A15	GND	
B16	GND		A16	PCIE_RX0P	
B17	VDD3.3_4	PU	A17	PCIE_RX0M	
B18	GND		A18	GND	
B19	PCIE_TX1P		A19	-	Open
B20	PCIE_TX1M		A20	GND	
B21	GND		A21	PCIE_RX1P	
B22	GND		A22	PCIE_RX1M	
B23	-	Open	A23	GND	
B24	-	Open	A24	GND	
B25	GND		A25	-	Open
B26	GND		A26	-	Open
B27	-	Open	A27	GND	
B28	-	Open	A28	GND	
B29	GND		A29	-	Open
B30	GND		A30	-	Open
B31			A31	GND	
B32	GND		A32	-	Open