



# RZ/V2M Evaluation Board Kit

Hardware Manual

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# SAFETY MATTERS

## Definitions of Symbols

A variety of symbols are used in this document and on this product, to prevent the damage to harm and the property to you and other people beforehand by correctly using this product.

This section, Safety Matters, presents these symbols and their meanings. It also presents safety notes to assure that this produce is used safely and correctly.

This product should only be used after fully understanding the material presented in this section.



### **WARNING**

Warning items indicate things that, if not avoided, could lead to death or serious injury.



### **CAUTION**

Caution items indicate things that, if not avoided, could lead injury or damage to the house and household goods, etc.

In addition to the above two symbols, the following are displayed at the same time as required.

**[Important]** These indicate the points which may cause a breakdown or malfunction of equipment by the incorrect setting when setting up this product.

△ indicates WARNING or CAUTION.

Example:



**CAUTION AGAINST ELECTRIC SHOCK**

⊘ indicates PROHIBITION.

Example:



**DISASSEMBLY PROHIBITED**

● indicates a COMPULSORY ACTION.

Example:



**COMPULSORY ACTION**

## **WARNING**

### Handling Related Warnings:



Always check the jumper and switch settings before connecting a power source. An incorrect jumper or switch setting can lead to internal heat generation, rupture, ignition, or damage to this evaluation board itself or any connected equipment.

If, during either the use or storage of this product, any abnormality in the product itself (including abnormal odors, heating, color changes, or changes to the shape of the product) are observed, disconnect the AC adapter immediately.

The incidence of such an abnormality may result in rupture, ignition, or performance deterioration. Therefore, do not use this product in such a situation.

### Installation:



Do not install this product in a location that has a high humidity or where water or other fluids could get on it. This product may be damaged if water or other fluids can get on it.

### Ambient Temperature:



The ambient temperature range for using this product is from 5°C to 35°C.



## CAUTION

### Handling:



This product must be handled carefully. Do not cause a strong impact by dropping it, letting it fall, etc.

Do not touch this product's component pins with bare hands. Doing so may discharge static electricity that damages the Internal circuits. Eliminate static electricity before touching this product.

When connecting or disconnecting cables to or from this product, hold the parts of the cable intended to be grasped (such as the plugs) and avoid putting stress on the cable. Do not pull this product etc. while it is connected with a communications interface cable. Doing so may cause the cable to be disconnected.

When connecting a cable to a connector, do not insert the plug in the reverse direction or upside down. Incorrect insertion may damage this product or connected equipment.

Always check the jumper and switch settings before connecting a power source. An incorrect jumper or switch setting can lead to damage to this product or connected equipment.

Do not handle this product with wet hands. Doing so can lead to failure of the product.

### Transport methods:



When transporting this product, use the product's packing box and cushioning materials and ship it with precision equipment handling. If the products packing is insufficient, it may be damaged during shipping.

If it must be transported by some other method, pack it carefully as precision equipment.

When packing this product, always use the antistatic pouch included with this product.

If some other pouch is used, electrostatic discharge may damage the product.

### Abnormal operation:



If operation of this product becomes abnormal due to interference from external noise etc., apply the following procedure.

1. Turn off the power.
2. Wait 10 or over seconds and then turn the power back on.

### Disposal:



When disposing of this product, be sure to dispose it as industrial waste according to all applicable laws.

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# 1. Overview

This board is an evaluation kit for the Arm<sup>®</sup>-based vision AI MPU RZ/V2M from Renesas Electronics (RZ/V2M Evaluation Board Kit, hereafter V2MEVK). This manual describes the hardware functions of the V2MEVK.

The V2MEVK consists of the RZ/V2M Board (main), RZ/V2M Base Board (base), CIS IMX415 Board (CIS), and CIS GND Board (CIS\_GND).

Board Name	Overview
RZ/V2M Board (main)	<ul style="list-style-type: none"><li>• The RZ/V2M is mounted.</li><li>• Board on which the main functional components for the RZ/V2M are mounted</li></ul>
RZ/V2M Base Board (base)	<ul style="list-style-type: none"><li>• Connected to CN12 and CN13 on the RZ/V2M Board</li><li>• Board for the generation and supply of power</li></ul>
CIS IMX415 Board (CIS)	<ul style="list-style-type: none"><li>• Connected to the CIS connector 1 on the RZ/V2M Board</li><li>• Image sensor board (on which IMX415 is mounted)</li></ul>
CIS GND Board (CIS_GND)	<ul style="list-style-type: none"><li>• Connected to the CIS connector 2 on the RZ/V2M Board</li><li>• Board for handling unused pins of the CMOS image sensor I/F of the RZ/V2M</li></ul>

The following documents have been prepared for this V2MEVK. Make sure to refer to the latest versions of these documents. For more information, contact a CSM SOLUTION sales representative.

Document Type	Document Title	Document No.	Description
Hardware Manual	V2MEVK Hardware Manual	This User's manual	Hardware specifications of the V2MEVK
Schematics	V2MEVK Schematics		Schematics of the V2MEVK
Parts List	V2MEVK Parts List		Parts List of the V2MEVK

The development environment including software, contact a Renesas Electronics sales representative. The following documents are available on the Renesas Electronics website.

Document Type	Document Title	Document No.	Description
User's Manual: Hardware	RZ/V2M User's Manual: Hardware	R01UH0940EJ0130	RZ/V2M hardware specifications (pin assignments, memory maps, peripheral specifications, electrical characteristics, and timing charts) and descriptions of operation
Start-up guide	RZ/V2M Evaluation Board Kit Start-Up Guide	R01UH1000EJ0100	The installation and startup procedure of the first boot loader, second boot loader, and U-Boot on the V2MEVK

## 1.1 Features

This V2MEVK includes the following features.

- LPDDR4: 32 Gbits
- eMMC™: 16 GB
- CMOS image sensor interface connector: 2ch (1ch is in preparation.).
- HDMI® Type-A connector: 1 ch.
- Gigabit Ethernet interface connector:1 ch.
- USB3.1 Gen1 Type-C: 1 ch.
- Micro SD card connector: 1. ch.
- SDIO interface connector: 1 ch.
- Pmod™ interface connector: 1ch.
- Debug serial interface micro USB Type-B: 1 ch.
- Lens motor interface connector: 1 ch.
- Audio interface connector: 1 ch.

## 1.2 Block Configuration

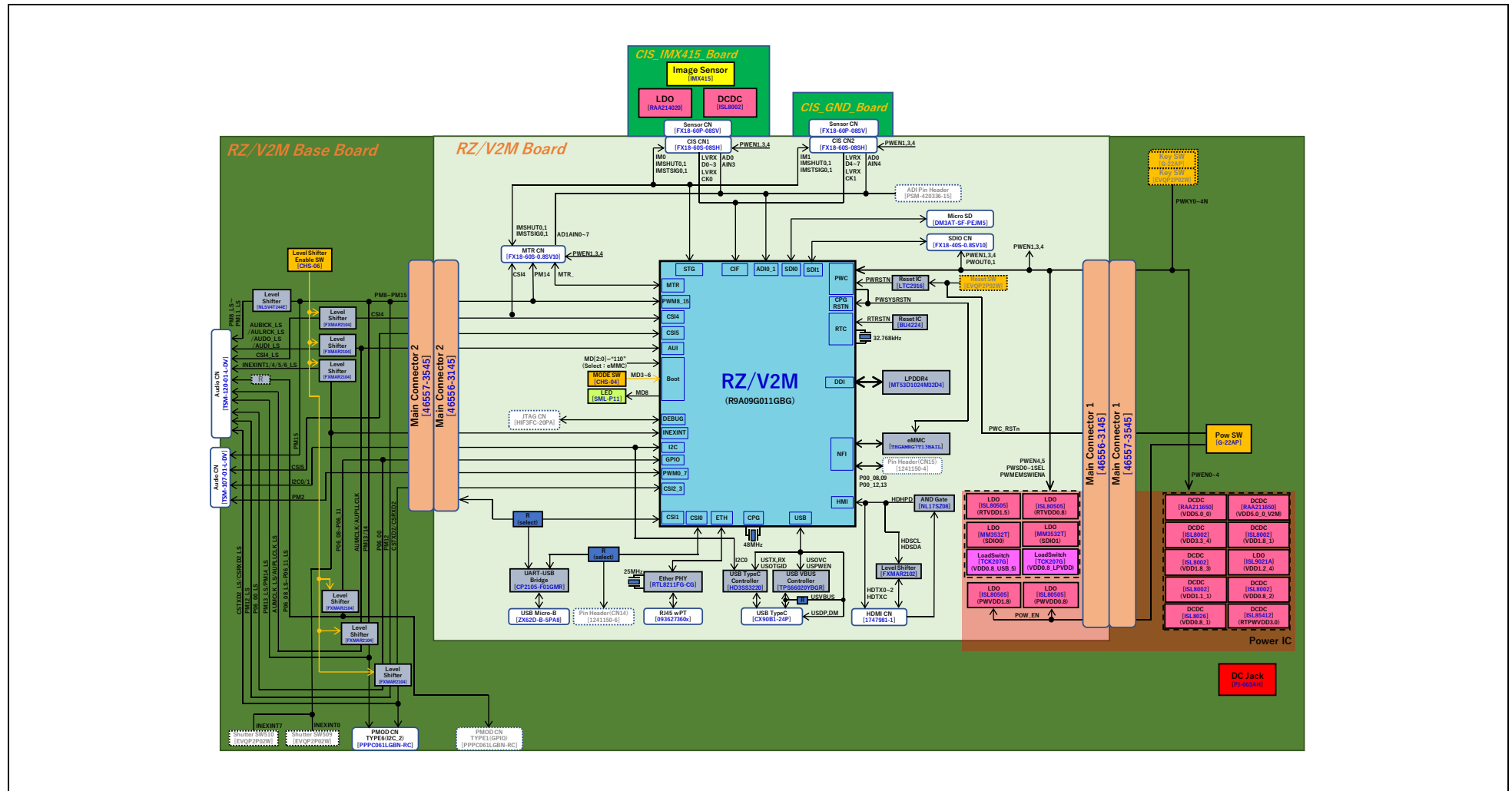


Figure 1.2-1 V2MEVK Block Diagram

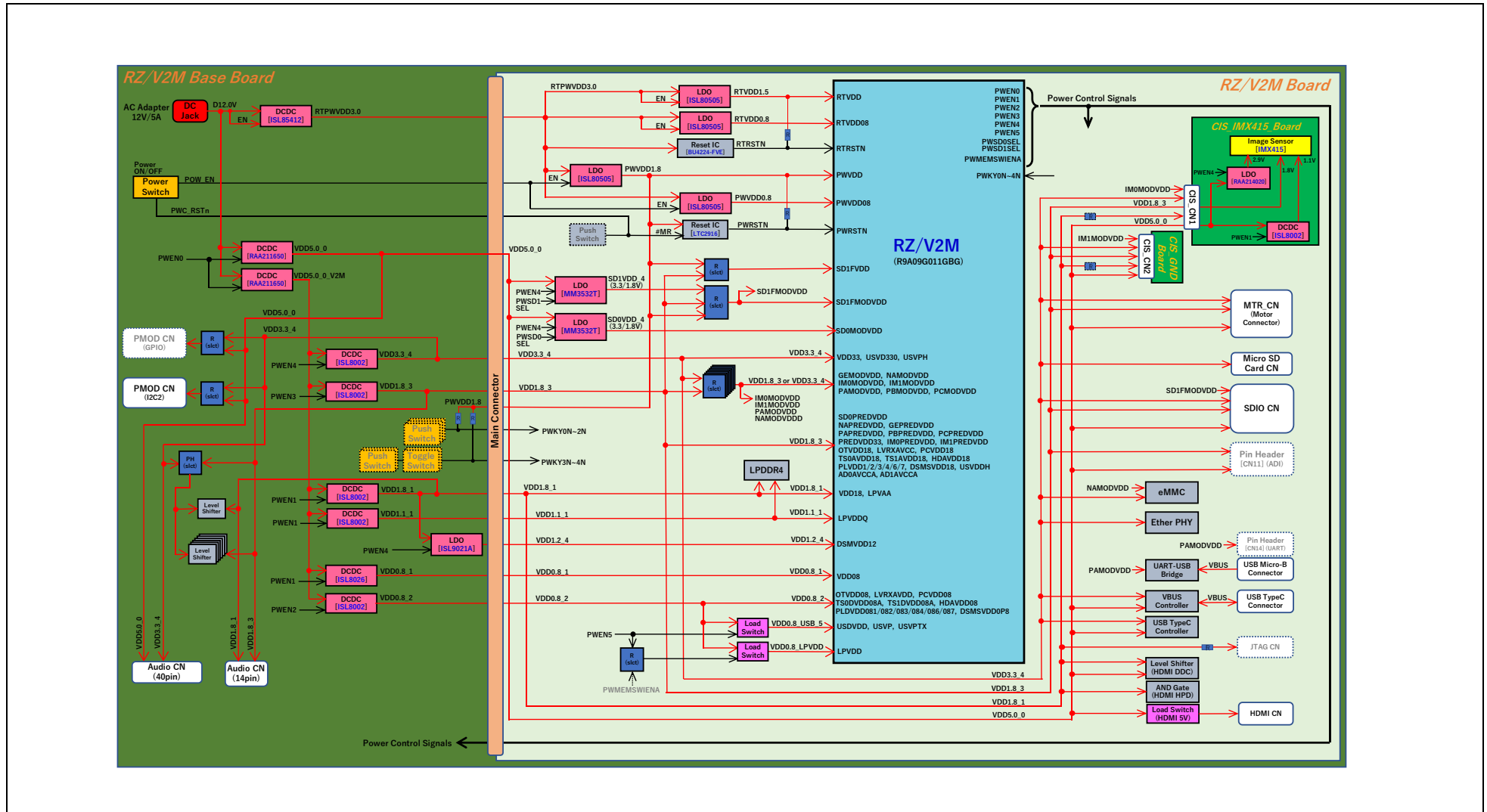


Figure 1.2-2 V2MEVK Power Supply Block Diagram

## 1.3 Specifications

### 1.3.1 V2MEVK Specifications

Table 1.3-1 V2MEVK Specifications

Item	Specification
MPU	R9A09G011GBG (RZ/V2M)
Board size	Main: 120 × 105 × 1.6 mm Base: 155 × 105 × 1.6 mm
LPDDR4	Micron MT53D1024M32D4 32 Gb Dual-Rank
eMMC	Kioxia THGBMJG7C1LBAIL(or same specification product) 16 GB
HDMI	Connector: Type-A (standard)
USB	Connector: Type-C
Ethernet	Connector: RJ45 Ethernet PHY IC: RTL8211FG-CG
Audio I/F	Connector: 40 pins with 2.54-mm pitch Connector: 14 pins with 2.54-mm pitch
SD Card I/F	Connector: Micro SD
SDIO	Connector: FX18-40S-0.8SV10
Image sensor I/F	Connector: FX18-60S-0.8SH Connected to the CIS IMX415 Board and CIS GND Board connectors.
Motor control I/F	Connector: FX18-60S-0.8SV10
Debug I/F	Connector: USB Micro-B UART-USB bridge: CP2105
LED	For power supply (VDD5.0): Yellow green (main) For boot (MD8): Yellow green (main) For power supply (RTPWVDD3.0): Yellow green (base)
Switch	For mode setting: DIP ×1 (main) For level shifters setting: DIP × 1 (base) For power supply: Toggle ×1 (base) For audio interface IO power setting: Pin header × 1 (base)
Power supply	AC adapter: 12V/5A

Table 1.3-2 CIS IMX415 Board Specification

Item	Specification
CMOS image sensor	IMX415 (Made by SONY)*1

Note 1. IMX415 is used in sensor slave mode with the ISP support package.

### 1.3.2 V2MEVK Accessories

Table 1.3-3 V2MEVK Accessories

Item	Specification
Upper plate	Material: Acrylic Size: 155 × 105 × 3 mm
Base plate	Material: Acrylic Size: 200 × 150 × 5 mm
Rubber feet	Size: 12.7 × 12.7 × 3 mm, Qty: 4
Board spacers	M3 × 20 mm, Qty: 4 M3 × 8 mm, Qty: 4 M3 × 10 mm, Qty: 4
M3 screws	M3 × 10, Qty:6
Jumper connector	For CN508

### 1.3.3 Outer Appearance

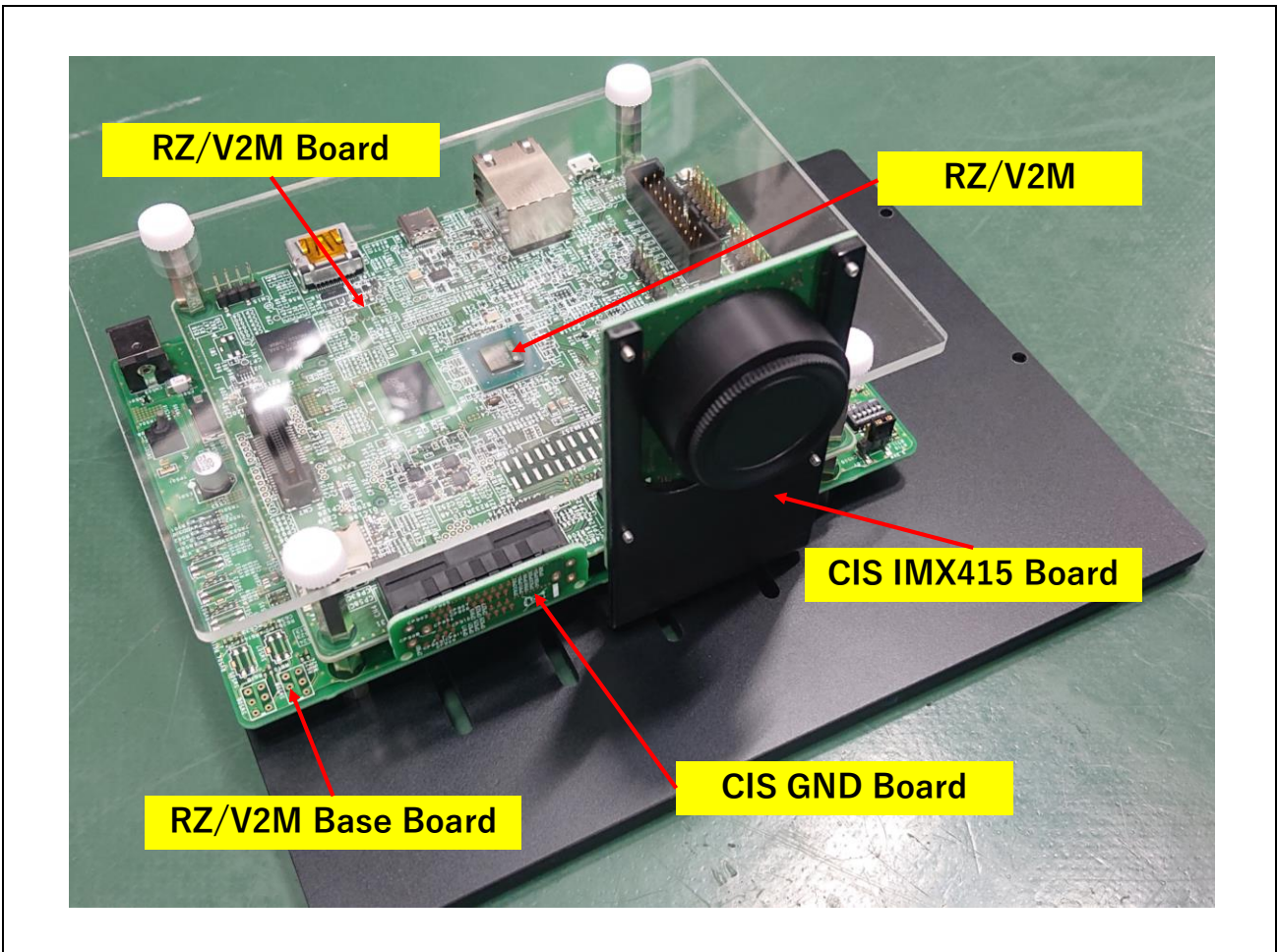


Figure 1.3-1 Outer Appearance of V2MEVK

## 1.4 Usage Notes

### 1.4.1 V2MEVK Power Supply Specifications

- Take sufficient care with setting up jumpers and switches on the V2MEVK. Incorrect settings may lead to damage to devices.
- Be sure to use the included AC adapter as the power supply for the V2MEVK. If the voltage exceeding 12 V is applied, devices on the V2MEVK may be damaged.
- The RZ/V2M has the power-on and power-off sequences. With the V2MEVK, be sure to follow the precautions below.

(1) When turning power on

Be sure to check that the power supply toggle switch SW501 is turned off before connecting the AC adapter to an outlet. Connecting the AC adapter makes some circuits operate and lights up LED501.

Connecting the AC adapter to an outlet while the power supply toggle switch SW501 is on is prohibited.

(2) When turning power off

Be sure to execute the power-off sequence by software before turning the power supply toggle switch SW501 off. After the sequence, turn this toggle switch off and remove the AC adapter from the outlet. Removing the AC adapter from the outlet while the power supply toggle switch SW501 is on is prohibited.

Doing so may lead to damage to devices.

### 1.4.2 Note on the CIS IMX415 Board and CIS GND Board

When operating the board, connect CN2 and CN4 on the RZ/V2M Board to the CIS IMX415 Board and to the CIS GND Board, respectively, before turning power on.

### 1.4.3 Note on Use of Ethernet

The gigabit Ethernet interface connector must not be connected to a public line. Connection with a public line is not supported. Note that the MAC address is not set in this evaluation kit.

## 2. Operating Procedure

### 2.1 Assembly

Connect the RZ/V2M Board and the CIS IMX415 Board and fix them with M3 screws from the reverse side of the base plate.

When separating them, follow the steps in the opposite order to that stated above.

### 2.2 Operation Mode Setting

The tables below list the settings of the DIP switch (SW2 on the RZ/V2M Board) and their functions.

Table 2.2-1 SW2 and Connection Destinations

Switch No.	RZ/V2M MD Pin
1	MD3
2	MD4
3	MD5
4	MD6

Table 2.2-2 Settings and Functions of SW2

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
Other than above				Setting prohibited

The table below lists the settings of the DIP switch (SW512 on the RZ/V2M Base Board).

Table 2.2-3 Settings and Functions of SW512

Switch No.	Connected Level Shifter	Setting	Settings when Using CN506	Settings when Using CN507
1	U511	ON: The level shifter is enabled. OFF: The level shifter is in Hi-Z.	—	—
2	U512	ON: The level shifter is enabled. OFF: The level shifter is in Hi-Z.	—	—
3	U513	ON: The level shifter is enabled. OFF: The level shifter is in Hi-Z.	—	ON
4	U514	ON: The level shifter is enabled. OFF: The level shifter is in Hi-Z.	—	-
5	U515	ON: The level shifter is enabled. OFF: The level shifter is in Hi-Z.	—	ON
6	U517	ON: The level shifter is enabled. OFF: The level shifter is in Hi-Z.	ON	—



## 2.3 Power Supply

Set up the DIP switches before supplying power.

Before connecting the AC adapter, check that the power supply toggle switch SW501 is turned off.

Connect the included AC adapter to CN503 on the RZ/V2M Base Board to supply power. At this time, LED501 lights up.

When SW501 is turned on, LED3, light up and the RZ/V2M starts up.

### 3. Layout

#### 3.1 Parts Layout

Figure 3.1-1 and Figure 3.1-2 show the parts layout diagrams of the RZ/V2M Board and Figure 3.1-3 shows the parts layout diagram of the RZ/V2M Base Board.

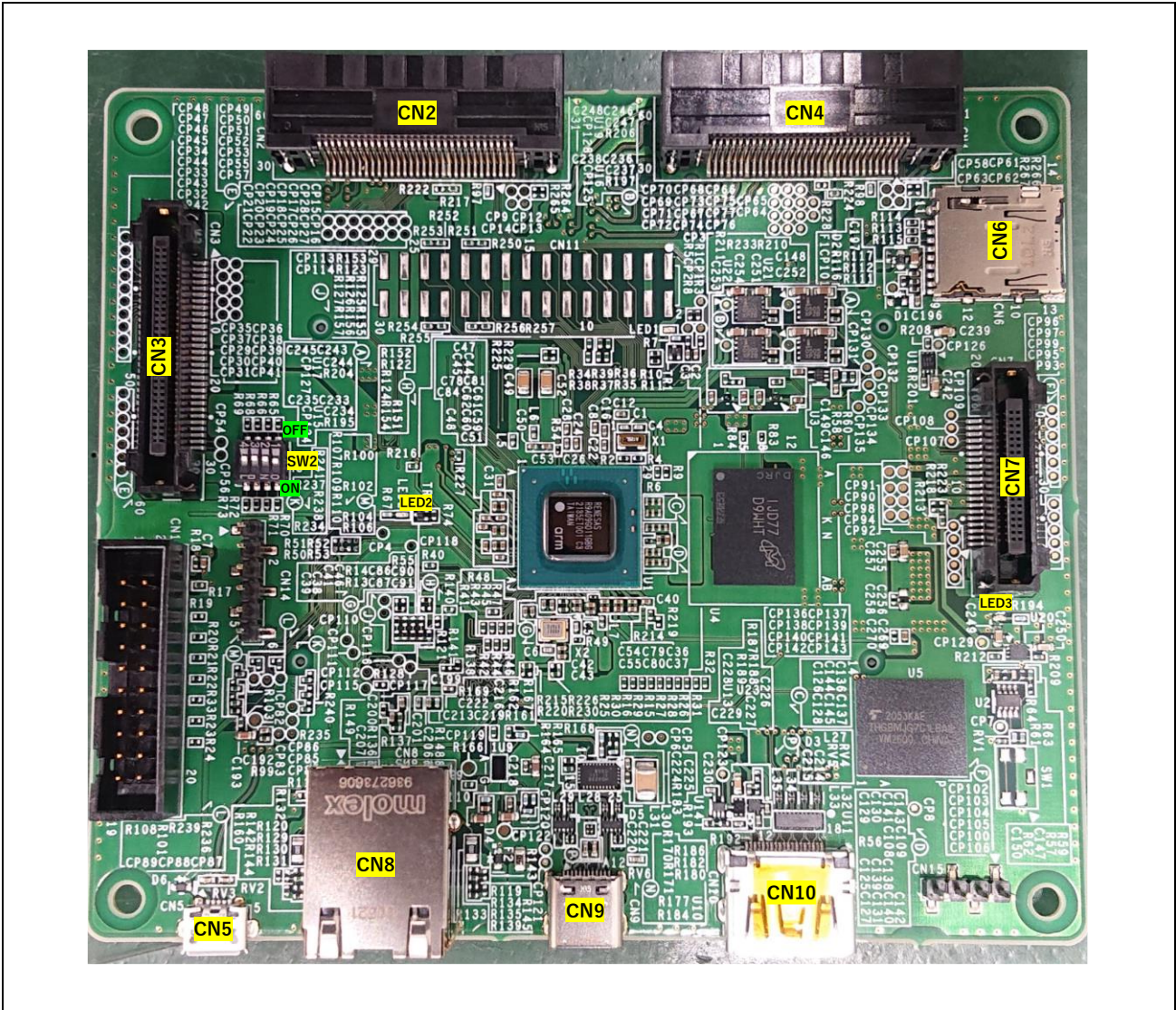


Figure 3.1-1 RZ/V2M Board Parts Layout Diagram (Parts Side)

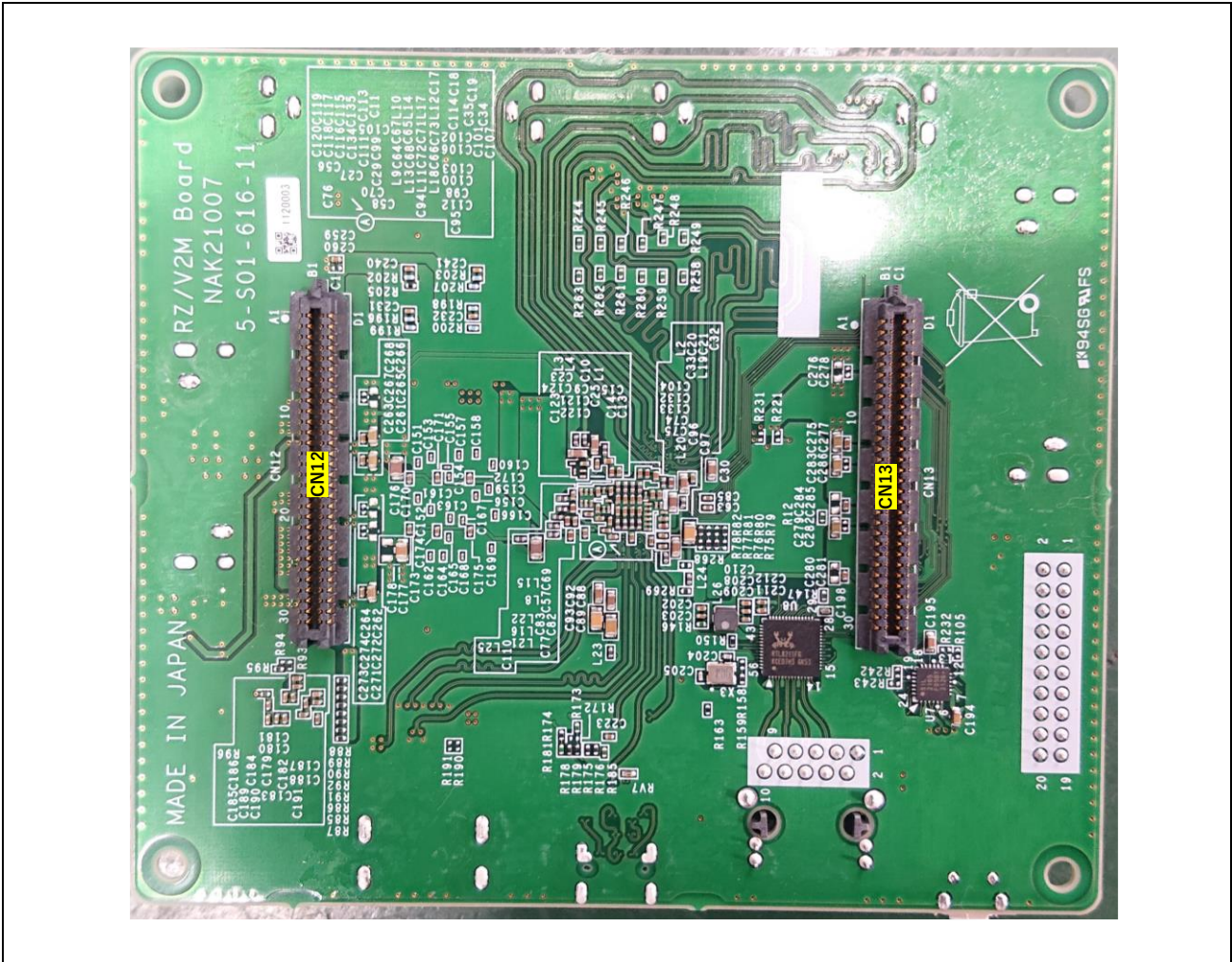


Figure 3.1-2 RZ/V2M Board Parts Layout Diagram (Solder Side)



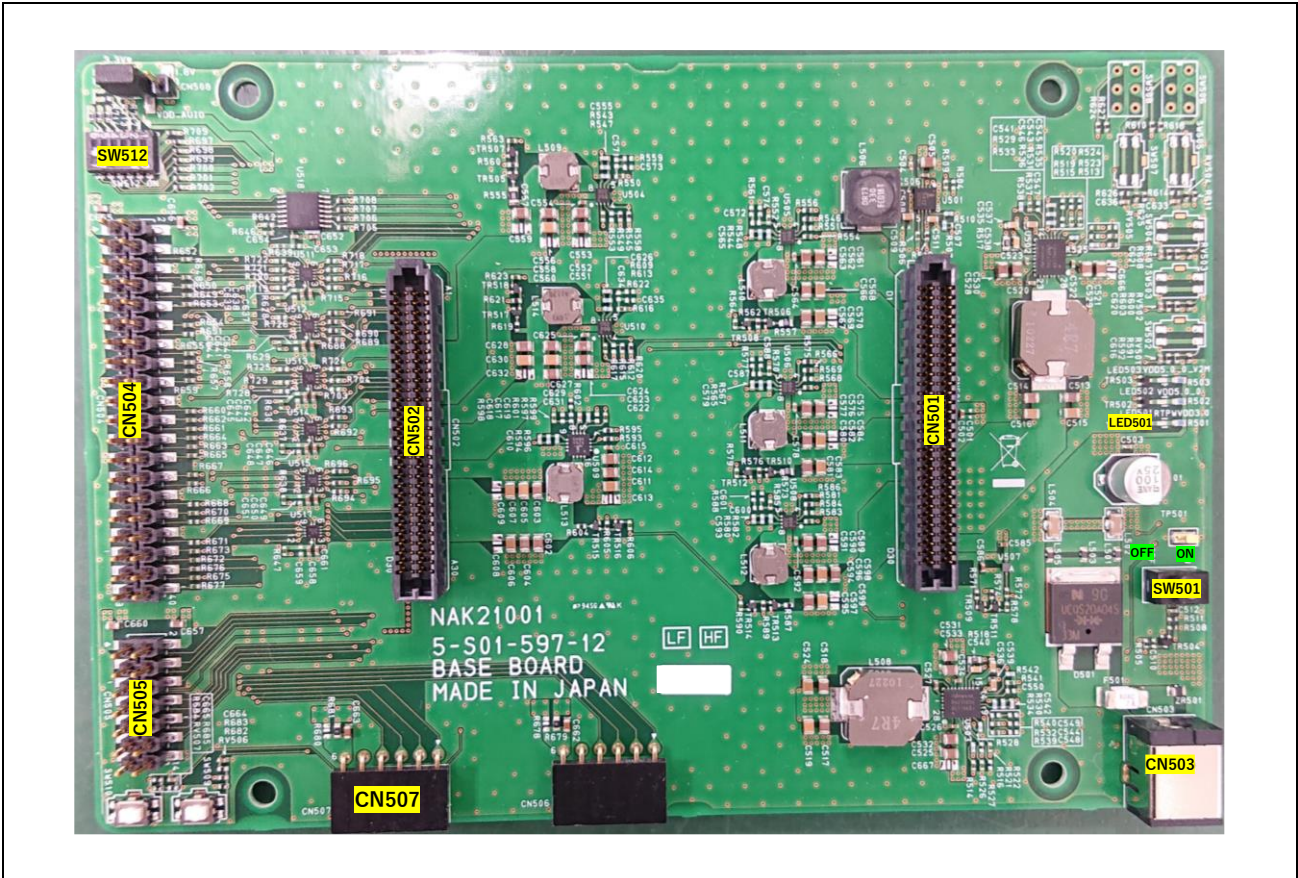


Figure 3.1-3 RZ/V2M Base Board Parts Layout Diagram (Parts Side)

## 3.2 Lists of Main Parts

**Table 3.2-1**, **Table 3.2-2**, and **Table 3.2-3** list the main parts of the RZ/V2M Board, RZ/V2M Base Board, and CIS IMX415 Board, respectively.

Table 3.2-1 RZ/V2M Board Parts List

No.	Quantity	Part Symbol	Part Name	Manufacturer
1	1	U1	R9A09G011GBG (RZ/V2M)	Renesas Electronics
2	4	U15, U16, U17, U19	ISL80505IRAJZ	Renesas Electronics

Table 3.2-2 RZ/V2M Base Board Parts List

No.	Quantity	Part Symbol	Part Name	Manufacturer
1	1	U501	ISL85412FRTZ	Renesas Electronics
2	2	U502, U503	RAA2116504GNP#	Renesas Electronics
3	5	U504, U505, U506, U508, U510	ISL8002IRZ	Renesas Electronics
4	1	U507	ISL9021AIWZ	Renesas Electronics
5	1	U509	ISL8026IRTAJZ	Renesas Electronics

Table 3.2-3 CIS IMX415 Board Parts List

No.	Quantity	Part Symbol	Part Name	Manufacturer
1	1	U802	ISL8002IRZ	Renesas Electronics
2	1	U804	RAA214020GNP#	Renesas Electronics

## 4. Interface Specifications

This section describes the interface specifications of the V2MEVK.

### 4.1 Reset

When resetting the V2MEVK, use software to control resetting.

### 4.2 LED

The V2MEVK has three LEDs. **Table 4.2-1** and **Table 4.2-2** list the colors and functions of these LEDs.

Table 4.2-1 RZ/V2M Board LED

LED	Color	Function/Usage
LED2	Yellow green	RZ/V2M boot indicator
LED3	Yellow green	RZ/V2M Board +5.0 V indicator

Table 4.2-2 RZ/V2M Base Board LED

LED	Color	Function/Usage
LED501	Yellow green	RZ/V2M Base Board +3.0 V indicator

### 4.3 Switches

The V2MEVK has three switches. **Table 4.3-1** and **Table 4.3-2** list the functions of the respective switches.

Table 4.3-1 RZ/V2M Board Switch

Switch	Shape	Usage
SW2	DIP switch	Operation mode setting (see section 2.2, <b>Operation Mode Setting</b> )

Table 4.3-2 RZ/V2M Base Board Switches

Switch	Shape	Usage
SW501	Toggle switch	Power supply on/off control
SW512	DIP switch	Level shifters enable control (see section 2.2, <b>Operation Mode Setting</b> )

## 4.4 Debug Serial Interface

The debugging port (micro USB Type-B connector (CN5)) is connected to the UART (CSI0/1) interface of the RZ/V2M via the USB-UART conversion IC. This port is for use in debugging and while an image quality adjustment tool is being used.

## 4.5 CMOS Image Sensor Input Interface

The CMOS image sensor interface can be used by connecting the CIS IMX415 Board and the CIS GND Board to CN2 and CN4 on the RZ/V2M Board, respectively.

Table 4.5-1 CIS Connector 1 (CN2) [for CIS IMX415 Board Connection]

Pin No.	V2MEVK Connection Destination	Pin No.	V2MEVK Connection Destination
1	NC	31	NC
2	RZ/V2M (PWEN1) *1	32	NC
3	RZ/V2M (PWEN3) *1	33	NC
4	RZ/V2M (PWEN4) *1	34	NC
5	RZ/V2M (AD0AIN3) *1	35	NC
6	GND	36	GND
7	GND	37	GND
8	GND	38	GND
9	GND	39	GND
10	+1.8 V	40	+1.8 V
11	+1.8 V	41	+1.8 V
12	+1.8 V	42	+1.8 V
13	+3.3 V	43	+3.3 V
14	RZ/V2M (IMSHUT1)*1	44	RZ/V2M (IMSTSIG1)*1
15	RZ/V2M (IMSHUT0)*1	45	RZ/V2M (IMSTSIG0)*1
16	RZ/V2M (IM0SIG1)*1	46	RZ/V2M (IM0SIG2)*1
17	RZ/V2M (IM0SCLK)*1	47	RZ/V2M (IM0SIG0)*1
18	RZ/V2M (IM0TXD)*1	48	RZ/V2M (IM0RXD)*1
19	RZ/V2M (IM0CLK)*1	49	RZ/V2M (IM0CS)*1
20	RZ/V2M (IM0VS)*1	50	RZ/V2M (IM0HS)*1
21	GND	51	GND
22	RZ/V2M (LVRXD3P)*1	52	GND
23	RZ/V2M (LVRXD3M)*1	53	GND
24	GND	54	RZ/V2M (LVRXD2P)*1
25	RZ/V2M (LVRXD0P)*1	55	RZ/V2M (LVRXD2M)*1
26	RZ/V2M (LVRXD0M)*1	56	GND
27	GND	57	RZ/V2M (LVRXCK0P)*1
28	RZ/V2M (LVRXD1P)*1	58	RZ/V2M (LVRXCK0M)*1
29	RZ/V2M (LVRXD1M)*1	59	GND
30	GND	60	GND

Note 1. These pins are for use with the ISP support package.

Table 4.5-2 CIS Connector 2 (CN4) [for CIS GND Board Connection]

Pin No.	V2MEVK Connection Destination	Pin No.	V2MEVK Connection Destination
1	NC	31	NC
2	RZ/V2M (PWEN1)* <sup>1</sup>	32	NC
3	RZ/V2M (PWEN3)* <sup>1</sup>	33	NC
4	RZ/V2M (PWEN4)* <sup>1</sup>	34	NC
5	RZ/V2M (AD0AIN4)* <sup>1</sup>	35	NC
6	GND	36	GND
7	GND	37	GND
8	GND	38	GND
9	GND	39	GND
10	+1.8 V	40	+1.8 V
11	+1.8 V	41	+1.8 V
12	+1.8 V	42	+1.8 V
13	+3.3 V	43	+3.3 V
14	RZ/V2M (IMSHUT1)* <sup>1</sup>	44	RZ/V2M (IMSTSIG1)* <sup>1</sup>
15	RZ/V2M (IMSHUT0)* <sup>1</sup>	45	RZ/V2M (IMSTSIG0)* <sup>1</sup>
16	RZ/V2M (IM1SIG1)* <sup>1</sup>	46	RZ/V2M (IM1SIG2)* <sup>1</sup>
17	RZ/V2M (IM1SCLK)* <sup>1</sup>	47	RZ/V2M (IM1SIG0)* <sup>1</sup>
18	RZ/V2M (IM1TXD)* <sup>1</sup>	48	RZ/V2M (IM1RXD)* <sup>1</sup>
19	RZ/V2M (IM1CLK)* <sup>1</sup>	49	RZ/V2M (IM1CS)* <sup>1</sup>
20	RZ/V2M (IM1VS)* <sup>1</sup>	50	RZ/V2M (IM1HS)* <sup>1</sup>
21	GND	51	GND
22	RZ/V2M (LVRXD5P)* <sup>1</sup>	52	GND
23	RZ/V2M (LVRXD5M)* <sup>1</sup>	53	GND
24	GND	54	RZ/V2M (LVRXD7P)* <sup>1</sup>
25	RZ/V2M (LVRXD6P)* <sup>1</sup>	55	RZ/V2M (LVRXD7M)* <sup>1</sup>
26	RZ/V2M (LVRXD6M)* <sup>1</sup>	56	GND
27	GND	57	RZ/V2M (LVRXCK1P)* <sup>1</sup>
28	RZ/V2M (LVRXD4P)* <sup>1</sup>	58	RZ/V2M (LVRXCK1M)* <sup>1</sup>
29	RZ/V2M (LVRXD4M)* <sup>1</sup>	59	GND
30	GND	60	GND

Note 1. These pins are for use with the ISP support package.



## 4.6 USB Interface

The V2MEVK has a USB3.1 Gen1 interface. The USB Type-C connector (CN9) is connected to the USB interface of the RZ/V2M via the Type-C controller.

## 4.7 HDMI Interface

The V2MEVK has an HDMI interface. The HDMI Type-A (standard) connector (CN10) is connected to the HDMI interface of the RZ/V2M.

## 4.8 Ethernet Interface

The V2MEVK has an Ethernet interface. The RJ-45 connector (CN8) is connected to the Ethernet interface of the RZ/V2M via the Ethernet PHY IC. Connecting this interface to a public line is prohibited.

## 4.9 SD Card Connector

The V2MEVK has a micro SD card connector (CN6). This connector is connected to the socket and the SDIO interface of the RZ/V2M.

## 4.10 SDIO Connector

CN7 on the RZ/V2M Board is connected to the SDI1 interface of the RZ/V2M.

Table 4.10-1 SDIO CN (CN7)

Pin No.	V2MEVK Connection Destination	Pin No.	V2MEVK Connection Destination
1	NC	21	NC
2	NC	22	NC
3	NC	23	NC
4	RZ/V2M (SD1FWP)	24	RZ/V2M (SD1FCD)
5	RZ/V2M (PWOUT0)* <sup>1</sup>	25	RZ/V2M (PWOUT1)* <sup>1</sup>
6	Output of the regulator (+1.8 V or +3.3 V)	26	Output of the regulator (1.8 V or 3.3 V)
7	+1.8 V	27	+1.8 V
8	+1.8 V	28	+1.8 V
9	+3.3 V	29	+3.3 V
10	+3.3 V	30	+3.3 V
11	+3.3 V	31	+3.3 V
12	GND	32	GND
13	GND	33	GND
14	GND	34	GND
15	RZ/V2M (PWEN1)* <sup>1</sup>	35	RZ/V2M (SD1FDAT2)
16	RZ/V2M (PWEN3)* <sup>1</sup>	36	RZ/V2M (SD1FDAT3)
17	RZ/V2M (PWEN4)* <sup>1</sup>	37	RZ/V2M (SD1FCMD)
18	NC	38	RZ/V2M (SD1FCLK)
19	NC	39	RZ/V2M (SD1FDAT0)
20	NC	40	RZ/V2M (SD1FDAT1)

Note 1. These pins are for use with the ISP support package.

## 4.11 Pmod Connector

The V2MEVK has one Pmod connector. The specifications are listed below.

Table 4.11-1 Pmod TYPE6 I2C CN (CN507)

Pin No.	Pmod Pin Spec.	V2MEVK Connection Destination
1	NC (INT)	RZ/V2M (PM13) via level shifter U515
2	NC (INT)	RZ/V2M (PM14) via level shifter U515
3	SCL	RZ/V2M (CSRXD2) via level shifter U513
4	SDA	RZ/V2M (CSTXD2) via level shifter U513
5	GND	GND
6	VCC	+3.3 V

## 4.12 Pin Headers

The V2MEVK has three pin headers. Their connection destinations are listed below.

Table 4.12-1 Audio Pin Header (CN504)

Pin No.	V2MEVK Connection Destination	Controlled Level Shifter	Pin No.	V2MEVK Connection Destination	Controlled Level Shifter
1	+3.3 V	—	2	+5.0 V	—
3	RZ/V2M (CSTXD2)	U513	4	+5.0 V	—
5	RZ/V2M (CSRXD2)	U513	6	GND	—
7	RZ/V2M (P06_00)* <sup>1</sup>	U513	8	RZ/V2M (PM13)	U515
9	GND	—	10	RZ/V2M (PM14)	U515
11	RZ/V2M (P06_08)* <sup>2</sup>	U517	12	RZ/V2M (AUBICK)* <sup>1</sup>	U514
13	RZ/V2M (PM8)	U518	14	GND	—
15	RZ/V2M (PM9)	U518	16	RZ/V2M (AUMCLK)* <sup>1</sup>	U515
17	+3.3 V	—	18	RZ/V2M (AUPLLCLK)* <sup>1</sup>	U515
19	RZ/V2M (CSTXD4)	U512	20	GND	—
21	RZ/V2M (CSRXD4)	U512	22	RZ/V2M (INEXINT4)	U511
23	RZ/V2M (CSSCLK4)	U512	24	RZ/V2M (CSCS4)	U512
25	GND	—	26	RZ/V2M (PM12)	U513
27	RZ/V2M (INEXINT6)	U511	28	RZ/V2M (INEXINT5)	U511
29	RZ/V2M (P06_09)* <sup>2</sup>	U517	30	GND	—
31	RZ/V2M (P06_10)* <sup>2</sup>	U517	32	RZ/V2M (INEXINT1)* <sup>1</sup>	U511
33	RZ/V2M (P06_11)* <sup>2</sup>	U517	34	GND	—
35	RZ/V2M (AULRCK)* <sup>1</sup>	U514	36	RZ/V2M (PM10)	U518
37	RZ/V2M (PM11)	U518	38	RZ/V2M (AUDI)* <sup>1</sup>	U514
39	GND	—	40	RZ/V2M (AUDO)* <sup>1</sup>	U514

Note 1. These pins are for use with the ISP support package.

Note 2. These pins are not connected in the default state.

Table 4.12-2 Audio Pin Header (CN505)

Pin No.	V2MEVK Connection Destination	Pin No.	V2MEVK Connection Destination
1	+1.8 V	2	+1.8 V
3	RZ/V2M (CSTXD5)* <sup>1</sup>	4	RZ/V2M (I2SDA1)* <sup>1</sup>
5	RZ/V2M (CSRXD5)* <sup>1</sup>	6	RZ/V2M (I2SCL1)* <sup>1</sup>
7	RZ/V2M (CSSCLK5)* <sup>1</sup>	8	RZ/V2M (I2SDA0)
9	RZ/V2M (CSCS5)* <sup>1</sup>	10	RZ/V2M (I2SCL0)
11	RZ/V2M (PM15)* <sup>1</sup>	12	RZ/V2M (PM2)* <sup>1</sup>
13	GND	14	GND

Note 1. These pins are for use with the ISP support package.

Table 4.12-3 VDD\_AUIO Pin Header (CN508)

Pin No.	V2MEVK Connection Destination
1	+3.3 V
2	VDD_AUIO (The voltage of audio interface IO (CN504))
3	+1.8 V

Note 1. For details, see section 5.1, **VDD\_AUIO Settings**.

## 4.13 Motor Connector

CN3 on the RZ/V2M Board is for the lens motor interface.

Table 4.13-1 MTR Connector (CN3)

Pin No.	V2MEVK Connection Destination	Pin No.	V2MEVK Connection Destination
1	RZ/V2M (MTDRV0)* <sup>1</sup>	31	RZ/V2M (MTDRV1)* <sup>1</sup>
2	RZ/V2M (MTDRV2)* <sup>1</sup>	32	RZ/V2M (MTDRV3)* <sup>1</sup>
3	RZ/V2M (MTDRV4)* <sup>1</sup>	33	RZ/V2M (MTDRV5)* <sup>1</sup>
4	RZ/V2M (MTDRV6)* <sup>1</sup>	34	RZ/V2M (MTDRV7)* <sup>1</sup>
5	RZ/V2M (MTDCPLS0)* <sup>1</sup>	35	RZ/V2M (MTDCPLS1)* <sup>1</sup>
6	RZ/V2M (MTDCPLS2)* <sup>1</sup>	36	RZ/V2M (MTDCPLS3)* <sup>1</sup>
7	RZ/V2M (MTCS0)* <sup>1</sup>	37	RZ/V2M (MTTXD0)* <sup>1</sup>
8	RZ/V2M (MTRXD0)* <sup>1</sup>	38	RZ/V2M (MTSCLK0)* <sup>1</sup>
9	RZ/V2M (MTCS1)* <sup>1</sup>	39	RZ/V2M (MTTXD1)* <sup>1</sup>
10	RZ/V2M (MTRXD1)* <sup>1</sup>	40	RZ/V2M (MTSCLK1)* <sup>1</sup>
11	RZ/V2M (AD1AIN0)* <sup>1</sup>	41	RZ/V2M (AD1AIN1)* <sup>1</sup>
12	RZ/V2M (AD1AIN2)* <sup>1</sup>	42	RZ/V2M (AD1AIN3)* <sup>1</sup>
13	RZ/V2M (AD1AIN4)* <sup>1</sup>	43	RZ/V2M (AD1AIN5)* <sup>1</sup>
14	RZ/V2M (AD1AIN6)* <sup>1</sup>	44	RZ/V2M (AD1AIN7)* <sup>1</sup>
15	RZ/V2M (IMSHUT0)* <sup>1</sup>	45	RZ/V2M (IMSHUT1)* <sup>1</sup>
16	RZ/V2M (IMSTSIG0)* <sup>1</sup>	46	RZ/V2M (IMSTSIG1)* <sup>1</sup>
17	+3.3 V	47	+3.3 V
18	+1.8 V	48	+1.8 V
19	GND	49	GND
20	GND	50	GND
21	RZ/V2M (PWEN1) * <sup>1</sup>	51	GND
22	RZ/V2M (PWEN3) * <sup>1</sup>	52	GND
23	RZ/V2M (PWEN4) * <sup>1</sup>	53	GND
24	RZ/V2M (PM14)	54	NC
25	RZ/V2M (CSCS4)	55	NC
26	RZ/V2M (CSSCLK4)	56	NC
27	RZ/V2M (CSRXD4)	57	NC
28	RZ/V2M (CSTXD4)	58	NC
29	NC	59	NC
30	NC	60	NC

Note 1. These pins are for use with the ISP support package.

## 5. Board Settings

This section describes the board settings for the V2MEVK.

Changing the board settings for the items other than those stated in this section is prohibited.

When changing the switching resistor settings, be sure to also check the related resistors so that there is no signal conflict or short-circuit. Since most of the pins of the RZ/V2M have multiple functions, some of the peripheral devices are used exclusively of each other.

For the detailed information, refer to *the RZ/V2M User's Manual: Hardware*.

### 5.1 VDD\_AUIO Settings

The shunt connector for CN508 sets the voltage of audio interface IO (CN504).

Table 5.1-1 RZ/V2M Board Switching Resistor Settings

State	Setting
1-2 short (initial state)	VDD_AUIO is +3.3 V.
2-3 short	VDD_AUIO is +1.8 V.

## 6. Supplementary Note

### 6.1 Usage Note of USB Type-C (CN6)

When connecting the USB Type-C cable to CN6, turn on SW501 and power on RZ/V2M before connecting it.

### 6.2 Constraints of Audio Interface (CN504)

Since the CN504 is connected to the level shifters, FXMAR2104 and NLSV4T244E, the specifications are limited.

- The operating frequency of CSI4 is up to 12 MHz when the voltage setting of CN508 is 3.3 V and up to 8 MHz when the voltage setting of CN508 is 1.8 V. In addition, the drive strength should be set X6 when using 12 MHz.
- When using PWM, only ch8 to ch11 can be used. Using the other channels is prohibited.
- When using GMCLK0, the motor connector (CN3) should be used and U515 is disabled (SW512[5] is off).

### 6.3 Power Supply ICs of V2MEVK

In consideration of the evaluation usage, the power supply ICs of V2MEVK are selected with a margin. The power supply ICs that suits the user circuit are recommended.

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