



MaaXBoard Mini

Hardware User Manual

V0.0

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Revision History

Rev.	Description	Author	Date
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Chapter 1 Product Overview

1.1 Brief Introduction

MaaXBoard Mini is a development board for makers, designed by Avnet Manufacturing Services. The MaaXBoard Mini is a single board computer based on NXP IMX8M Mini SOC series, which can be used for the areas such as medical instruments, video surveillance, communications, IOT, makers and so on.

In the design of a compact body size, it is provided with rich resources of peripheral interface, include: Gigabit Ethernet interface, USB 2.0 host interface, MIPI-DSI interface, MIPI-CSI interface, Micro SD Card interface, UART interface, GPIO interface, Wi-Fi/Bluetooth interface, etc.

1.2 System Block Diagram

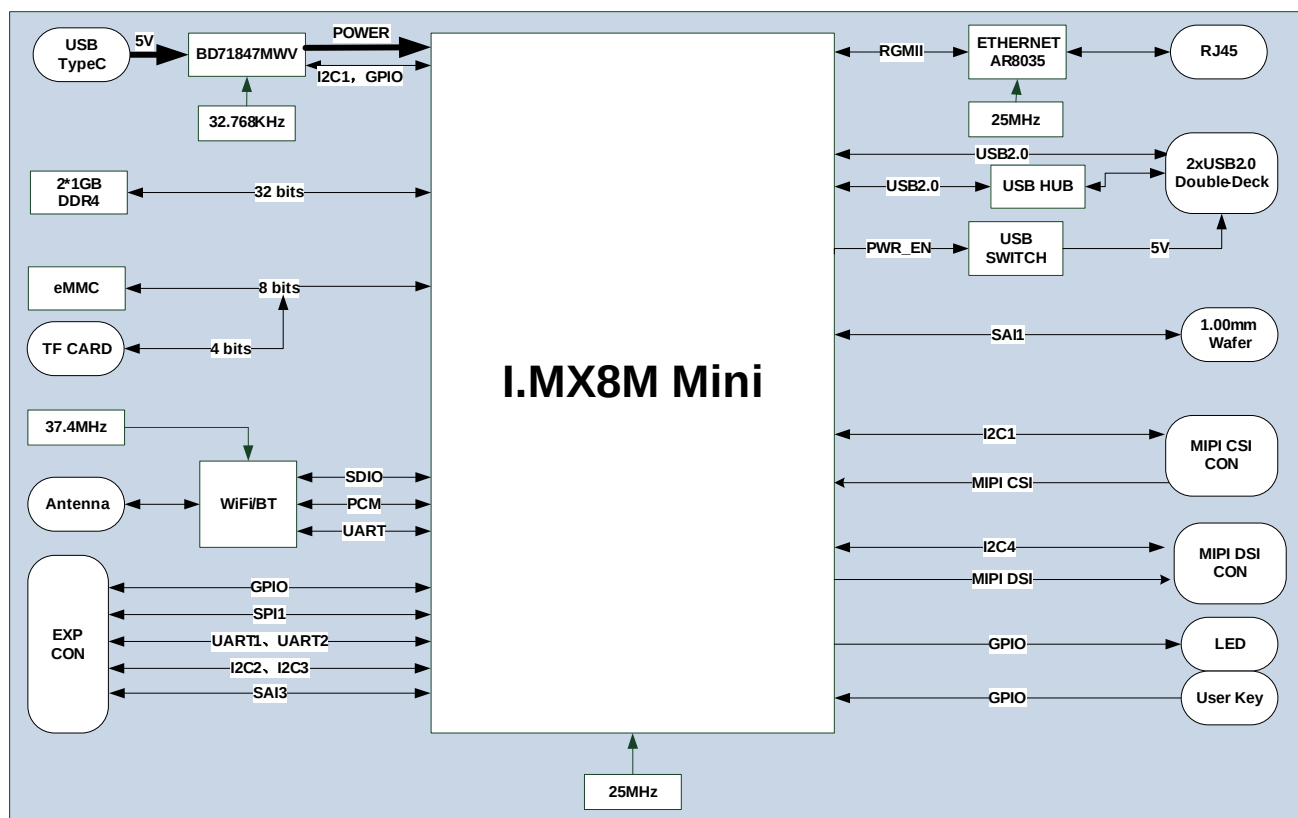


Figure 1.1 MaaXBoard Mini System Block Diagram

1.3 Packing List

- ◆ 1 × MaaXBoard Mini
- ◆ 1 × Desiccant
- ◆ 1 × Anti-static Bag
- ◆ 1 × Safety Flyer
- ◆ 1 × Quick Start Guide
- ◆ 1 × Box

1.4 Product Specifications

- ◆ **General Specifications:**
 - ◆ Operating Temperature: 0~70°C (When the CPU loads heavy, need a heatsink)
 - ◆ Power Supply: 5V/3A (Power Adapter)
 - ◆ Operating Humidity: 20% ~ 90%(non-condensing)
 - ◆ Dimensions: 85mm × 55mm
 - ◆ PCB Layers: 8Layers
- ◆ **Communication Interface:**
 - ◆ 1 × 40Pin IO Interface (Expand I2C, SPI, UART, I2S Interface)
 - ◆ 1 × MIPI-CSI Camera Interface
 - ◆ 1 × MIPI-DSI Display Interface
 - ◆ 1 × Gigabit Ethernet interface (RJ45)
 - ◆ 4 × USB2.0 Host
 - ◆ 1 × Micro SD Card (TF Card) Interface
 - ◆ 1 × 8bits and 1x 7bits GPIO Interface (Support Audio peripheral expand)
 - ◆ 1 × Power Interface (USB Type C Connector)
 - ◆ 1 × Power Button
 - ◆ 2 × User Button
 - ◆ 1 × Wi-Fi/Bluetooth
 - ◆ 2 × User LED

1.5 Other Customer Provide Parts

To use the various functions of MaaXBoard Mini, customer should also provide the following parts which are not contained in MaaXBoard Mini Packages.

- ◆ 1 × USB to serial cable (TTL)
- ◆ 1 × 1Gbps Network Cable
- ◆ 1 × Camera Module
- ◆ 1 × MIPI-DSI Displayer
- ◆ 1 × 5V/3A Power Supply (USB Type C Interface)
- ◆ Other tools needed to implement related function

1.6 Interface Locations

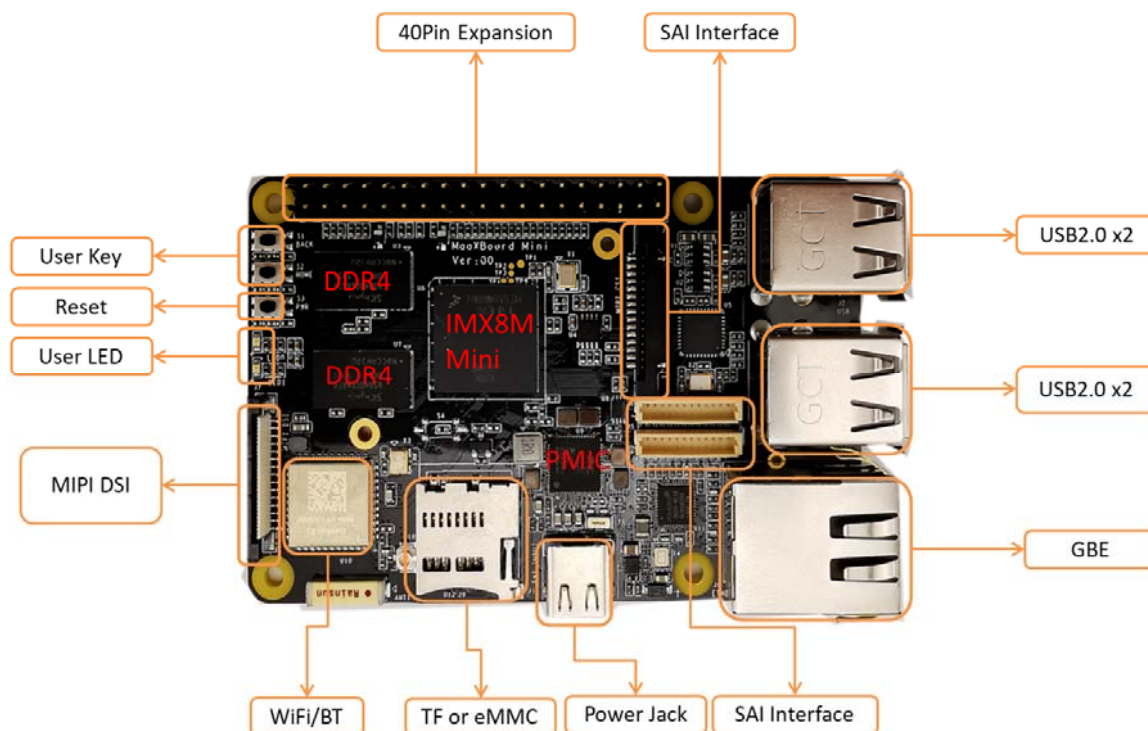


Figure 1.2MaaXBoard Mini Top View

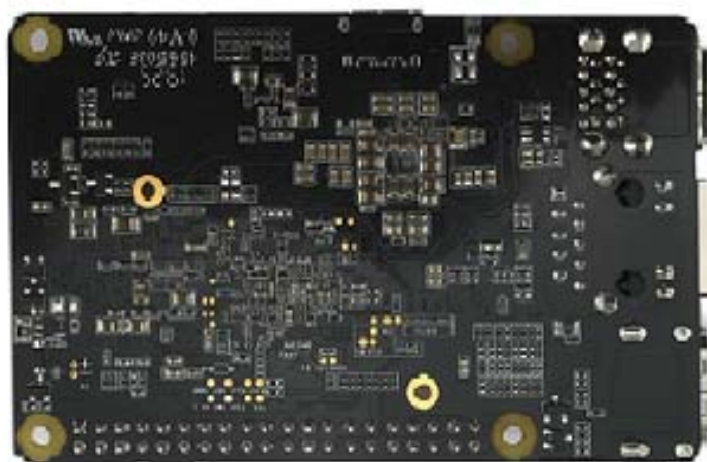


Figure 1.3MaaXBoard Mini Bottom View

1.7 Product Dimensions(mm)

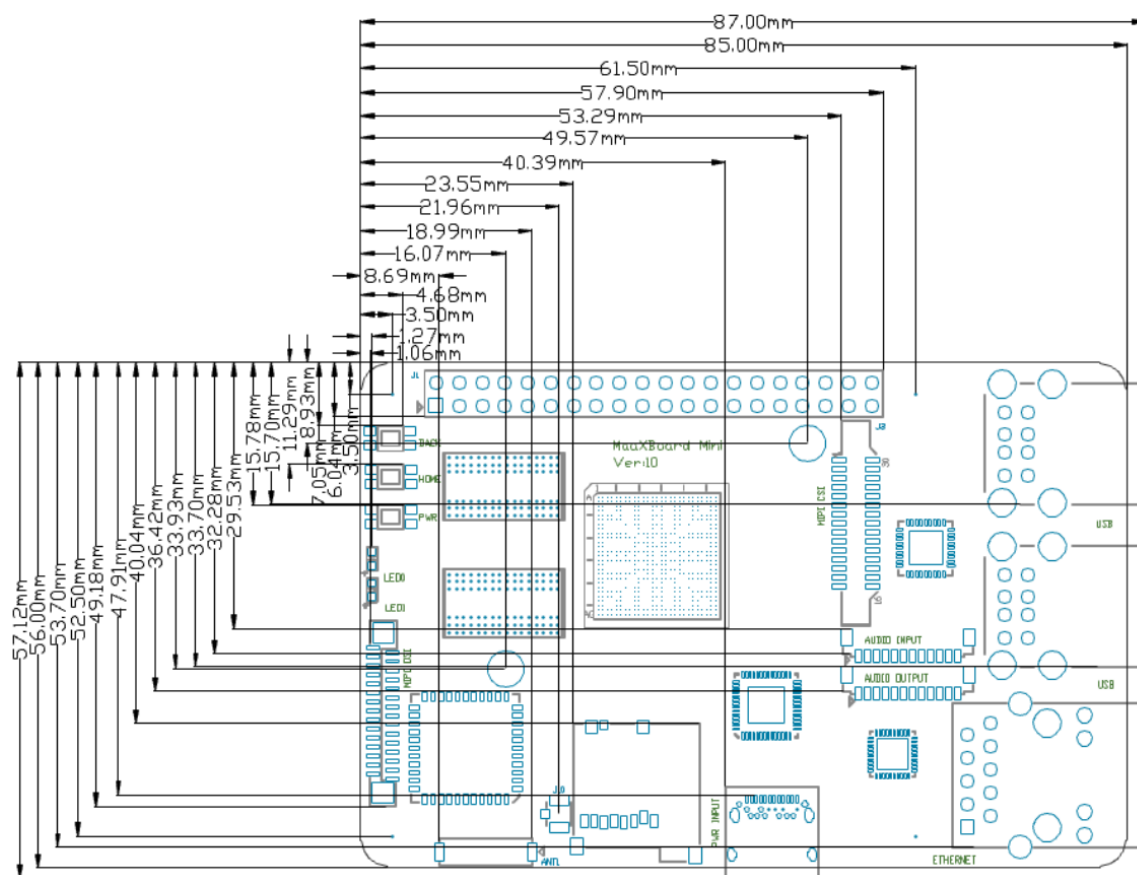


Figure 1.4 Product Dimensions

1.8 Height Distribution (mm)

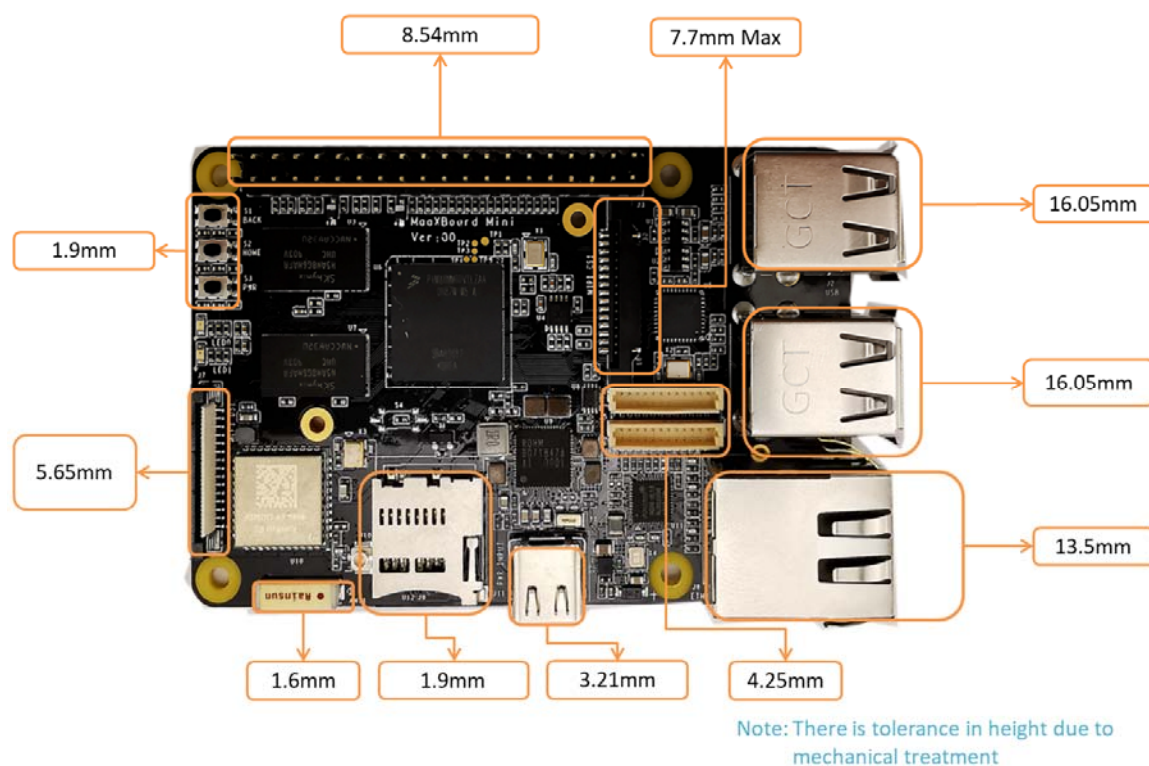


Figure 1.5Height Distribution

Note: There is tolerance in height due to mechanical treatment.

Chapter 2 Introduction of Hardware System

This chapter will introduce the structure, expansion and peripheral interfaces of MaaXBoard Mini hardware system in details.

2.1 MaaXBoard Mini Hardware Installation and Start up

2.1.1 Installation

Before power up MaaXBoard Mini, you need to connect all necessary peripheral devices, then power on the board.

2.1.2 Booting Configuration

According to the manufactured configuration, MaaXBoard Mini supports two boot mode: boot from Micro SD card or boot from eMMC. These two boot mode is mutual exclusion. If users choose to boot from Micro SD card, they should burn the latest image to the card on PC, then install the card to the board, refer to the software user manual. If users choose to boot from eMMC, just power on the board.

Note: If the eMMC firmware is destroyed by accident, users could update the eMMC image in USB Download mode. Please operate carefully and follow the steps in software user manual strictly to avoid damaging the product.

2.2 Details of Interfaces

This section will introduce the constructions, principles, interface definitions and considerations of use of MaaXBoard Miniperipherals in detail, so that users may have a deep understanding of the hardware circuitry of the board.

2.2.1 POWER IN

MaaXBoard Mini use a USB Type C interface as the +5V power in. Note that the USB Type C interface only provides power supply function, do not support data communication.

The Power adapter should support 3A or above current output.

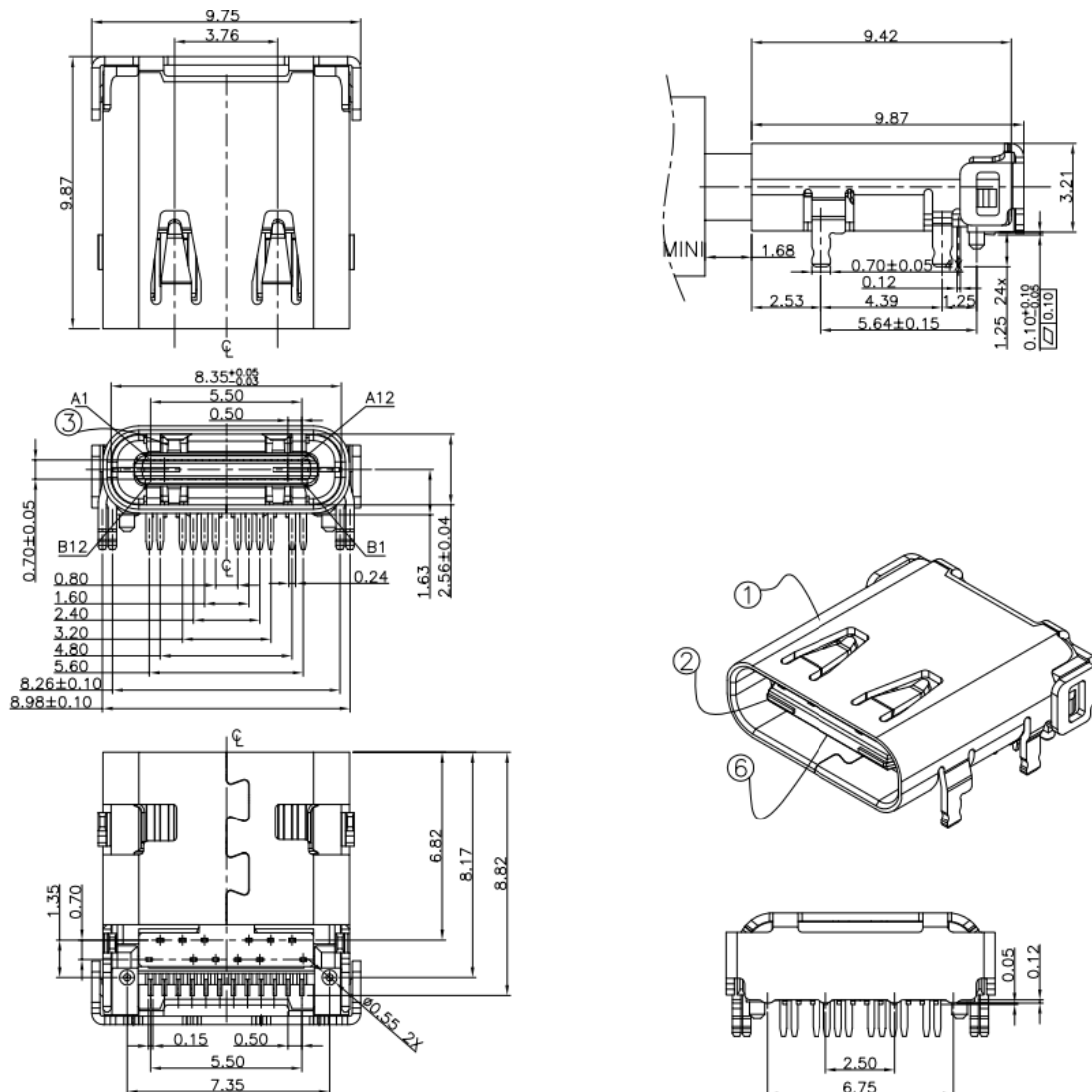


Figure 2.1 USB Type C Slot

2.2.2 Button

There are 3 buttons on the MaaXBoard Mini, S3 as the system power button for the board, S1 and S2 as user button.

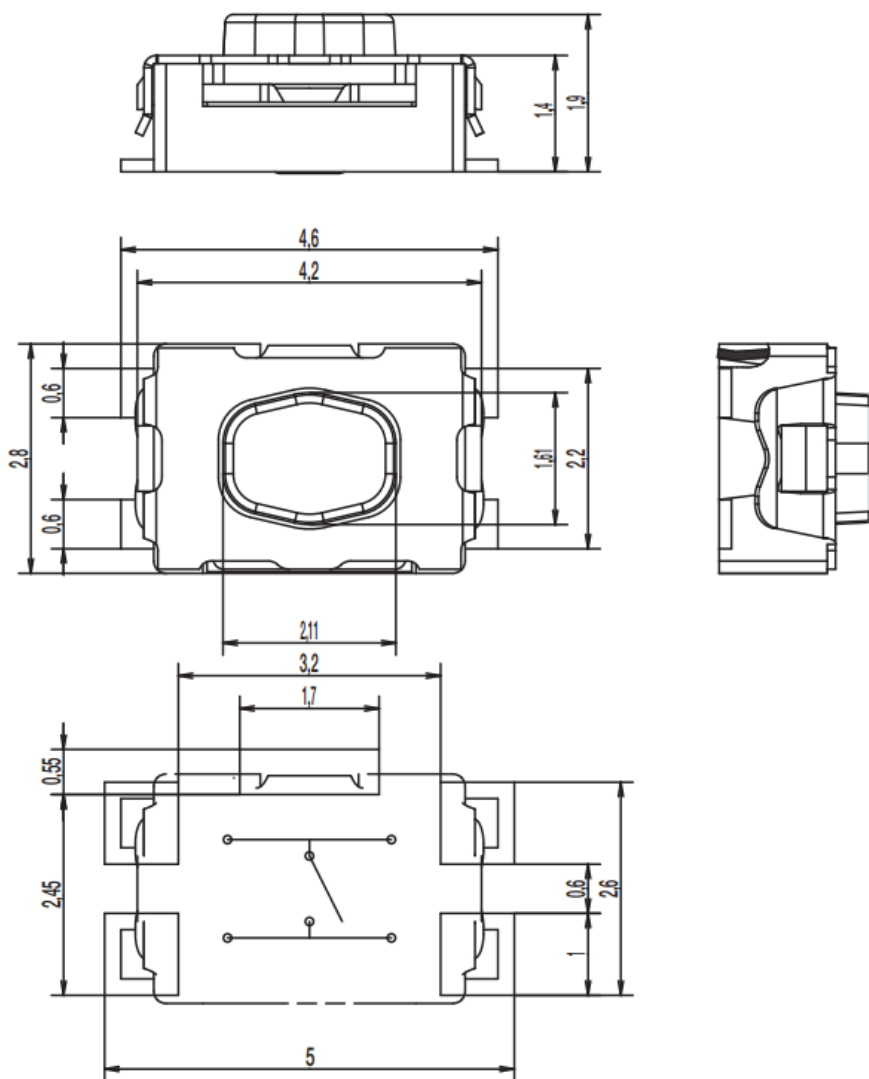


Figure 2.2Button

2.2.3 USB Host

MaaXBoard Mini provides two Double-layer USB Host connector (J2, J4), the USB ports can provide full speed USB2.0 data communication function, used to extend external devices in USB protocol.

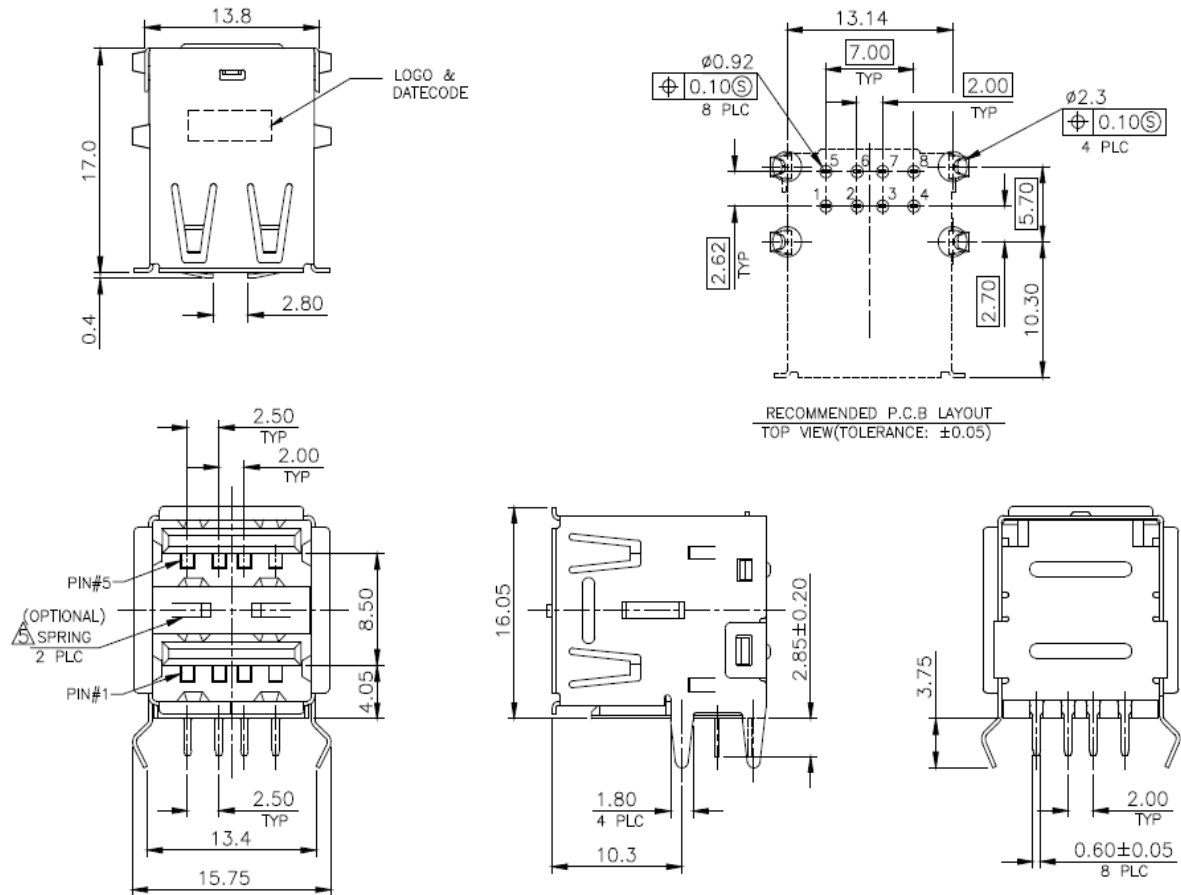


Figure 2.3 Double-layer USB Host connector

Table 2.1 USB Pin Definition

USB Connector(J2)				
Pin	Signal Description	Ball	Description	Signal Type
1	VBUS1			Down layer 5V Power
2	USB1_HOST_DN	A22	USB1 PHY USB2.0 differential signal pair negative	Differential signal
3	USB1_HOST_DP	B22	USB1 PHY USB2.0 differential signal pair positive	
4	GND			Down layer ground
5	VBUS			Up layer 5V Power
6	USB_HOST_DN		USB2.0 host differential signal pair negative	Differential signal
7	USB_HOST_DP		USB2.0 host differential signal pair positive	
8	GND			Up layer ground
S1	Case Earth			Earth Ground
S2	Case Earth			
S3	Case Earth			
S4	Case Earth			

Table 2.2USB Pin Definition

USB Connector(J4)				
Pin	Signal Description	Ball	Description	Signal Type
1	VBUS			Down layer 5V Power
2	USB_HOST_DN		USB2.0 host differential signal pair negative	Differential signal
3	USB_HOST_DP		USB2.0 host differential signal pair positive	
4	GND			Down layer ground
5	VBUS			Up layer 5V Power
6	USB_HOST_DN		USB2.0 host differential signal pair negative	Differential signal
7	USB_HOST_DP		USB2.0 host differential signal pair positive	
8	GND			Up layer ground
S1	Case Earth			Earth Ground
S2	Case Earth			
S3	Case Earth			
S4	Case Earth			

2.2.4 RJ-45

J8 is the physical interface of Gigabit Ethernet, the interface information is shown in the following picture:

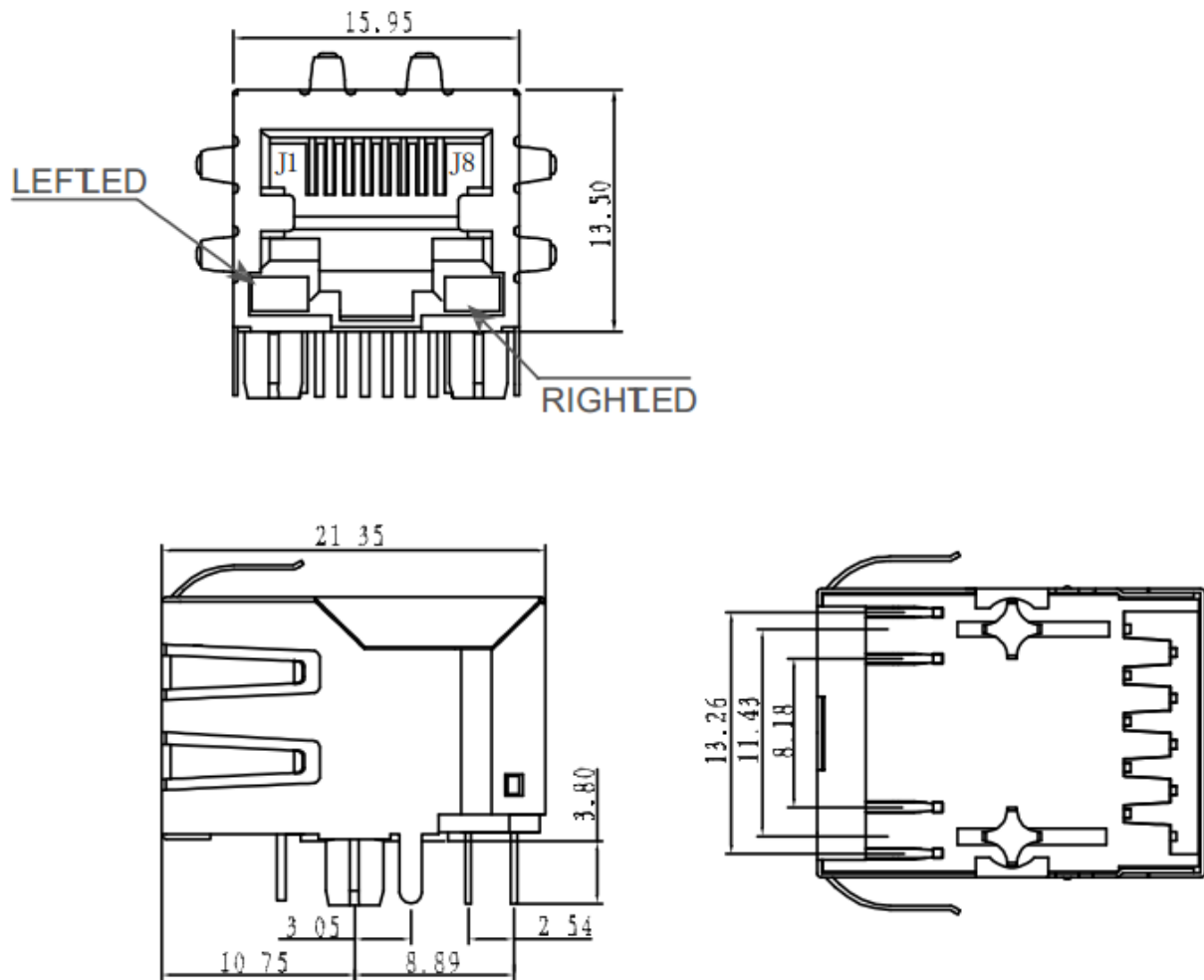


Figure 2.4RJ45 Connector

Table 2.1 Ethernet Interface Pin Definition

RJ45 Ethernet(J8)				
Pin	Signal Name	Ball	Description	Signal Type
1	MIIA_TRP0		Media-dependent interface 0 positive	Differential signal
2	MIIA_TRN0		Media-dependent interface 0 negative	
3	MIIA_TRP1		Media-dependent interface 1 positive	
4	MIIA_TRN1		Media-dependent interface 1 negative	

RJ45 Ethernet(J8)				
Pin	Signal Name	Ball	Description	Signal Type
5	NC		No connection	
6	NC		No connection	
7	MIIA_TRP2		Media-dependent interface 2 positive	Differential signal
8	MIIA_TRN2		Media-dependent interface 2 negative	
9	MIIA_TRP3		Media-dependent interface 3 positive	
10	MIIA_TRN3		Media-dependent interface 3 negative	
11	MIIA_LED_LINK/ Pull-up		Parallel LED output for data transmit	IO
12	Pull-down/ MIIA_LED_LINK			
13	MIIA_LED_ACT		Parallel LED output for 10/100/1000 BASE-T activity, active blinking	
14	Pull-up			
15	GND		Ground	Ground
16	GND		Ground	

2.2.5 Camera

J3 on the MaaXBoard Mini is a 15-pin FPC connector that supports MIPI 2Lane Camera input.

The following picture shows the information of J3:

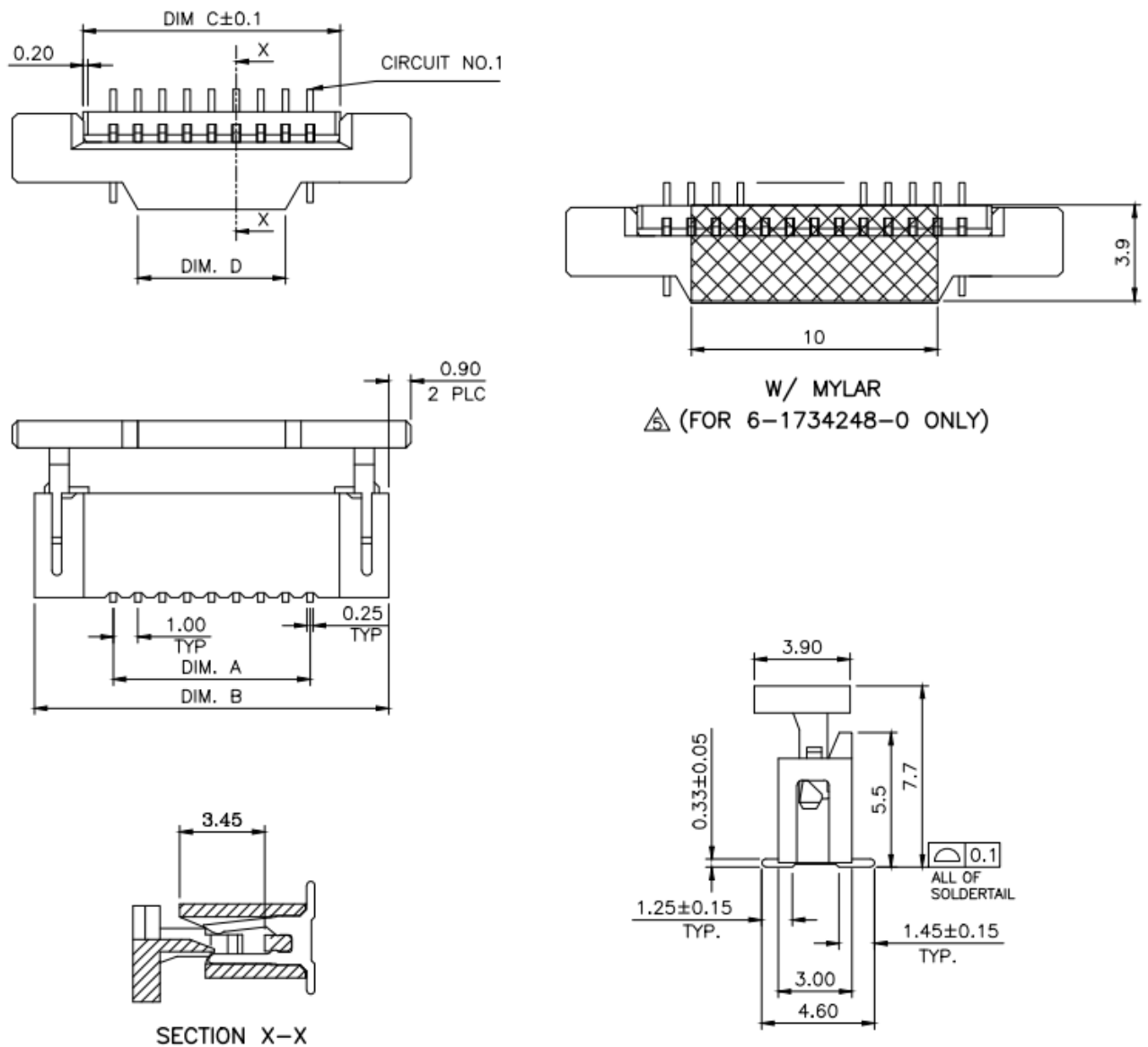


Figure 2.5 Camera Connector

Table 2.2 Camera Connector Pin Definition

Camera(J3)				
Pin	Signal Description	Ball		Signal Type
1	GND			Ground
2	CSI_DN0	A14	MIPI CSI received differential signal 0 pair negative	Differential signal
3	CSI_DP0	B14	MIPI CSI received differential signal 0 pair positive	
4	GND			Ground
5	CSI_DN1	A15	MIPI CSI received differential signal 1 pair negative	Differential signal
6	CSI_DP1	B15	MIPI CSI received differential signal 1 pair positive	
7	GND			Ground
8	CSI_CN	A16	MIPI CSI received differential clock pair negative	Differential signal
9	CSI_CP	B16	MIPI CSI received differential clock pair positive	
10	GND			Ground
11	CAM_PWREN	AD18	Output for powering sensor	Output
12	CAM_SPARE	AC14	Output for resetting sensor	Output
13	I2C1_SCL	E9	I2C1 clock output	Output

Camera(J3)				
14	I2C1_SDA	F9	I2C1 data	IO
15	NVCC_3V3			Power
16	NC		No connection	
17	NC		No connection	
18	NC		No connection	
19	NC		No connection	
20	NC		No connection	
21	NC		No connection	
22	NC		No connection	
23	NC		No connection	
24	NC		No connection	
25	NC		No connection	
26	NC		No connection	
27	NC		No connection	
28	NC		No connection	
29	NC		No connection	
30	NC		No connection	

2.2.6 40Pin Expansion Pin Header

J1 on the MaaXBoard Mini is a 40 pin Extend Interface, used to support external devices.

The following picture shows the information of the 40 Pins expansion connector J1:

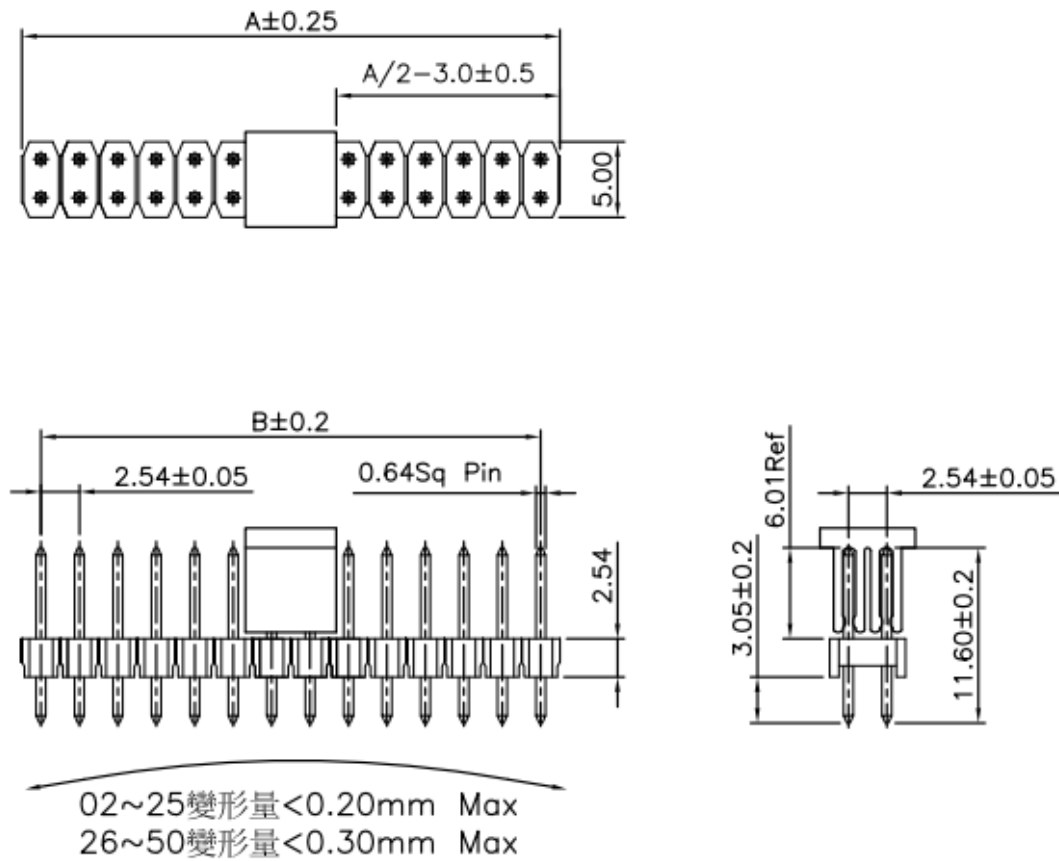


Figure 2.62.54mm Double Row Pin Header

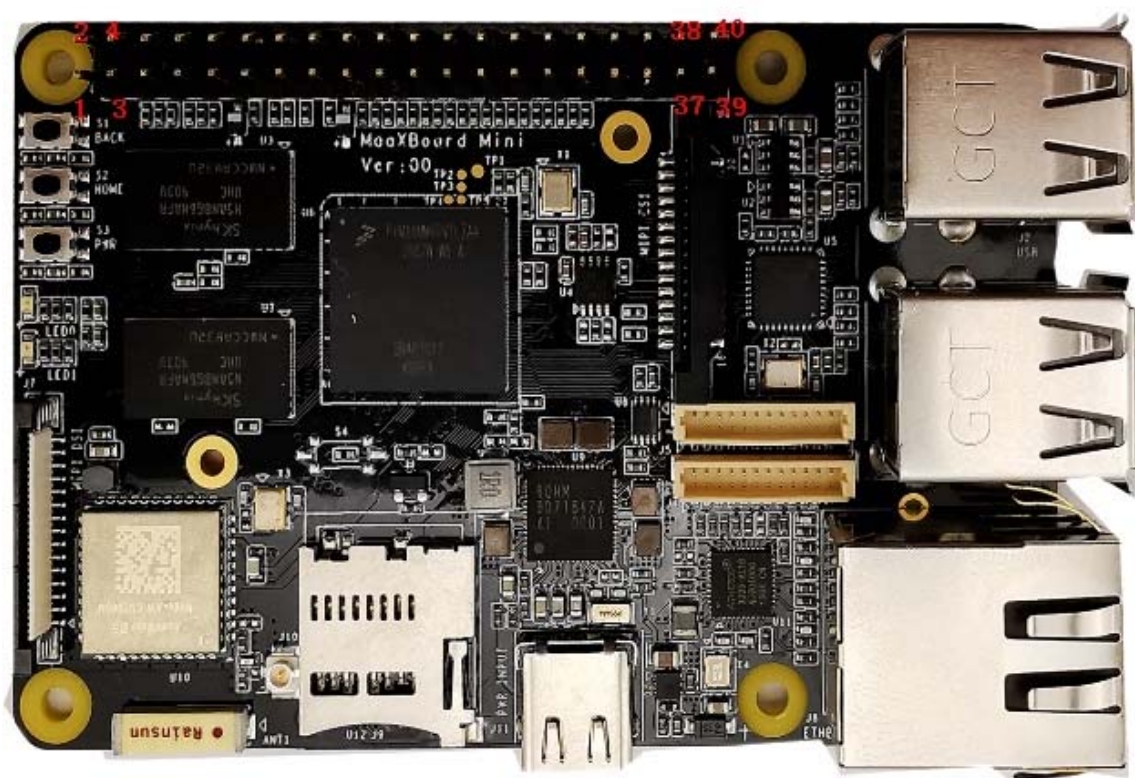


Figure 2.740Pin Pin Header Pin1 Position

Table 2.3 40 Pin Expansion Pin Header Definition

Expansion(J1)				
Pin	Signal Description	Ball		Signal Type
1	NVCC_3V3		3.3V/500mA output	Power
2	5V_IN		5V power supply input or output	Power
3	I2C2_SDA	D9	General-purpose input/output	IO
4	5V_IN		5V power supply input or output	Power
5	I2C2_SCL	D10	General-purpose input/output	IO
6	GND		Ground	Ground

Expansion(J1)				
7	GPIO1_IO14	AC9	General-purpose input/output	IO
8	UART1_TXD	F13	General-purpose input/output	
9	GND		Ground	Ground
10	UART1_RXD	E14	General-purpose input/output	IO
11	GPIO3_IO17	R26	General-purpose input/output	
12	SAI3_TXC	AG6	General-purpose input/output	
13	GPIO3_IO04	L27	General-purpose input/output	
14	GND		UART5 transmit Data	Ground
15	GPIO3_IO18	R27	General-purpose input/output	IO
16	UART2_RXD	F15	General-purpose input/output	
17	NVCC_3V3		3.3V/500mA output	Power
18	UART2_TXD	E15	General-purpose input/output	IO
19	ECSPI1_MOSI	B7	General-purpose input/output	
20	GND		Ground	Ground
21	ECSPI1_MISO	A7	General-purpose input/output	IO
22	GPIO5_IO28	F19	General-purpose input/output	
23	ECSPI1_SCLK	D6	General-purpose input/output	
24	ECSPI1_SS0	B6	General-purpose input/output	

Expansion(J1)				
25	GND		Ground	Ground
26	GPIO1_IO01	AF14	General-purpose input/output	IO
27	I2C3_SDA	F10	General-purpose input/output	
28	I2C3_SCL	E10	General-purpose input/output	
29	GPIO1_IO15	AB9	General-purpose input/output	
30	GND		Ground	Ground
31	SAI2_MCLK	AD19	General-purpose input/output	IO
32	GPIO5_IO05	AF8	General-purpose input/output	
33	GPIO5_IO04	AG9	General-purpose input/output	
34	GND		Ground	Ground
35	SAI3_RXFS	AG8	General-purpose input/output	IO
36	GPIO3_IO16	P26	General-purpose input/output	
37	GPIO1_IO10	AD10	General-purpose input/output	
38	SAI3_RXD	AF7	General-purpose input/output	
39	GND		Ground	Ground
40	SAI3_TXD	AF6	General-purpose input/output	IO

Note:According to NXP, IO internal pull up/down is not supported. Users need to disable the internal pull up/down through software and use external pull up/down resistors instead.

2.2.7 Wi-Fi/Bluetooth (Optional)

MaaXBoard Mini employs a Wi-Fi/Bluetooth module to support Wi-Fi 2.4G/5G Frequency, and Bluetooth V4.2 standard. The Wi-Fi/Bluetooth antennas have two type: onboard ceramic antenna or IPEX antenna.

◆ IPEX antenna (customized version)

IPEX antenna is empty welding in default, if the customer needs to use this interface, please contact the Avnet Manufacturing Services to customize.

IPEX antenna connector's specification as follows:

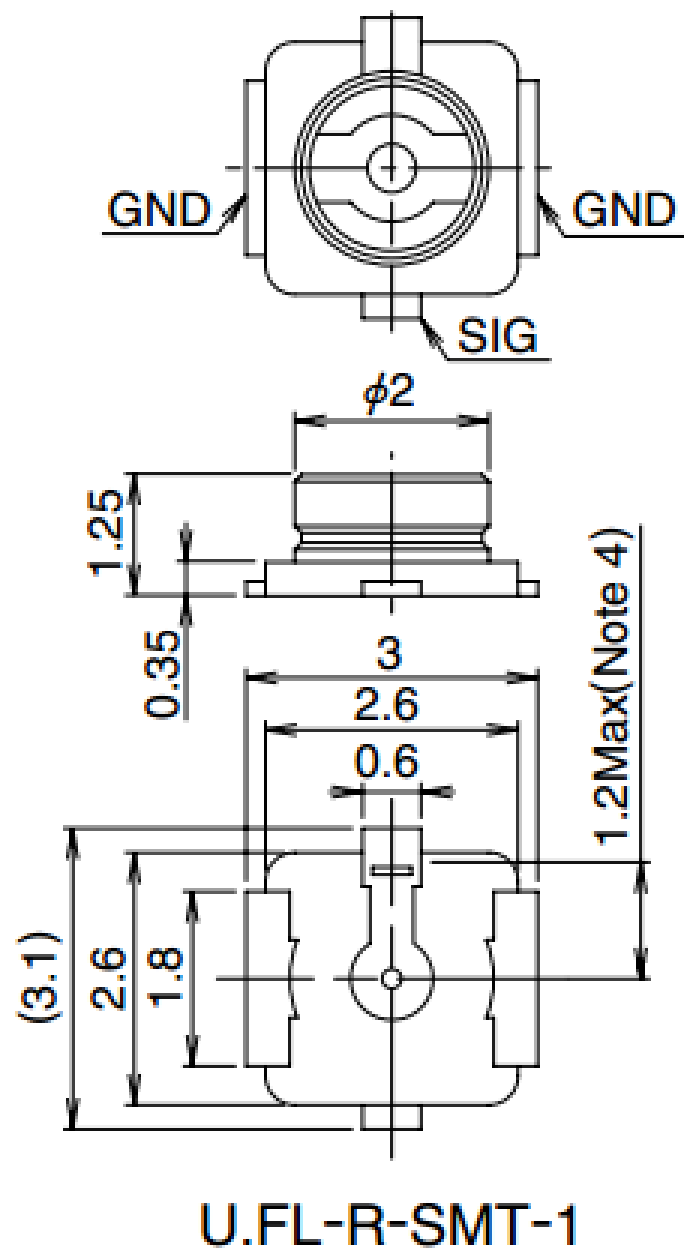


Figure 2.8 IPEX Antenna Connector

Table 2.4 Antenna Connector Pin Definition

Antenna(J10)			
Pin	Signal Description	Ball	Signal Type
1	IN	Data transmit	Antenna
2	GND		Ground
3	GND		

- ◆ Onboard Ceramic Antenna (Default)
Onboard Ceramic Antenna's specification as follows:



P/N: AN-1003

Frequency: 2.45 / 5 GHz

Dimension: 10.0 x 3.0mm

Figure 2.9 Onboard Ceramic Antenna

2.2.8 Micro SD Card (TF Card)

Micro SD card(TF Card) is used to start the code, the program system curing storage, or provide external storage function.

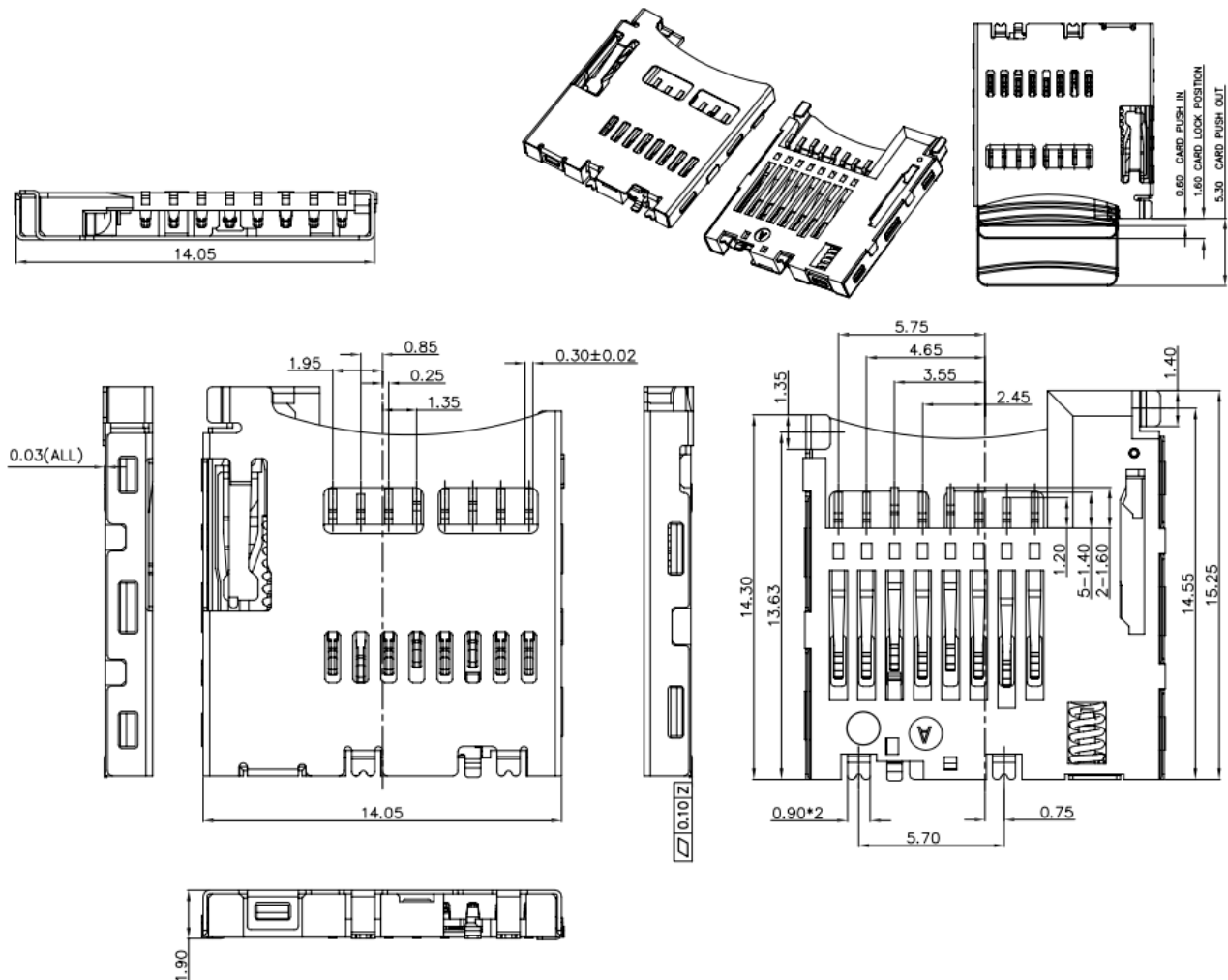


Figure 2.3 Micro SD Card Slot

Table 2.5 Micro SD Card Slot Pin Definition

TF card connector(J9)				
Pin	Signal Description	Ball		Signal Type
1	SD1_ DATA2	T27	MMC Data bit2	IO
2	SD1_ DATA3	T26	MMC Data bit3	
3	SD1_ CMD	V27	MMC command	
4	NVCC_3V3		3.3V power supply	Power
5	SD1_ CLK	V26	MMC reference clock	IO
6	GND			Ground
7	SD1_ DATA0	Y27	MMC Data bit0	IO
8	SD1_ DATA1	Y26	MMC Data bit1	
9	SD1_ DETECT	AG11	MMC card detect	
10	SHELL			SHELL
11	SHELL			
12	SHELL			
13	SHELL			

2.2.9 Extend Interface J6

J6on the MaaXBoard Mini is a 12 pin Wafer connector, used to support GPIO function.

The following picture shows the information of the 12 pin Wafer connector J6:

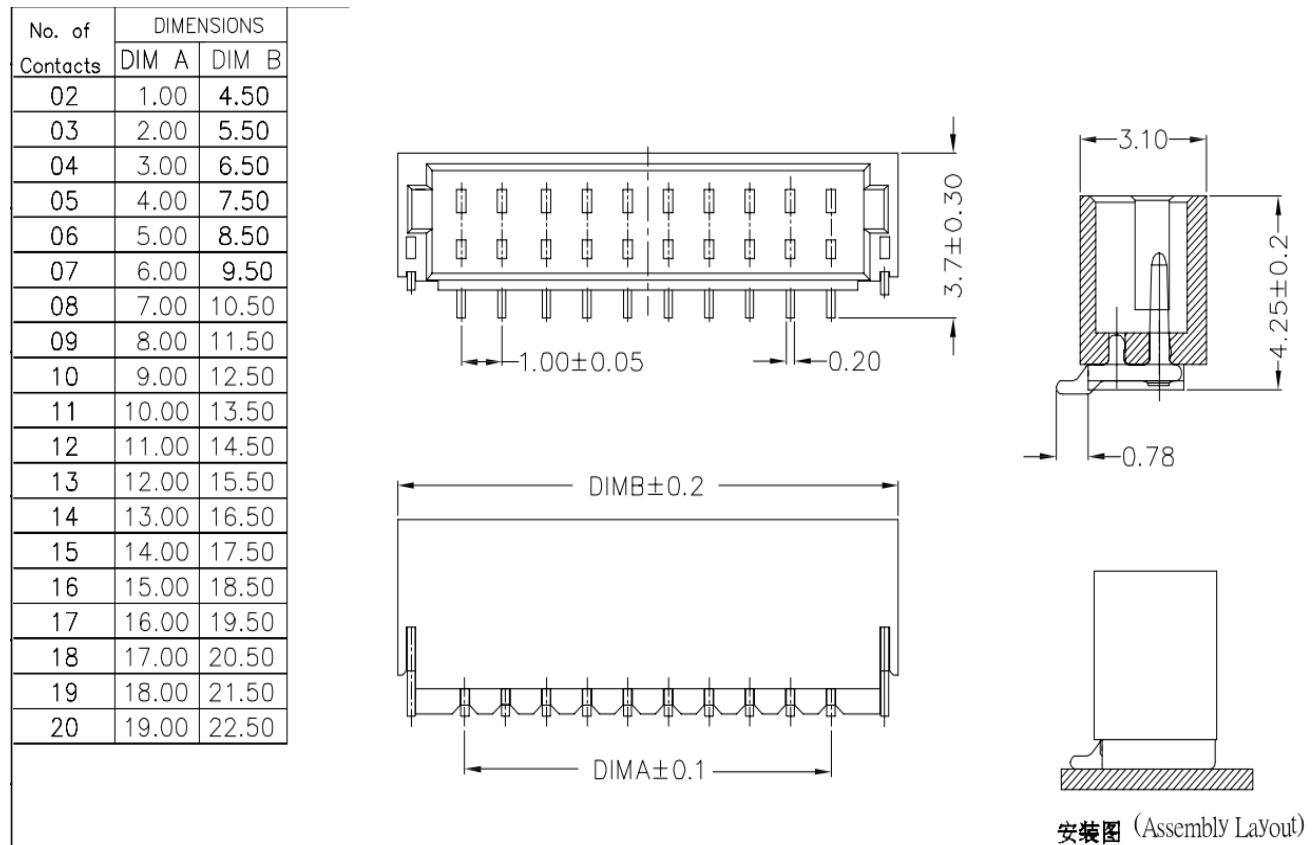


Figure 2.412Pin Wafer Connector

Table 2.612 Pin Definition

Expansion Interface1 (J6)				
Pin	Signal	Ball	Description	Signal Type
1	SAI1_MCLK	AB18	SAI1 master clock output	IO
2	GND		Ground	Ground
3	SAI1_TXD7	AF23	SAI1 transmit data bit7	IO
4	SAI1_TXD6	AG23	SAI1 transmit data bit6	
5	SAI1_TXD5	AF22	SAI1 transmit data bit5	
6	SAI1_TXD4	AG22	SAI1 transmit data bit4	
7	SAI1_TXD3	AF21	SAI1 transmit data bit3	
8	SAI1_TXD2	AG21	SAI1 transmit data bit2	
9	SAI1_TXD1	AF20	SAI1 transmit data bit1	
10	SAI1_TXD0	AG20	SAI1 transmit data bit0	
11	SAI1_TXFS	AB19	SAI1 transmit L/R clock	
12	SAI1_TXC	AC18	SAI1 transmit bit clock	

2.2.10 Extend Interface J5

J5 on the MaaXBoard Mini is a 12 pins Wafer connector, used to support GPIO function.

The following picture shows the information of the 12 pins Wafer connector J5:

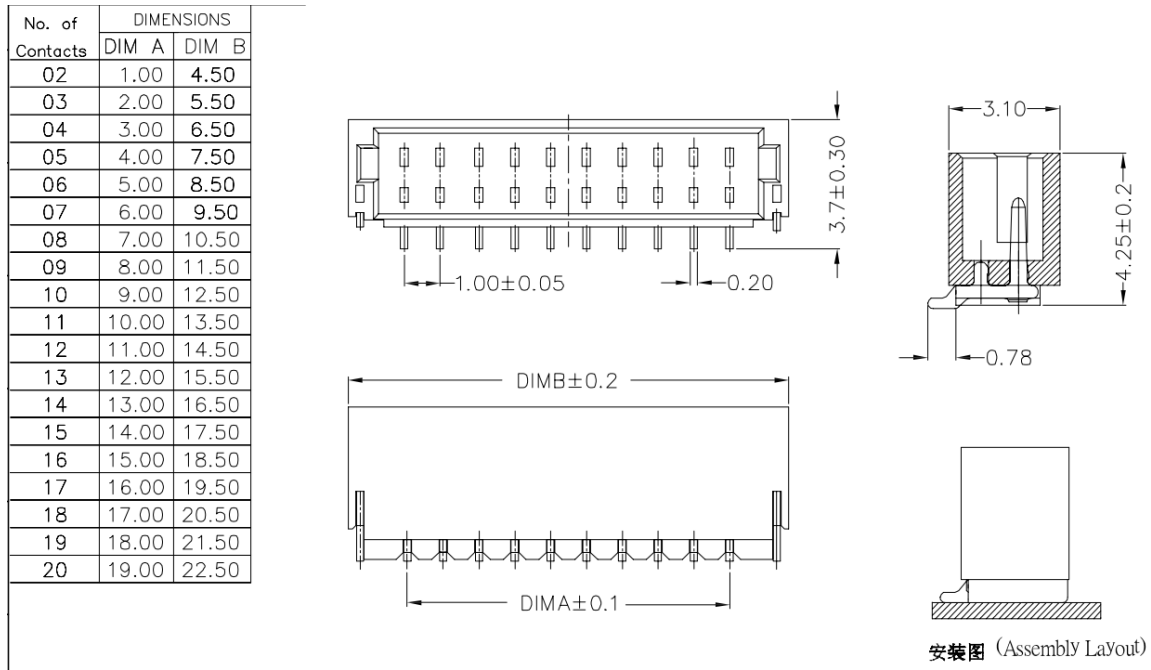


Figure 2.5 12Pin Wafer Connector

Table 2.7 J23 Pin Definition

Expansion Interface1 (J5)				
Pin	Signal	Ball	Description	Signal Type
1	NVCC_3V3		3.3V/500mA power output	Power
2	GND		Ground	Ground
3	SAI1_MCLK	AB18	SAI1 master clock output	IO
4	SAI1_RXD0	AG15	SAI1 receive data bit0	
5	SAI1_RXD1	AF15	SAI1 receive data bit1	
6	SAI1_RXD2	AG17	SAI1 receive data bit2	
7	SAI1_RXD3	AF17	SAI1 receive data bit3	
8	SAI1_RXD4	AG18	SAI1 receive data bit4	
9	SAI1_RXD5	AF18	SAI1 receive data bit5	

Expansion Interface1 (J5)				
10	SAI1_RXD6	AG19	SAI1 receive data bit6	
11	SAI1_RXFS	AG16	SAI1 receive L/R clock	
12	SAI1_RXC	AF16	SAI1 receive bit clock	

2.2.11 MIPI-DSI

J7 on the MaaXBoard Mini is a 30 pin FPC connector that supports MIPI-DSI high-definition and small size screen.

The following picture shows the information of 30-pin FPC connector J7:

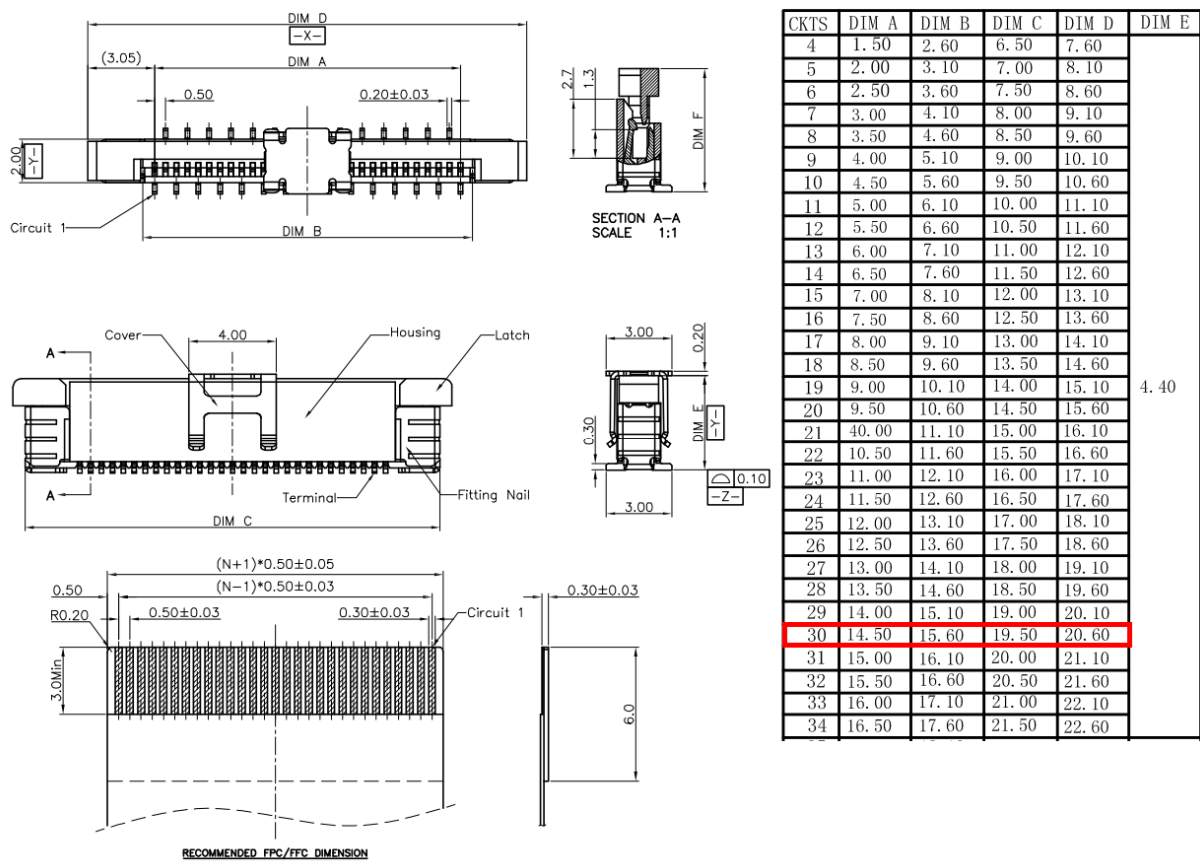


Figure 2.630Pin FPC Connector (MIPI-DSI)

Table 2.8J7 Pin Definition

30Pin FPC Connector (J7)				
Pin	Signal	Ball	Description	Signal Type
1	GND		Ground	Ground
2	DSI_DP3	B13	MIPI DSI transmit differential signal 3 pair	Differential output
3	DSI_DN3	A13	MIPI DSI transmit differential signal 3 pair	
4	GND		Ground	Ground
5	DSI_DP2	B12	MIPI DSI transmit differential signal 2 pair	Differential output
6	DSI_DN2	A12	MIPI DSI transmit differential signal 2 pair	
7	GND		Ground	Ground
8	DSI_DP1	B10	MIPI DSI transmit differential signal 1 pair	Differential output
9	DSI_DN1	A10	MIPI DSI transmit differential signal 1 pair	
10	GND		Ground	Ground
11	DSI_DP0	B9	MIPI DSI transmit differential signal 0 pair	Differential output
12	DSI_DN0	A9	MIPI DSI transmit differential signal 0 pair	
13	GND		Ground	Ground
14	DSI_CKP	B11	MIPI DSI clock differential signal pair positive	Differential output
15	DSI_CKN	A11	MIPI DSI clock differential signal pair	
16	GND		Ground	Ground
17	DSI_TS_RST	AC15	Touch screen reset output	Output
18	DSI_TS_nINT	AB15	Touch screen interrupt input	Input
19	I2C4_SDA	E13	I2C port 4 data	IO
20	I2C4_SCL	D13	I2C port 4 clock	Output
21	DSI_EN	AF10	MIPI DSI backlight enable output	Output
22	DSI_BL_PWM	AD6	MIPI DSI backlight PWM output	Output
23	GND		Ground	Ground

30Pin FPC Connector (J7)				
24	NC		No connection	
25	NC		No connection	
26	GND		Ground	Ground
27	NC		No connection	
28	VSYS		5V power output	Power
29	VSYS		5V power output	
30	VSYS		5V power output	

2.3 Introduction of Peripheral Chips

2.3.1 AR8035

AR8035 Integrated 10/100/1000 Mbps Ethernet Transceiver. The AR8035 is a single port 10/100/1000 Mbps Tri-speed Ethernet PHY, which provides a low power, low BOM (Bill of Materials) cost solution for comprehensive applications including consumer, enterprise, carrier and home networks, etc.

AR8035 supports IEEE 802.3az Energy Efficient Ethernet (EEE) standard and Atheros proprietary SmartEEE, which allows legacy MAC/SoC devices without 802.3az support to function as the complete 802.3az system.

2.3.2 BD71837

BD71847MWV integrated all the power voltage for iMX8M Mini, include the peripheral power voltage, which significantly reduce the difficulty when customer develop the system, shorten the development cycle and the manufacture period of the product.

BD71847MWV is Power Management IC specially designed for iMX8MMini series SOC by ROHM Semiconductor. It integrates 8 Buck regulators and 7 LDOs, support the processor to dynamically adjust the power to achieve the goal of energy saving. The chip provides 1.8V/3.3V optional MMC card power supply at the same time. Users could choose 1.8V or 3.3V output by change the resistor or by software, to fit multimedia card with various type and protocol. It provides a 32.768 kHz Crystal Oscillator Driver which could power to the clock circuit directly. It also provides several protection modes: output short circuit, output over voltage/current, over thermal protection, etc.

2.3.3 AW-CM256SM

The AW-CM256SM wireless module is compliant with the IEEE 802.11a/b/g/n/ac standard, support connection up to 433.3Mbps transmit/receive (connect to WLAN using 802.11 ac protocol).

AW-CM256SM module provide SDIO interface Wi-Fi, UART/PCM interface Bluetooth Function. It enables a low power consumption and high performance solution that fit for IOT and other application field.

Chapter 3 Appendix

3.1 Software

MaaXBoard Mini support Linux Yoctosystem and Android system, for the detail software introduction, please refer to related user manual.

◆ Linux

- ◆ MaaXBoard Mini Linux Software Release Note
- ◆ MaaXBoard Mini Linux Software User Manual
- ◆ MaaXBoard Mini Linux Software Development Guide

◆ Android

- ◆ MaaXBoard Mini Android Software Release Note
- ◆ MaaXBoard Mini Android Software User Manual
- ◆ MaaXBoard Mini Android Development Guide

Chapter 4 Technical Support and Warranty

4.1 Technical Support

- ◆ Avnet Manufacturing Services provides its product with one-year free technical support including:
- ◆ Providing software and hardware resources related to the embedded products of Avnet Manufacturing Services;
- ◆ Helping customers properly compile and run the source code provided by Avnet Manufacturing Services;
- ◆ Providing technical support service if the embedded hardware products do not function properly under the circumstances that customers operate according to the instructions in the documents provided by Avnet Manufacturing Services;
- ◆ Helping customers troubleshoot the products.
- ◆ The following conditions will not be covered by our technical support service. We will take appropriate measures accordingly:
 - ◆ Customers encounter issues related to software or hardware during their development process;
 - ◆ Customers encounter issues caused by any unauthorized alter to the embedded operating system;
 - ◆ Customers encounter issues related to their own applications;
 - ◆ Customers encounter issues caused by any unauthorized alter to the source code provided by Avnet Manufacturing Services.

4.2 Warranty Conditions

- ◆ 12-month free warranty on the PCB under normal conditions of use since the sales of the product;
- ◆ The following conditions are not covered by free services; Avnet Manufacturing Services will charge accordingly:
 - ◆ Customers fail to provide valid purchase vouchers or the product identification tag is damaged, unreadable, altered or inconsistent with the products;
 - ◆ Not according to the user's manual operation causes damage to the product;
 - ◆ Products are damaged in appearance or function caused by natural disasters (flood, fire, earthquake, lightning strike or typhoon) or natural aging of components or other force majeure;
 - ◆ Products are damaged in appearance or function caused by power failure, external forces, water, animals or foreign materials;
 - ◆ Products malfunction caused by disassembly or alter of components by customers or, products disassembled or repaired by persons or organizations unauthorized by Avnet Manufacturing Services, or altered in factory specifications, or configured or expanded with the components

that are not provided or recognized by Avnet Manufacturing Services and the resulted damage in appearance or function;

- ◆ Product failures caused by the software or system installed by customers or inappropriate settings of software or computer viruses;
- ◆ Products purchased from unauthorized sales;
- ◆ Warranty (including verbal and written) that is not made by Avnet Manufacturing Services and not included in the scope of our warranty should be fulfilled by the party who committed. Avnet Manufacturing Services has no any responsibility.
- ◆ Within the period of warranty, the freight for sending products from customers to Avnet Manufacturing Services should be paid by customers; the freight from Avnet Manufacturing Services to customers should be paid by us. The freight in any direction occurs after warranty period should be paid by customers;
- ◆ Please contact technical support if there is any repair request.
- ⚠ **Avnet Manufacturing Services will not take any responsibility on the products sent back without the permission of the company.**

Chapter 5 Contact Information

- ◆ Tel: +86-755-33190846/33190847/33190848
- ◆ E-mail:
 - ◆ Technical support: support@embest-tech.com
 - ◆ Sales contact: chinasales@embest-tech.com
- ◆ Fax: +86-755-25616057
- ◆ Website: <http://www.embest-tech.com/>
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◆ Federal Communications Commission (FCC) Statement



◆ This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.



◆ Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:



- ◆ ● Reorient or relocate the receiving antenna.
- ◆ ● Increase the separation between the equipment and receiver.
- ◆ ● Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ◆ ● Consult the dealer or an experienced radio/TV technician for help.



◆ Warning: Changes or modifications made to this device not expressly approved by Embest Technology Co., Ltd may void the FCC authorization to operate this device.

◆ Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user's authority to operate the equipment.

◆ **RF exposure statement:**

- ◆ The transmitter must not be colocated or operated in conjunction with any other antenna or
- ◆ transmitter. This equipment complies with the FCC RF radiation exposure limits set forth for
- ◆ an uncontrolled environment. This equipment should be installed and operated with a
- ◆ minimum distance of 20cm between the radiator and any part of your body.