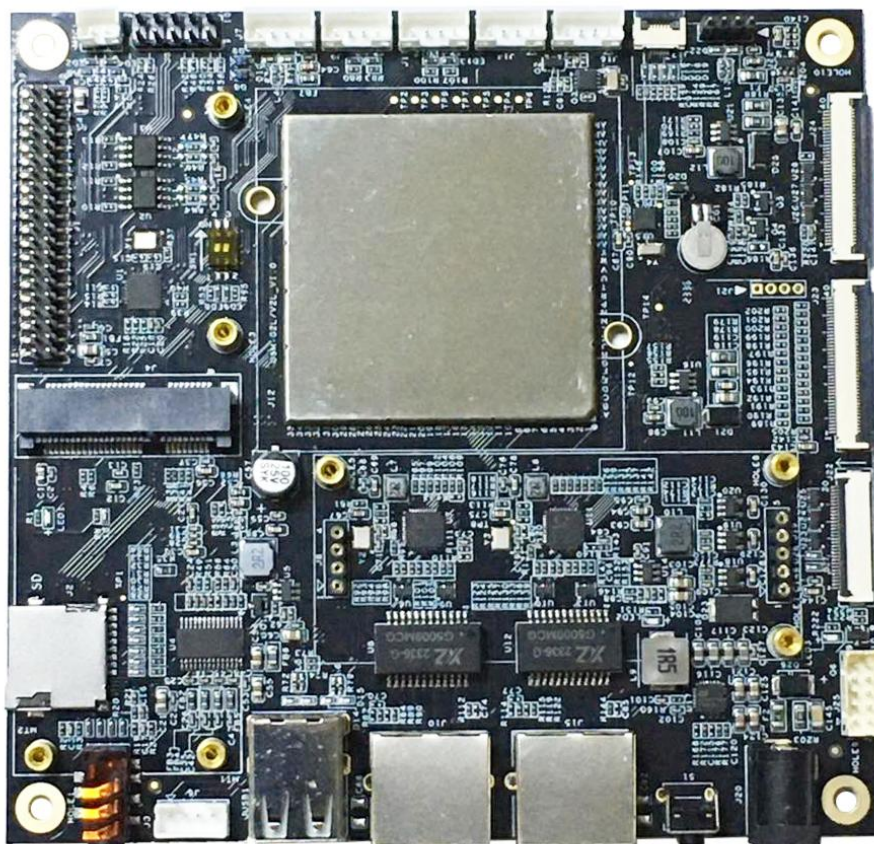


Industrial Development Board Specification

Model:DB-G2L-V2



REVISION HISTORY					
Version	Date	Board ID	Page	Descriptive	
V1.0	2023/9/25	CBD_OSMG2L_V2.0	14	Initial version	

Contents

1. Product Introduction	1
2. Product Pictures	1
3. Hardware Block Diagram	3
4. Hardware Parameters	3
5. Software Parameter	5
6. Development Information	5
7. Electrical Characteristics	5
7.1 Operating Environment	5
7.2 Power Consumption Parameters	6
8. Mechanical Dimensions	6
9. Development Board Kit List	8
10. Development Board Interface Definitions	9
11. Precautions For Use	11
More Help	11

1. Product Introduction

DB-G2L-V2 development board is designed based on the industrial grade SOM-G2L-OSM core board. Dual network ports, dual CAN-bus, 3 USB ports, multiple serial ports, LCD, 4G, WiFi, etc., with rich interfaces, it is suitable for AIOT IoT devices, automotive central control, entertainment/gaming devices, commercial display devices and other application fields.

SOM-G2L-OSM core board is developed based on the Renesas G2L series Cortex™-A55 processor. The processor integrates the latest high-performance CPU and GPU, and can be used in scenarios with stringent security performance requirements. In addition, the G2L series processors also integrate USB2.0, Gigabit Ethernet, CAN-FD interfaces.

Note: The DB-G2L-V2 development board can also be used to pre-evaluate the performance of the SOM G2L-OSM core board and CPU.

2. Product Pictures

The following images are for reference only:

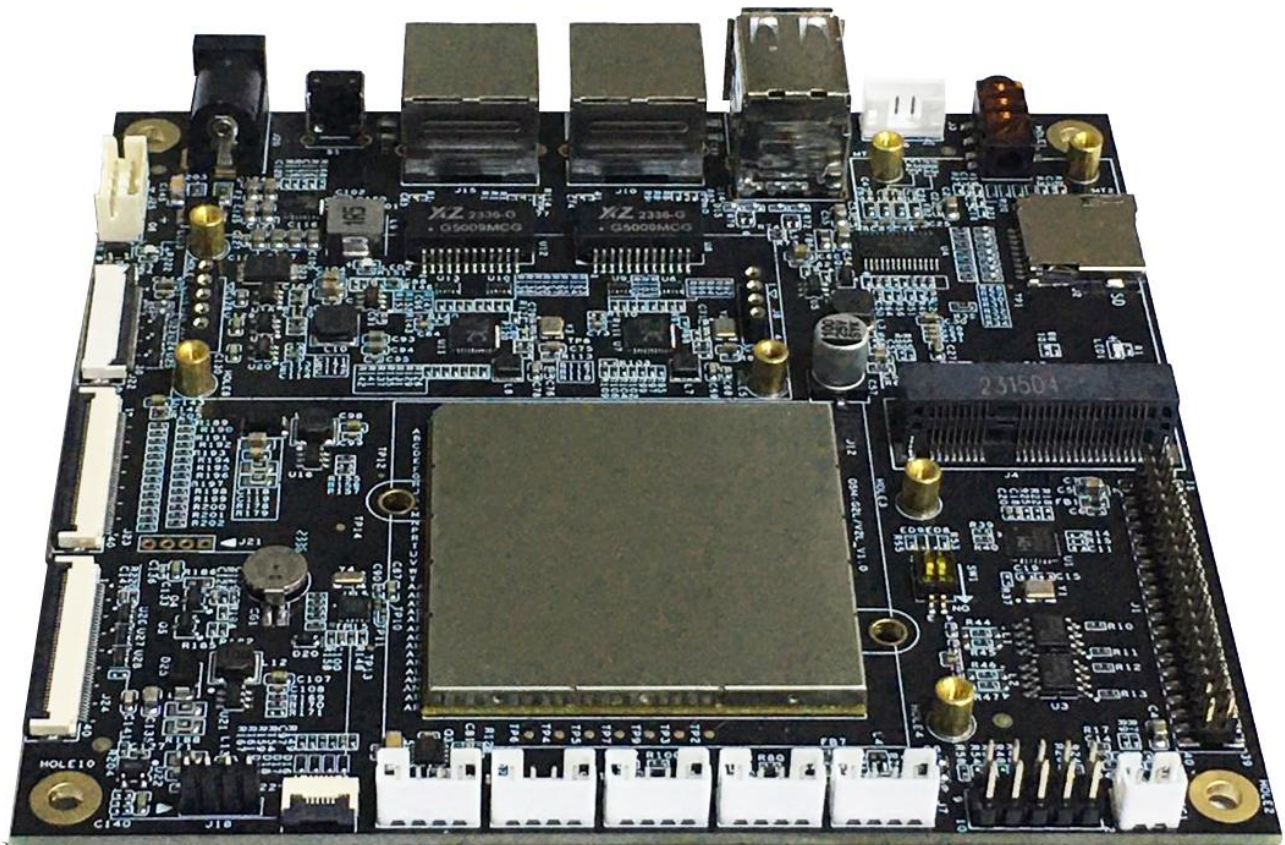


Figure 1 Development board front view

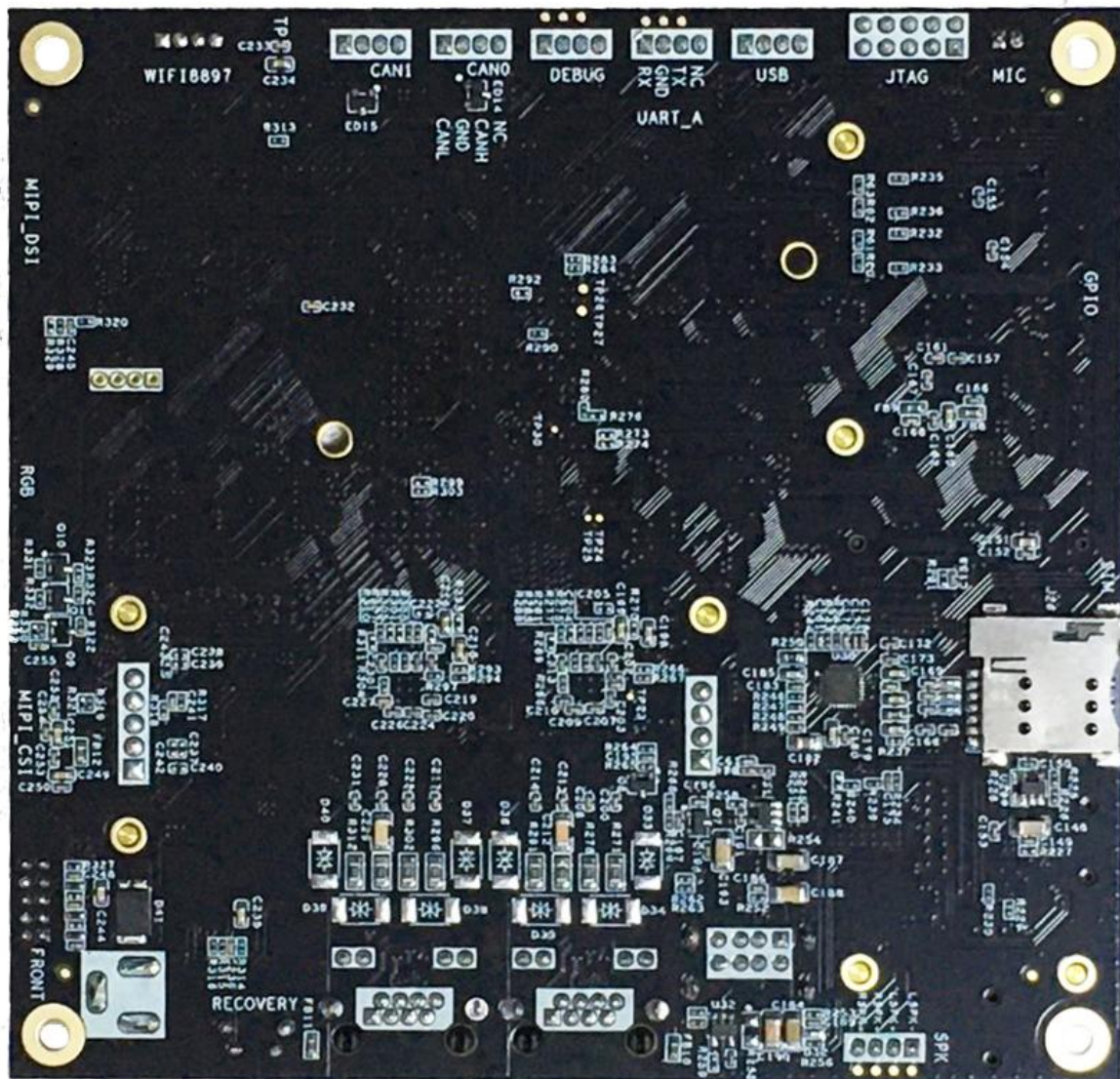


Figure 2 Development board back view

3. Hardware Block Diagram

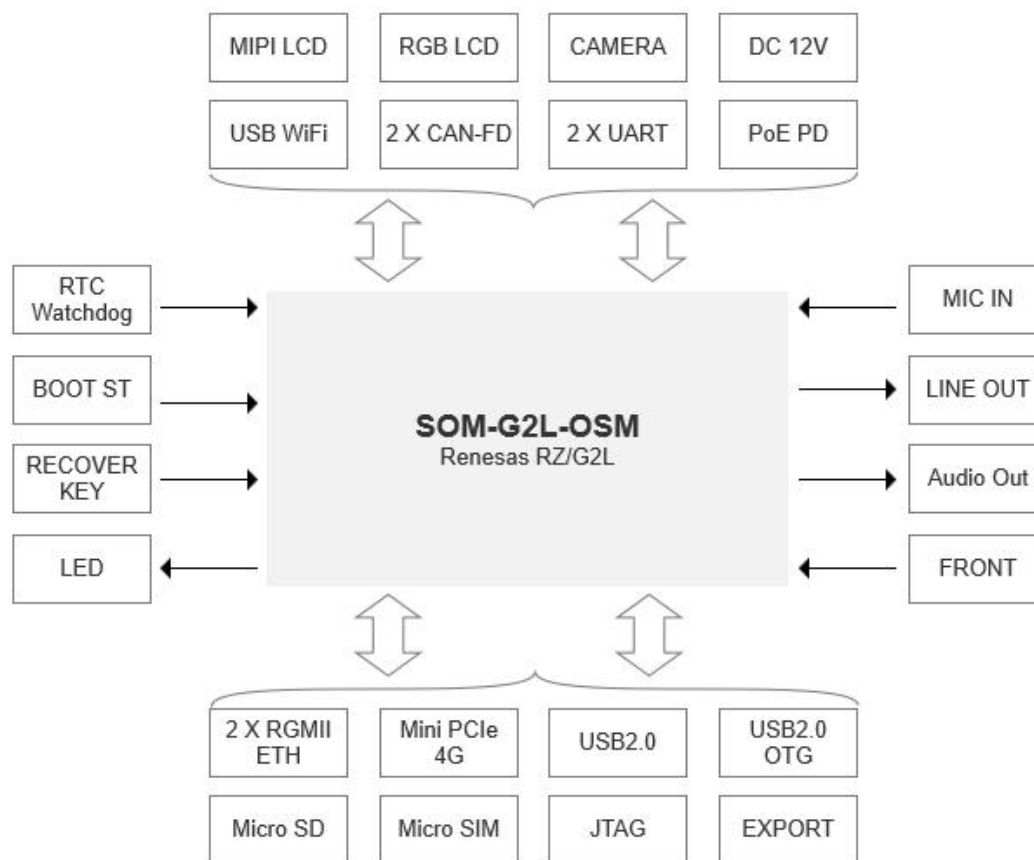


Figure 3 Hardware Block Diagram of Development Board

4. Hardware Parameters

Processors	Chip model	Renesas RZ/G2L
	CPU	Dual-Core ARM Cortex-A55+ARM Cotex-M33
	GPU	Mali-G31 GPU OpenGL ES1.1 / 2.0 / 3.0 / 3.1 and 3.2
Audio and Video coding and decoding	Video code	H.264 codec module H.264 / AVC (High Profile / Main Profile / Baseline Profile) H.264 / MVC (Stereo High Profile) Maximum pixel rate: 1920 × 1080@30 fps Color format (Coded input) : Supports YcbCr 4:2:0 semi-planar Color format (Coded output) : Supports YcbCr 4:2:0 semi-planar
	Audio code	Dual channel serial transmission Supports I2S/Mono/TDM audio formats Multi channel formats Supports 8, 16, 18, 20, 22, 24 and 32-bit data formats Supports transmission

			and reception of 32-level FIFOs Supports LR clock signaling, continuous LR clock signali
		Image Scaling	Bilinear interpolation scaling function Input image size (maximum): 5M (2800 × 2047) Output image size (maximum): Full HD (1920 × 1080) Color format conversion support RGB / ARGB / YcbCr422 / YcbCr420 / RAW (Grayscale)
Storage		RAM	2GB
		ROM	16GB (Optional 8G/32G) eMMC
Video In	MIPI CSI	1	1x CAMERA, 30pin FFC connector, 0.5mm spacing
Video Out	MIPI DSI	1	1x MIPI LCD capacitive touchscreen interface, 40pin (display) + 6pin (touch) FFC connector. Pitch 0.5mm Maximum resolution supported is 1920 x 1080@60fps
	DVP	1	1x 40Pin FFC connector with 0.5mm pitch, supports WXGA (1280 × 800) 60 fps
USB	USB HOST	1	USB 2.0 Type A (Supports up to 480 Mbps)
	USB OTG	1	USB 2.0 Type A (Supports up to 480 Mbps)
Network	WiFi	1	USB WiFi, 4pin Black Terminal Block, 2.0mm Pitch Note: After the USB_B bus expands four signals through the USB2.0 HUB, one of the expansion signals The signal is then expanded through the USB2.0 HUB.
	Ethernet	2	2x RJ45 interfaces, RMII/RGMII support, 10/100/1000Mbps network adaptive; The first Ethernet supports PoE PD.
	4G	1	Mini PCIe interface via USB2.0 HUB
Storage	Micro SD	1	Micro SD card slot
CAN communication	CAN FD	2	2x 4 pin white terminal blocks, 2.0mm spacing
Audio	SPK	1	4 pin white terminal blocks, 2.0mm spacing
	LINE OUT+MIC IN	1	3.5mm Audio holder
	MIC	1	2 pin white terminal blocks, 2.0mm spacing
Debug	JTAG	1	Supports JTAG debugging interface
AM1805	RTC	1	Suitable for button cell MS621 (3V rechargeable)
	Watchdog	1	1x Watchdog
Serial port	Debug	1	Debug UART white terminal blocks, 2.0mm spacing
	UART	1	UART 4 pin white terminal blocks, 2.0mm spacing
TP	I2C	1	6pin FFC connector with 0.5mm pitch
EXPORT	SPI	2	x2 to 2x 20Pin black pins with 2.0mm spacing Maximum transmission rate: 50 Mbps
	UART	4	X4 to 2x 20Pin black pins, 2.0mm spacing
	I2C	1	X1 to 2x 20Pin black pins, 2.0mm spacing
	GPIO	5	X5 to 2x 20Pin black pins, 2.0mm pitch
	5V	1	X1 into 2x 20pin black pins with 2.0mm spacing

	3.3V	1	X1 into 2x 20pin black pins with 2.0mm spacing
BOOT SET		1	2bit startup mode selection dip switch
POWER		1	12V DC input DC-005 power connector for 5.5mm OD, 2.1mm ID power plugs
Size		120mm × 125mm	
Power supply		DC Input voltage 12V	

5. Software Parameter

Kernel	4.19	
Uboot	2020.10	
OS	Yocto	
Driver support	eMMC	DDR4
	MMC/SD	LED
	KEY	USB WIFI/4G/Mouse
	UART	I2C
	CAN-FD	MIPI CAMERA
	MIPI LCD	Ethernet
	LINE IN/OUT	Touch Screen
	RTC	

6. Development Information

- Provide core board pin definition, core board 3D graphic files, editable base board schematic, editable base board PCB, chip Data sheet, shorten the hardware design cycle.
- Provides file system images, kernel driver source code, and a wealth of demo programs
- Provides complete platform development kits to save time on software organization and make application development easier.

7. Electrical Characteristics

7.1 Operating Environment

Environmental Parameters	Minimum	Typical	Maximum
Operating temperature	-40°C	/	85°C
Storage temperature	-50°C	/	90°C
Operating humidity	35% (no condensation)	/	75% (no condensation)
Storage humidity	35% (no condensation)	/	75% (no condensation)
Operating voltage	9V	12.0V	18V

7.2 Power Consumption Parameters

Operating State	Voltage Typical	Current Typical	Power Consumption Typical
Free state	12.0V	0.15A	1.8W
Full load state	12.0V	0.23A	2.76W

Note: Test data is related to specific application scenarios and is for reference only.

Free state: the system is started, the development board is not connected to other external modules, and the program is not executed.

Full load state: the system boots up, the development board is not connected to other external modules, running the DDR pressure read/write test program, the resource utilization of the two ARM Cortex-A53 cores is about 100%.

8. Mechanical Dimensions

The main hardware-related parameters of the development board are shown below for reference only.

PCB Size	120mm*125mm
PCB Layers	4 Layers
PCB Board Thickness	1.6mm
Number of mounting holes	4
Maximum component height	22mm
Weights	130g

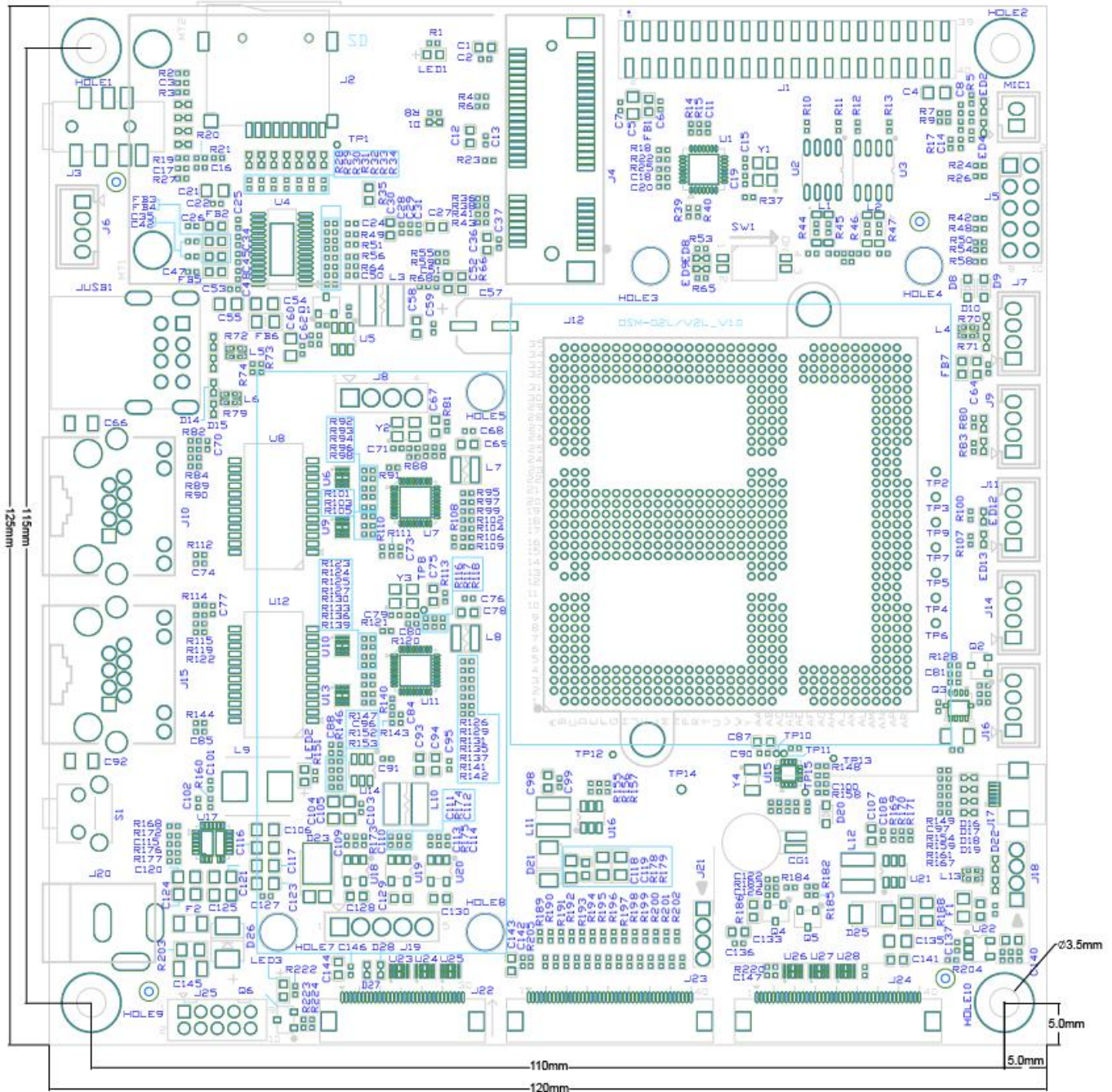


Figure 4 Development board mechanical dimensions

Maximum component height: the height difference between the highest component level of the development board and the level of the front of the PCB. The highest component on the board is the duallayer USB sockets(JUSB1).

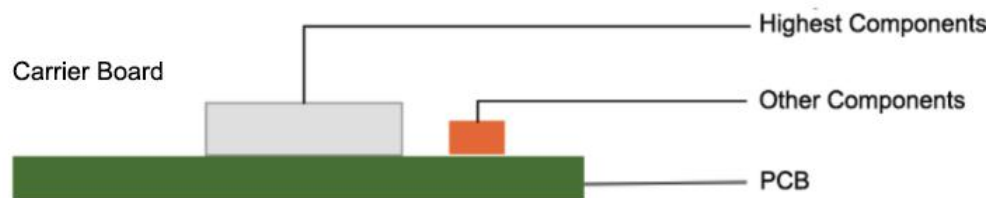
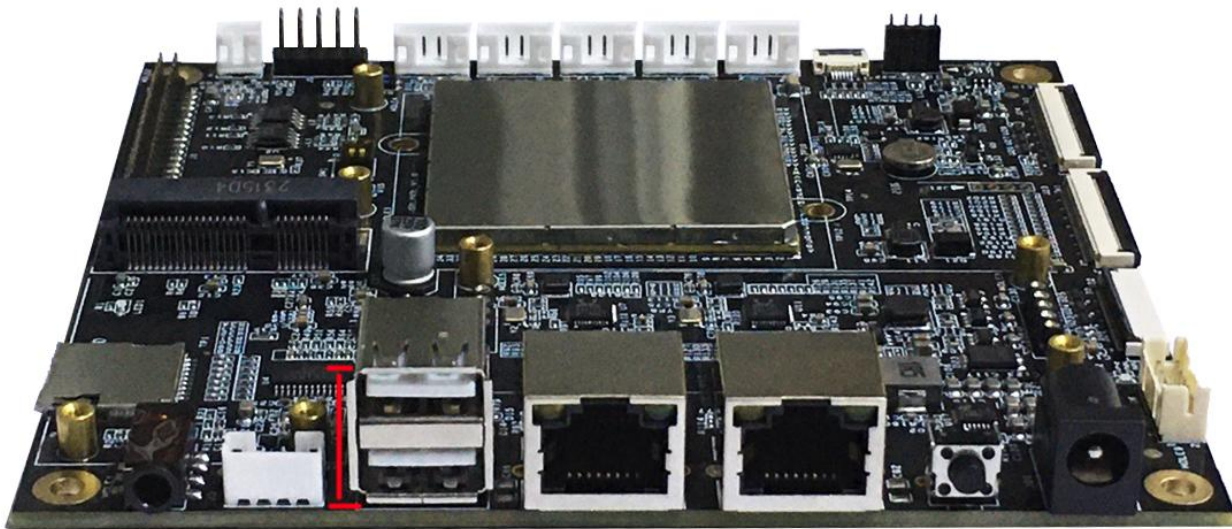
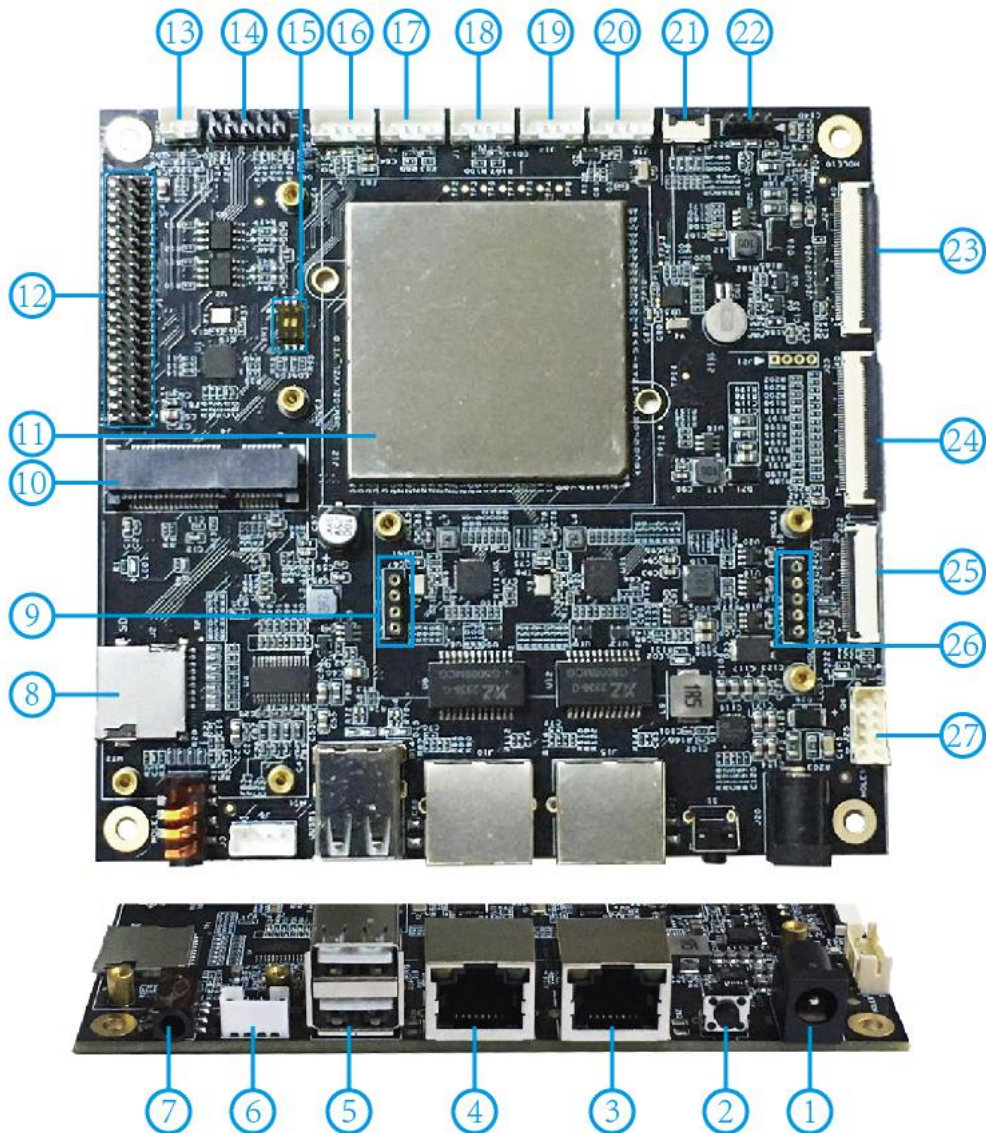


Figure 5 Schematic of the highest device on the development board

9. Development Board Kit List

Name	Quantity	Remark
Development Board with Core Board	1	
12V Power Adapter	1	Standard configuration
2.4G Antenna	1	Standard when WiFi function is available

10. Development Board Interface Definitions



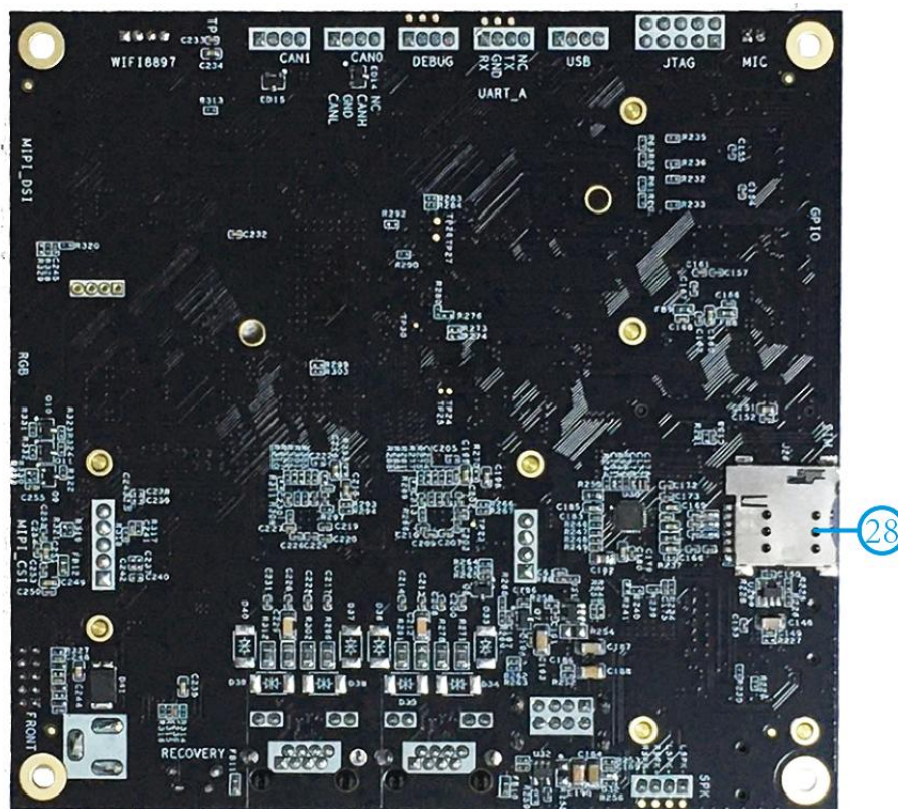


Figure 6 Development Board interface definition diagram

No.	Label	Functional Description	Remark
1	J20	DC Power Interface	1x 12V input power connector for 5.5mm OD, 2.1mm ID power plugs
2	S1	RECOVER Key	Access to the system burn-in button
3	J15	Ethernet-2	RJ45 ethernet-2 interface
4	J10	Ethernet-1	RJ45 ethernet-1 interface (PoE PD support, optional)
5	JUSB1	USB2.0	1x USB2.0 HOST(USB2 HUB) Type A lower level 1x USB2.0 OTG Type A upper level Remarks: After the USB_B bus is expanded with four signals through the USB2.0 HUB, one of the signals is led out directly. USB_A bus direct lead
6	J6	SPK	1x 4PinWhite Terminal Block, 2.0mm Spacing
7	J3	Audio	1x LINE OUT+MIC IN connector, 3.5mm audio cradle
8	J2	Micro SD	1x Micro SD card slot
9	J8	PoE PD Input	1x 4Pin Black Row Holder, 2.0mm Spacing
10	J4	4G	1x Mini PCIe connected via USB2.0 HUB
11	J13	SOM-G2L-OSM Core boards	1x 662Pin LGA
12	J1	EXPORT	1x EXPORTExpansion Connector, 2x20pin Pin Header, 2.0mm Pitch
13	MIC1	MIC	1x 2Pin white terminal block, 2.0mm spacing
14	J5	JTAG	2x 5Pin header, 2.54mm spacing
15	SW1	BOOT SET	1x 2bit boot mode selection dip switch

16	J7	USB2.0 touch screen interface	1x 4Pin white terminal block, 2.0mm spacing
17	J9	UART	1x 4Pin white terminal block, 2.0mm spacing
18	J11	Debut	1x 4Pin white terminal block, 2.0mm spacing
19	J14	CAN-FD-1	1x 4Pin white terminal block, 2.0mm spacing
20	J16	CAN-FD-2	1x 4Pin white terminal block, 2.0mm spacing
21	J17	Capacitive Touch Screen Interface	1x 6Pin FFC connector, 0.5mm spacing
22	J18	USB WiFi	1x 4Pin Pin Array, 2.0mm Spacing Connects via USB2.0 HOST
23	J24	MIPI LCD interface	1x 40Pin FFC Connector, 0.5mm Spacing
24	J23	RGB LCD interface	1x 40Pin FFC Connector, 0.5mm Spacing
25	J22	CAMERA	1x 30Pin FFC Connector, 0.5mm Spacing
26	J19	PoE PD Output	1x 5Pin Black Row Holder, 2.0mm Spacing
27	J25	FRONT	2x5pin header, 2.0mm spacing
28	J26	Micro SIM	1x 4G Micro SIM card slot

Note: For a more detailed description of the interface functions, please refer to the development board hardware manual.

11. Precautions For Use

1. Do not squeeze, bend, or disassemble the board.
2. Keep circuit boards away from static electricity.
3. Do not allow water or other liquids to come into contact with the board
4. Clean the board with a soft, dry towel or brush.
5. Do not use long connection cables, which may affect performance and image quality

More Help

Sales E-mail: sales@geniatech.com

Technical E-mail: support@geniatech.com

Technical Hotline: (+86)0755-8602-8588

Official Website: www.geniatech.com

Official Mall: <https://shop.geniatech.com>