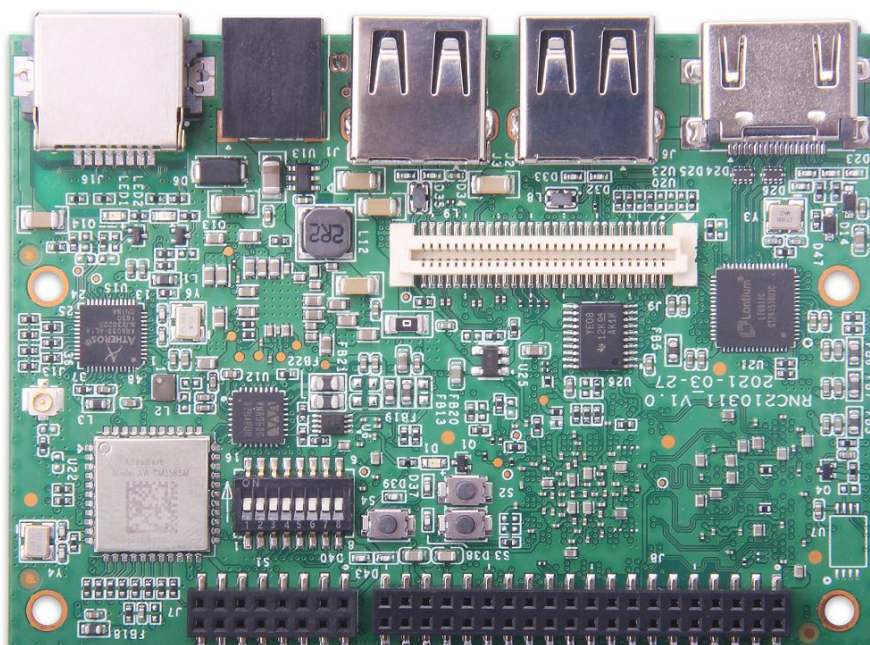


Shenzhen Geniatech Co.,Ltd.

iMX8M MiniCore Board Specifications

MODEL:SOM-DB11

Confirmation

REVISION HISTORY					
VERSION	DATE	BOARD ID	PAGE	DESCRIPTION	AUTHOR
V1.0	2023/8/18	RNU230706_V1.0	18	specification	

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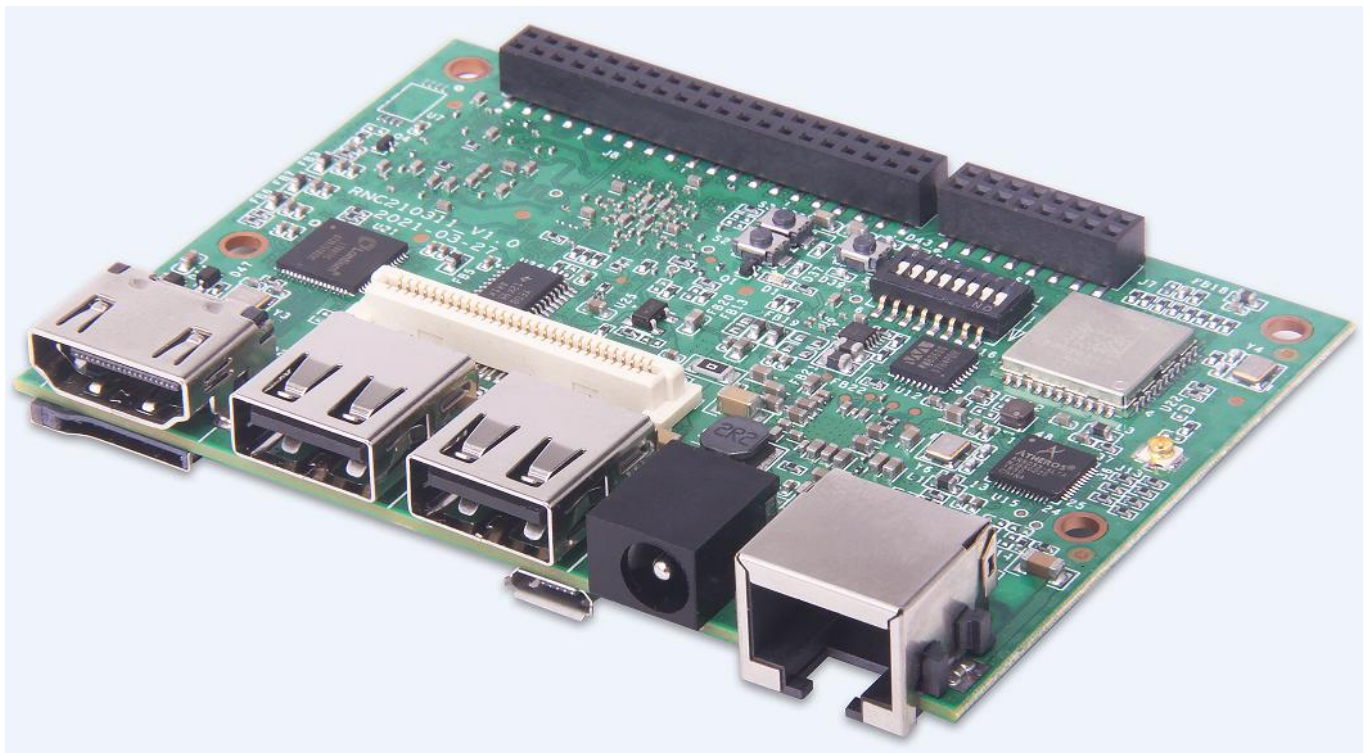
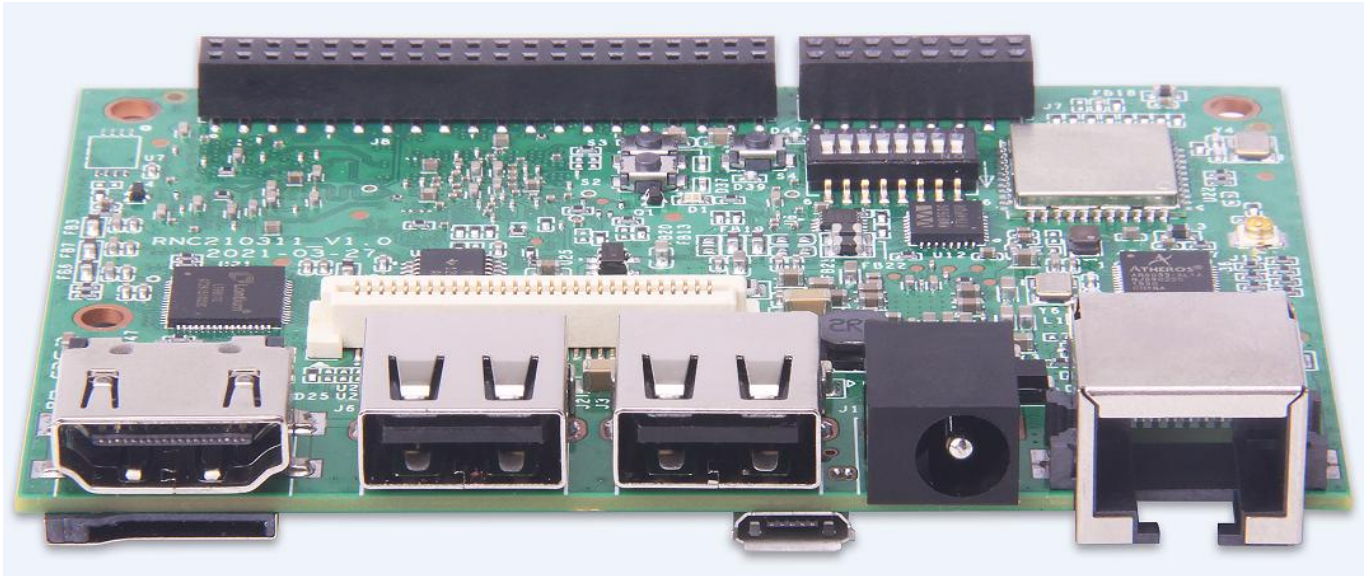
1. SoM-DB11 Product Description

The SoM-DB11 uses NXP's latest generation of embedded low-energy multi-core application processors, i.MX8M Mini (A53+M4), with industry-leading audio, voice and video processing performance; support for 1080P@60fps H.264/H.265 video codecs and GPU graphics gas pedals; and support for industrial control equipment and consumer electronics devices to run applications in harsh environments to run applications. It can be widely used in AIOT IoT devices, in-vehicle central control, entertainment/gaming devices, commercial display devices and other applications. Customization services such as interface customization and operator board customization are available.

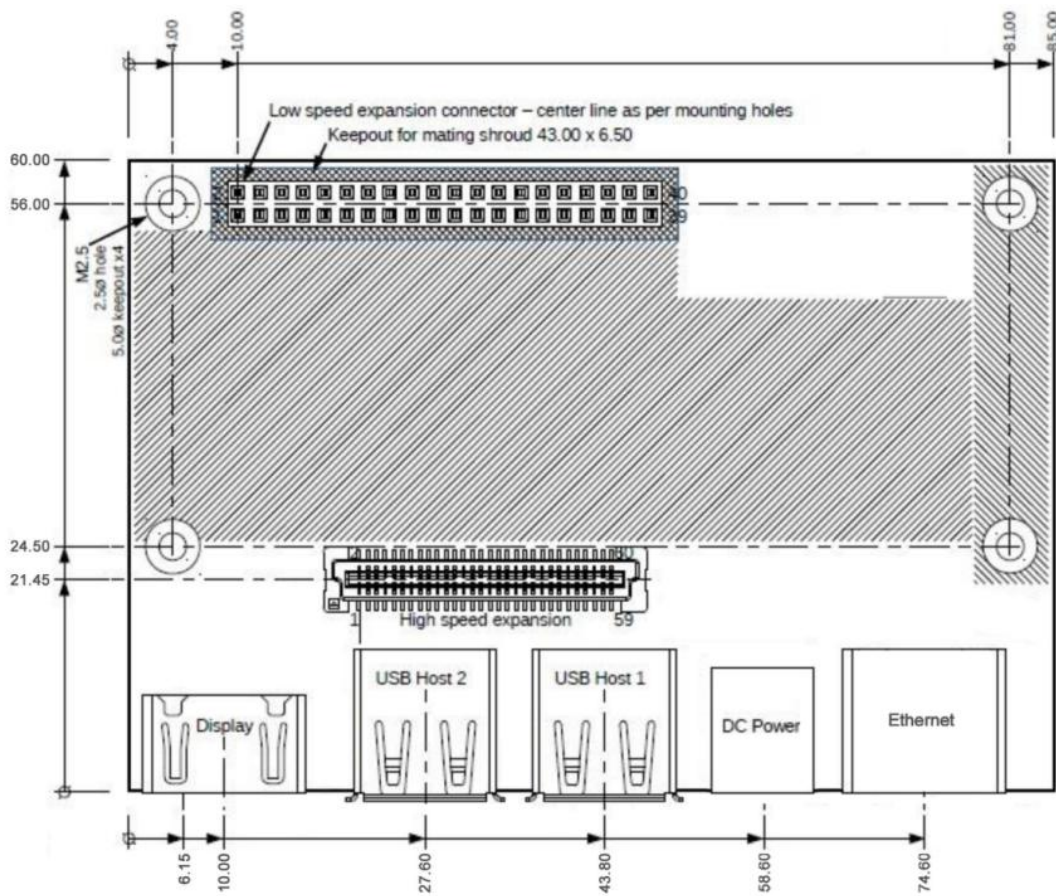
- NXP Quad-Core Cortex A53(64bit) +Cortex M4 large core + small core heterogeneous processor with 1.6GHz frequency, balancing performance and power consumption requirements.
- Comes standard with 1GB RAM (2GB/4GB optional), 8GB eMMC (16G/32G optional)
- Supports WLAN802.11 a/b/g/n/ac, 2.4G/5GHz, Bluetooth 4.2 wireless communication and Gigabit wired network communication.
- Integrates HDMI Out, MIPI CSI/DSI, USB2.0, PCIe, UART, I2S, SPI and other common interfaces.
- Supports Linux Yocto,Android 9.0 system.
- Class 96Boards architecture, 85 x 60mm
- Industrial standard design, consumer and industrial control optional
- Suitable for industrial control and communication, human-machine interaction (HMI), intelligent medical, Internet of Things (IoT) and other smart home and industrial control fields

2. SoM-DB11 Product Pictures

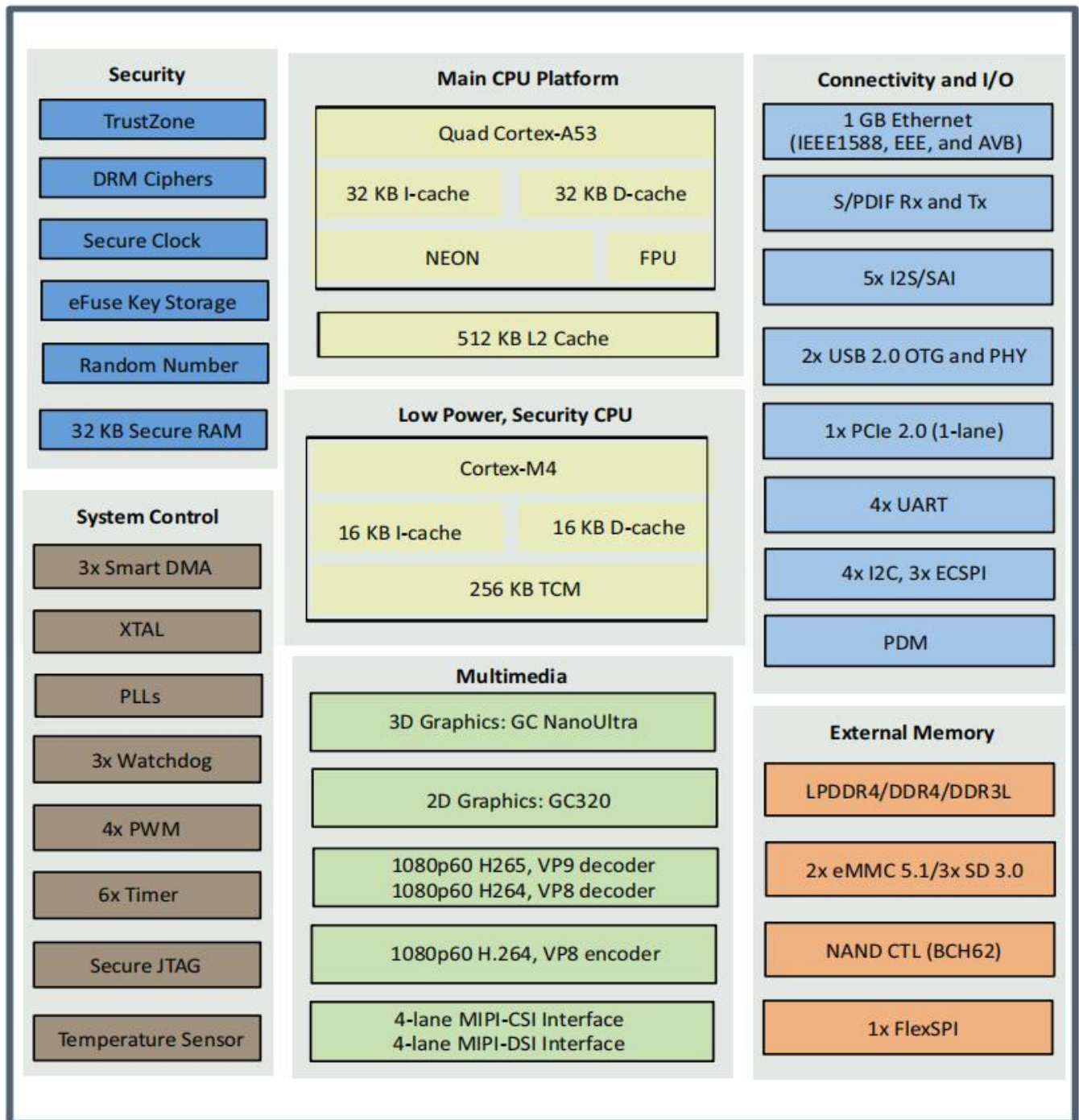
The following picture is for reference only:



3.SoM-DB11Core Board Dimension Diagram



4.SoM-DB11 Block Diagram



5. Electrical Characteristics

5.1 Power Supply Parameters

Parameter	Pin No.	Specification				Description
		Minimum	Typical	Maximum	Unit	
Mains Voltage	VSYS	9	12	18	V	
No-load current	--	215	--	220	mA	Linux stand-by
Heavy load current	--	260	--	334	mA	LinuxVideo Playback Status

5.2 Environmental parameters

Parameter Description		Specification				Description
		Minimum	Typical	Maximum	Unit	
Operating Temperature	Working Environment	0	25	+85	°C	Commercial Grade
	Storage environment	-40	25	+125	°C	
	Working Environment	-40	25	+85	°C	Industrial grade
	Storage environment	-40	25	+125	°C	
Humidity	Working Environment	10	--	90	%RH	No condensation
	Storage environment	5	--	95	%RH	

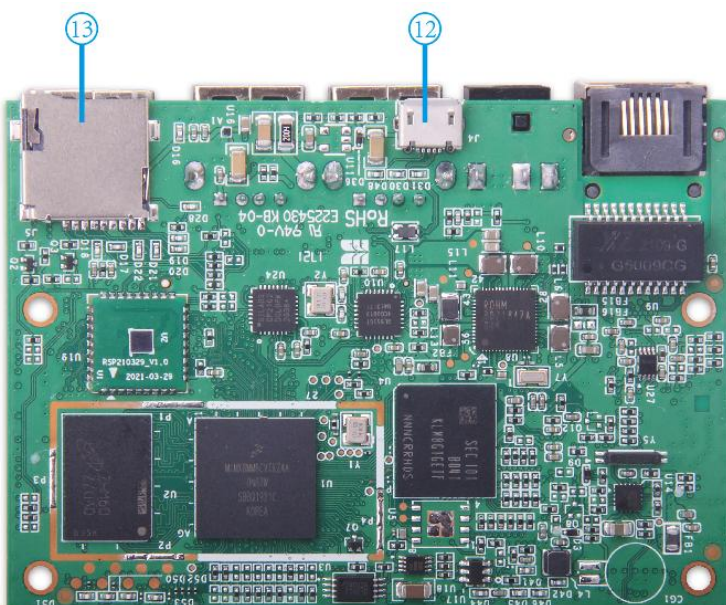
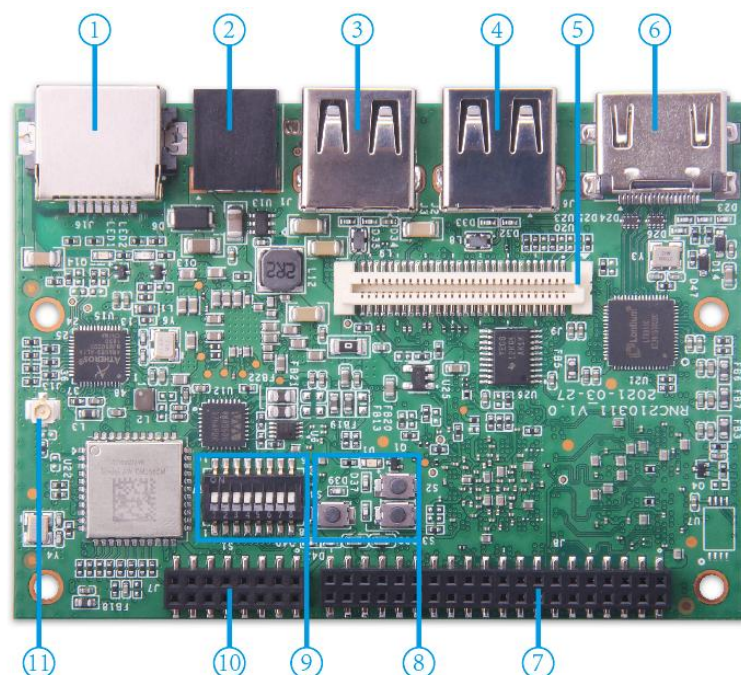
5.3 Interface Speed

Parameter Description	Specification				Description
	Minimum	Typical	Maximum	Unit	
Serial communication rate	--	115200	--	bps	
SPI communication rate	--	--	52	Mbps	
I2C communication rate	--	100	320	Kbps	
SD/SDIO communication rate	--	25	200	Mbps	
USB interface rate	--	--	480	Mbps	

6.FEATURES

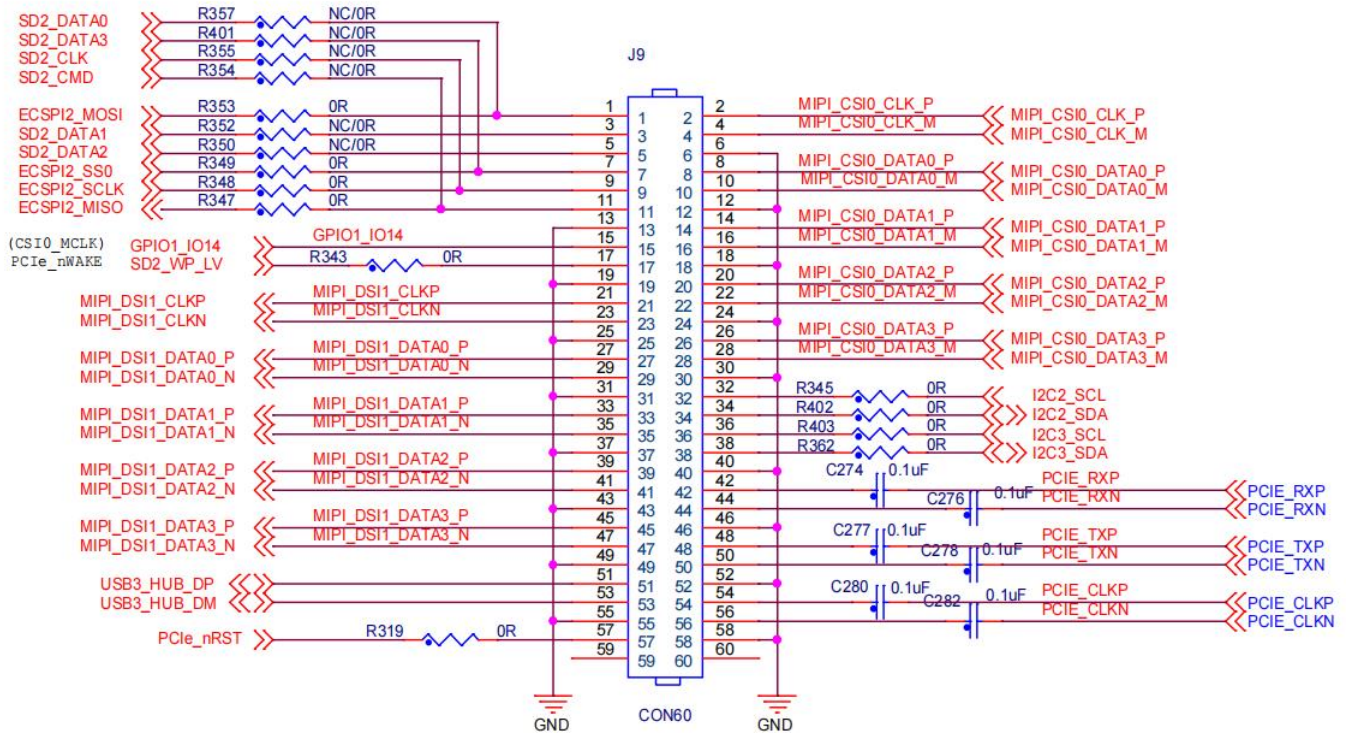
SoC	NXP i.MX8M Mini	
OS	Yocto(Linux)、Android 9.0	
Processor	CPU	Quad-Core ARM Cortex A53(64bit) + Cortex M4
	GPU	GCNanoUltra 3D (1 shader) + GC320 2D OpenGL ES 2.0
	VPU	Decoder:1080P@60fps HEVC/H.265/H.264/VP9/VP8 Encoder:1080P@60fps H.264/VP8
Storage	DDR	2GB (optional 1GB/4GB) DDR4
	Internal Storage	16GB (optional 8-32GB) EMMC
Network	Internal WiFi	802.11 a/b/g/n/ac WiFi 2.4G frequency range: 2.400 ~ 2.497GHz WiFi 5G frequency range: 5.15 ~ 5.925GHz
	Bluetooth	BT 5.0
	Ethernet(LAN)	1*RJ45 1000Mbps LAN
Display Interface	HDMI Out	Provides a HDMI Out interface and supports the highest resolution of 1080P @ 60 fps
USB Interface	USB	USB-A 2.0 x 2
	USB OTG	MicroUSB
SD Card	Micro SD Card	Support
Other Interface	UART x3, SPI x1,SDIO*1, I2C x2, GPIO x11,PClex1,MIPI DSI x1,MIPI CSI x1,USB x1,SAI,PCM/I2S,DC Power, RTC,Speaker,Mic,Headset,	
	Key	x 3 Vol+、Vol-、ON/OFF
	LEDs	x 3 Power、WiFi、Etherent
Size	85 mm x 60 mm	
Current Source	DC:+12V	

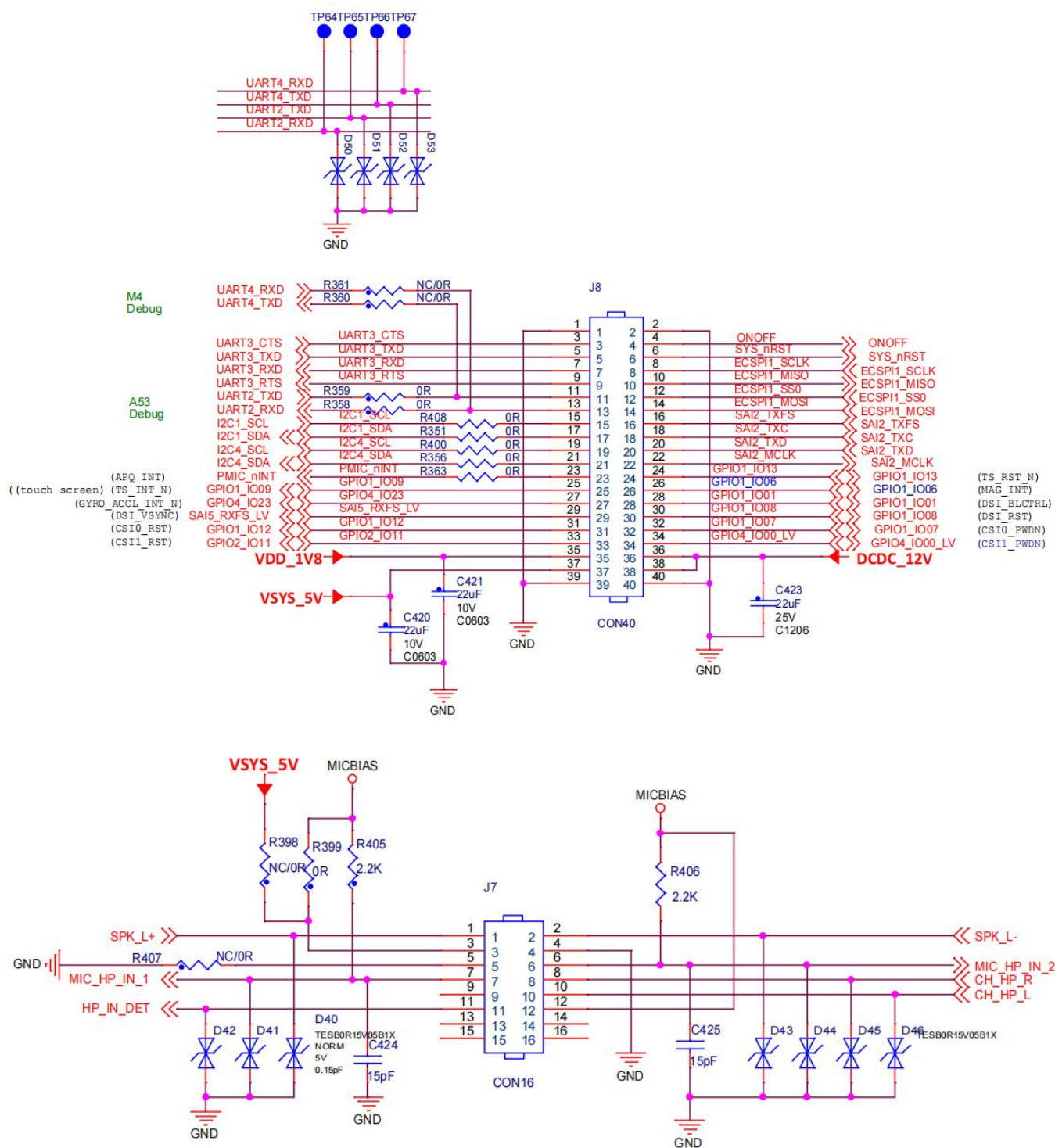
7. SoM-DB11 Interface Definition Description



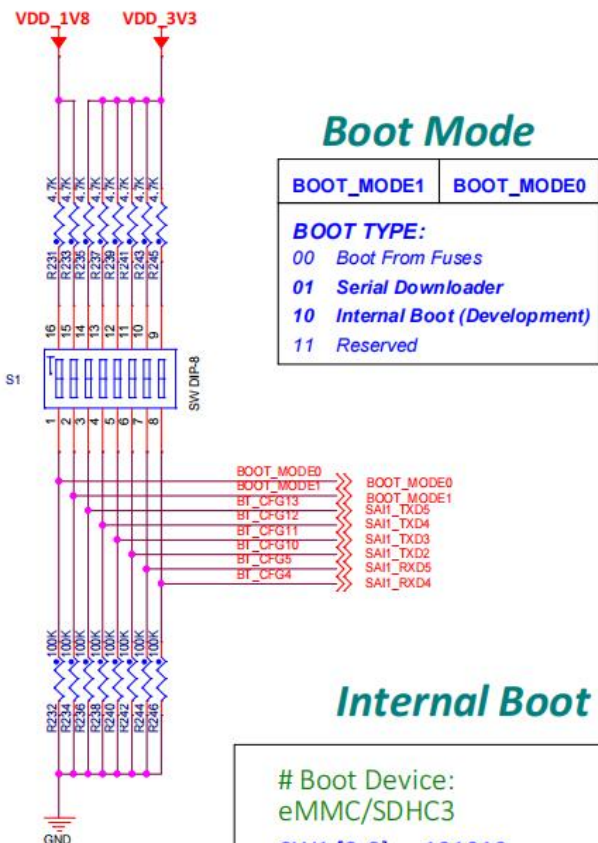
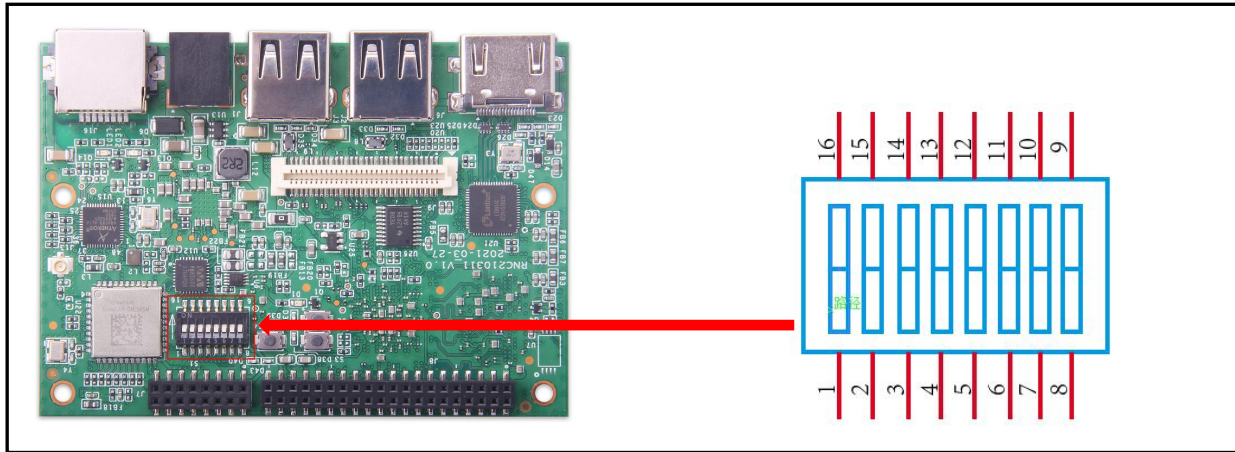
No.	Name	Description
1	Ethernet interface	RJ45 10/100/1000
2	DC IN	DC IN (Φ5.5/2.1mm)
3	USB2.0	USB2.0 Type A
4	USB2.0	USB2.0 Type A
5	60PIN High speed connector	BTB 60PIN 0.8mm spacing
6	HDMI Out	HDMI Type A
7	40PIN Low speed connector	2*20PIN 2.0 spacing
8	Key	3 key, Vol+ \ Vol- \ Power
9	Boot setting	8 dip switch
10	16PIN Low speed connector	2*8PIN 2.0 spacing
11	WiFi Antenna interface	IPXE Port
12	USB OTG	Micro USB
13	SD Card	Micro SD Card Slot

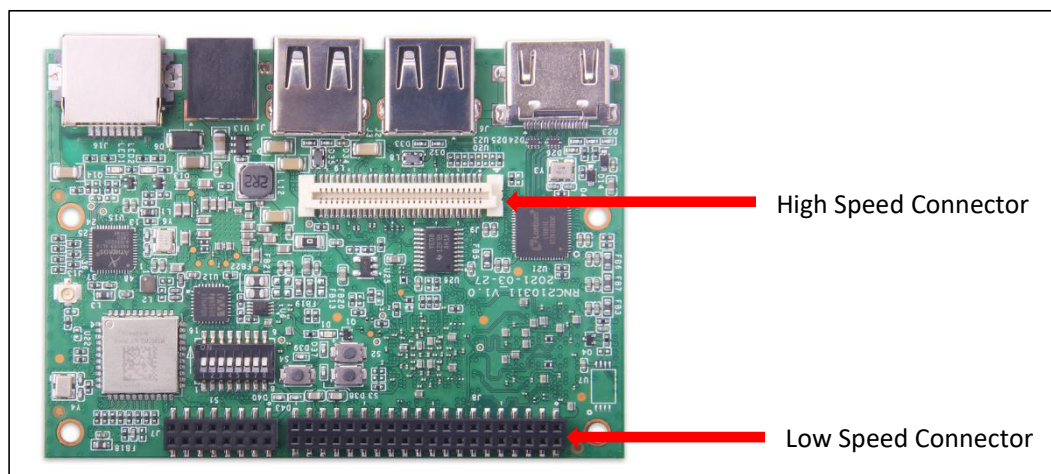
8. Core board pin function description





8.1 Boot Settings





8.2 High Speed Connector(J9)Pin Function Definition

60Pin High Speed Connector Pin Function Definition							
Pin No.	Chip Pins	Connector Network Signal Name	Pin Signal Description	Default Function	Chip Pin GPIO Port	Signal Level	Remarks
1	B8	ECSPI2_MOSI	SPI2 Master output slave input	ECSPI2_MOSI	GPIO5_IO11	1.8V	
	AB23	SD2_DATA0	SD2 data signal 0	SD2_DATA0	GPIO2_IO15	1.8V	
2	B16	MIPI_CSIO_CLK_P	CSIO clock signal+	MIPI_CSIO_CLK_P	-	1.8V	
3	AB24	SD2_DATA1	SD2 data signal 1	SD2_DATA1	GPIO2_IO16	1.8V	
4	A16	MIPI_CSIO_CLK_M	CSIO clock signal-	MIPI_CSIO_CLK_M	-	1.8V	
5	V24	SD2_DATA2	SD2 data signal 2	SD2_DATA2	GPIO2_IO17	1.8V	
6	—	GND	Ground signal	GND	-	0V	
7	A6	ECSPI2_SS0	SPI2 select	ECSPI2_SS0	GPIO5_IO13	1.8V	
	V23	SD2_DATA3	SD2 data signal 3	SD2_DATA3	GPIO2_IO18	1.8V	
8	B14	MIPI_CSIO_DATA0_P	CSIO data signal 0+	MIPI_CSIO_DATA0_P	-	1.8V	
9	E6	ECSPI2_SCLK	SPI2 clock	ECSPI2_SCLK	GPIO5_IO10	1.8V	
	W23	SD2_CLK	SD2 clock signal	SD2_CLK	GPIO2_IO13	1.8V	
10	A14	MIPI_CSIO_DATA0_M	CSIO data signal 0-	MIPI_CSIO_DATA0_M	-	1.8V	
11	A8	ECSPI2_MISO	SPI2 Master input slave output	ECSPI2_MISO	GPIO5_IO12	1.8V	
	W24	SD2_CMD	SD2 command signal	SD2_CMD	GPIO2_IO14	1.8V	
12	-	GND	Ground signal	GND	-	0V	
13	-	GND	Ground signal	GND	-	0V	
14	B15	MIPI_CSIO_DATA1_P	CSIO data signal 1+	MIPI_CSIO_DATA1_P	-	1.8V	
15	AC9	GPIO1_IO14	General I/O	GPIO1_IO14	GPIO1_IO14	1.8V	
16	A15	MIPI_CSIO_DATA1_M	CSIO data signal 1-	MIPI_CSIO_DATA1_M	-	1.8V	

17	AA27	SD2_WP_LV	SD2 write protection	SD2_WP_LV	GPIO2_IO20	1.8V	
18	-	GND	Ground signal	GND	-	0V	
19	-	GND	Ground signal	GND	-	0V	
20	B17	MIPI_CSIO_DATA2_P	CSIO data signal 2+	MIPI_CSIO_DATA2_P	-	1.8V	
21	FSA644UCX-D6	MIPI_DSI1_CLKP	DSI1 clock signal +	MIPI_DSI1_CLKP	-	1.8V	
22	A17	MIPI_CSIO_DATA2_M	CSIO data signal 2+-	MIPI_CSIO_DATA2_M	-	1.8V	
23	FSA644UCX-D5	MIPI_DSI1_CLKN	DSI1 clock signal -	MIPI_DSI1_CLKN	-	1.8V	
24	-	GND	Ground signal	GND	-	0V	
25	-	GND	Ground signal	GND	-	0V	
26	B18	MIPI_CSIO_DATA3_P	CSIO data signal 3+	MIPI_CSIO_DATA3_P	-	1.8V	
27	FSA644UCX-E6	MIPI_DSI1_DATA0_P	DSI1 data signal 0+	MIPI_DSI1_DATA0_P	-	1.8V	
28	A18	MIPI_CSIO_DATA3_M	CSIO data signal 3-	MIPI_CSIO_DATA3_M	-	1.8V	
29	FSA644UCX-E5	MIPI_DSI1_DATA0_N	DSI1 data signal 0-	MIPI_DSI1_DATA0_N	-	1.8V	
30	-	GND	Ground signal	GND	-	0V	
31	-	GND	Ground signal	GND	-	0V	
32	D10	I2C2_SCL	I2C2 clock signal	I2C2_SCL	GPIO5_IO16	1.8V	
33	FSA644UCX-F6	MIPI_DSI1_DATA1_P	DSI1 data signal 1+	MIPI_DSI1_DATA1_P	-	1.8V	
34	D9	I2C2_SDA	I2C2 data signal	I2C2_SDA	GPIO5_IO17	1.8V	
35	FSA644UCX-F5	MIPI_DSI1_DATA1_N	DSI1 data signal 1-	MIPI_DSI1_DATA1_N	-	1.8V	
36	E9	I2C3_SCL	I2C3 clock signal	I2C3_SCL	GPIO5_IO18	1.8V	
37	-	GND	Ground signal	GND	-	0V	
38	F9	I2C3_SDA	I2C3 data signal	I2C3_SDA	GPIO5_IO19	1.8V	
39	FSA644UCX-E4	MIPI_DSI1_DATA2_P	DSI1 data signal 2+	MIPI_DSI1_DATA2_P	-	1.8V	
40	-	GND	Ground signal	GND	-	0V	
41	FSA644UCX-F4	MIPI_DSI1_DATA2_N	DSI1 data signal 2-	MIPI_DSI1_DATA2_N	-	1.8V	
42	B19	PCIE_RXP	PCIE receive +	PCIE_RXP	-	1.8V	
43	-	GND	Ground signal	GND	-	0V	
44	A19	PCIE_RXN	PCIE receive -	PCIE_RXN	-	1.8V	
45	FSA644UCX-E3	MIPI_DSI1_DATA3_P	DSI1 data signal 3+	MIPI_DSI1_DATA3_P	-	1.8V	
46	-	GND	Ground signal	GND	-	0V	
47	FSA644UCX-F3	MIPI_DSI1_DATA3_N	DSI1 data signal 3-	MIPI_DSI1_DATA3_N	-	1.8V	
48	B20	PCIE_TXP	PCIE send +	PCIE_TXP	-	1.8V	
49	-	GND	Ground signal	GND	-	0V	
50	A20	PCIE_TXN	PCIE send -	PCIE_TXN	-	1.8V	
51	-	USB3_HUB_DP	USB3 D+	USB3_HUB_DP	-	1.8V	
52	-	GND	Ground signal	GND	-	0V	
53	-	USB3_HUB_DM	USB3 D-	USB3_HUB_DM	-	1.8V	
54	B21	PCIE_CLKP	PCIE clock signal+	PCIE_CLKP	-	1.8V	
55	-	GND	Ground signal	GND	-	0V	
56	A21	PCIE_CLKN	PCIE clock signal-	PCIE_CLKN	-	1.8V	
57	AC19	PCIE_nRST	PCIE reset	PCIE_nRST	GPIO4_IO21	1.8V	SAI2_RXFS
58	-	GND	Ground signal	GND	-	0V	

59	-	NC	-	-	-	-	
60	-	NC	-	-	-	-	

8.3 Low Speed Connector(J8) Pin Function Definition

40Pin Low Speed Connector Pin Function Definition							
Pin No.	Chip Pins	Connector Network Signal Name	Pin Signal Description	Default Function	Chip Pin GPIO Port	Signal Level	Remarks
1	-	GND	Ground signal	GND	-	0V	
2	-	GND	Ground signal	GND	-	0V	
3	-	UART3_CTS	UART3 clear to send	UART3_CTS	-	1.8V	
4	A25	ONOFF	CPU sleep wake up	ONOFF	Snvsmix_ONOFF	-	
5	-	UART3_TXD	UART3 send	UART3_TXD	-	3.3V	
6	-	SYS_nRST	System reset	SYS_nRST	-	3.3V	
7	-	UART3_RXD	UART3 receive	UART3_RXD	-	3.3V	
8	D6	ECSP11_SCLK	SPI1 clock signal	ECSP11_SCLK	GPIO5_IO6	1.8V	
9	-	UART3_RTS	UART3 request to send	UART3_RTS	-	3.3V	
10	A7	ECSP11_MISO	SPI1 master input slave output	ECSP11_MISO	GPIO5_IO8	1.8V	
11	E15	UART2_TXD	UART2 send	UART2_TXD	GPIO5_IO25	1.8V	A53 Debug
	F18	UART4_TXD	UART4 send	UART4_TXD	GPIO5_IO29	1.8V	M4 Debug
12	B6	ECSP11_SS0	SPI1 select	ECSP11_SS0	GPIO5_IO9	1.8V	
13	F15	UART2_RXD	UART2 receive	UART2_RXD	GPIO5_IO24	1.8V	A53 Debug
	F19	UART4_RXD	UART4 receive	UART4_RXD	GPIO5_IO28	1.8V	M4 Debug
14	B7	ECSP11_MOSI	SPI1 master output slave input	ECSP11_MOSI	GPIO5_IO7	1.8V	
15	E9	I2C1_SCL	I2C1 clock signal	I2C1_SCL	GPIO5_IO14	1.8V	
16	AD23	SAI2_TXFS	I2S send frame selection	SAI2_TXFS	GPIO4_IO24	1.8V	
17	F9	I2C1_SDA	I2C1 data signal	I2C1_SDA	GPIO5_IO15	1.8V	
18	AD22	SAI2_TXC	I2S send a bit clock	SAI2_TXC	GPIO4_IO25	1.8V	
19	D13	I2C4_SCL	I2C4 clock signal	I2C4_SCL	GPIO5_IO20	1.8V	
20	AC22	SAI2_TXD	I2S output data	SAI2_TXD	GPIO4_IO26	1.8V	
21	E13	I2C4_SDA	I2C4 data signal	I2C4_SDA	GPIO5_IO21	1.8V	
22	AD19	SAI2_MCLK	I2S main clock	SAI2_MCLK	GPIO4_IO27	1.8V	
23	AF13	PMIC_nINT	Power management interruption	PMIC_nINT	GPIO1_IO03	1.8V	
24	AD9	GPIO1_IO13	General I/O	GPIO1_IO13	GPIO1_IO13	1.8V	
25	AF10	GPIO1_IO09	General I/O	GPIO1_IO09	GPIO1_IO09	1.8V	
26	AG11	GPIO1_IO06	General I/O	9611_RST	GPIO1_IO06	1.8V	
27	AC24	GPIO4_IO23	General I/O	GPIO4_IO23	GPIO4_IO23	1.8V	SAI2_RXD0

28	AF14	GPIO1_IO01	General I/O	GPIO1_IO01	GPIO1_IO01	1.8V	
29	AB15	SAI5_RXFS_LV	I2S receives a frame selection	SAI5_RXFS_LV	GPIO3_IO19	1.8V	SAI5_RXFS
30	AG10	GPIO1_IO08	General I/O	GPIO1_IO08	GPIO1_IO08	1.8V	
31	AB10	GPIO1_IO12	General I/O	GPIO1_IO12	GPIO1_IO12	1.8V	
32	AF11	GPIO1_IO07	General I/O	GPIO1_IO07	GPIO1_IO07	1.8V	
33	R24	GPIO2_IO11	General I/O	GPIO2_IO11	GPIO2_IO11	1.8V	SD1_STROBE
34	AG16	GPIO4_IO00_LV	General I/O	GPIO4_IO00_LV	GPIO4_IO00	1.8V	SAI1_RXFS
35	-	VDD_1V8	Core board system power supply 1.8V	VDD_1V8	-	1.8V	
36	-	DC_12V	Power input 12V	DC_12V	-	12V	
37	-	VSYS_5V	Core board system power supply 5V	VSYS_5V	-	5V	
38	-	DC_12V	Power input 12V	DC_12V	-	12V	
39	-	GND	Ground signal	GND	-	0V	
40	-	GND	Ground signal	GND	-	0V	

8.4 Low Speed Connector(J7) Pin Function Definition

16Pin Low Speed Connector Pin Function Definition				
Pin No.	Connector Network Signal Name	Connect to	Default Function	Remarks
1	SPK_L+	WM8960 audio signal SPK-LP	SPK_L+	
2	SPK_L-	WM8960 audio signal SPK-LN	SPK_L-	
3	VSYS_V	System power supply 5V	VSYS_V	
4	GND	Ground signal	GND	
5	GND	Ground signal	GND	
6	MIC_HP_IN_2	WM8960 audio signal 号 LINPUT2	MIC_HP_IN_2	
7	MIC_HP_IN_1	WM8960 audio signal LINPUT1	MIC_HP_IN_1	
8	CH_HP_R	WM8960 audio signal HP_R	CH_HP_R	
9	NC	-	NC	
10	CH_HP_L	WM8960 audio signal HP_L	CH_HP_L	
11	HP_IN_DET	WM8960 audio signal LINPUT3	HP_IN_DET	
12	MICBIAS	WM8960 audio signal MICBIAS	MICBIAS	
13	NC	-	NC	
14	NC	-	NC	
15	NC	-	NC	
16	NC	-	NC	

9. Precautions for use

1. Relative humidity: 10% ~ 90% .
2. Storage temperature: -40 ~ 125℃
3. Operation temperature: Commercial field: 0~ 85℃； Industrial field: -40~85℃
4. Do not squeeze、 distort or disassemble the board.
5. Keep the board away from static electricity .
6. Keep the board away from water and other liquid.
7. Clean the board with soft and clean dry cloth when it's dirty.
8. Don't use long connect wires which may affect performance and image quality.