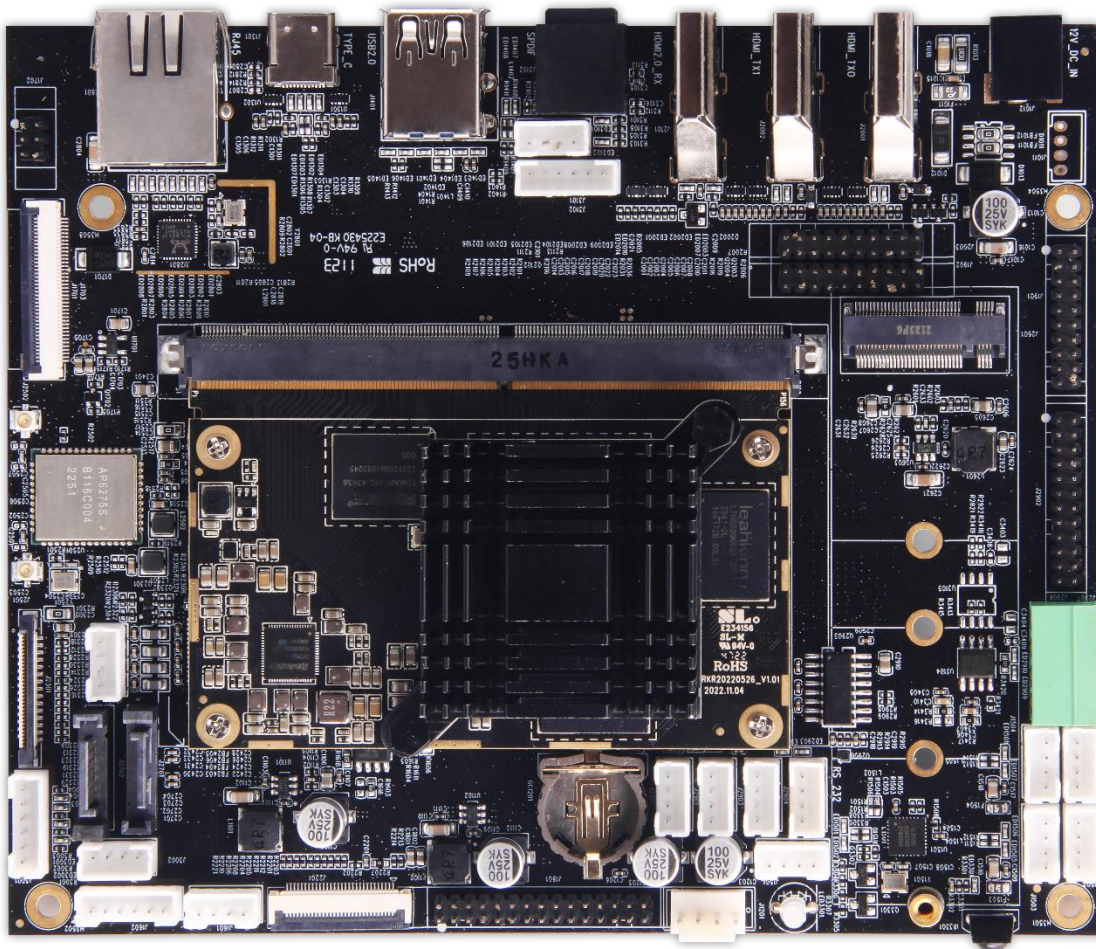


DB3588V2

Hardware UserGuide V2.0



Powered by:

Geniatech

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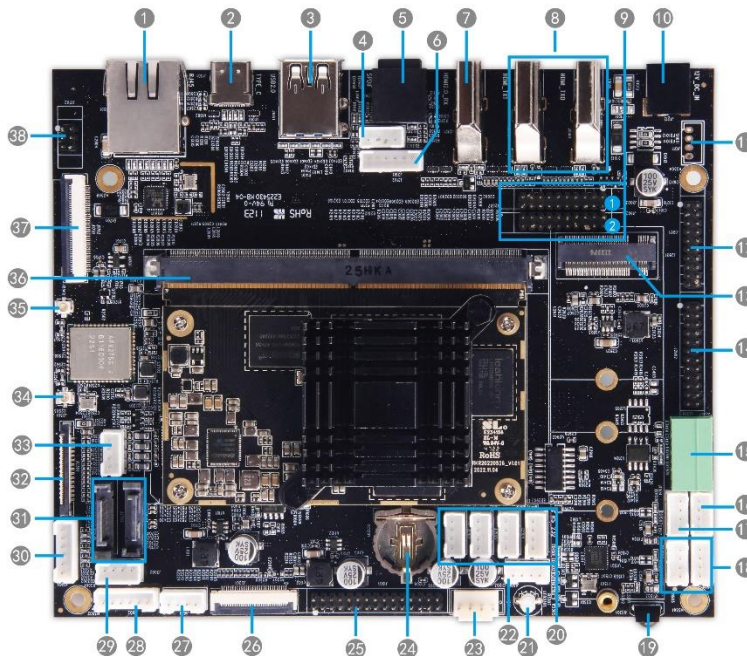
1 Introduction

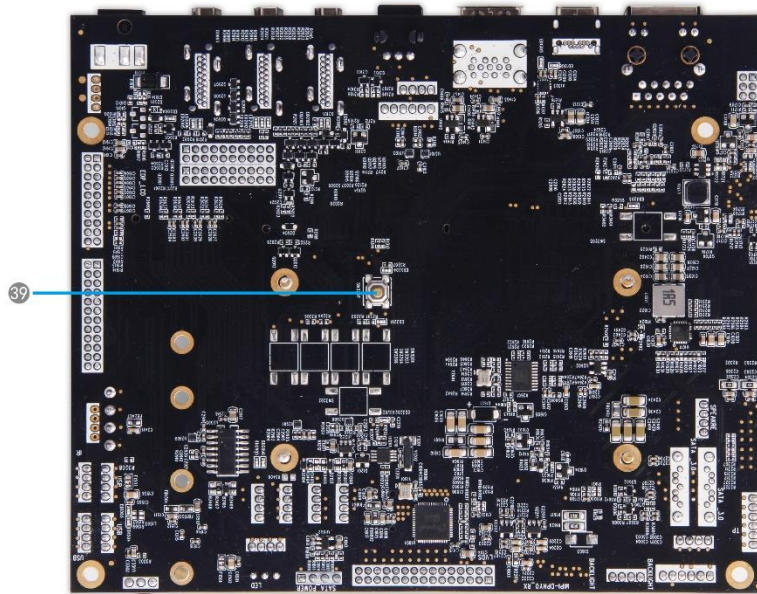
DB3588V2 is a high-performance development board, mainly composed of SOM3588 core board and carrier board, Based on Rockchip RK3588 scheme, it is equipped with quad-core Cortex-A76 and quad-core Cortex-A55 with main frequency up to 2.4GHz, integrated ARM Mali-G610 MP4 quad-core GPU and built-in AI accelerator NPU, which can provide 6TOPs computing power. It supports Bluetooth, Wi-Fi, audio and video, camera and other functions, and it has a variety of video input and output interfaces. It is suitable for intelligent NVR, cloud terminal, industrial control, information release terminal, multimedia advertising machine and other scenarios.

The following are the main features of the DB3588-V2:

- Supports 32 channels 1080P 30FPS, supports 8K video compilation and solution.
- Supports the LPDDR4 up to 32GB, and extends the EMMC up to 512GB.
- Supports for HDMI IN video input, as well as MIPI and USB multiple camera combination way.
- With a variety of video output interfaces, it can be used with LVDS / EDP / HDMI/ MIPI and other interfaces for the display screen.
- Supports a variety of M.2/SATA3.0/SPDIF/PDM/USB3.0/USB2.0 peripheral interfaces.
- Supports gigabit cable network port, and supports 2.4G / 5G dual-frequency wifi and Bluetooth.
- Supports multiple operating systems: Android12 & Debian11 & Buildroot.
- Supports for GPIO / UART / SPI / I2C / RS232 and other extended interfaces.
- Built-in watchdog and RTC battery, it can support 7 * 24 hours of stable work.

1.1 Board Overview



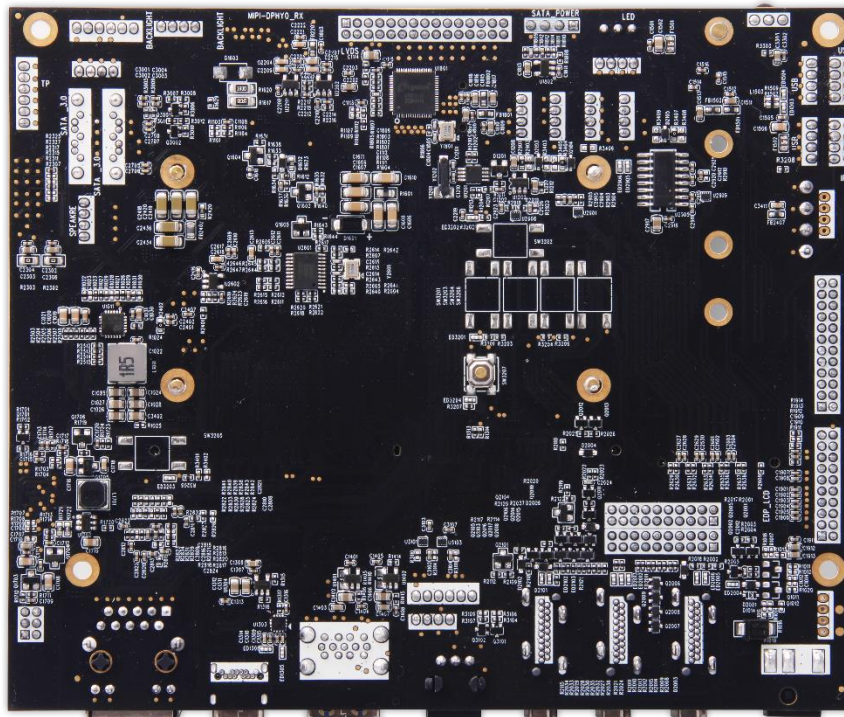
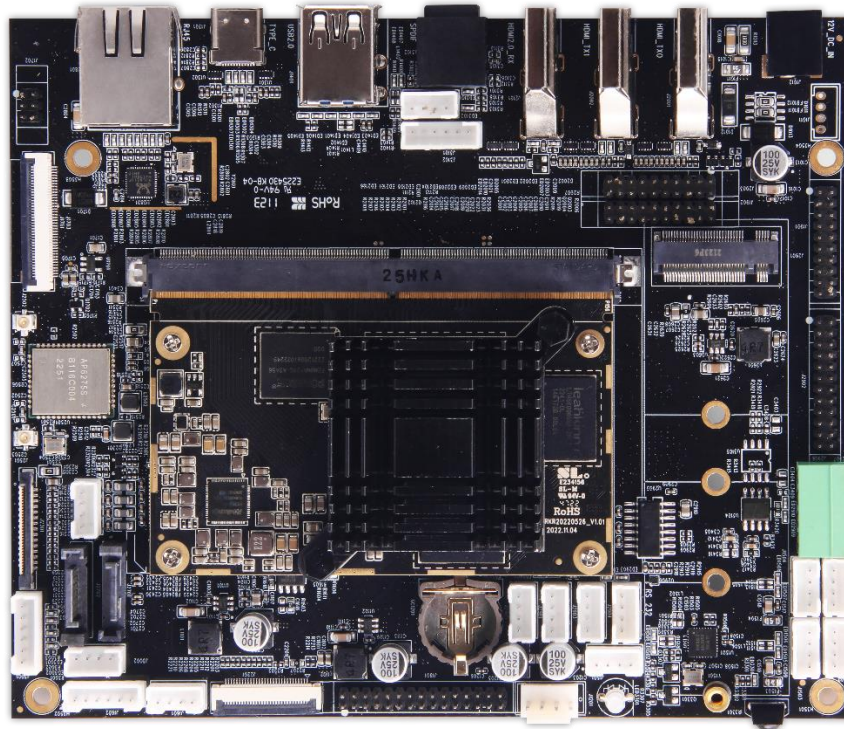


Label	Function	Note
1	LAN	100M/1000M Ethernet
2	Type-C	*1
3	USB 2.0 Type A/USB 3.0 Type A	USB2.0*1 (top), USB3.0*1 (Bottom)
4	DEBUG	1 * 4P Header , pitch 2.0mm
5	SPDIF	*1
6	SPI	1 * 6P Header, pitch 2.0mm
7	HDMI IN	*1
8	HDMI OUT (1,2)	*2 (HDMI 2a)
9	eDP/HDMI OUT Select	2-way 2 * 10P,2.0mm spacing (① is HDMI OUT1, ② is EDP OUT)
10	DC Jack connector	12V/2A
11	POWER SOCKET	1 * 4P Header, pitch 2.0mm
12	eDP Screen Connector	2 *10P header, pitch 2.0mm
13	M.2 Key-M	NGFF 75Pin
14	GPIO	2* 12P header, pitch 2.00mm (GPIO/UART/SPI/I2C)
15	CAN	1 * 4P 3.81mm phoenix terminal
16	IR	*1 (External Expansion IR)
17	USB2.0(4)	1 * 4P Header, pitch 2.0mm
18	USB2.0(2,3)	1 * 4P Header, pitch 2.0mm
19	IR	*1 (IR Receive)
20	RS232(1-4)	1 * 4P Header, pitch 2.0mm
21	LED LIGHT	*1

22	USB2.0(1)	1 * 4P Header, pitch 2.0mm
23	SATA_POWER	1 * 4P Header, pitch 2.54mm
24	RTC Battery socket	*1
25	LVDS Screen Connector	2* 15P header, pitch 2.0mm
26	FPC Connector	1 * 30P FPC, pitch 0.5mm(MIPI CSI)
27	Backlight1	1 * 4P Header, pitch 2.0mm
28	Backlight2	1 * 6P Header, pitch 2.0mm 12V Power
29	I2C	1 * 4P Header, pitch 2.0mm
30	I2C TP	1 * 6P Header, pitch 2.0mm
31	SATA3.0	*2
32	AUDIO interface	1*30P, FPC pitch 0.5mm (Mic array)
33	Speaker	1 * 4P Header, pitch 2.0mm
34	WiFi/BT Antenna interface 1	1*IPEX
35	WiFi/BT Antenna interface 2	1*IPEX
36	SODIMM SOCKET	MXM 314P 0.5mm H7.8 SMD
37	FPC Connector	1*40P, FPC pitch 0.5mm (MIPI DSI)
38	LCM-POWER	2*3PHeader, pitch 2.0mm (3.3V/5V/12V optional)
39	Update Button	*1

2 What's in the Developer Board

The Developer Board contains one DB3588V2.



3 Getting started

3.1 Prerequisites

Before you power up your DB3588V2 for the first time you will need the following:

- DB3588V2 board
- A DB3588V2 board compliant power supply (sold separately by Geniatech).
- A DB3588V2 board compliant IR remote (sold separately by Geniatech).
- A LVDS or eDP LCD Monitor that supports a resolution of Max to 2560x1600@60Hz.
- LVDS-LVDS cable or eDP-eDP cable to connect the board to the LCD.
- A computer keyboard/mouse with USB interface.

3.2 Starting the board for the first time

To start the board, follow these simple steps:

- step 1. Connect the LVDS / eDP cable to the DB3588V2 connector (marked) and to the LCD Monitor.
- step 2. Connect the keyboard to the boards USB connector marked or connect the mouse to the USB connector marked. (It doesn't matter which order you connect it in. You can also connect via an external USB Hub.)
- step 3. Connect the power supply to power connector marked.

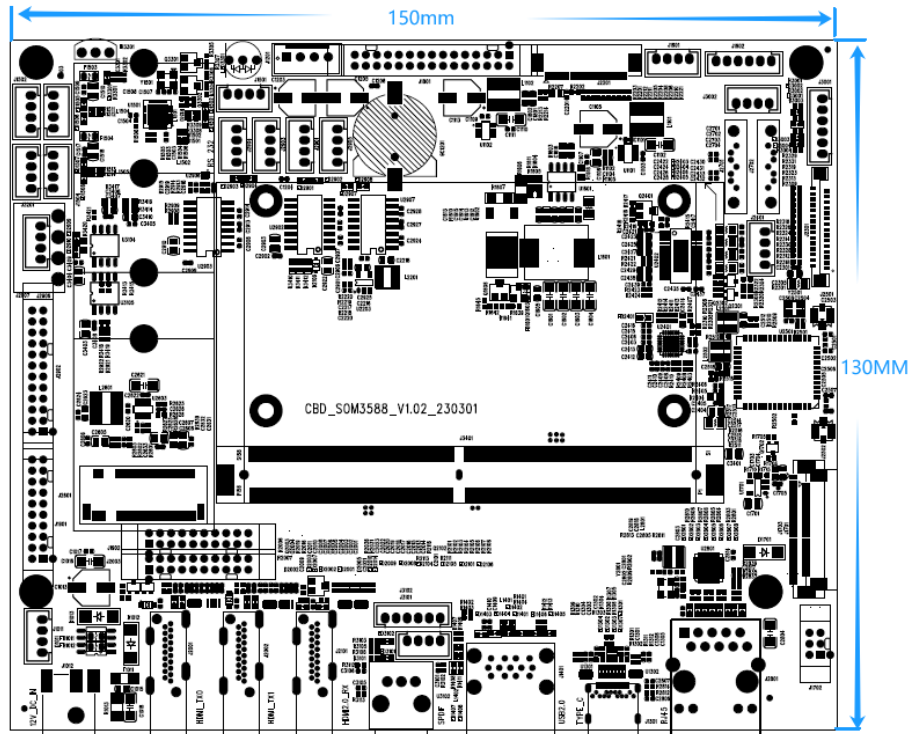
Power on (Plug power adapter), toggle the power switch, then the board will boot up and you will see the boot up logo with Android.

Please note that the first boot takes several minutes due to Androids initialization. Subsequent boot times should be faster.

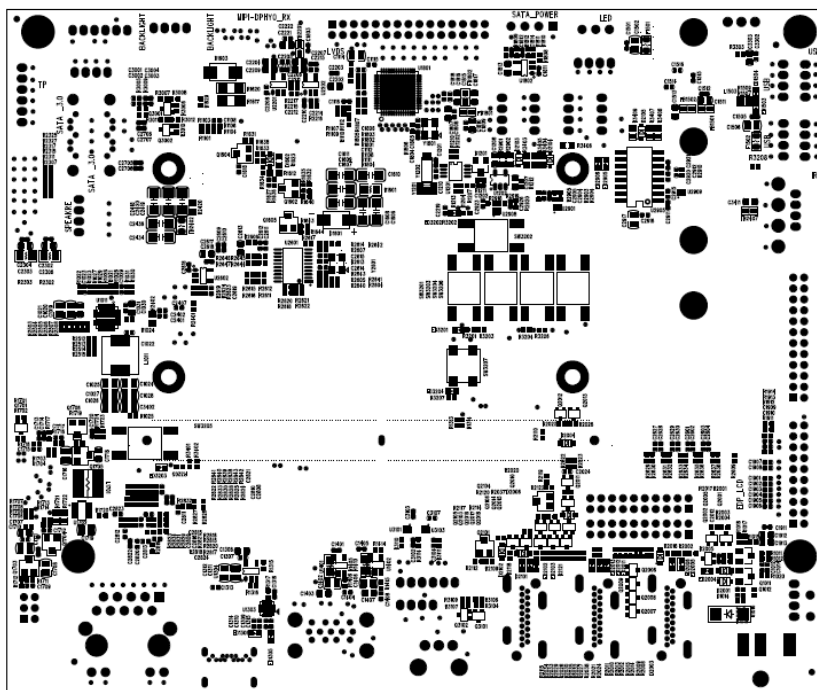
4. DB3588V2 Overview

4.1 Product Diagram

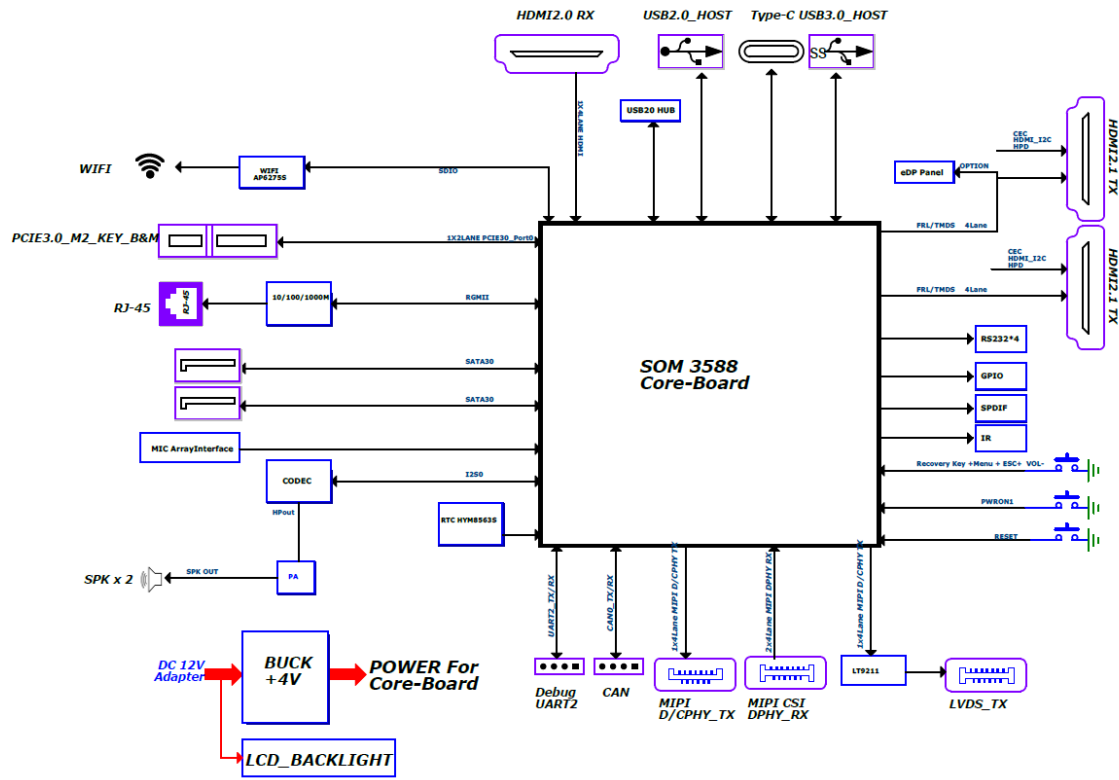
TOP View:



Bottom View:



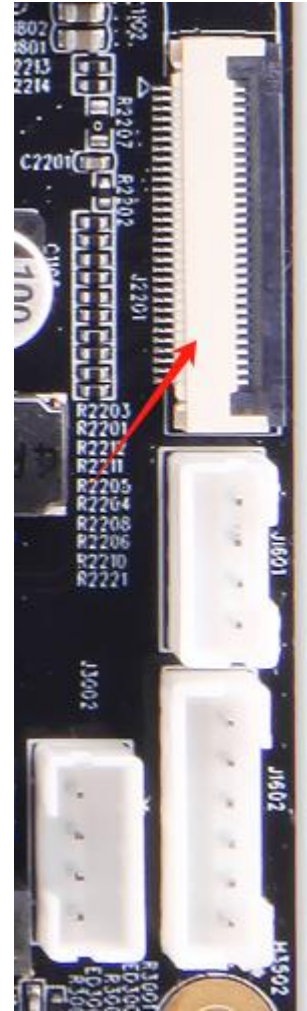
Block Diagram:



4.2 Internal Connectors, Headers & Jumpers

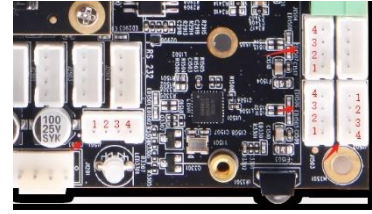
CSI(J2201)

No.	Function	Property	Description
1	NC		
2	VCC2V8	Power	Output (2.8V)
3	VDD1V2	Power	Output (1.2V)
4	VCC1V8	Power	Output (1.8V)
5	NC		
6	GND	Ground	
7	VCC2V8	Power	Output (2.8V)
8	GND		
9	SDA	Input/Output	I2C Data Signal
10	SCL	Input/Output	I2C Clock Signal
11	RESET	Output	Reset Signal
12	VCC1V8	Power	Output (1.8V)
13	GND	Ground	
14	MCLK	Output	Main Clock Signal
15	GND	Ground	
16	DP3	Input/Output	mipi data channel3 +
17	DN3	Input/Output	mipi data channel3 -
18	GND	Ground	
19	DP2	Input/Output	mipi data channel2 +
20	DN2	Input/Output	mipi data channel2 -
21	GND	Ground	
22	DP1	Input/Output	mipi data channel1 +
23	DN1	Input/Output	mipi data channel1 -
24	GND	Ground	
25	CLKP	Input/Output	mipi clock signal +
26	CLKN	Input/Output	mipi clock signal -
27	GND	Ground	
28	DPO	Input/Output	mipi data channel0 +
29	DNO	Input/Output	mipi data channel0 -
30	GND	Ground	

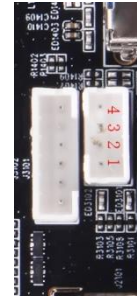


USB Slot (J1501/J1502/J1503/J1504)

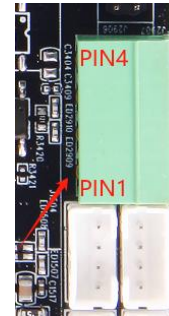
No.	Function	Property	Description
1	VCC	POWER	Output 5V
2	DM	Input/Output	USB2.0 data -
3	DP	Input/Output	USB2.0 data +
4	GND	Ground	

**Debug(J3101)**

No.	Function	Property	Description
1	RX	Input	UART RX (Data)
2	Ground	Ground	
3	TX	Output	UART TX (Data)
4	VCC	POWER	Output 3.3V

**CAN Bus(J2906)**

No.	Function	Property	Description
1	CAN_H	Output/Input	
2	GND	Ground	
3	CAN_L	Output/Input	
4	GND	Ground	

**SPI(J3102)**

No.	Function	Property	Description
1	GND	Ground	
2	SPI_MOSI	Output	Master out slave in
3	SPI_MISO	Input	Master in slave out
4	SPI_CLK	Output	Serial clock
5	SPI_CS	Output	Chip select
6	VCC_SPI	POWER	Output 3.3V

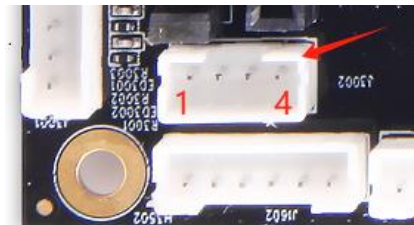


I2C for TP(J3001)

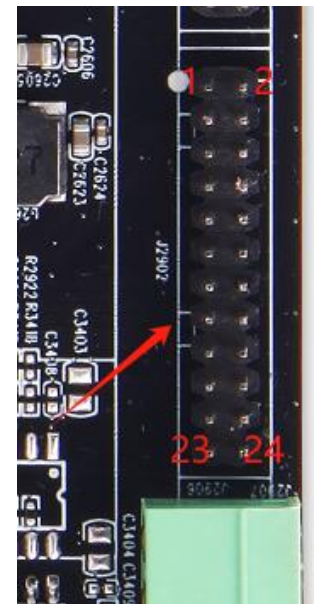
No.	Function	Property	Description
1	VCC	Power	Output 3.3V
2	SCL	Input/Output	I2C Clock Signal
3	SDA	Input/Output	I2C Data Signal
4	RESET	Input/Output	Reset
5	INT	Input/Output	Interrupt
6	GND	Ground	

**I2C(J3002)**

No.	Function	Property	Description
1	VCC	Power	Output 3.3V
2	SCL	Input/Output	I2C Clock Signal
3	SDA	Input/Output	I2C Data Signal
4	GND	Ground	

**GPIO(J2902)**

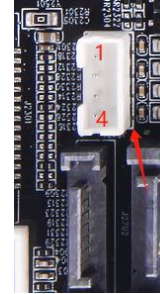
No.	Function
1	SDMMCO_D3/GPIO4_D3
2	I2C4_SCL/ GPIO2_B5
3	SDMMCO_D2/GPIO4_D2
4	I2C4_SDA/ GPIO2_B4
5	SDMMCO_D1/GPIO4_D1
6	TYPEC1_USB20_VBUSDET
7	SDMMCO_D0/GPIO4_D0
8	TYPEC1_USB20_OTG_ID
9	SDMMCO_CLK/GPIO4_D5
10	I2C1_SCL/ GPIO0_D4
11	GND
12	I2C1_SDA/ GPIO0_D5
13	SDMMCO_CMD/GPIO4_D4
14	SARADC_IN4
15	SDMMCO_DET/GPIO0_A4
16	SARADC_VIN3_HP_HOOK
17	SDMMCO_PWREN/GPIO4_A5
18	SARADC_IN4



19	SARADC_IN6
20	SARADC_IN7
21	VCC_3V3
22	VCC_5V0
23	GND
24	GND

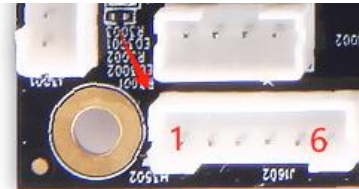
SPEAKER(J2401)

No.	Function	Property	Description
1	AL+	Output	Audio left channel+
2	AL-	Output	Audio left channel-
3	AR+	Output	Audio right channel-
4	AR-	Output	Audio right channel+



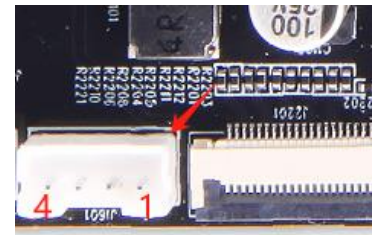
BACKLIGHT(J1602)

No.	Function	Property	Description
1	VCC	Power	Output 12V
2	VCC	Power	Output 12V
3	EN	Output	Back light Control ON/OFF
4	ADJ	Output	Back light adjust brightness
5	GND	Ground	
6	GND	Ground	



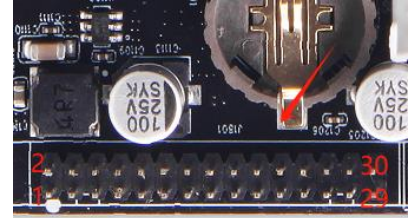
BACKLIGHT for no Backlight Board Panel(J1601)

No.	Function	Property	Description
1	POWER	POWER	BL Power (12V~46V)
2	POWER	POWER	BL Power (12V~46V)
3	GND	Output	Back light adjust brightness
4	GND	Output	Back light adjust brightness



LVDS(J1801)

No.	Function	Property	Description
1	VDD	POWER	Output 12V/5V/3.3V
2	VDD		
3	VDD		
4	GND	Ground	
5	GND		
6	GND		
7	LVDS0_DN0	Output	Channel 0 D0 data signal
8	LVDS0_DP0	Output	
9	LVDS0_DN1	Output	Channel 0 D1 data signal
10	LVDS0_DP1	Output	
11	LVDS0_DN2	Output	Channel 0 D2 data signal
12	LVDS0_DP2	Output	
13	GND	Ground	
14	GND	Ground	
15	LVDS0_CLKN	Output	Channel 0 Clock data signal
16	LVDS0_CLKP	Output	
17	LVDS0_DN3	Output	Channel 0 D3 data signal
18	LVDS0_DP3	Output	
19	LVDS1_DN0	Output	Channel 1 D0 data signal
20	LVDS1_DP0	Output	
21	LVDS1_DN1	Output	Channel 1 D1 data signal
22	LVDS1_DP1	Output	
23	LVDS1_DN2	Output	Channel 1 D2 data signal
24	LVDS1_DP2	Output	
25	GND	Ground	
26	GND	Ground	
27	LVDS1_CLKN	Output	Channel 1 Clock data signal
28	LVDS1_CLKP	Output	
29	LVDS1_DN3	Output	Channel 1 D3 data signal
30	LVDS1_DP3	Output	



eDP(J1901)

No.	Function	Property	Description
1	VDD	POWER	Output 12V/5V/3.3V
2	VDD		
3	GND	Ground	
4	GND		
5	D0-	Output	Lane0 data signal
6	D0+	Output	
7	D1-	Output	Lane1 data signal
8	D1+	Output	
9	D2-	Output	Lane2 data signal
10	D2+	Output	
11	D3-	Output	Lane3 data signal
12	D3+	Output	
13	GND	Ground	
14	GND	Ground	
15	AUX-	Output	AUX Channel signal
16	AUX+	Output	
17	GND	Ground	
18	GND	Ground	
19	HPD	Output	Hotplug
20	VCC	POWER	Output 3.3V

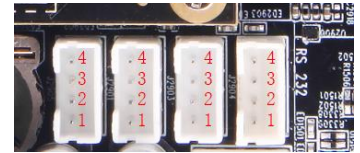
**PANEL POWER(J1702)**

No.	Function	Property	Description
1	VCC1	POWER	Output 3.3V
2	VCC2	POWER	Output 5V
3	VCC3	POWER	Output 12V



RS232(J2901/J2903/J2904/J2905)

No.	Function	Property	Description
1	VCC	POWER	Output 5V
2	RX	Input	
3	TX	Output	
4	GND	Ground	



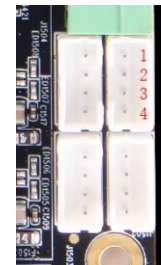
STAT POWER(J1201)

No.	Function	Property	Description
1	VCC	POWER	12V_DCIN
2	GND	Input	
3	GND	Output	
4	VCC	POWER	5V



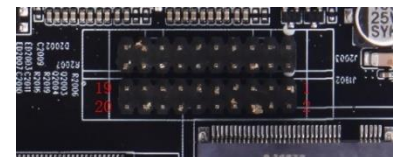
IR(J1201)

No.	Function	Property	Description
1	VCC		
2	LED		
3	GND		
4	KEY		



eDP JUMPER(J1902)

No.	Function
1	HDMI0_TX_SBDN/eDP0_TX_AUXN
2	EDP_AUXN
3	HDMI0_TX_SBDP/eDP0_TX_AUXP
4	EDP_AUXP
5	HDMI0_TX3N_PORT/eDP0_TX_D3N
6	EDP_TX3N
7	HDMI0_TX3P_PORT/eDP0_TX_D3P
8	EDP_TX3N
9	HDMI0_TX3P_PORT/eDP0_TX_D3P
10	EDP_TX3N
11	HDMI0_TXOP_PORT/eDP0_TX_DOP



12	EDP_TX0P
13	HDMI0_TX1N_PORT/eDPO_TX_D1N
14	EDP_TX0P
15	HDMI0_TX1P_PORT/eDPO_TX_D1P
16	EDP_TX0P
17	HDMI0_TX2N_PORT/eDPO_TX_D2N
18	EDP_TX0P
19	HDMI0_TX2P_PORT/eDPO_TX_D2P
20	EDP_TX2P

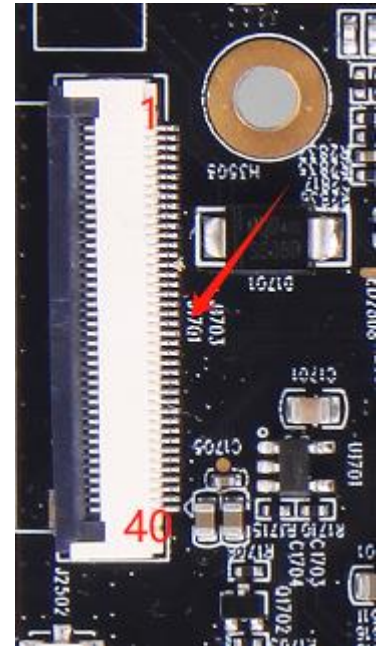
HDMI JUMPER(J2003)

No.	Function
1	HDMI0_TX_SBDN_1
2	HDMI0_TX_SBDN/eDPO_TX_AUXN
3	HDMI0_TX_SBDP_1
4	HDMI0_TX_SBDP/eDPO_TX_AUXP
5	HDMI0_TX3N
6	HDMI0_TX3N_PORT/eDPO_TX_D3N
7	HDMI0_TX3N
8	HDMI0_TX3P_PORT/eDPO_TX_D3P
9	HDMI0_TX3N
10	HDMI0_TX3P_PORT/eDPO_TX_D3P
11	HDMI0_TX0P
12	HDMI0_TX0P_PORT/eDPO_TX_D0P
13	HDMI0_TX1N
14	HDMI0_TX1N_PORT/eDPO_TX_D1N
15	HDMI0_TX1P
16	HDMI0_TX1P_PORT/eDPO_TX_D1P
17	HDMI0_TX2N
18	HDMI0_TX2N_PORT/eDPO_TX_D2N
19	HDMI0_TX2P
20	HDMI0_TX2P_PORT/eDPO_TX_D2P



MIPI DSI(J1703)

No.	Function	Property	Description
1	NC		
2	VCC_1V8	POWER	Output 1.8V
3	VCC_3V3	POWER	Output 3.3V
4	GND	Ground	
5	RESET	OUTPUT	Reset signal
6	NC		
7	GND	Ground	
8	DN0	Output	MIPI Lane 0 Signal-
9	DP0	Output	MIPI Lane 0 Signal+
10	GND	Ground	
11	DN1	Output	MIPI Lane 1 Signal-
12	DP1	Output	MIPI Lane 1 Signal+
13	GND	Ground	
14	CLKN	Output	MIPI Clock Signal-
15	CLKP	Output	MIPI Clock Signal+
16	GND	Ground	
17	DN2	Output	MIPI Lane 2 Signal-
18	DP2	Output	MIPI Lane 2 Signal+
19	GND	Ground	
20	DN3	Output	MIPI Lane 3 Signal-
21	DN3	Output	MIPI Lane 3 Signal+
22	GND	Ground	
23	NC		
24	NC		
25	GND	Ground	
26	NC		
27	PWM_OUT	Output	
28	NC		
29	NC		
30	GND	Ground	
31	LED-	POWER-	
32	LED-	POWER-	
33	NC		
34	NC		
35	NC		
36	NC		
37	NC		
38	NC		
39	LED+	POWER+	
40	LED+	POWER-	



4.3 System Block Diagram

