

Technical Specification

KDG3288

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Revision History

Rev.	Date	Description	Remark

Note:

This document is reference specification for KDG-3288 designed. The current function, parameter and illustration describe in this document should depend on the practicality.

Power Requirement

No.	Item	Voltage(V)			Current(A)		Remark
		Min	Typical	Max	Typical	Max	
1	12DC		12V		2A	10A	

1. Introduction

1.1 General Description

The KDG-3288 Based on RK 3288, ultra Quad Core Cortex-A17 up to 1.8GHz; ARM Mali-T764 GPU, with TE, ASTC, AFBC technology, support OpenGL ES1.1/2.0/3.0, OpenVG1.1, OpenCL.

The KDG-3288 is unique design for customer to seeking like Digital Signage, Smart Home and so on solutions. Customer can custom depend on the practicality.

1.2 Features

Table 1- 1

Item		Detail Description	
Main Chip	RK3288	CPU	Quad Core Cortex-A17 up to 1.8GHz
		GPU	<ul style="list-style-type: none"> ● ARM Mali-T764 GPU, with TE, ASTC, AFBC technology ● Support OpenGL ES1.1/2.0/3.0, OpenVG1.1, OpenCL, DirectX11
DDR3	*4		2G DDR3
EMMC	*1		16G EMMC
WIFI&BT	*1		AP6212 WIFI&BT Module <i>Note: USB Wifi/BT module optional</i>
DC IN	*2		DC 12V 2A~10A
DB9	*1		DB9 Male Header
USB	*4		USB2.0 *2 Optional USB connector *2
Min.USB/OTG	*1		Min.USB / OTG
HDMI	*1		4Kx2K@60fpsHDMI2.0
TF	*1		TF card slot, Up to 64G
SPDIF	*1		Optical SPDIF port
LAN	*1		10M/100M/1000M adaptive LAN port
Back Light	*1		12V back light connector
Jump pin	*6		Panel voltage jump pin *3 (3.3V/5V/12V) Back light voltage jump pin*2 (5V/12V) Auto-Power on jump pin*1
LVDS	*2		6/8/10bit 2ch
EDP	*2		26 Pin (2*13Pin) eDP1 30 Pin eDP2
MIPI	*1		Optional MIPI connector
TP	*1		Touch panel connector
I2C	*1		SPI and I2C port
Function key	*1		Function Keys connector

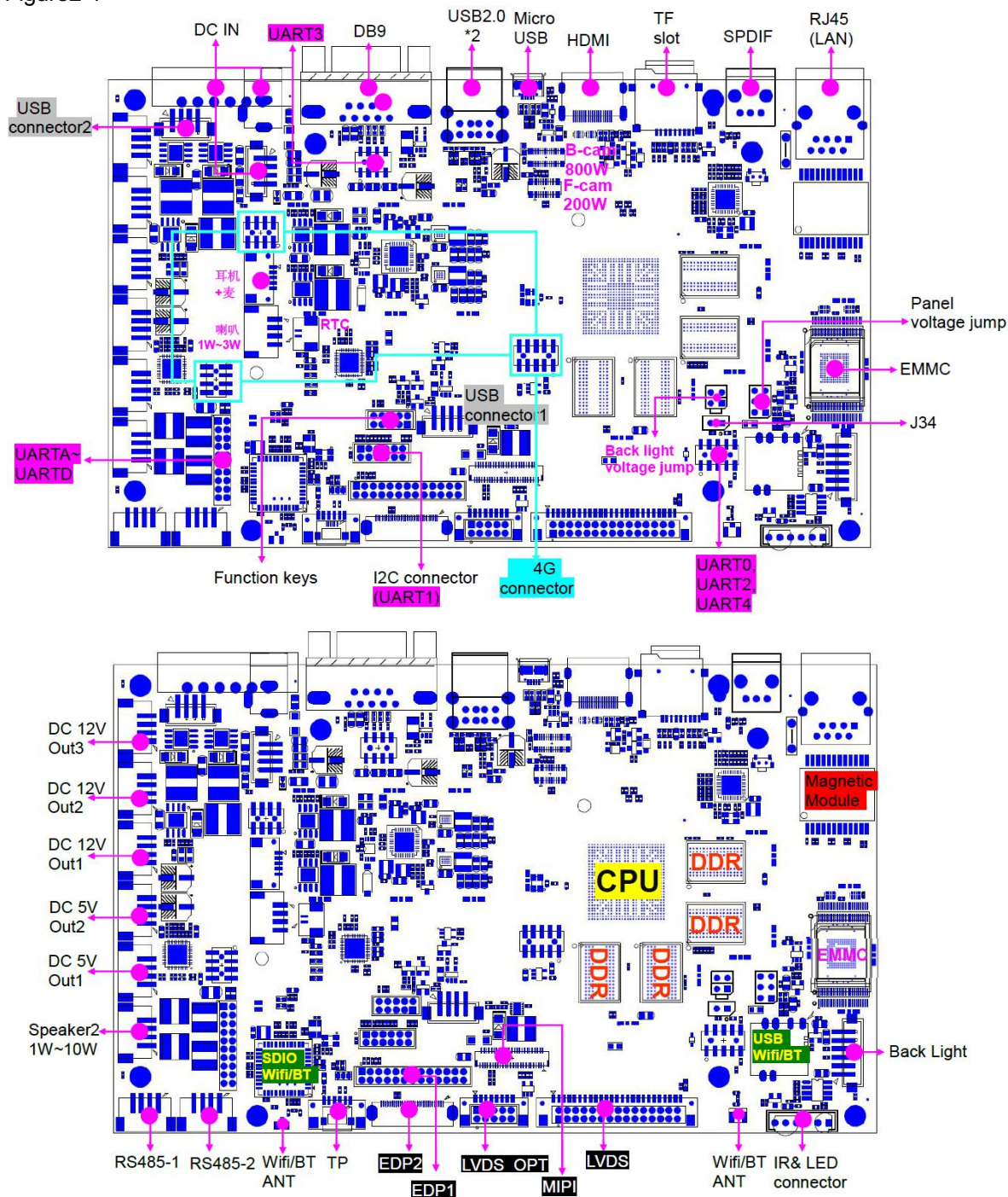
Speaker	*2	Speaker1 1W~3W Speaker2 1W~10W
4G connector	*3	4G connector *3 4G USB *3 on 4G board
RTC	*1	Optional RTC battery connector
Camera connector	*2	Back camera 800W *1 Front camera 200W *1
Headphone&MIC	*1	Headphone& MIC connector
UART	*9	UART0~UART4 UARTA~UARTD
RS485 connector	*2	RS485 connector
DC out	*5	DC 12V/3A out *3 DC 5V/1A out *2
IR&LED connector	*1	IR&LED connector
ANT	*2	SDIO Wifi/BT ANT*1 USB Wifi/BT ANT*1
Dimension	Length: 180mm Width: 110mm Height: 23mm	

2. Function Layout

The picture is for reference only, the actual item is the standard.

2.1 Top view

Figure2-1



3. Interface Definition

3.1 DC IN

- PCB No.: J28 4Pin 2.0mm 180 degree
- J19 6Pin 3.81mm 凤凰座 Optional
- J5 DC port(DC3~3.5mm) Optional

Figure3-1

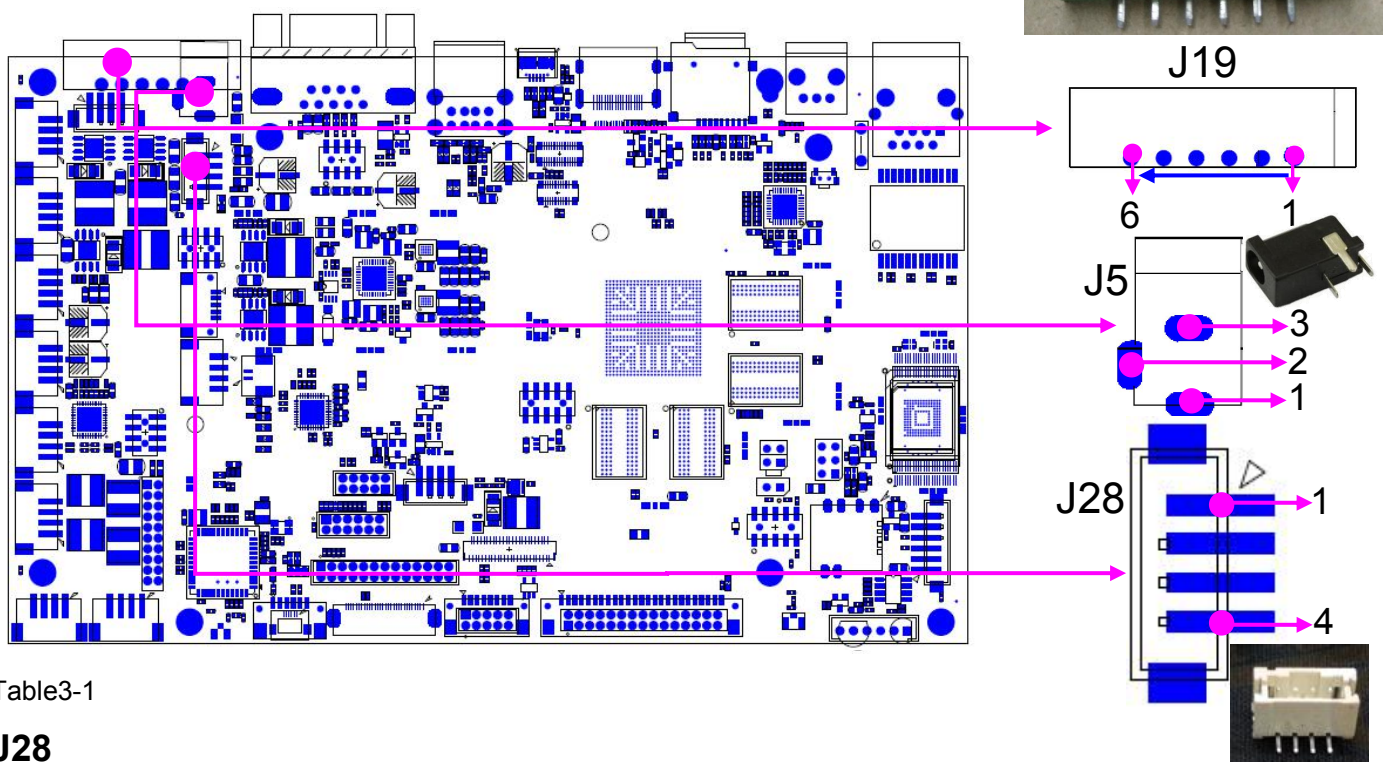


Table3-1

J28

Pin No.	Symbol	Description
1	+12V	12V Power Supply
2	+12V	12V Power Supply
3	GND	Ground
4	GND	Ground

Table3-2

J19

Pin No.	Symbol	Description
1	+12V	12V Power Supply
2	+12V	12V Power Supply
3	+12V	12V Power Supply
4	GND	Ground
5	GND	Ground
6	GND	Ground

Table3-3

J5

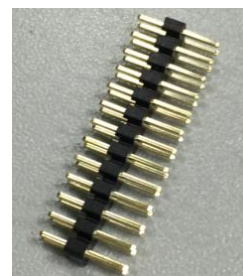
Pin No.	Symbol	Description
1	+12V	12V Power Supply
2	GND	Ground
3	GND	Ground

3.2 Display Connector

3.2.1 EDP1

PCB No.: EDP1 26Pin 2.0mm 2X13, for 27" EDP

Figure3-2



EDP1

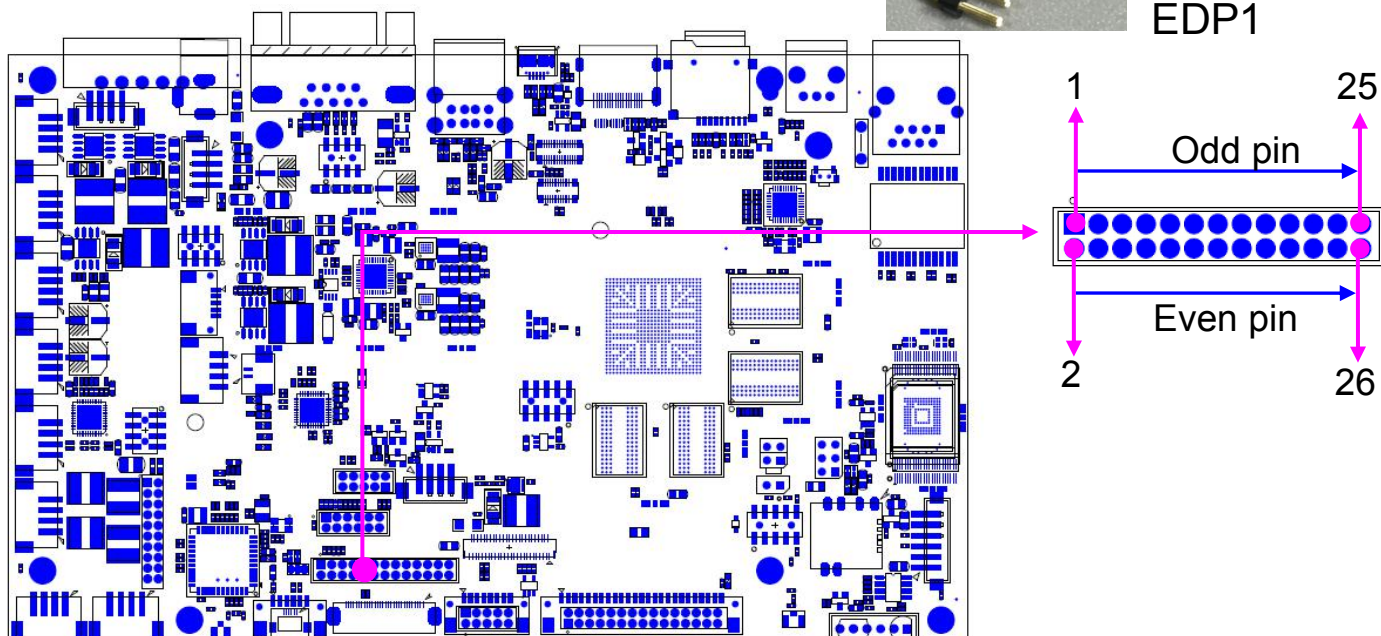


Table3-4

Pin No.	Symbol	Description
1	VIDEO_ON_IN/VIDEO_ON	VIDEO_ON
2	HPD/TP25	Hot Plug Detect
3	EDP_AUXN	AUXN
4	EDP_AUXP	AUXP
5	GND	Ground
6	GND	Ground
7	EDP_TX3N	TX3N
8	EDP_TX3P	TX3P
9	GND	Ground
10	GND	Ground
11	EDP_TX2N	TX2N
12	EDP_TX2P	TX2P
13	GND	Ground
14	GND	Ground

15	EDP_TX1N	TX1N
16	EDP_TX1P	TX1P
17	GND	Ground
18	GND	Ground
19	EDP_TX0N	TX0N
20	EDP_TX0P	TX0P
21	GND	Ground
22	GND	Ground
23	PANEL_POWER	3.3V/5V/12V(Based on J23)
24	PANEL_POWER	3.3V/5V/12V(Based on J23)
25	NC	Reserved
26	PANEL_POWER	3.3V/5V/12V(Based on J23)

3.2.2 EDP2

PCB No.: EDP2 30PIN 0.5mm bottom contact, for 15.6" EDP

Figure3-3

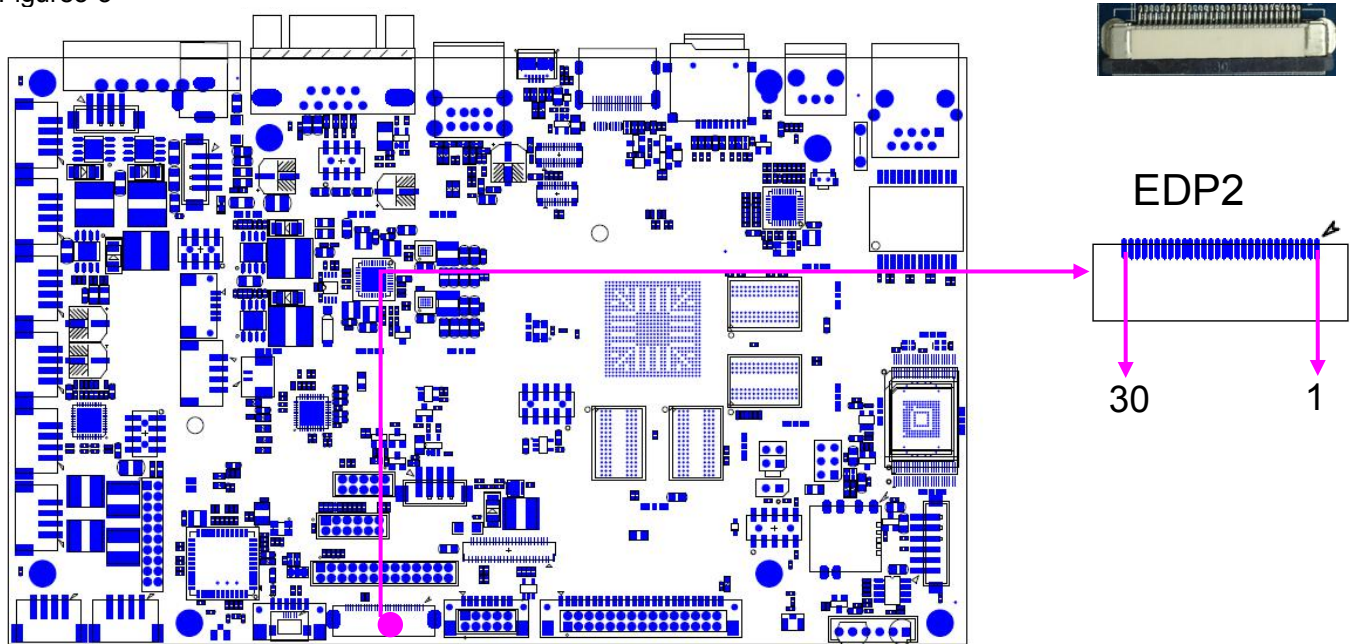


Table3-5

Pin No.	Symbol	Description
1	NC	Reserved
2	GND	Ground
3	TX1N	LAN1N
4	TX1P	LAN1P
5	GND	Ground
6	TX0N	LAN0N
7	TX0P	LAN0P
8	GND	Ground
9	AUXP	AUX_P
10	AUXN	AUX_N
11	GND	Ground

12	VCC_LCD	VCC3.3V
13	VCC_LCD	VCC3.3V
14	NC	Reserved
15	GND	Ground
16	GND	Ground
17	T10	Reserved
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	BL_EN	LED_EN
23	LCDC_BL	PWM
24	NC	Reserved
25	NC	Reserved
26	VLED	VLED
27	VLED	VLED
28	VLED	VLED
29	VLED	VLED
30	NC	Reserved

3.2.3 MIPI

PCB No.: MIPI1 51Pin 0.3mm

Figure3-4

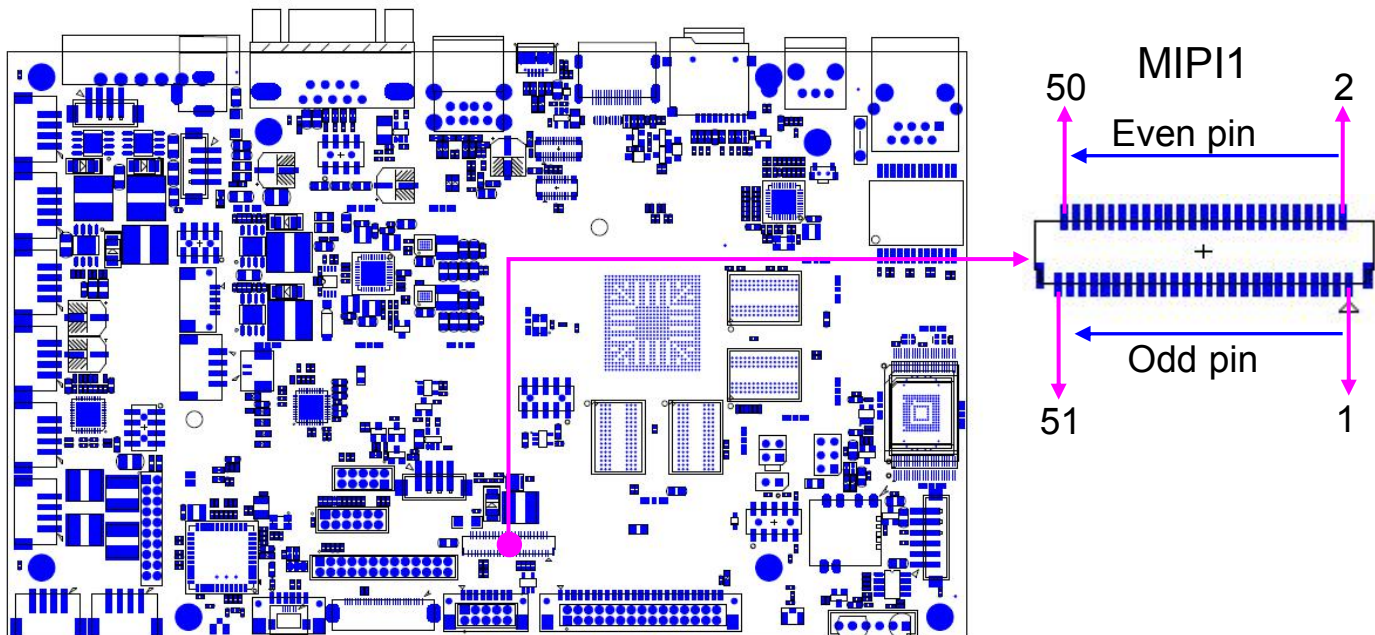


Table3-6

Pin No.	Symbol	Description
1	T8	
2	MIPI_TX/RX_D3N	MIPI2_3N
3	GND	GND
4	MIPI_TX/RX_D3P	MIPI2_3P
5	GND	GND

6	MIPI_TX/RX_D0N	MIPI2_0N
7	GND	GND
8	MIPI_TX/RX_D0P	MIPI2_0P
9	GND	GND
10	MIPI_TX/RX_CLKN	MIPI2_CLKN
11	GND	GND
12	MIPI_TX/RX_CLKP	MIPI2_CLKP
13	GND	GND
14	MIPI_TX/RX_D1N	MIPI2_1N
15	GND	GND
16	MIPI_TX/RX_D1P	MIPI2_1P
17	GND	GND
18	MIPI_TX/RX_D2N	MIPI2_2N
19	GND	GND
20	MIPI_TX/RX_D2P	MIPI2_2P
21	GND	GND
22	MIPID3-	MIPI1_3N
23	GND	GND
24	MIPID3+	MIPI1_3P
25	GND	Ground
26	MIPID0-	MIPI1_3N
27	GND	Ground
28	MIPID0+	MIPI1_3P
29	GND	Ground
30	MIPICLK-	MIPI1_CLKN
31	GND	Ground
32	MIPICLK+	MIPI1_CLKP
33	VDD	3.3V
34	MIPID1-	MIPI1_1N
35	VDD	3.3V
36	MIPID1+	MIPI1_1P
37	VDD	3.3V
38	MIPID2-	MIPI1_2N
39	HSYNC	horizontal synchronization signal
40	MIPID2+	MIPI1_2P
41	LCD_EN_MIPI	LED_EN
42	GND	Ground
43	PWM_IN	PWM_IN1.8V
44	LED-	VLED-
45	BL_PWM_OUT	PWM_OUT1.8V
46	LED-	VLED-
47	LED+	VLED+
48	LED-	VLED-
49	LED+	VLED+
50	LED-	VLED-
51	LED+	VLED+

3.2.4 LVDS

- PCB No.: CON7 25Pin 1.25 DF14 Optional
Reference model: DF14-25P-1.25H
- J13 30Pin 2.0mm 2x15
- CON6 8Pin 1.25 DF14
Reference model: DF14-8P-1.25H
- J14 10Pin 2.0mm 2x5

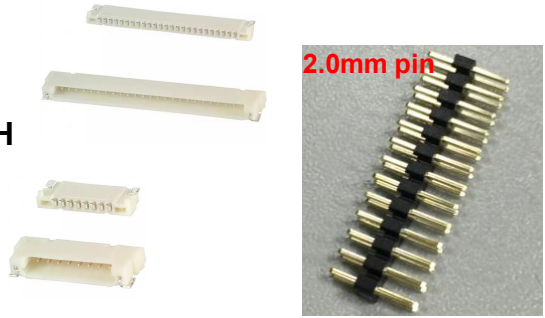


Figure3-5

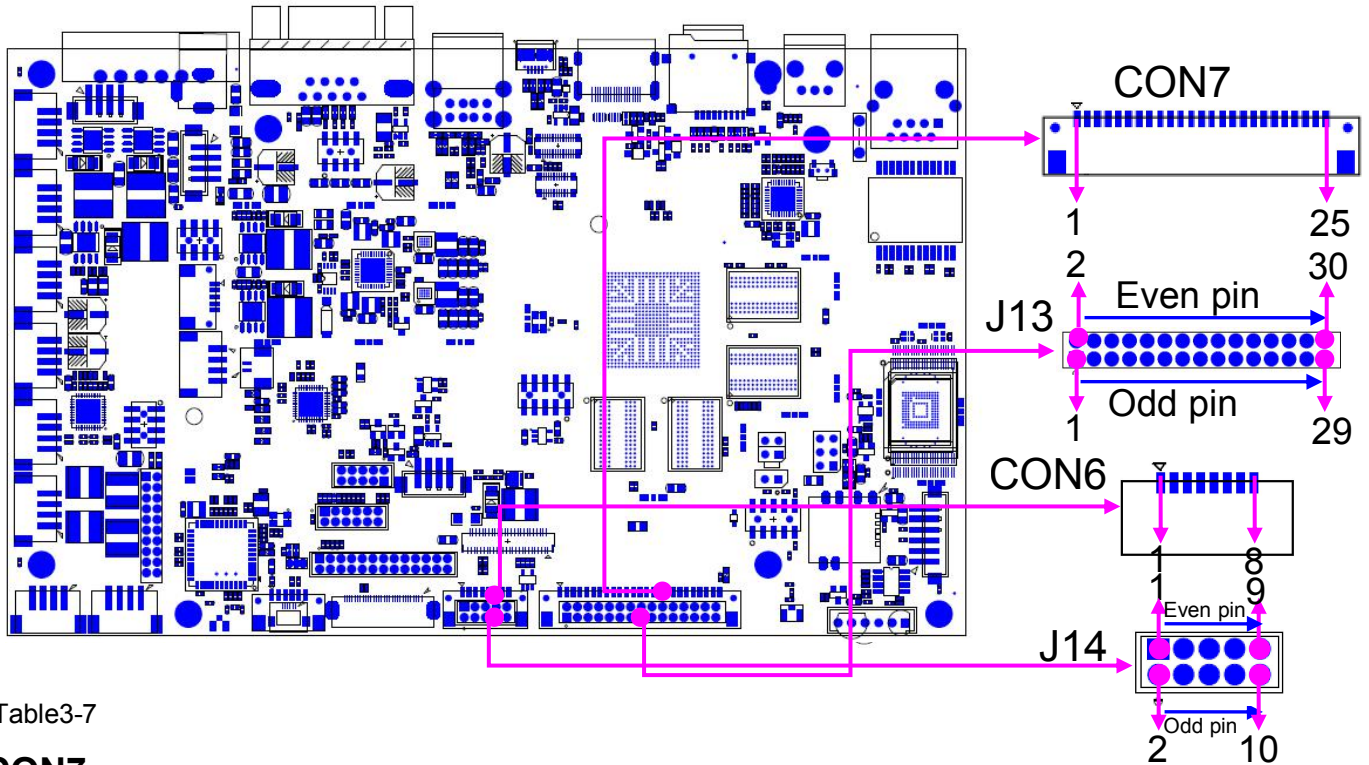


Table3-7

CON7

Pin No.	Symbol	Description
1	PANEL_POWER	3.3V/5V/12V(Based on J23)
2	PANEL_POWER	3.3V/5V/12V(Based on J23)
3	GND	Ground
4	GND	Ground
5	O3+	O3+
6	O3-	O3-
7	OC+	OC+
8	OC-	OC-
9	O2+	O2+
10	O2-	O2-
11	O1+	O1+
12	O1-	O1-
13	O0+	O0+
14	O0-	O0-
15	E3+	E3+
16	E3-	E3-
17	EC+	EC+

18	EC-	EC-
19	E2+	E2+
20	E2-	E2-
21	E1+	E1+
22	E1-	E1-
23	E0+	E0+
24	E0-	E0-
25	BL_EN	BL_EN

Table3-8

J13

Pin No.	Symbol	Description
1	PANEL_POWER	3.3V/5V/12V(Based on J23)
2	NC	NC
3	PANEL_POWER	3.3V/5V/12V(Based on J23)
4	GND	GND
5	GND	GND
6	GND	GND
7	O0-	O0-
8	O0+	O0+
9	O1-	O1-
10	O1+	O1+
11	O2-	O2-
12	O2+	O2+
13	GND	GND
14	GND	GND
15	OC-	OC-
16	OC+	OC+
17	O3-	O3-
18	O3+	O3+
19	E0-	E0-
20	E0+	E0+
21	E1-	E1-
22	E1+	E1+
23	E2-	E2-
24	E2+	E2+
25	GND	GND
26	GND	GND
27	EC-	EC-
28	EC+	EC+
29	E3-	E3-
30	E3+	E3+

Table3-9 **CON6**

Pin No.	Symbol	Description
1	GND	Ground
2	O4+	O4+
3	O4-	O4-
4	E4+	E4+
5	E4-	E4-
6	LVDS_OPT_1	Optional_1
7	LVDS_OPT_2	Optional_2
8	LVDS_OPT_3	Optional_3

Table3-10 **J14**

Pin No.	Symbol	Description
1	E4-	E4-
2	E4+	E4+
3	O4-	O4-
4	O4+	O4+
5	LED-	LED-
6	LED+	LED+
7	ADJ	ADJ
8	NC	NC
9	EN_BL	EN_BL
10	GND	GND

3.3 Jump pin

1

PCB No.: J21 2x2 2.54mm PINHEADER Backlight voltage jump pin
 J23 2x3 2.54mm PINHEADER Panel voltage jump pin

Figure3-6

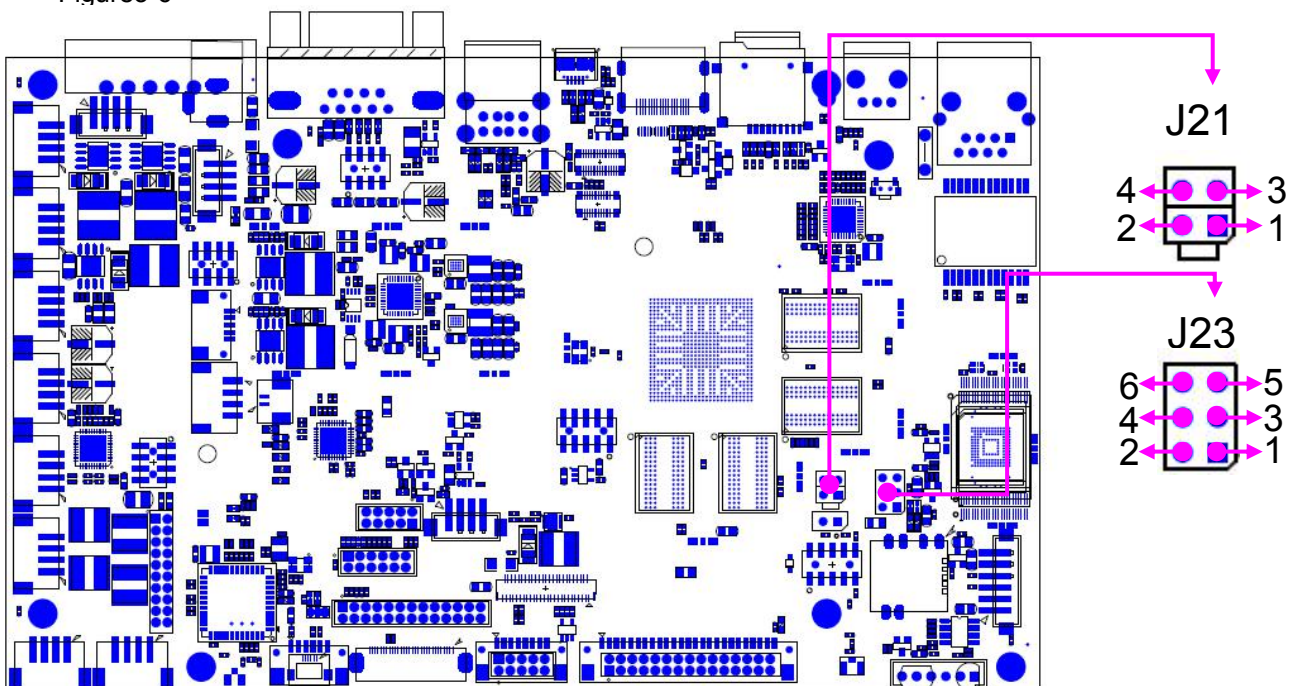


Table3-11-1 **J21**

Pin No.	Symbol	Description
1	BL VCC	BL VCC
2	5V	5V
3	BL VCC	BL VCC
4	12V	12V

Table3-11-2 **J23**

Pin No.	Symbol	Description
1	PANEL POWER	PANEL POWER
2	3.3V	3.3V
3	PANEL POWER	PANEL POWER
4	5V	5V
5	PANEL POWER	PANEL POWER
6	12V	12V

3.4 TP connector

PCB No.: CON3 6Pin 1.25mm DF14 Reference model: DF14-5P-1.25H
 J20 6Pin 0.5mm 后锁 FPC-6P-0.5mm_B

Figure 3-7

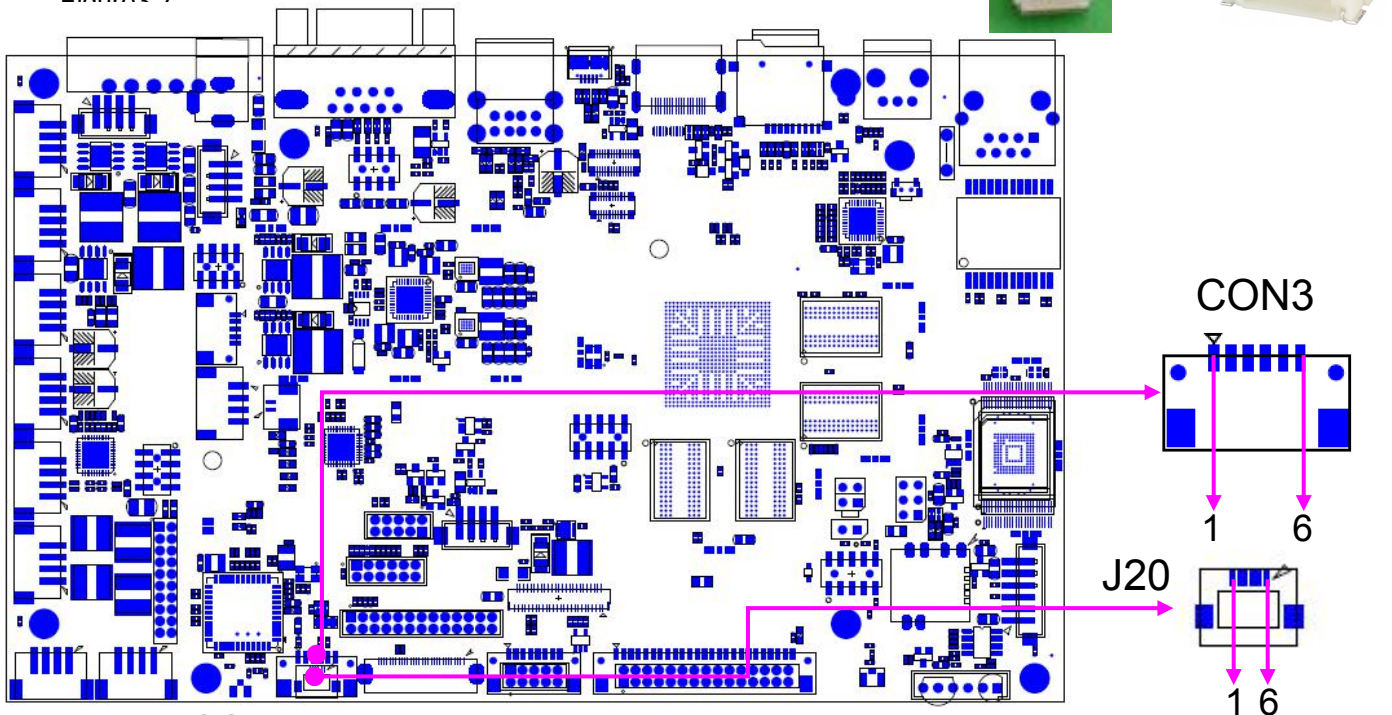


Table3-12-1 **CON3**

Pin No.	Symbol	Description
1	VCC_TP	VCC 3.3V
2	TOUCH_INT	INT
3	TOUCH_RST	RST
4	I2C4_SDA_TP	I2C4_SDA
5	I2C4_SCL_TP	I2C4_SCL
6	GND	Ground

Table3-12-2 **J20**

Pin No.	Symbol	Description
1	VCC_TP	VCC 3.3V
2	TOUCH_INT	INT
3	TOUCH_RST	RST
4	I2C4_SDA_TP	I2C4_SDA
5	I2C4_SCL_TP	I2C4_SCL
6	GND	Ground

3.5 4G Connector

PCB No.: J8 8Pin 2.0mm 4G connector1
 J10 10Pin 2.0mm 4G connector2
 J12 8Pin 2.0mm 4G USB Power



Figure3-8

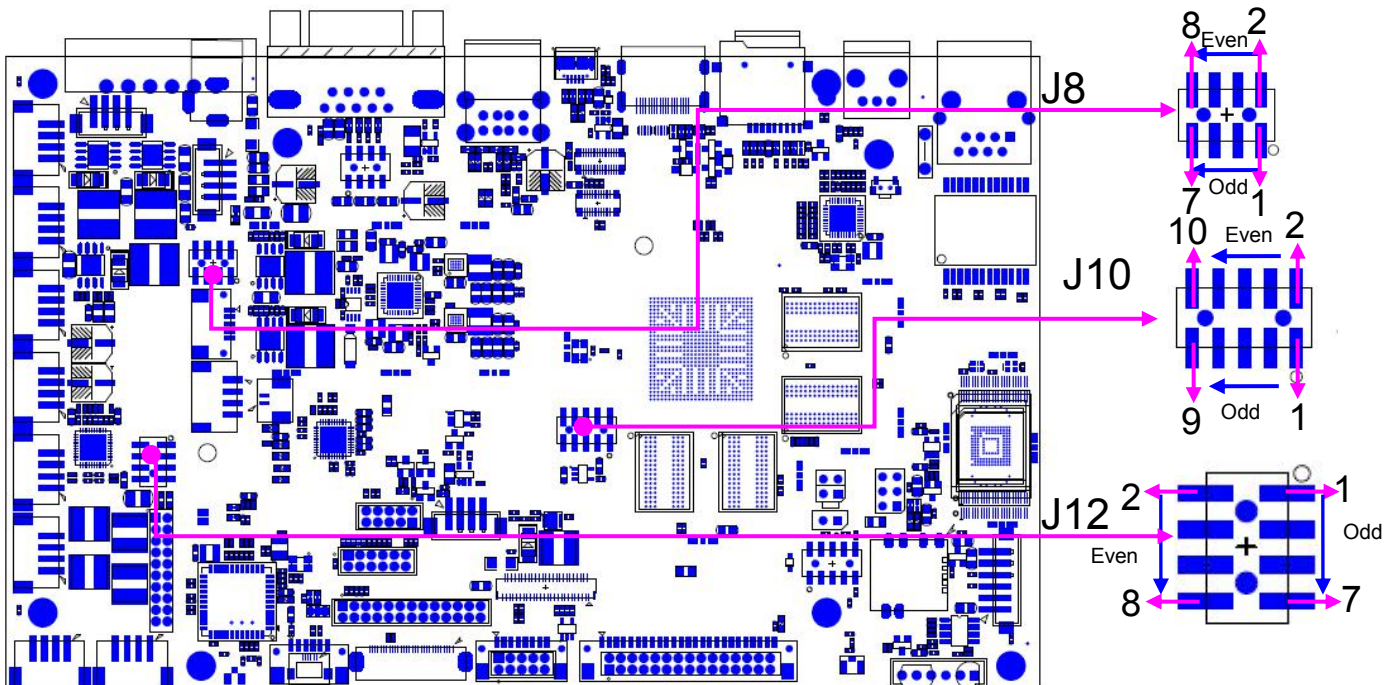


Table3-13 **J8**

Pin No.	Symbol	Description
1	DC5VB	5V
2	VCC_IO	VCC_IO
3	GND	GND
4	GND	GND
5	HSIC_STROBE	HSIC_STROBE
6	HSIC_DATA	HSIC_DATA
7	HUB_RESET_N	HUB_RESET_N
8	GSENSOR_INT	GSENSOR_INT

Table3-14 **J10**

Pin No.	Symbol	Description
1	I2C1_SCL	I2C1_SCL
2	I2C1_SDA	I2C1_SDA

3	VDD_10	VDD_10
4	GND	GND
5	SUSPEND	SUSPEND
6	3G_WK_OUT	3G_WK_OUT
7	3G_RESET	3G_RESET
8	3G_W_DIS	3G_W_DIS
9	3G_PWR_EN	3G_PWR_EN
10	VCC_18	VCC_18

Table3-15 **J12**

Pin No.	Symbol	Description
1	5VC	5V
2	5VC	5V
3	5VC	5V
4	5VC	5V
5	GND	Ground
6	GND	Ground
7	GND	Ground
8	GND	Ground

3.6 Speaker

PCB No.: CON2
CON13

4Pin 2.0mm Speaker1 1W~3W
4Pin 2.0mm Speaker2 1W~10W

Reference model: S4B-PH-SM4-TB(LF)(SN)

Figure3-9

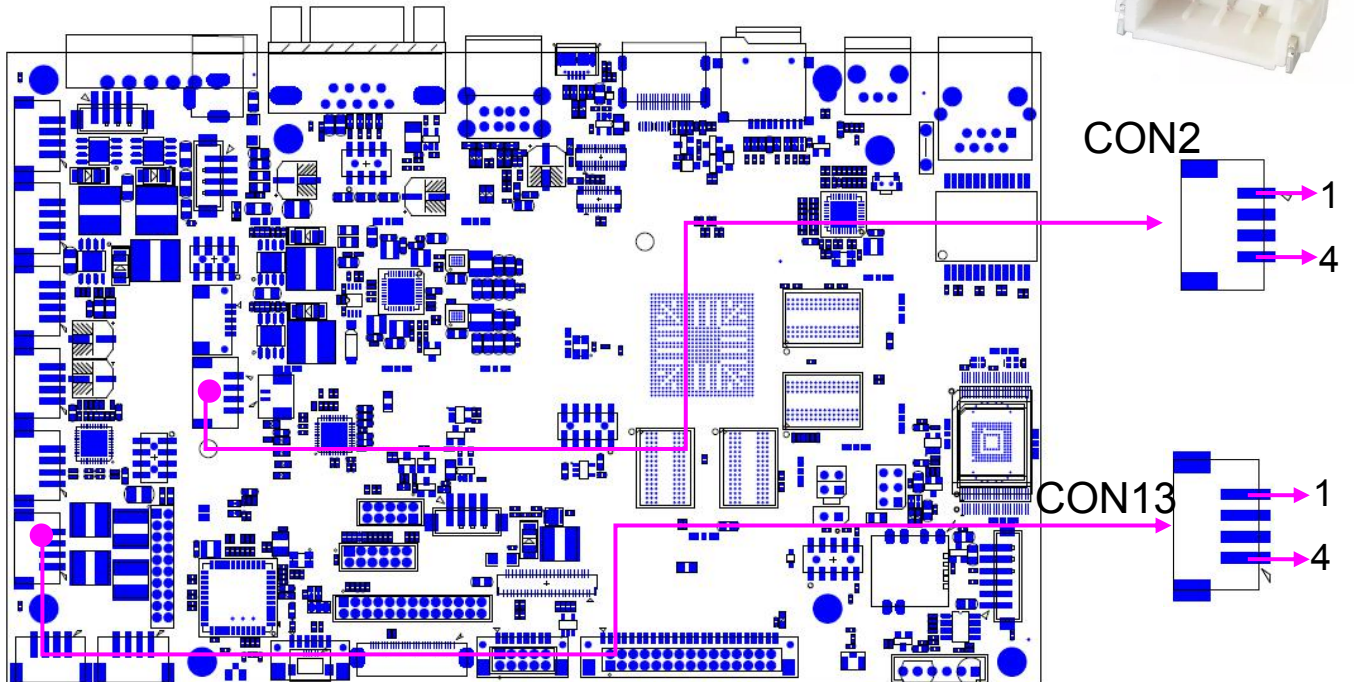


Table3-16 **CON2**

Pin No.	Symbol	Description
1	RP	Right+
2	RN	Right-
3	LN	Left-

4	LP	Left+
---	----	-------

Table3-17 CON13

Pin No.	Symbol	Description
1	LN	Left-
2	LP	Left+
3	RP	Right+
4	RN	Right-

3.7 Back light connector

PCB No.: J24 6Pin 2.0mm vertical SMT 立式贴片

Figure3-10

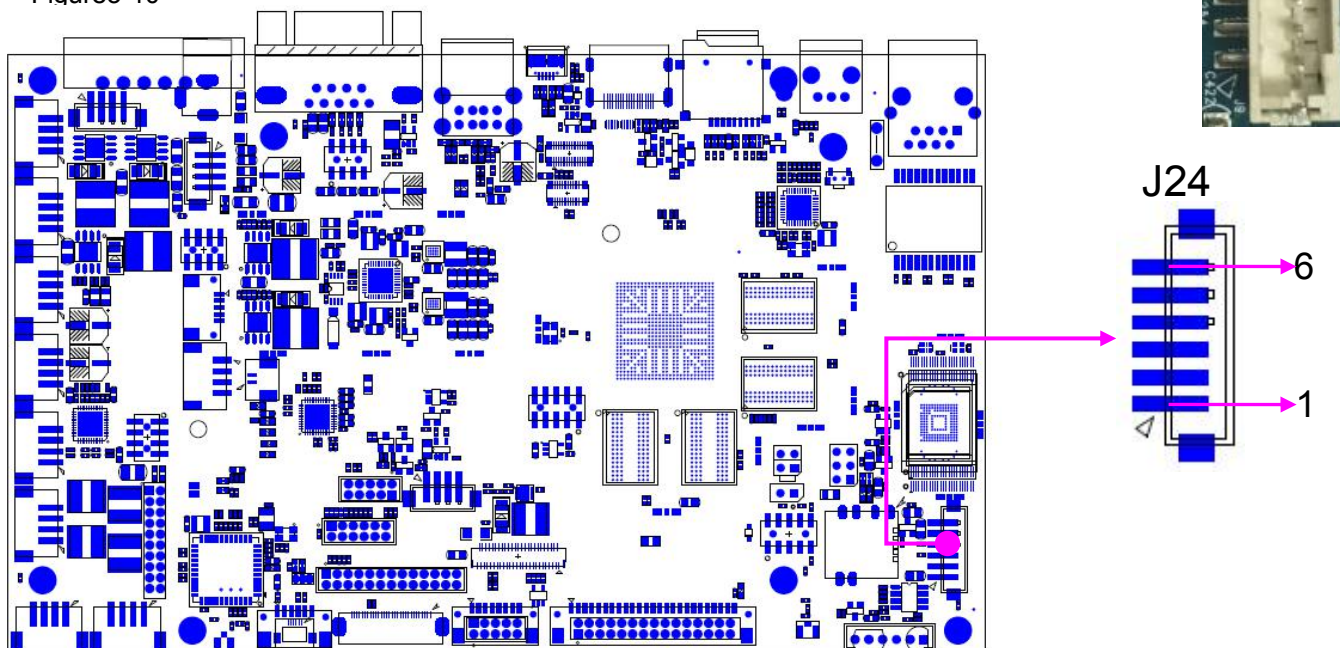


Table3-18

Pin No.	Symbol	Description(Based on J21)
1	VCC	5V/12V
2	VCC	5V/12V
3	BL_ON	BL_ON
4	ADJ	ADJ
5	GND	GND
6	GND	GND

3.8 I2C

PCB No.: J6 12Pin 2.0mm 2X6

Figure3-11



J6

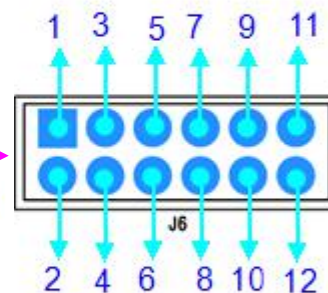
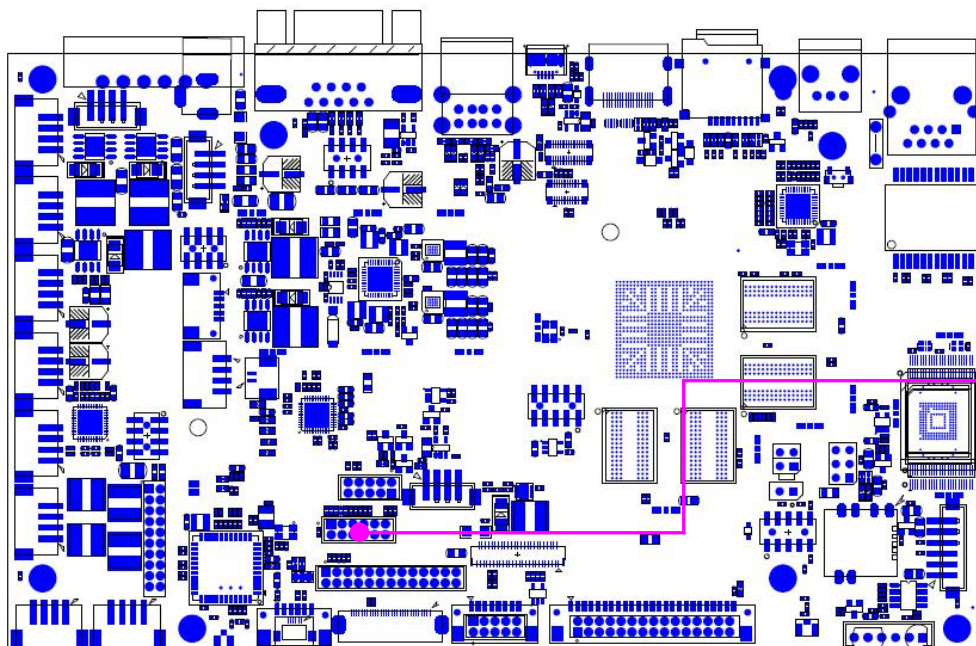


Table3-19

Pin No.	Symbol	Description
1	SPI2_CLK	The CLK signal of SPI2
2	SPI2_CSN0	The CSN signal of SPI2
3	SPI2_RXD	RXD of SPI2
4	SPI2_TXD	TXD of SPI2
5	VCC_OUT	VCC Out
6	GND	Ground
7	UART1_RX	RX of UART1
8	UART1_TX	TX of UART1
9	UART1_CTS	CTS of UART1
10	UART1_RTS	RTS of UART1
11	I2C1_SDA	SDA of I2C1
12	I2C1_SCL	SCL of I2C1

Note:

① About UART1

State	Default use: RS485	If RS485 is no use
UART1 available	x	√

3.9 Function Keys connector

PCB No.: J22 10Pin 2.0mm 2X5

Figure3-12

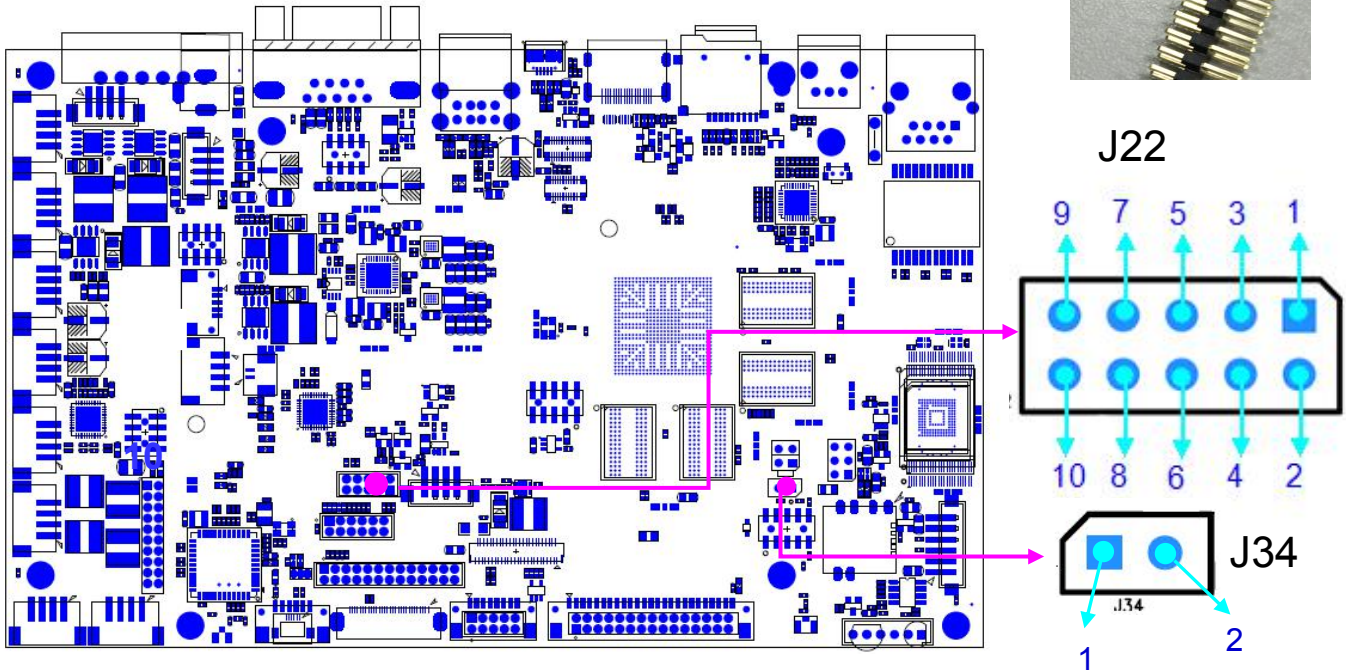


Table3-20

Pin No.	Symbol	Description
1	VOL+	The volume increase
2	LED+	LED+
3	VOL-	The volume reduction
4	LED-	LED-
5	ESC	ESC
6	POWER ON KEY	Power on key PIN1
7	OPT	Optional signal
8	POWER ON KEY	Power on key PIN2
9	GND	Ground
10	NC	Reserved

The J34 is the auto-power on jump pin, in general, the jump is on the jump pin, when you plug into the power supply, the KDG-3288 will power-on automatically.

If you want to power-on the KDG-3288 manually, you can connect the switch to the pin8 and pin6 of J22. After connecting, when you plug KDG-3288 into power supply and press the switch three seconds, the KDG-3288 will power-on.

3.10 Front Camera

PCB No.: J4 200W Front SP2518 Reference model: AXT624124

Figure3-13

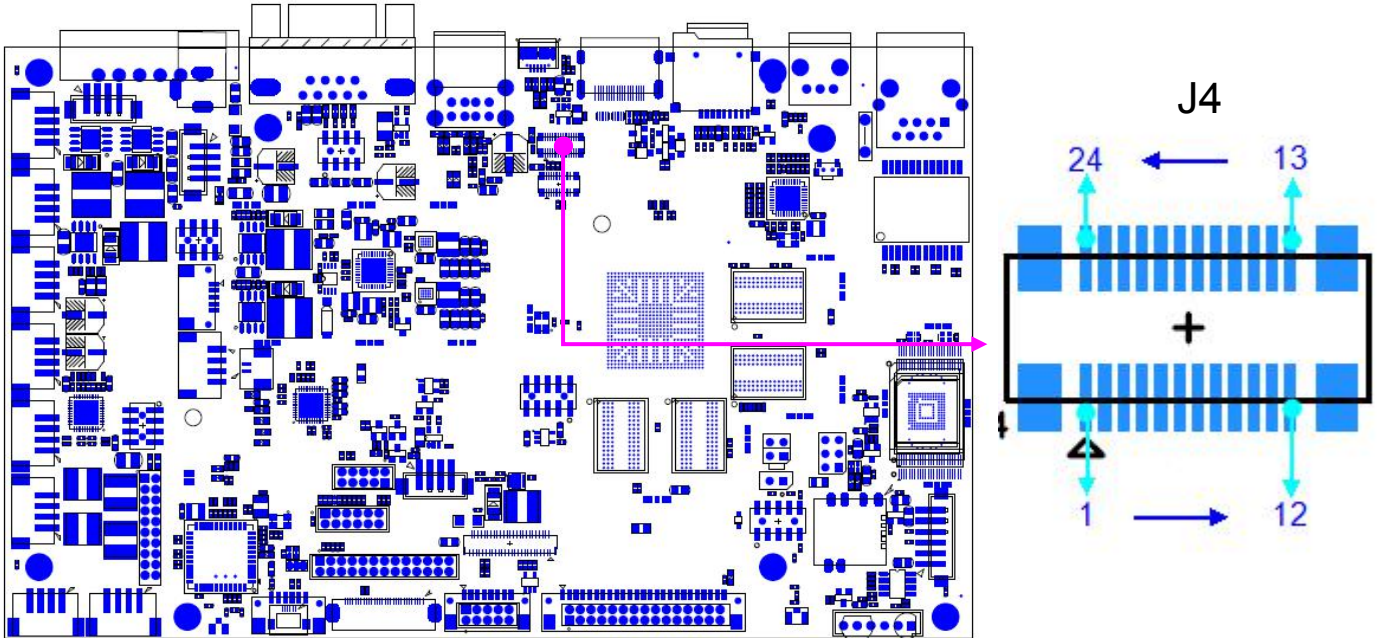
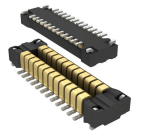


Table3-21

Pin No.	Symbol	Description
1	CIF_PDN0	PWDN1
2	I2C3_SDA_CAM	SDA
3	I2C3_SCL_CAM	SCL
4	CIF_VSYNC	VS
5	CIF_HREF	HS
6	VCC_18DVP	DOVDD1.8V
7	CIF_CLK0	MCLK
8	GND	DGND Ground
9	CIF_CLK1	PCLK
10	CIF_D0	D2
11	CIF_D1	D3
12	AF-VDD2_8V	AFVDD
13	GND	Ground
14	CIF_D2	D4
15	CIF_D3	D5
16	CIF_D4	D6
17	CIF_D5	D7
18	CIF_D6	D8
19	CIF_D7	D9
20	VCC18_DVP	DVDD1.8V
21	CIF_PND0	PWDN0
22	CIF_RST0	RST
23	VCC28_DVP	AVDD2.8V
24	GND	AGND Ground

25	GND	Ground
26	GND	Ground
27	GND	Ground
28	GND	Ground

3.11 Back Camera

PCB No.: J9 800W Female Reference model: AXT630124

Figure3-14

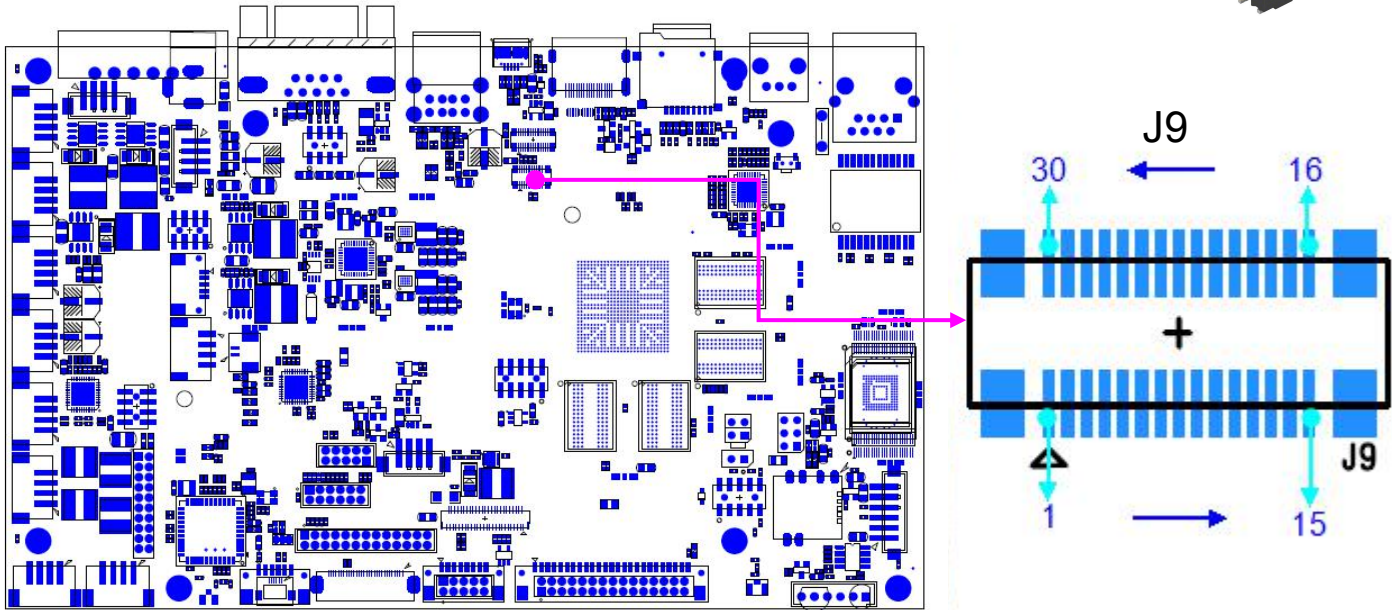
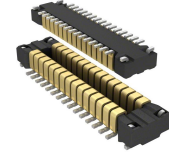


Table3-22

Pin No.	Symbol	Description
1	GND	AF-GND Ground
2	AF_VDD2_8V	AF-VDD2.8V
3	VCC15_DVP	DVDD1.5V
4	VCC18_DVP	DOVDD1.8V
5	NC	Reserved
6	GND	AGND Ground
7	VDD28_DVP	AVDD2.8V
8	NC	Reserved
9	I2C3_SDA_CAM	SDA
10	I2C3_SCL_CAM	SCL
11	MIPI_RST1	RST
12	CIF_PDN1	PWDN
13	GND	Ground
14	MIPI_MCLK	MCLK
15	GND	Ground
16	MIPI_RX_D3P	D3P
17	MIPI_RX_D3N	D3N
18	GND	Ground
19	MIPI_RX_D2P	D2P
20	MIPI_RX_D2N	D2N

21	GND	Ground
22	MIPI_RX_D1P	D1P
23	MIPI_RX_D1N	D1N
24	GND	Ground
25	MIPI_RX_CLKP	CLKP
26	MIPI_RX_CLKN	CLKN
27	GND	Ground
28	MIPI_RX_D0P	D0P
29	MIPI_RX_D0N	D0N
30	GND	Ground

3.12 Headphone&MIC

PCB No.: CON1 5Pin 1.25mm [Reference model: DF14-5P-1.25H](#)

Figure3-15

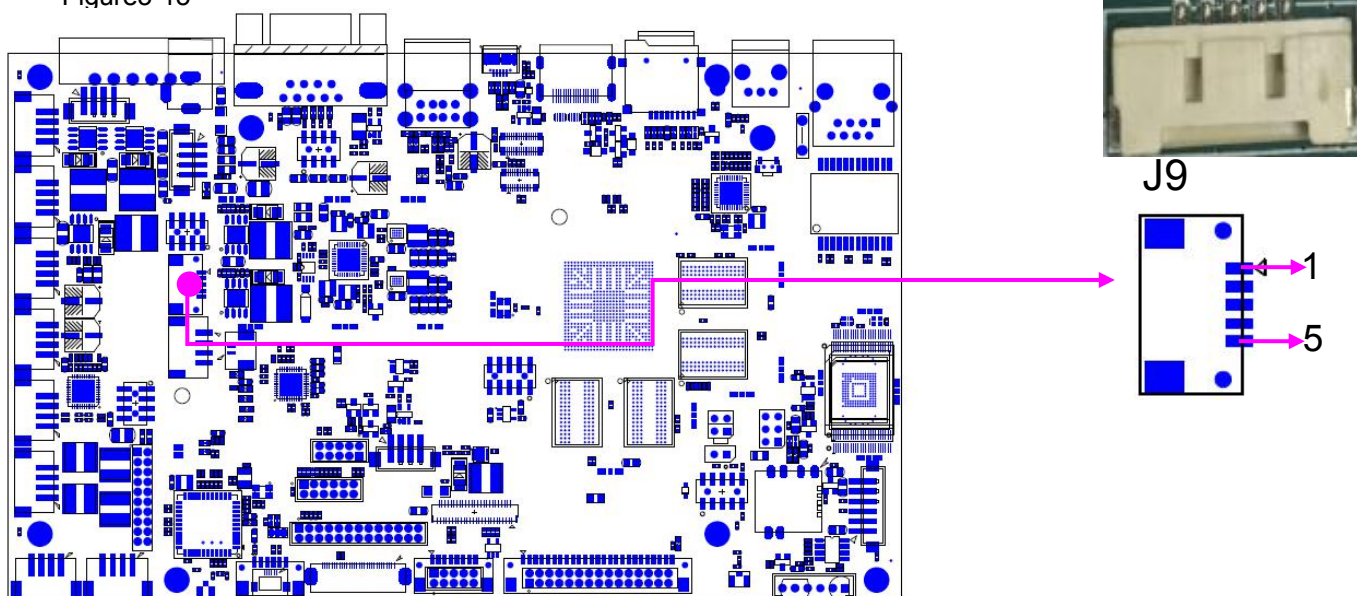


Table3-23

Pin No.	Symbol	Description
1	GND	Ground
2	HP_DET	Head Phone Detect
3	HPO_R	Head Phone Right Out
4	HPO_L	Head Phone Left Out
5	MIC2N	MIC2N

3.13 Optional USB connector

PCB No.: J11 4Pin 2.0mm 180 Degree
 J17 4Pin 2.0mm 180 Degree
 Reference model: A2001AWV



Figure3-16

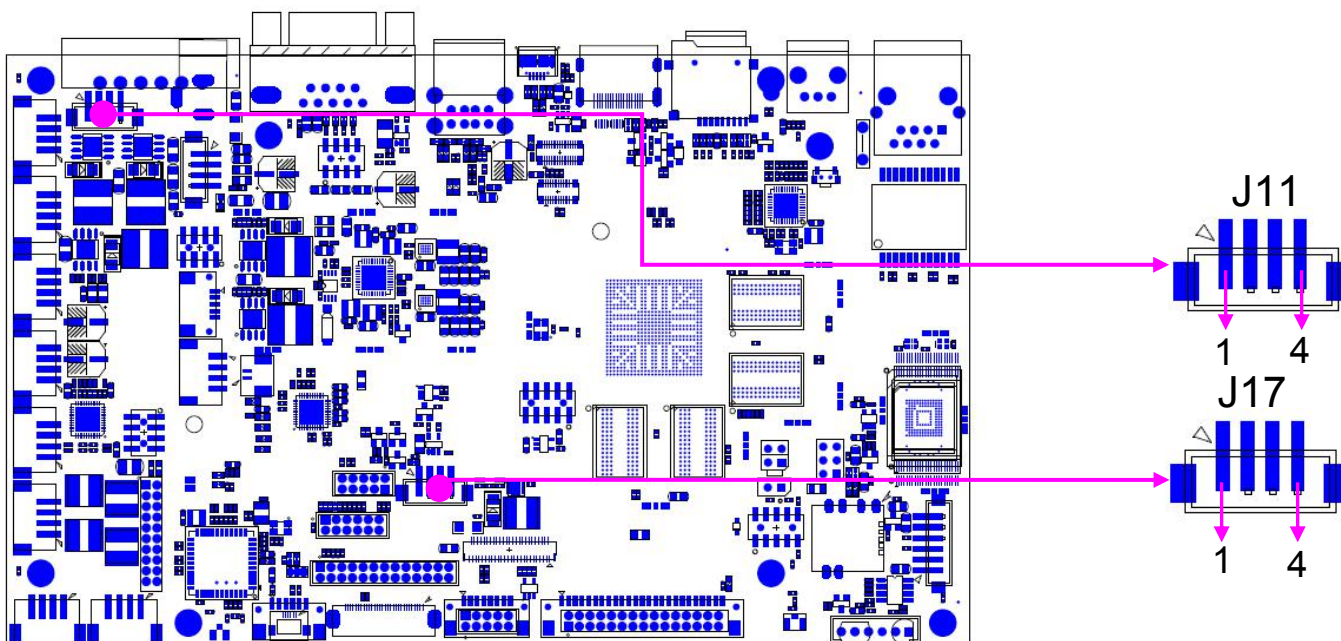


Table3-24

J11

Pin No.	Symbol	Description
1	DC_5V0	5V
2	DM3	DM
3	DP3	DP
4	GND	Ground

Table3-25

J17

Pin No.	Symbol	Description
1	VCC_HOST_5VA	5V
2	HOST2_DM	DM
3	HOST2_DP	DP
4	GND	Ground

3.14 DC Out

PCB No.: CON11&CON12 4Pin 2.0mm DC 5V out
 CON4&CON9&CON10 4Pin 2.0mm DC 12V out
 Reference model: S4B-PH-SM4-TB(LF)(SN)



Figure3-17

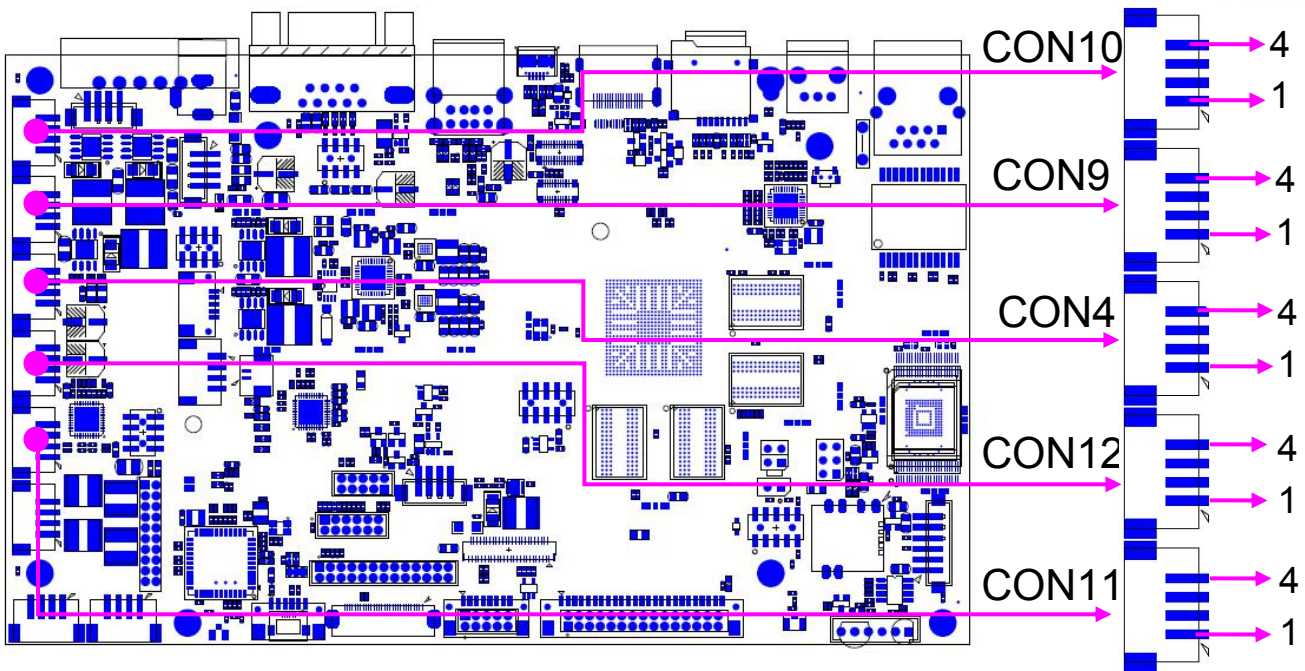


Table3-26

CON11

Pin No.	Symbol	Description
1	5VA	5V
2	5VA	5V
3	GND	Ground
4	GND	Ground

Table3-27

CON12

Pin No.	Symbol	Description
1	5VA	5V
2	5VA	5V
3	GND	Ground
4	GND	Ground

Table3-28

CON4

Pin No.	Symbol	Description
1	12VA	12V
2	12VA	12V
3	GND	Ground
4	GND	Ground

Table3-29

CON9

Pin No.	Symbol	Description
1	12VA	12V
2	12VA	12V
3	GND	Ground
4	GND	Ground

Table3-30

CON10

Pin No.	Symbol	Description
1	12VA	12V
2	12VA	12V
3	GND	Ground
4	GND	Ground

3.15 RS485 connector

PCB No.: CON14 4Pin 2.0mm

CON15 4Pin 2.0mm

Reference model: S4B-PH-SM4-TB(LF)(SN)

Figure3-16

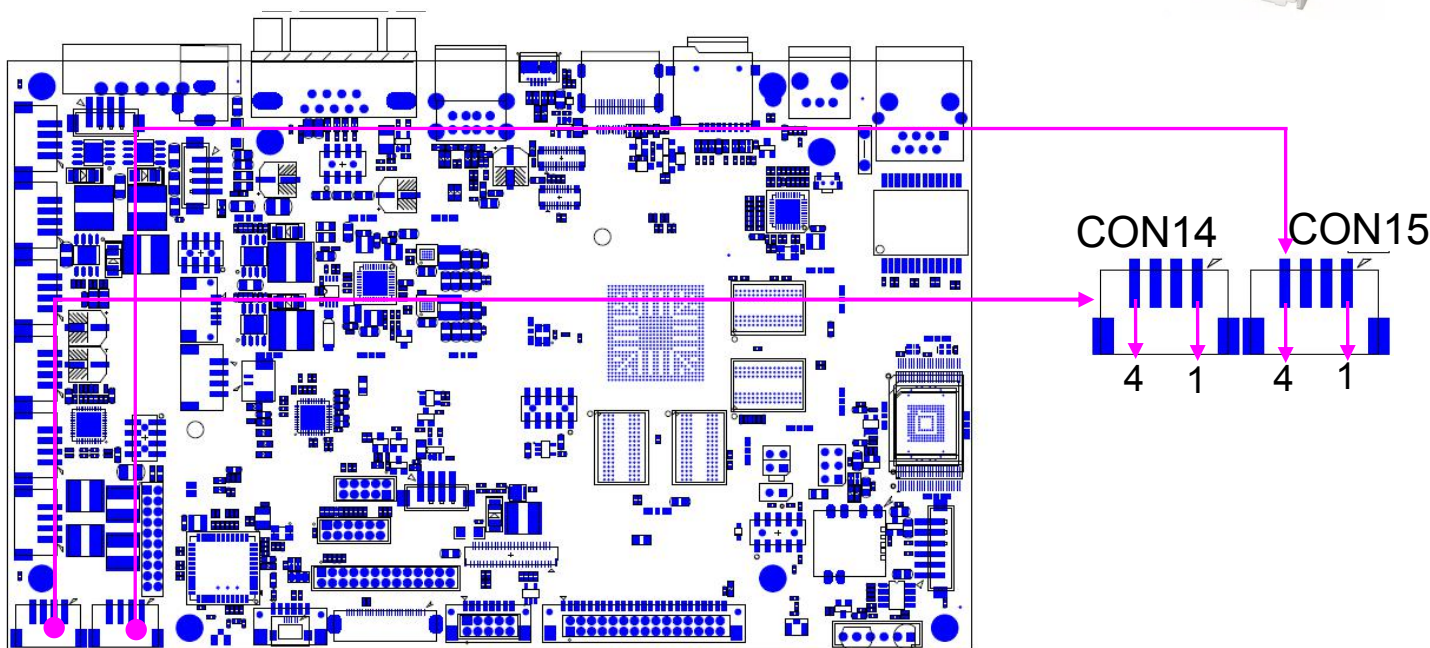


Table3-31

CON14

Pin No.	Symbol	Description
1	12VA	12V
2	RS485A	RS485A
3	RS485B	RS485B
4	GND	Ground

Table3-32
CON15

Pin No.	Symbol	Description
1	12VA	12V
2	RS485A	RS485A
3	RS485B	RS485B
4	GND	Ground

3.16 UART

PCB No.: J18 20Pin 2.0mm 2x10 UARTA~UARTD

Figure3-17

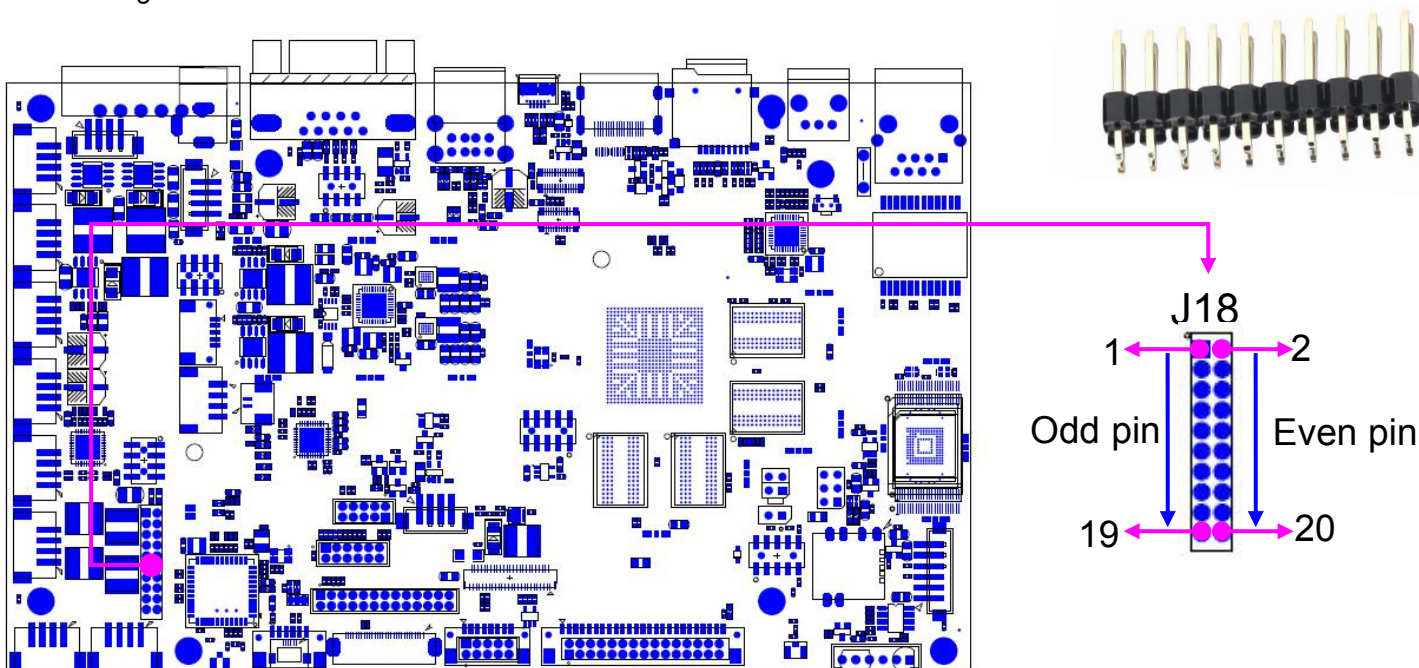


Table3-33

Pin No.	Symbol	Description
1	VCC_IO	VCC
2	5VA/DC5VB	5VA/DC5VB
3	TXD	UARTD-TX
4	RXD	UARTD-RX
5	CTSD	CTSD
6	RTSD	RTSD
7	GND	Ground
8	GND	Ground
9	TXB	UARTB-TX
10	RXB	UARTB-RX
11	CTSB	CTSB
12	RTSB	RTSB
13	GND	Ground
14	GND	Ground
15	TXC	UARTC-TX
16	RXC	UARTC-RX

17	TXA	UARTA-TX
18	RXA	UARTA-RX
19	GNDA	GroundA
20	GND	Ground

PCB No.: J29 10Pin 2.0mm 2x5 SMT Male UART0, UART2, UART4

Figure3-18

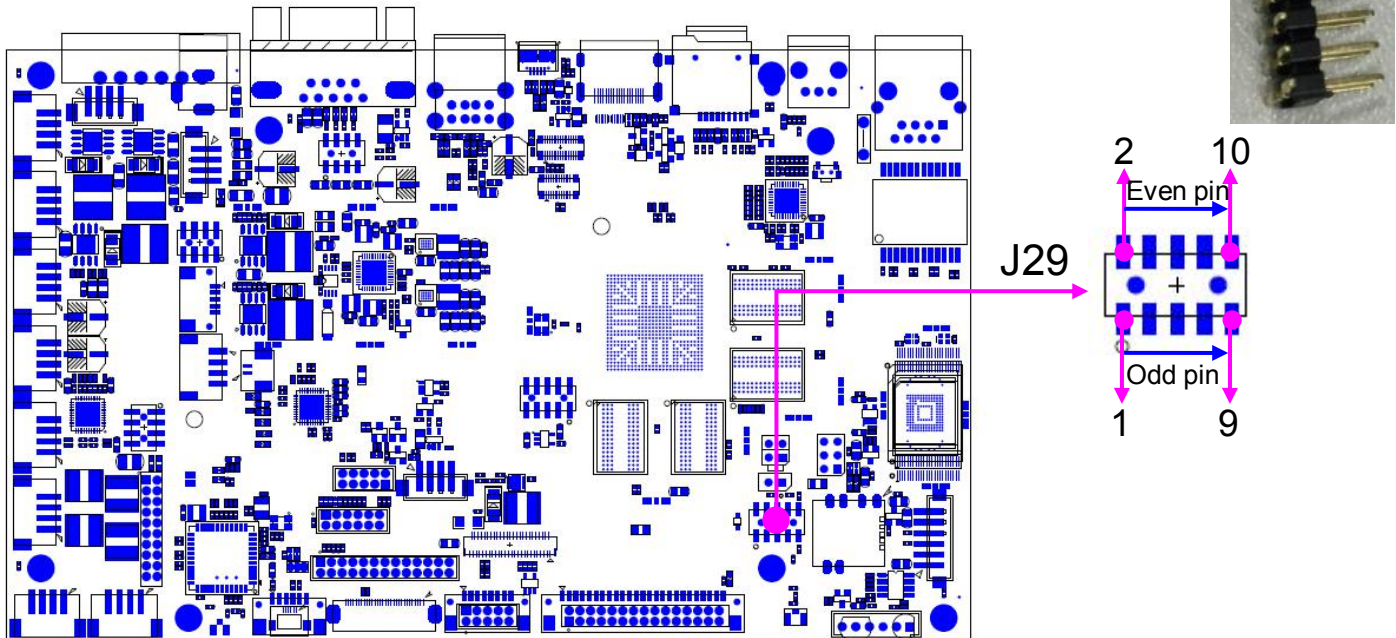


Table3-34

Pin No.	Symbol	Description
1	VCC_SYS	VCC_SYS
2	VCC_IO	VCC_IO
3	UART2_RX	UART2_RX
4	UART2_TX	UART2_TX
5	UART4_RX	UART4_RX
6	UART4_TX	UART4_TX
7	GND	GND
8	GND	GND
9	UART0_RX	UART0_RX
10	UART0_TX	UART0_TX

Note:

① About UART0

<i>BT module</i>	<i>AP6212/AP6330</i>	<i>USB Module(like 8723BU)</i>
<i>UART0 available</i>	x	√

② About UART2

<i>State</i>	<i>Normal use : Debug</i>	<i>Special use: UART</i>
<i>UART2 available</i>	x	√

PCB No.: J25 8Pin 2.0mm 2x4 SMT Male UART3

Figure3-19

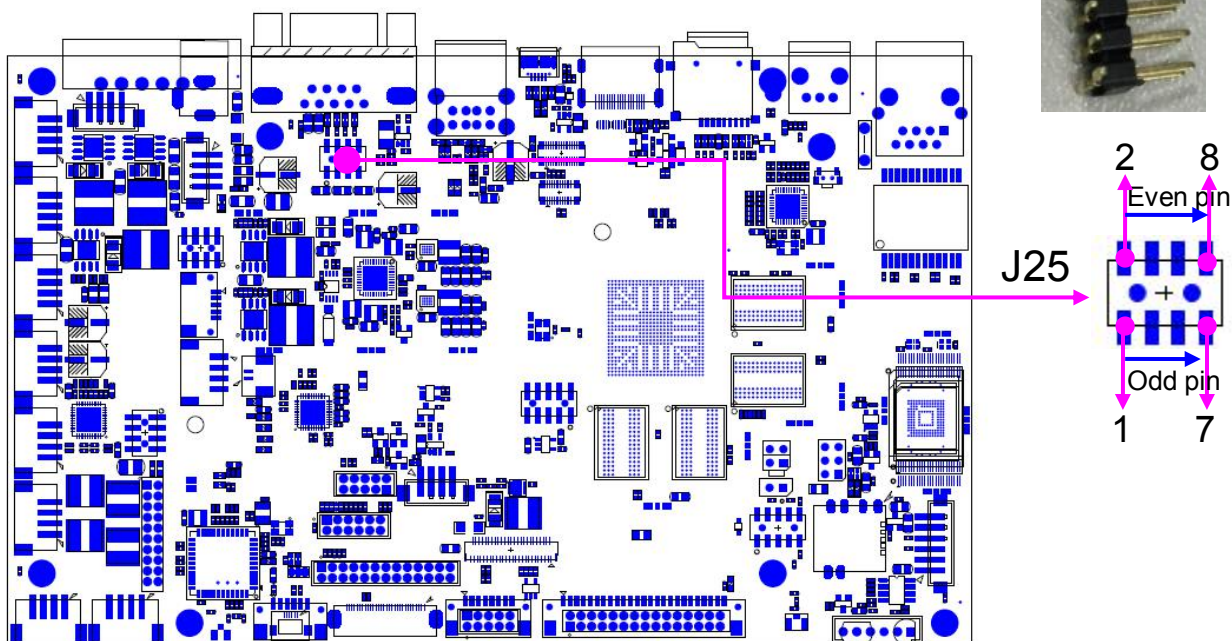


Table3-35

Pin No.	Symbol	Description
1	VCC_SYS	VCC_SYS
2	VCC_IO	VCC_IO
3	UART3_RX	UART2_RX
4	UART3_TX	UART2_TX
5	UART3_CTS	UART4_RX
6	UART3_RTS	UART4_TX
7	GND	GND
8	GND	GND

Note:

① About UART3

BT module	Default use: RS232	If RS232 is no use
UART3 available	x	√