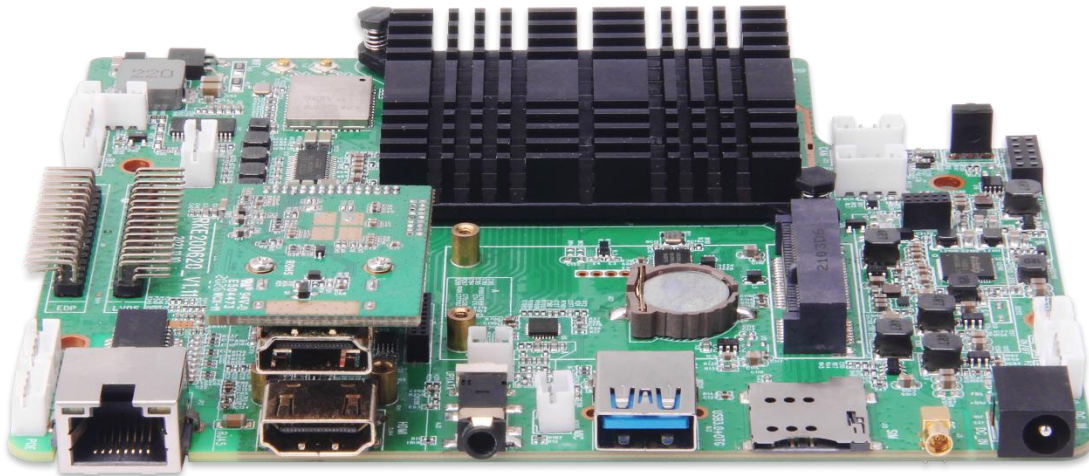


K2-3399

Hardware UserGuide



Powered by:

Geniatech

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1 Introduction

K2-3399 is an Android Customized Board with below new features:

- (I) Rockchip RK3399 ARM Dual-core ARM Cortex-A72 MPCore processor @1.8GHz and Quad-core ARM Cortex-A53MPCore processor @1.4GHz
- (II) ARM Mali-T860MP4 GPU, support OpenGL ES1.1/2.0/3.0, OpenCL1.2, DirectX11.1
- (III) support Android 10.0 / Linux Debian OS
- (IV) Support 2GB/4GB LPDDR4, 8G~128GB eMMC flash, external expansion USB storage
- (V) Ethernet 10/100/1000M Lan interface
- (VI) IEEE 802.11b/g/n/ac (2.4G&5.8G) +BT5.0 (optional)
- (VII) Support mini PCIE LTE (Global standard)
- (VIII) 1 * HDMI In, 1 * HDMI Out, support 4K video play
- (IX) 1 * LVDS, 1 * eDP
- (X) GTIOT: Z-WAVE / ZIGBEE / LoRa / LTE / GPS / WiFi / BT5.0
- (XI) Support DVB-T/DVB-T2/DVB-C/ATSC1.0/3.0/ISDB-T/DMB-TH/DTMB (optional)
- (XII) 1 * USB3.0 + 3 * USB2.0(built-in)
- (XIII) Support watch dog&RTC + RS232 + GPIO + SPK (MAX: 2*5W8Ω)
- (XIV) Designed for retail, interactive communication

Chipset	Rockchip RK3399	
Market area	Global	
OSD Language	English/Chinese(multi language OSD)	
Processor	CPU	Dual-core Cortex-A72 up to 1.8GHz Quad-core Cortex-A53 up to 1.4GHz
	GPU	ARM Mali-T860 MP4 Quad-core GPU Support OpenGL ES1.1/2.0/3.0, OpenCL1.2, DirectX11.1 etc. Support AFBC
	DDR	2GB LPDDR4 (4GB Optional)
	EMMC FLASH	16GB (8~128G Optional)
Network	Ethernet	RJ45 10/100/1000Mbps
	WiFi	IEEE 802.11 a/b/g/n/ac, 2.4GHz/5.8GHz
Display	<p>Embed two VOPs, support dual-screen simultaneous/dual-screen display, and can choose to output from the following display interface.</p> <p>1*LVDS</p> <p>1*eDP</p> <p>1*HDMI IN(Support 720p/1080p/1080i/4k)</p> <p>1*HDMI OUT(Support 480p/480i/576p/576i/720p/1080p/1080i/4k, support RGB format)</p>	
USB	1*USB 3.0(OTG) +3*USB2.0(built-in)	
Camera	USB camera	
Audio	1 * HDMI OUT, 1 * BT, 1 * Headphone, 1 * SPK, 1 * Mic in	
Interface	1*HDMI IN; 1*HDMI OUT; 1*LVDS; 1*eDP; 1*RF; 1*LTE+1*Micro SIM; 1*1000M RJ45; 1*USB3.0 ; 3*USB2.0; 1*RS232/Headphone&Mic; 1*SPK; 1*POE; 1*GTIOT; 1*GPIO; 1*DC IN; 1*IR	

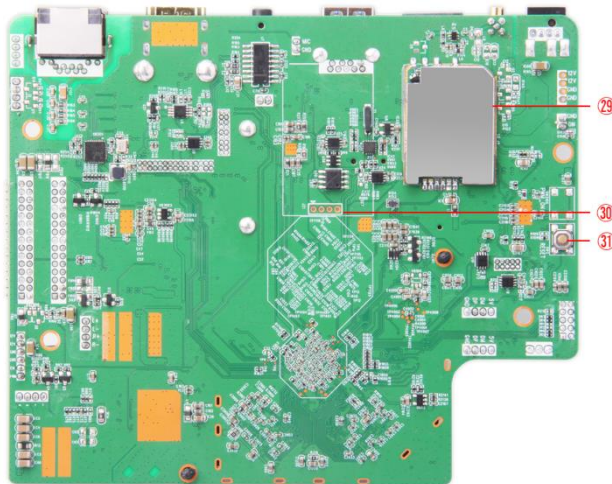
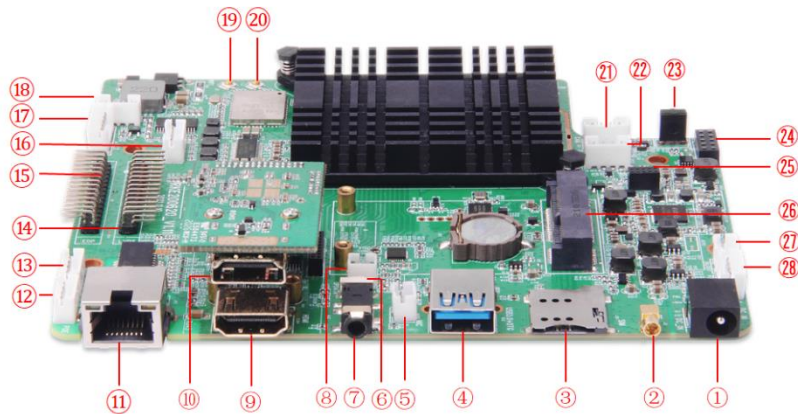
OS	Android10.0 / Linux
Dimensions	142 mm * 117 mm
Adapter	DC12V / 3A (Φ5.5mm / φ2.1mm)

Support Formats

Media Remark		Codec
Video	decoder	MMU embedded
		Real-time video decoder of MPEG-1, MPEG-2, MPEG-4, H.263, H.264, H.265, VC-1, VP9, VP8, MVC
		H.264/AVC, Base/Main/High/High10 profile @ level 5.1; up to 4Kx2K @ 30fps
		H.265/HEVC, Main/Main10 profile @ level 5.1 High-tier; up to 4Kx2K @ 60fps
		VP9, profile 0, up to 4Kx2K @ 60fps
		MPEG-1, ISO/IEC 11172-2, up to 1080P @ 60fps
		MPEG-2, ISO/IEC 13818-2, SP@ML, MP@HL, up to 1080P @ 60fps
		MPEG-4, ISO/IEC 14496-2, SP@L0-3, ASP@L0-5, up to 1080P @ 60fps
		VC-1, SP@ML, MP@HL, AP@L0-3, up to 1080P @ 60fps
		MVC is supported based on H.264 or H.265, up to 1080P @ 60fps
		Supports frame timeout interrupt, frame finish interrupt and bit stream error interrupt
	encoder	Support video encoder for H.264 UP to HP@level4.1, MVC and VP8, Only support I and P slices, not B slices, Support error resilience based on constrained intra prediction and slices, Image size is from 96x96 to 1920x1080(Full HD), Maximum frame rate is up to 1920x1080@30FPS②
		input data format:

		<ul style="list-style-type: none">➤ YCbCr 4:2:0 planar➤ YCbCr 4:2:0 semi-planar➤ YCbYCr 4:2:2➤ CbYCrY 4:2:2 interleaved➤ RGB444 and BGR444➤ RGB555 and BGR555➤ RGB565 and BGR565➤ RGB888 and BRG888➤ RGB101010 and BRG101010
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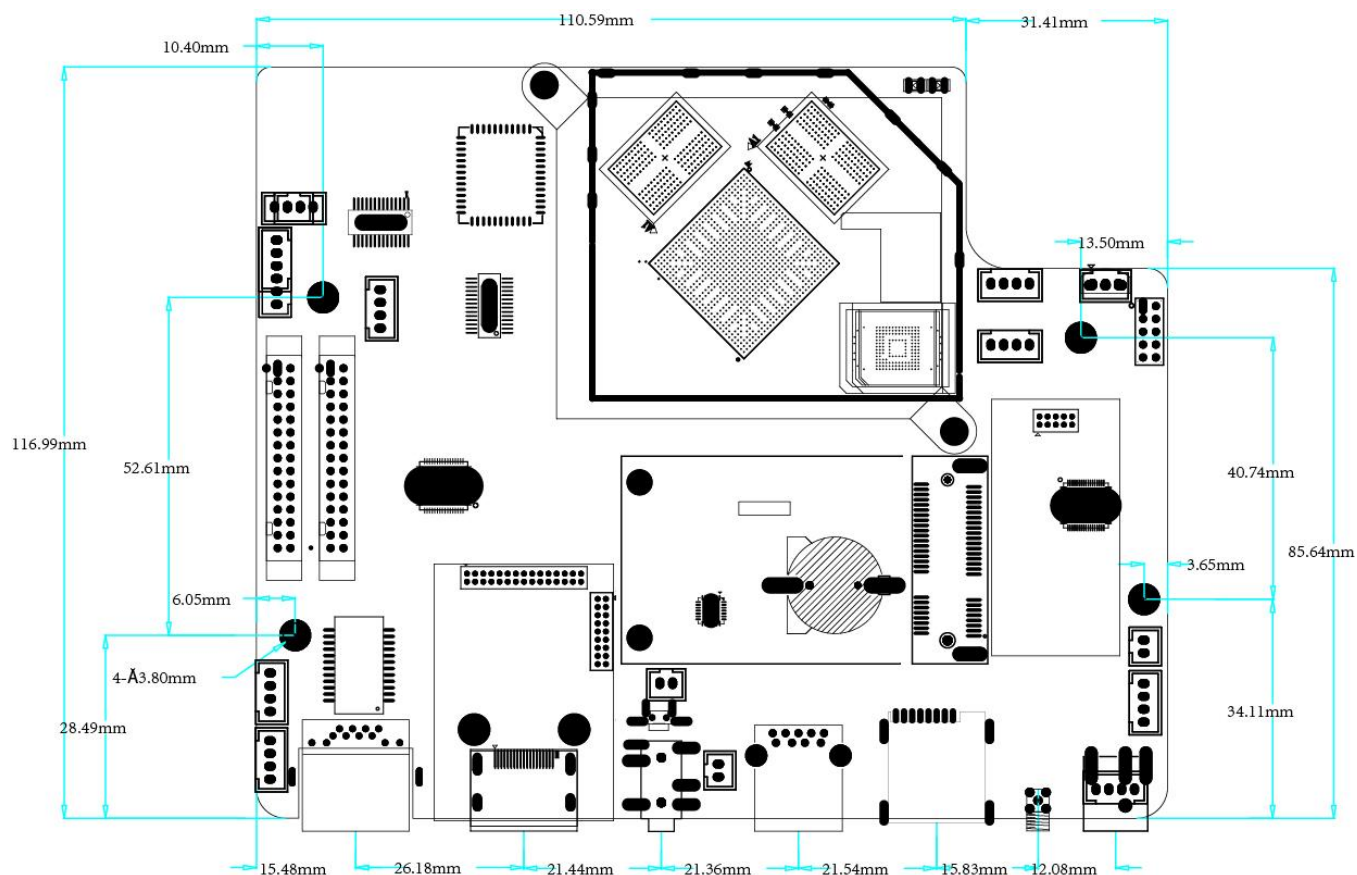
1.1 Board overview



No.	Name	Description
1	DC IN	1 * DC IN
2	RF	1 * MMCX
3	Micro SIM	1 * Micro SIM
4	USB3.0	1 * USB3.0
5	Mic	1 * 2Pin 2.0mm
6	Update key	1 * switch
7	RS232 or HP/Mic	1 * 3.5mm jack (Optional)
8	Update	1 * 2Pin 2.0mm
9	HDMI OUT	1 * HDMI OUT
10	HDMI IN	1 * HDMI IN
11	LAN	1 * RJ45(LED)
12	POE-1	1 * 4Pin 2.0mm
13	Debug	1 * 4Pin 2.0mm
14	LVDS	1 * 2x15Pin 2.0mm
15	eDP	1 * 2x15Pin 2.0mm
16	SPK	1 * 4Pin 2.0mm
17	Backlight-2	1 * 6Pin 2.0mm
18	Backlight-1	1 * 4Pin 2.0mm
19	WIFI/BTANT-1	1 * IPEX
20	WIFI/BT ANT-2	1 * IPEX
21	USB2.0-1	1 * 4Pin 2.0mm
22	USB2.0-2	1 * 4Pin 2.0mm
23	IR	1 * IR
24	GPIO	1 * 2x5Pin 2.0mm
25	GTIOT	1 * 2x5Pin 1.27mm
26	LTE	1 * Mini-PCIE
27	Power key	1 * 2Pin 2.0mm
28	POE-2	1 * 4Pin 2.0mm
29	Tuner module	1*ATSC/DVB-T2
30	USB2.0-3	1 * 4Pin 2.0mm
31	Reset	1 * Reset

2 What's in the Developer Board

The Developer Board contains one K2-3399.



3 Getting started

3.1 Prerequisites

Before you power up your K2-3399 for the first time you will need the following:

- K2-3399 board.
- A K2-3399 board compliant power supply (sold separately by Geniatech).
- A K2-3399 board compliant IR remote (sold separately by Geniatech).
- A eDP or LVDS LCD Monitor that supports a resolution of 1080P/60Hz.
- eDP-eDP cable or LVDS-LVDS 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 eDP / LVDS cable to the K2-3399 connector (marked) and to the LCD Monitor.
- step 2. Connect the keyboard to the boards USB connector marked or the mouse to the USB connector marked. (It doesn't matter which order you connect them in. You can also connect via an external USB Hub.)
- step 3. Connect the power supply to power connector marked.

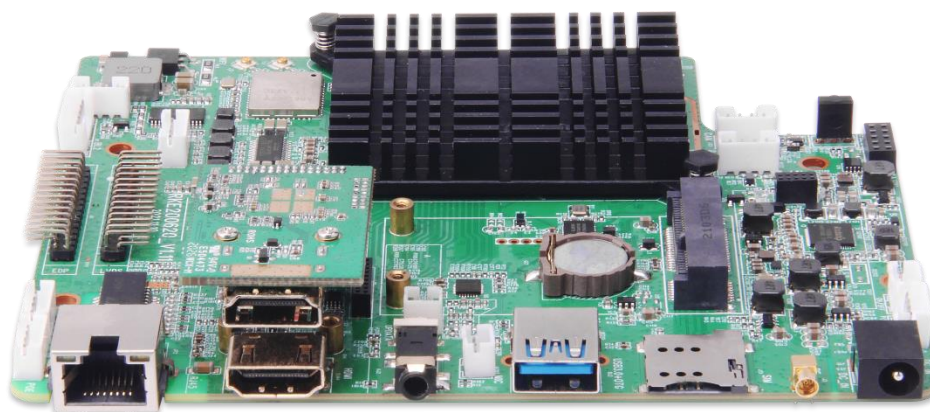
Power on (Plug power adapter),toggle the power switch,then the board will boot up and you will see the boot up logo with Android.

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

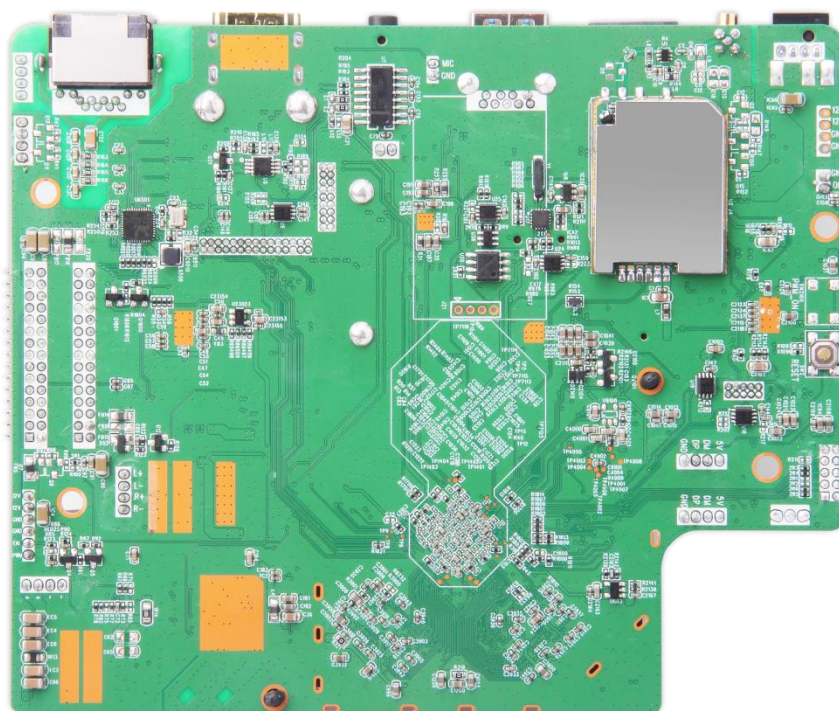
4 K-3399 Overview

4.1 Product Diagram

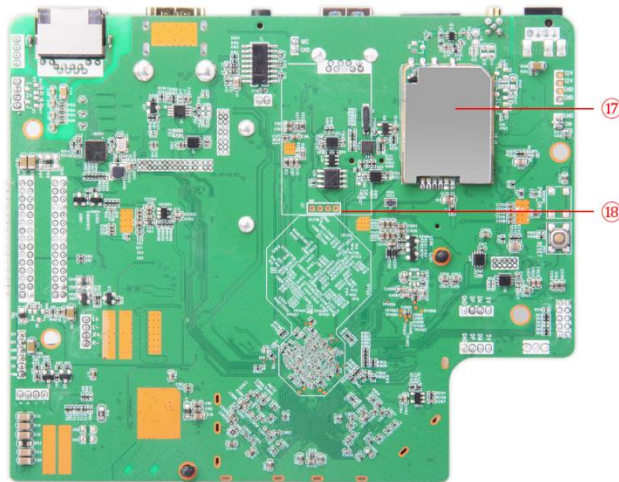
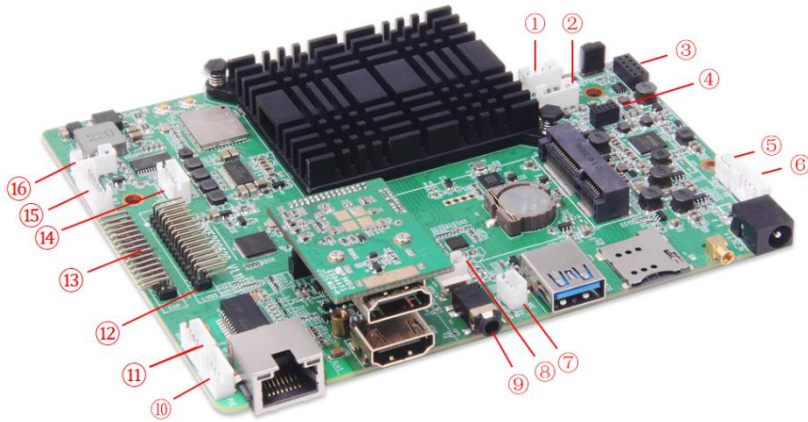
TOP View:



Bottom View:

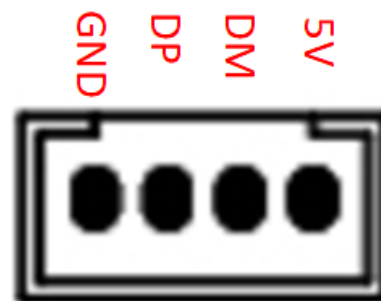
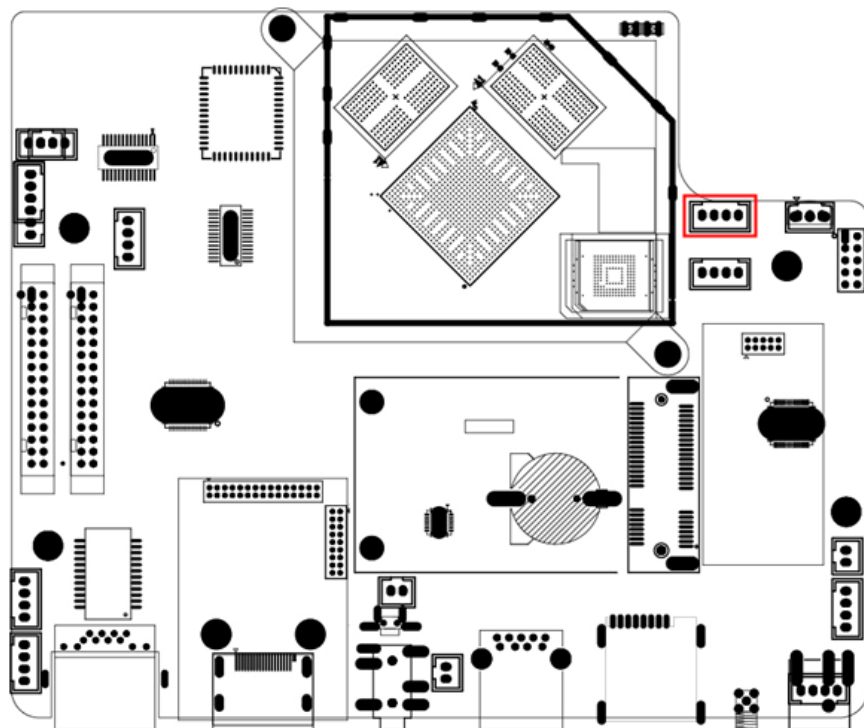


4.2 Internal Connectors, Headers & Jumpers

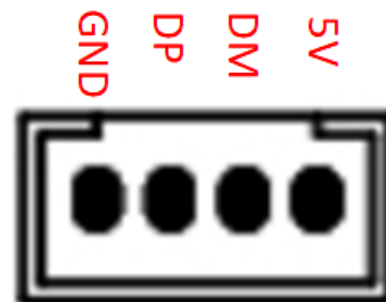
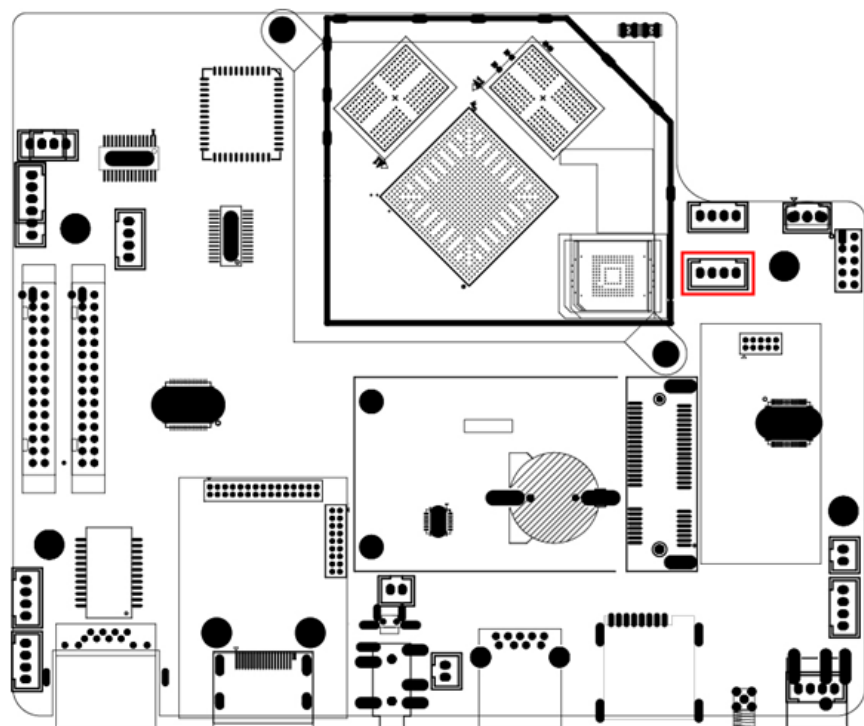


No	Name	Description
1	USB 2.0-1	1*4Pin2.0mm
2	USB2.0-2	1*4pin2.0mm
3	GPIO	1*(2*5)Pin2.0mm
4	GTIOT	1*(2*5)pin 1.27mm
5	Power key	1*2pin 2.0mm
6	POE-1	1*4pin 2.0mm
7	MIC	1*2pin2.0mm
8	Update key	1*2pin 2.0mm
9	RS232/HP&MIC	1*3.5mm jack
10	POE-2	1*4pin2.0mm
11	Debug	1*4Pin2.0mm
12	LVDS	1*(2*15)pin 2.0mm
13	eDP	1*(2*15)pin2.0mm
14	Speaker	1*4Pin2.0mm
15	Backlight-2	1*6Pin2.0mm
16	Backlight-1	1*4Pin2.0mm
17	USB Tuner	1*10pin
18	USB2.0-3	1*4Pin2.0mm

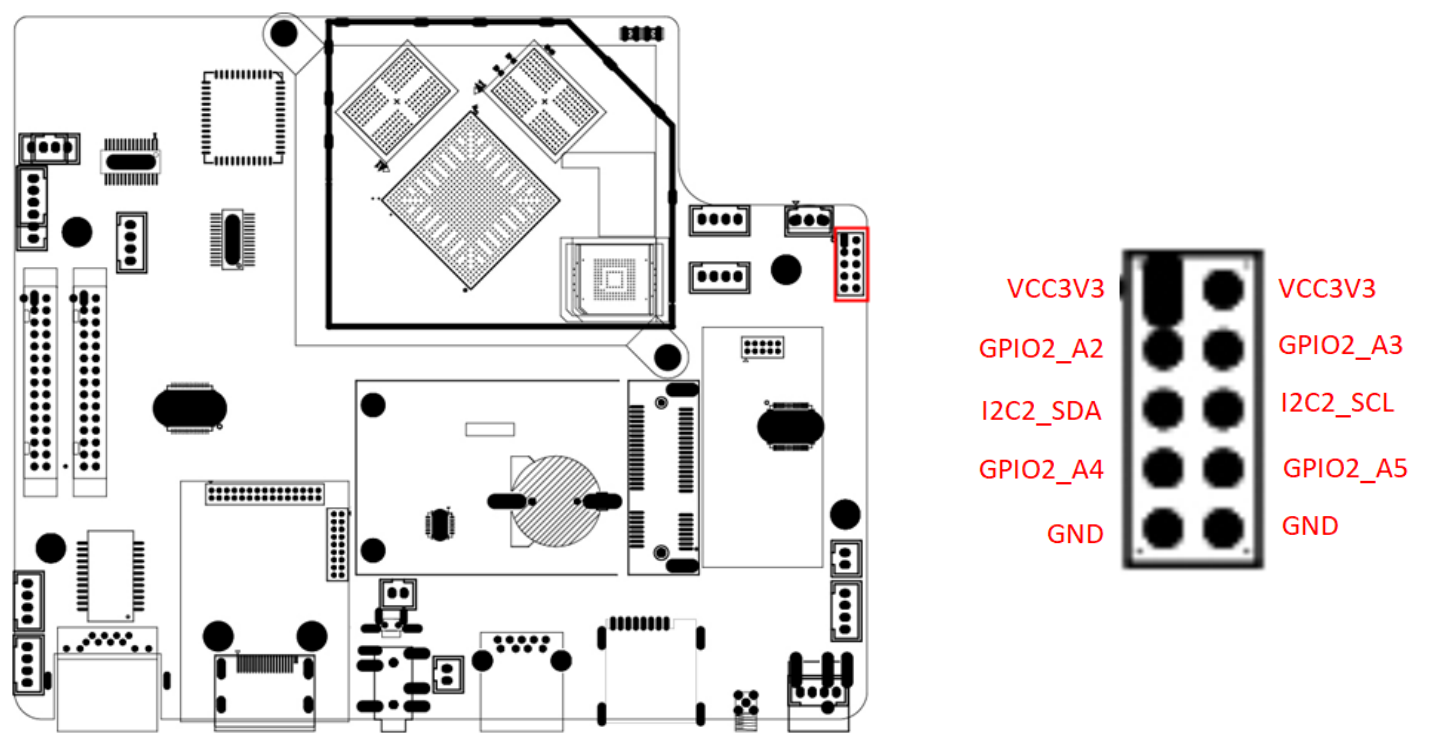
4.2.1: USB2.0-1(J23)



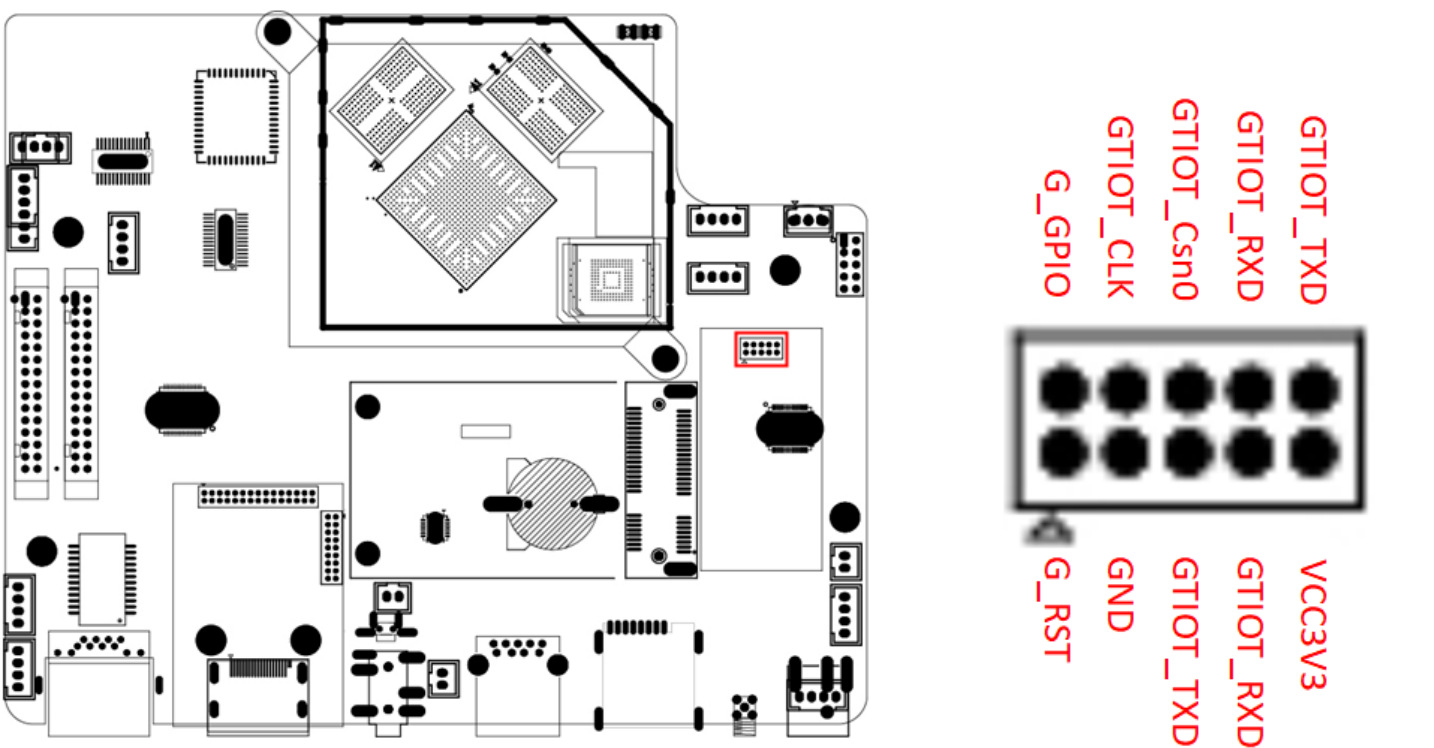
4.2.2: USB2.0-2(J2)



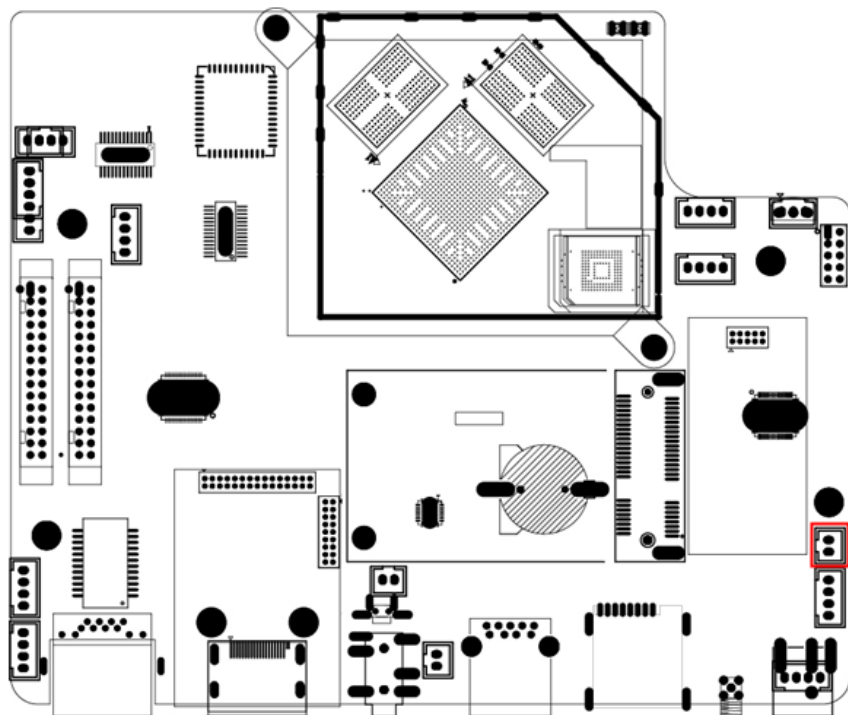
4.2.3: GPIO (J20)



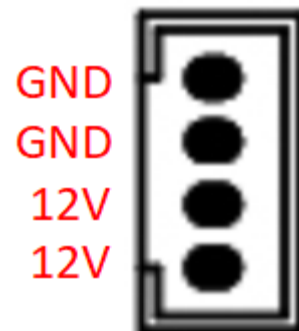
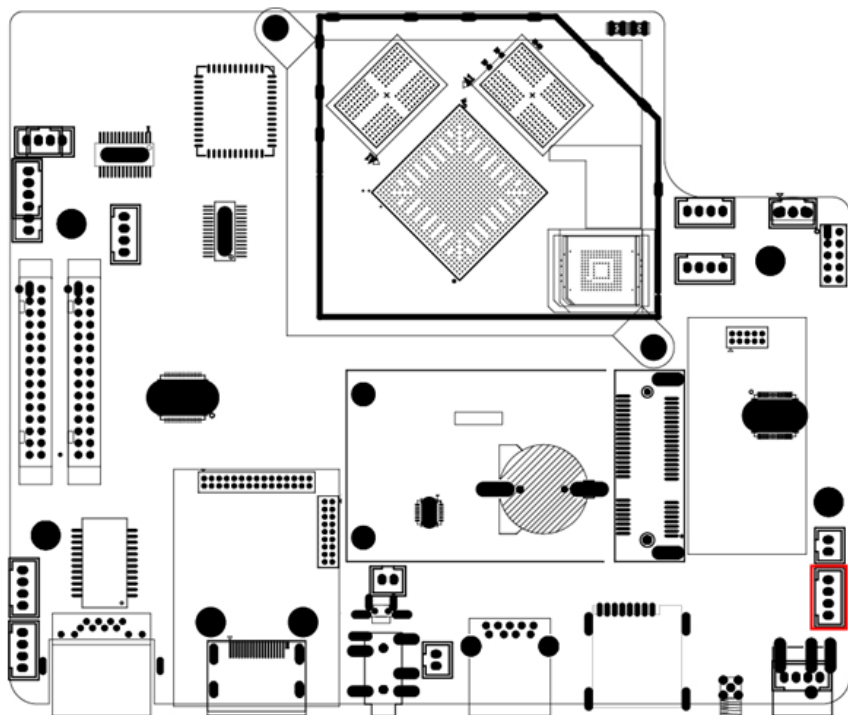
4.2.4: GTIOT (J19)



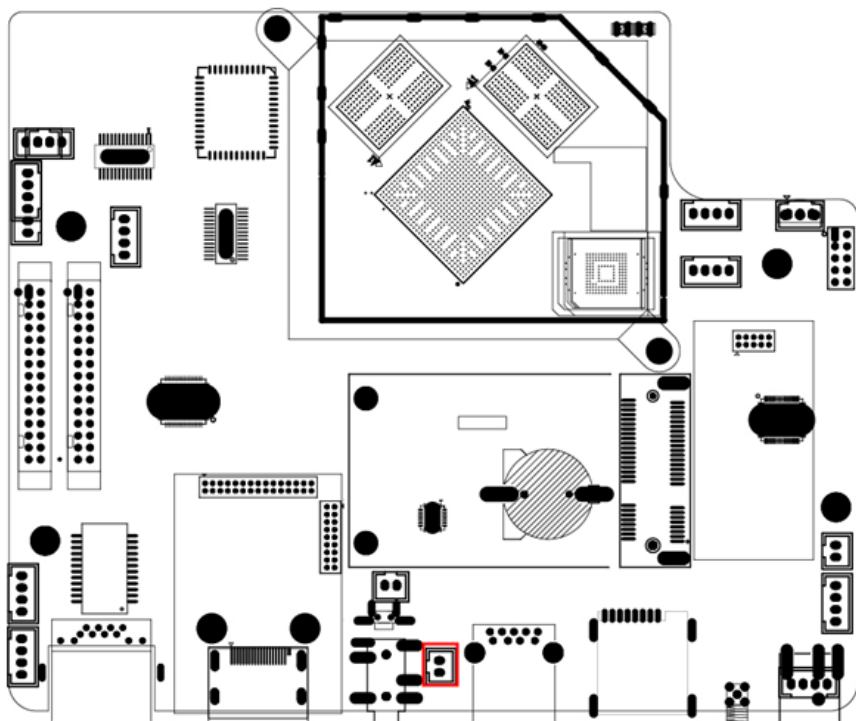
4.2.5: Power (J22)



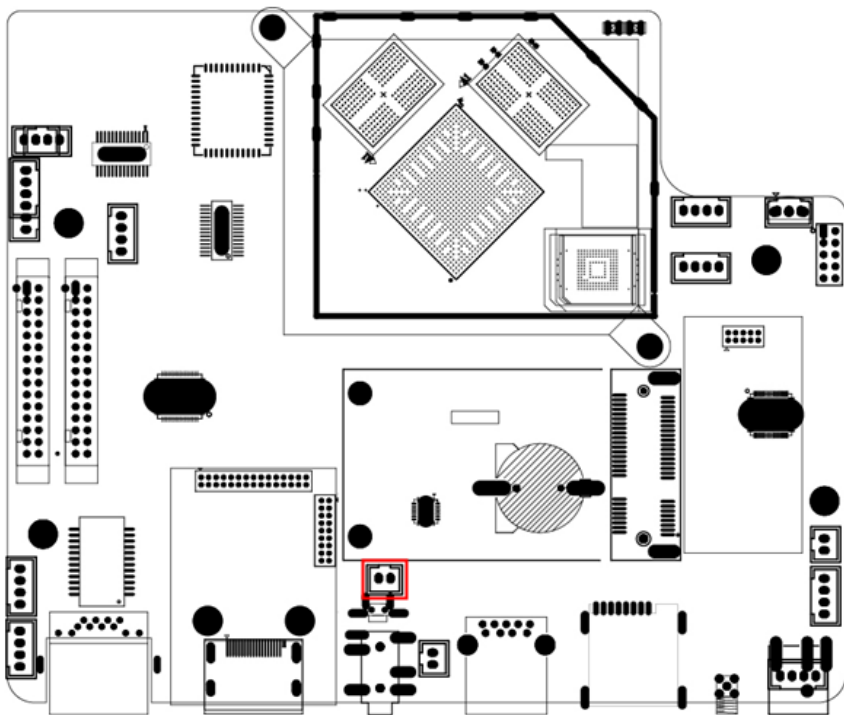
4.2.6: POE-1 (J5)



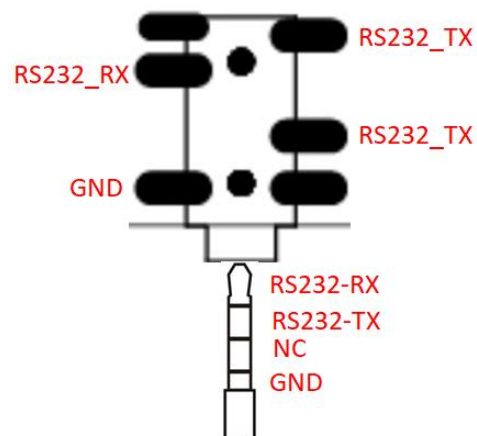
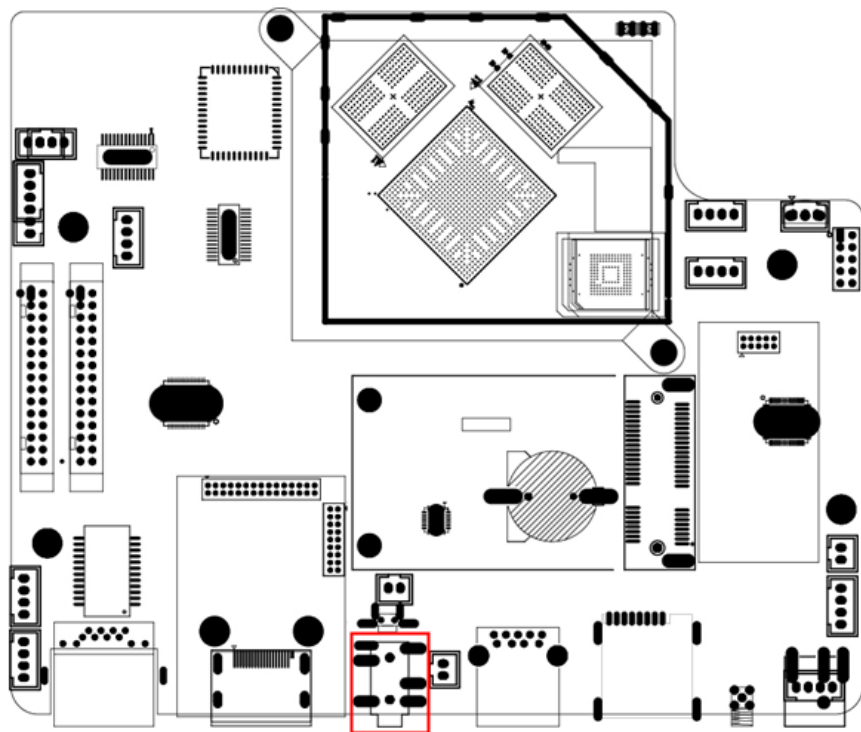
4.2.7: MIC (ACN3)



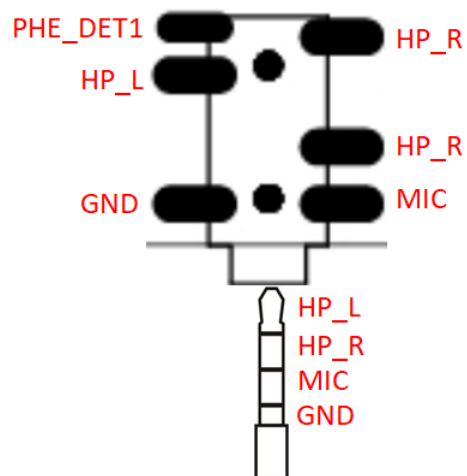
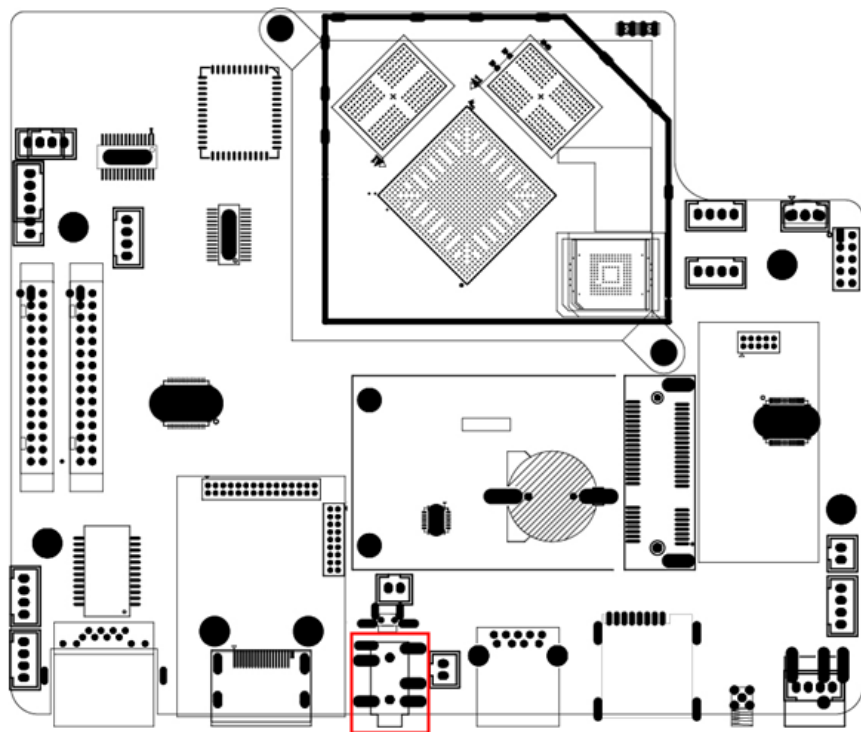
4.2.8: Update (ACN2)



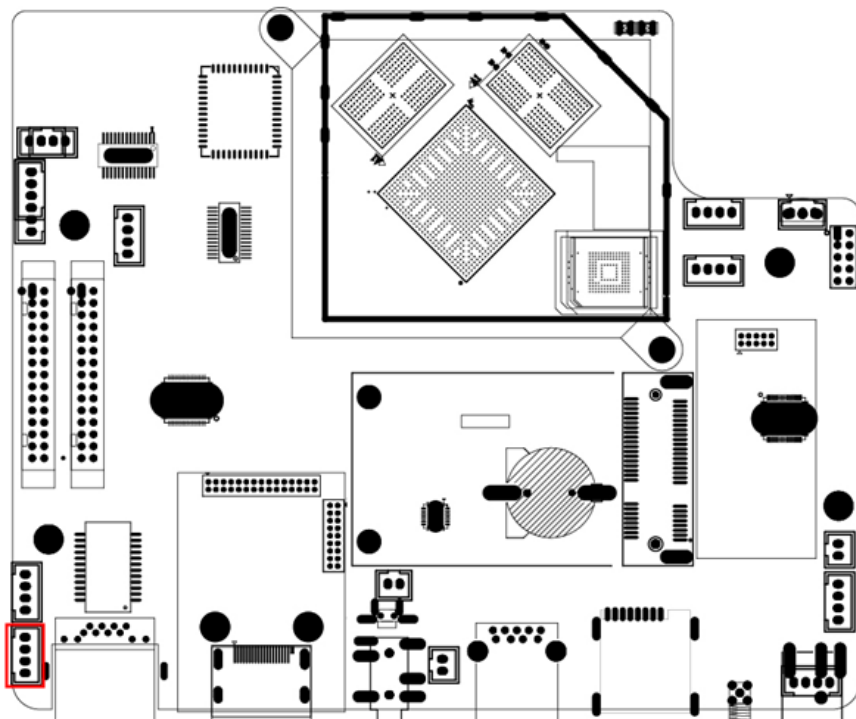
4.2.9.1: RS232 (AJ2)



4.2.9.2: HP&MIC(AJ2)



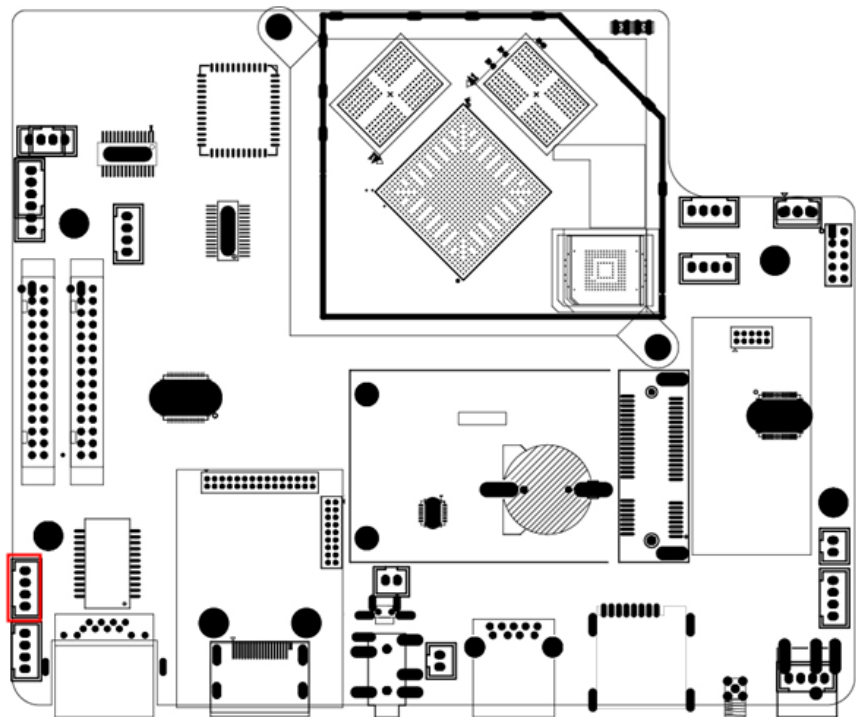
4.2.10: POE-2 (J16)



AC_A1
AC_A2
AC_B1
AC_B2



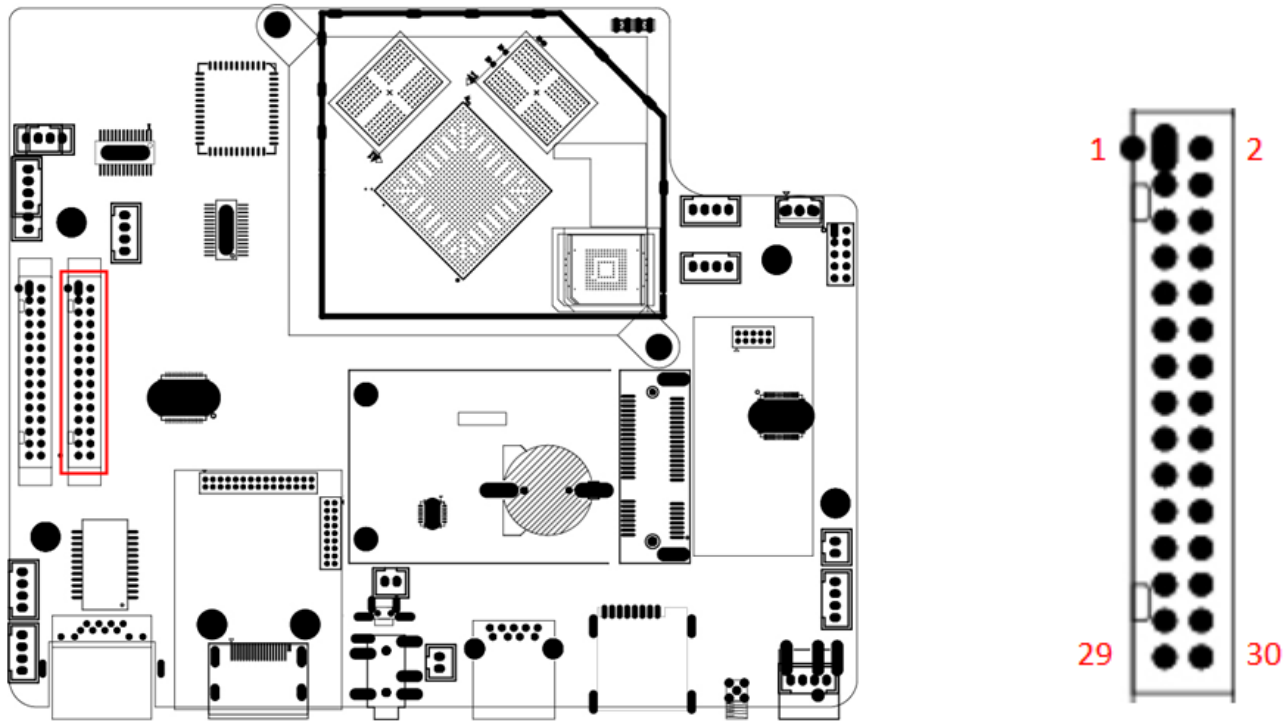
4.2.11: Debug (J1)



VCC
TX
GND
RX

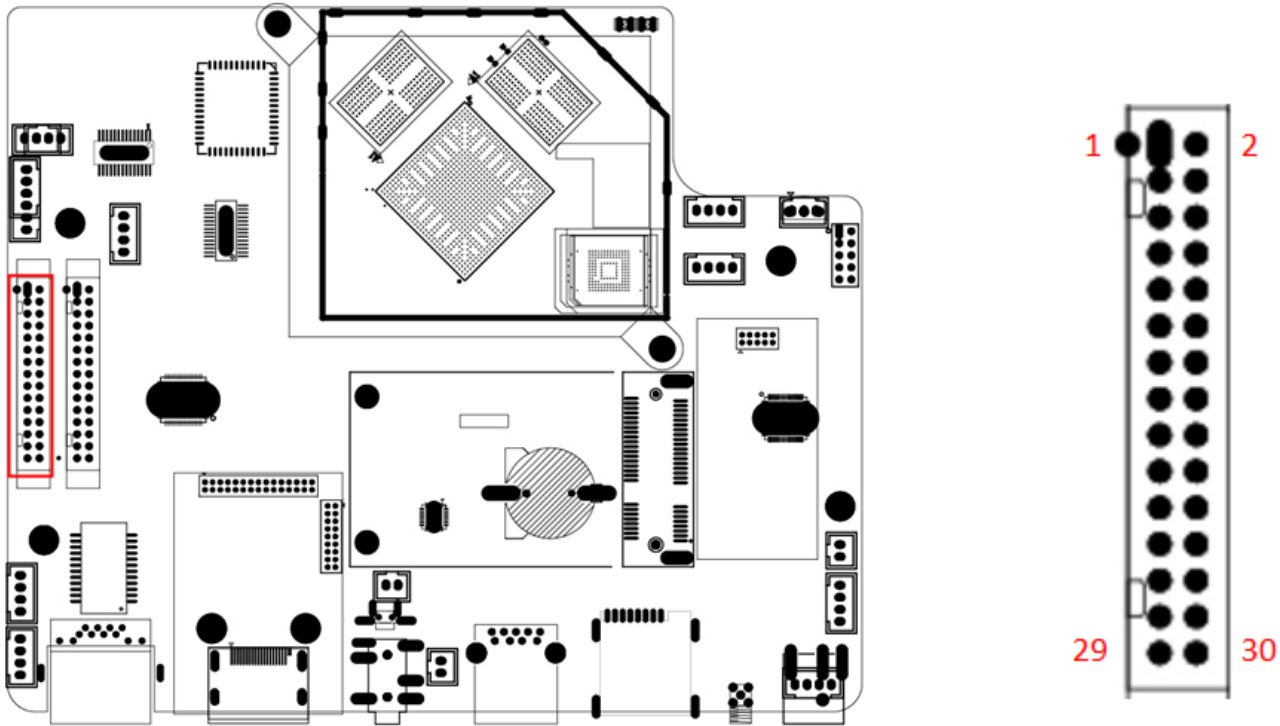


4.2.12: LVDS (J6)



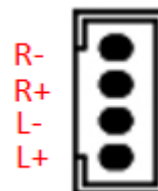
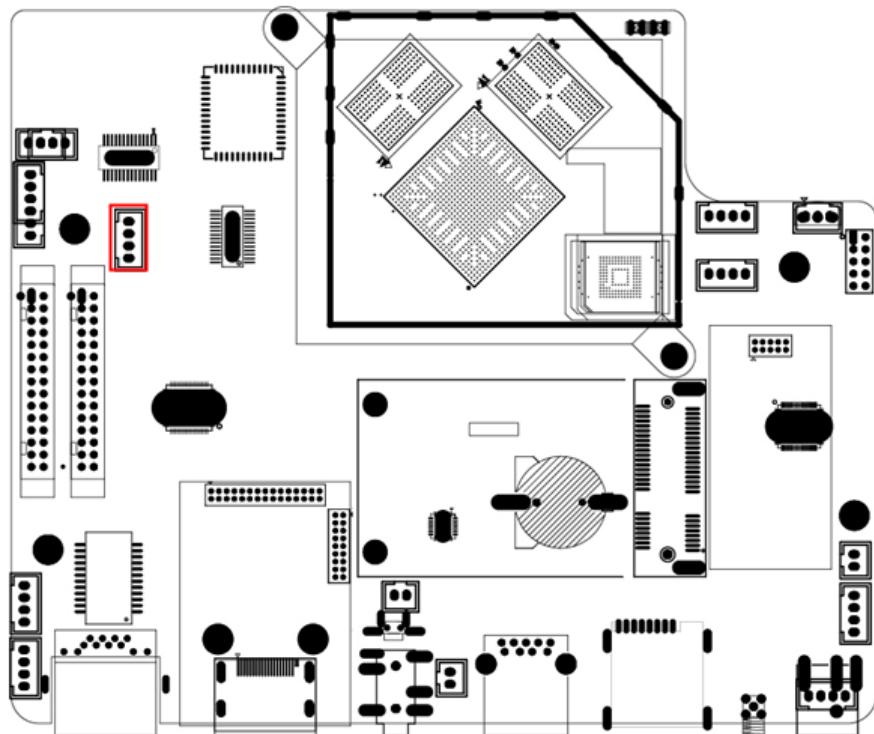
Pin Define	Pin No.	Pin No.	Pin Define
PANELVCC	1	2	PANELVCC
PANELVCC	3	4	GND
BL_12V	5	6	BL_12V
LVDS_LB3P	7	8	LVDS_LB3N
LVDS_LBCP	9	10	LVDS_LBCN
LVDS_LB2P	11	12	LVDS_LB2N
LVDS_LB1P	13	14	LVDS_LB1N
GND	15	16	GND
LVDS_LB0P	17	18	LVDS_LB0N
LVDS_LA3P	19	20	LVDS_LA3N
LVDS_LACP	21	22	LVDS_LACN
GND	23	24	GND
LVDS_LA2P	25	26	LVDS_LA2N
LVDS_LA1P	27	28	LVDS_LA1N
LVDS_LA0P	29	30	LVDS_LA0N

4.2.13: eDP (J8)

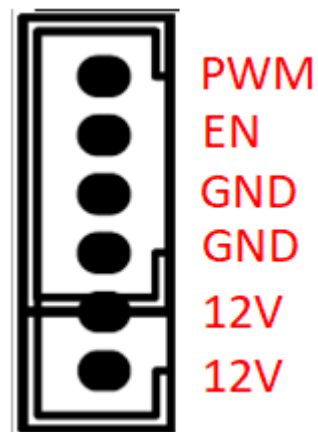
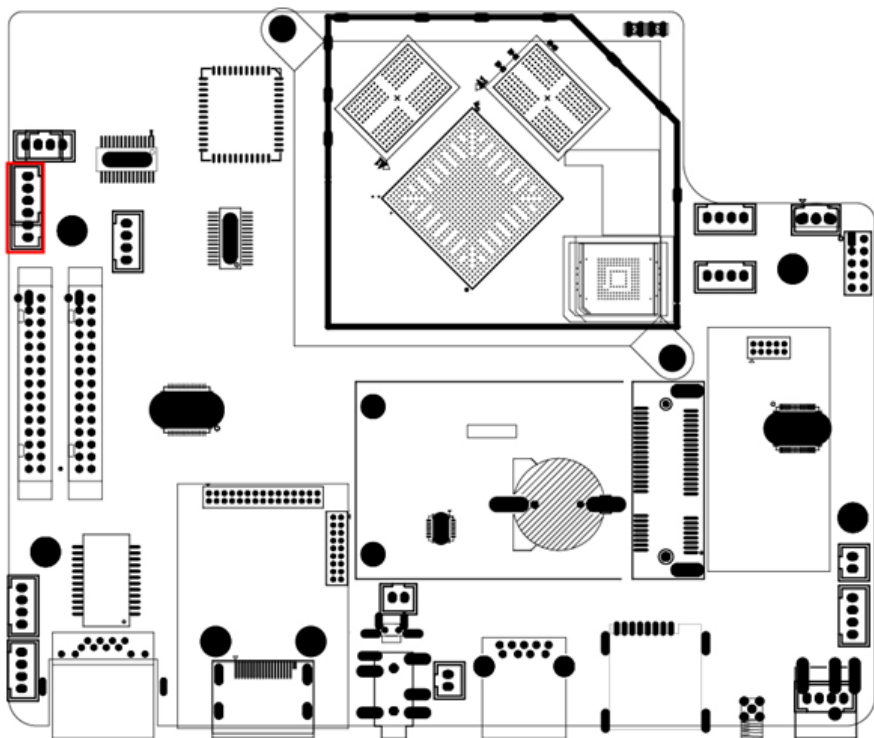


Pin Define	Pin No.	Pin No.	Pin Define
NC	1	2	GND
EDP_TX1N	3	4	EDP_TX1P
GND	5	6	EDP_TX0N
EDP_TX0P	7	8	GND
EDP_AUXP	9	10	EDP_AUXN
GND	11	12	LCD_3.3V
LCD_3.3V	13	14	EDP_TX2N
GND	15	16	GND
EDP_TX2P	17	18	GND
GND	19	20	GND
GND	21	22	LCD_EN
LED_PWM	23	24	EDP_TX3N
EDP_TX3P	25	26	LED_VCC5V
LED_VCC5V	27	28	LED_VCC5V
LED_VCC5V	29	30	EDP_HPD

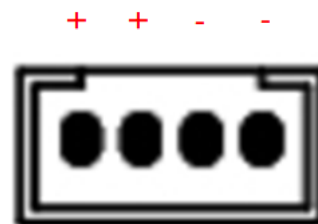
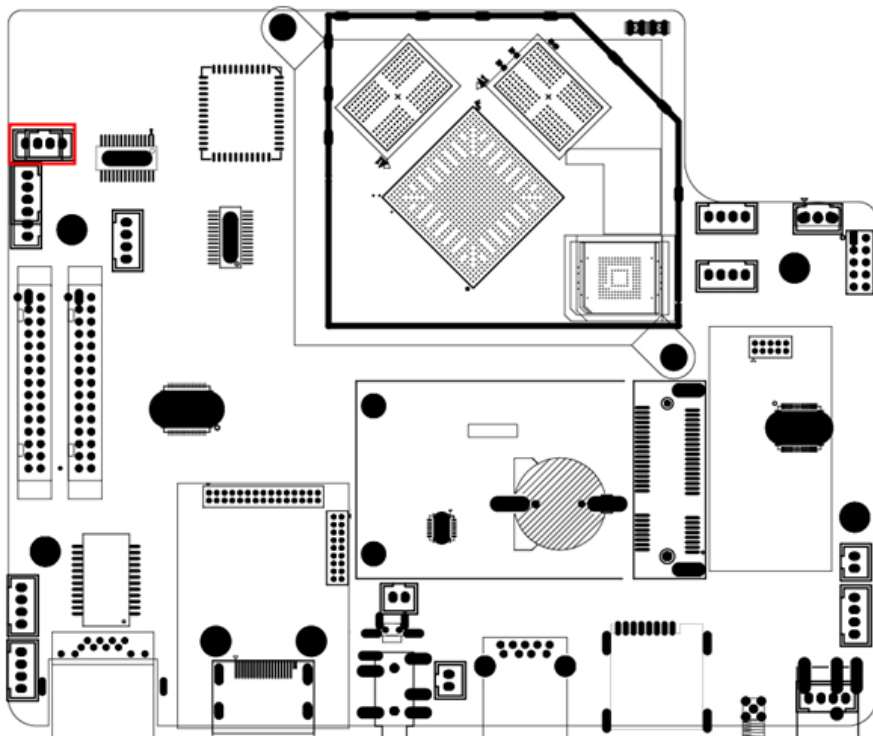
4.2.14: Speaker (2J1)



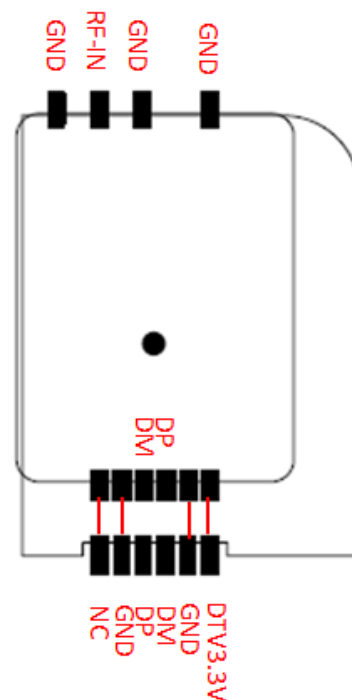
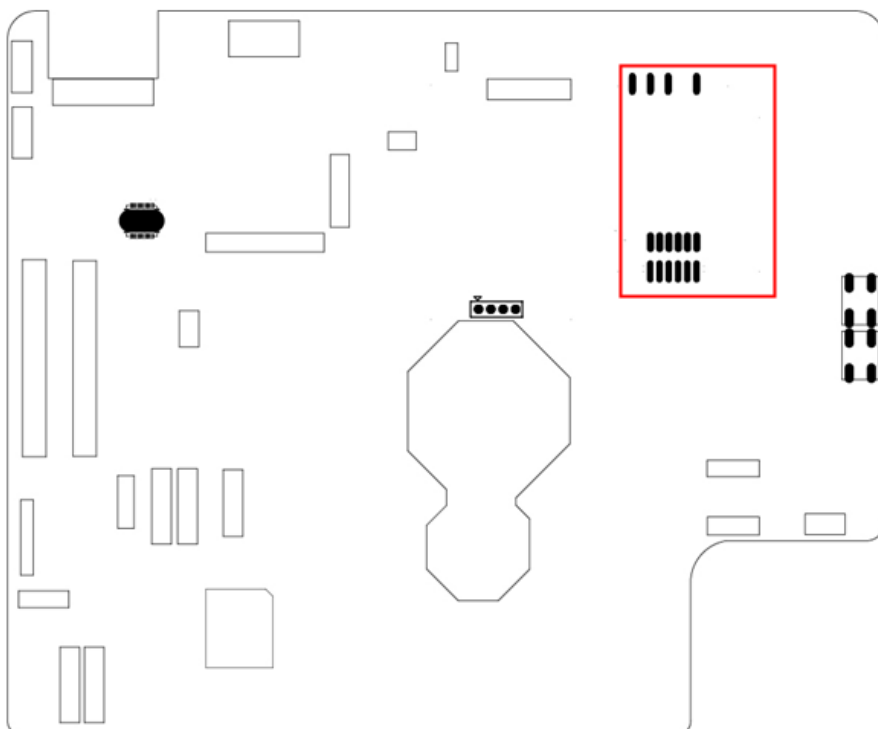
4.2.15: LVDS Backlight-2 (J11)



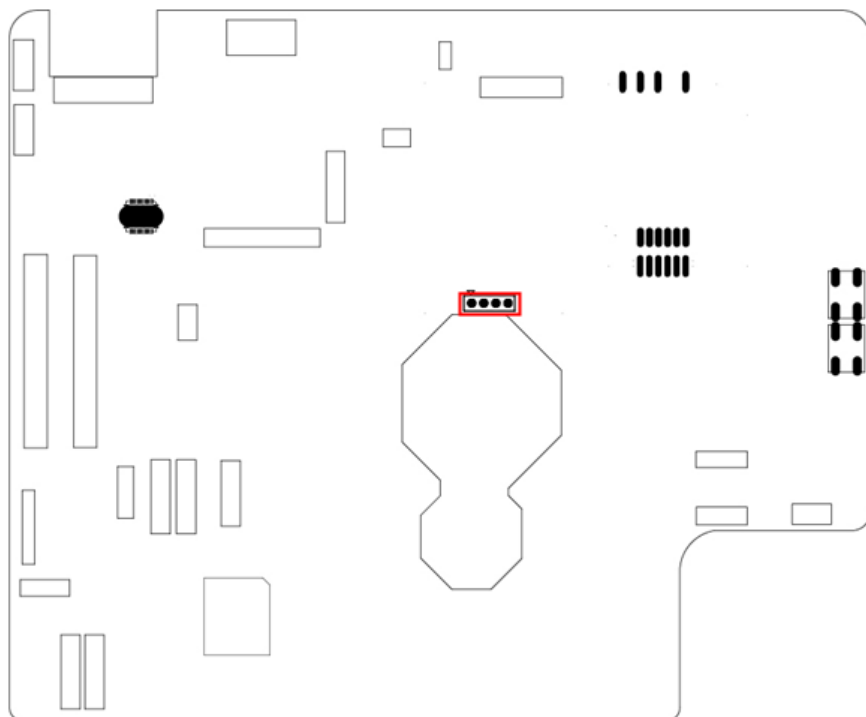
4.2.16: LVDS Backlight-1 (J10)



4.2.17: USB Tuner(U2)



4.2.18: USB2.0-3(J21)



4.3 System Block diagram

