

KU250Z3AW motherboard

(PCB Rev:1.00)

Manual Version 1.00

2019.02.25

1 SUMMARY

KU250Z3AW is our standard 3.5 "industrial motherboard with low power consumption. The main features of Intel 7th mobile Skylake-U single chip CPU are as follows.

1.1 Main Features

- 1.1.1 Onboard CPU , support Intel Mobile 7th Kaby lake-U CPU (BGA1356) 。
- 1.1.2 1 DDR3 SODIMM 260 Socket, Maximum support 8GB DDR4 Ram, 2133MHz。
- 1.1.3 Onboard 2GB/4GB/8G DDR4 ram (option)
- 1.1.4 Onboard 32G/64G SSD (option)
- 1.1.5 Onboard 2*Intel 1000M LAN, 1*Intel I219V, 1*Intel I211 (There is only one Intel I211AT card when the port USB is 4).
- 1.1.6 Onboard HDA ALC662, support MIC/LINE-OUT and pin interface.
- 1.1.7 Onboard Dual channel power amplifier, Dual 3W4 Ω speakers per channel (option) ; Support SPDIF digital audio interface.
- 1.1.8 2* Mini-PCIE slot
- 1.1.9 1* Mini-SATA slot
- 1.1.10 1* SATA 3.0 Hard disk interface
- 1.1.11 2*USB 3.0, 6*USB2.0 interface, 2 are I / O interfaces, 4 for (When there are 2 network cards, 6 USB are pins)
- 1.1.12 provide 5 * RS232 pin interface, 1*RS485/RS422 pin interface。
- 1.1.13 1*PS/2 interface (pin, Keyboard and mouse)
- 1.1.14 support HDMI export, Support 4K display output.
- 1.1.15 support RGB CRT export
- 1.1.16 Support for dual channel 24 bit LVDS output and EDP 1.3 + 4 Lanes (4096 / 2304) output (only one of the two can be selected).
- 1.1.17 Supporting touch screen (4wire 5wire 8wire)
- 1.1.18 2*3-Pin FAN interface
- 1.1.19 Provide 8 GPIOs for users to choose from
- 1.1.20 1*Fast button switch with indicator light
- 1.1.21 1*reset button
- 1.1.22 1*Hard disk indicator lamp and 1*power light
- 1.1.23 Support 255' watchdog。
- 1.1.24 Supporting Intel AMT automatic Management Technology

1.2 Power supply

Support wide voltage 8-36V power supply.

Support power-on automatic power-on function, jumper selection.

1.3 Size

154.8 x 117.4 mm

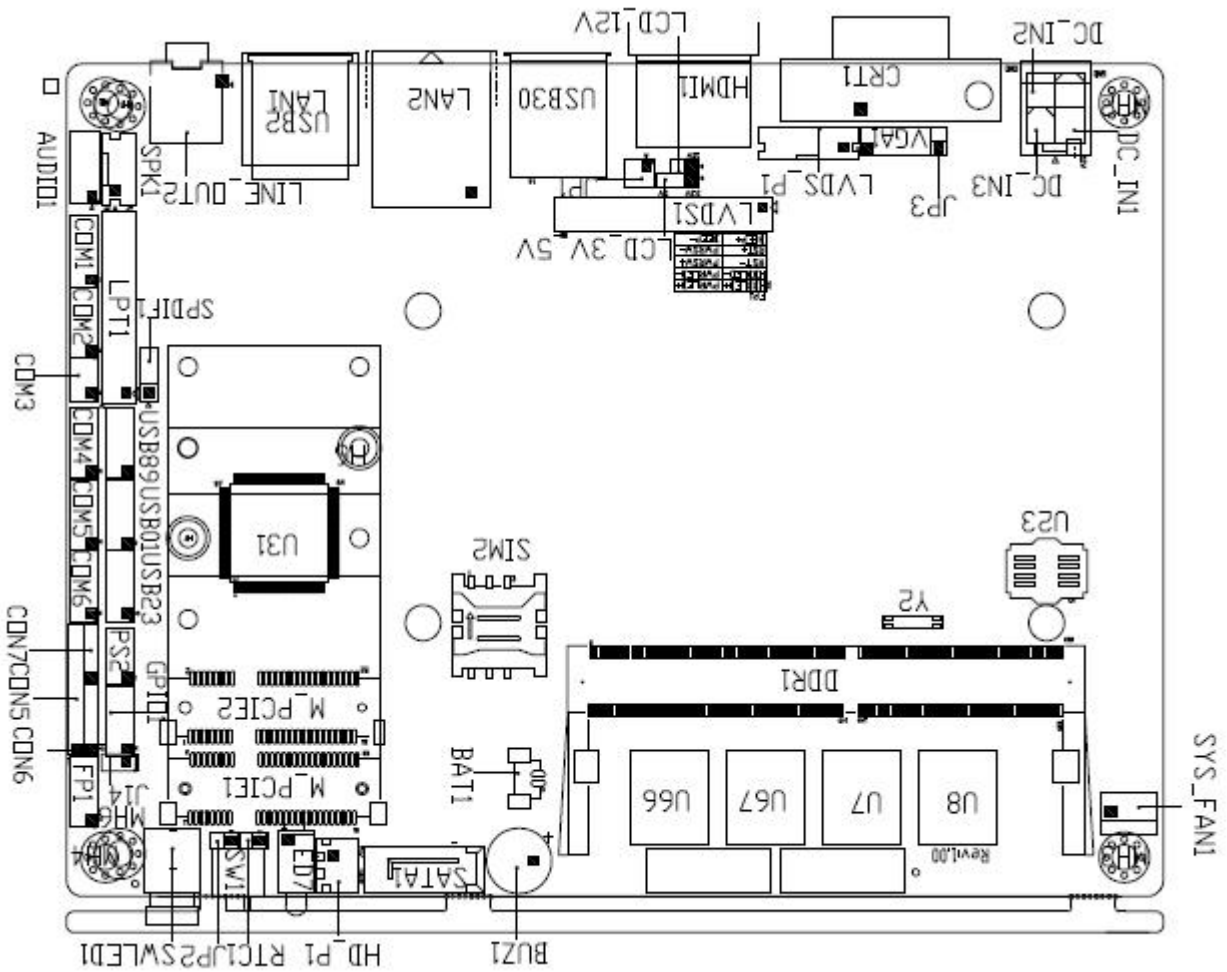
1.4 Working Environment

Working Temp: -20°C ~ +60°C

Storage Temp: -40°C ~ +85°C

2 KU250Z3AW Front side interfaces layout

TOP layout as below:



Remark: Interfaces in the above picture, **Pin 1** are in square shape.

2.1 DC_IN1 and DC_IN2

The main board input power interface, production can only choose one interface, customers on demand.

DC_IN1 is the standard DC-JACK port and DC / IN 2 is DT-126RP-02P Terminal Blocks interface. Special attention should be paid to the positive and negative electrodes of power supply.

Note: when assembling, testing and using, only after installation of equipment and cables can power on.

2.2 CRT1 and VGA1

CRT1 It's a standard CRT Display output interface.

VGA1 is 2x5、2mm pin interface, Both can not be used at the same time.



2.3 HDMI1

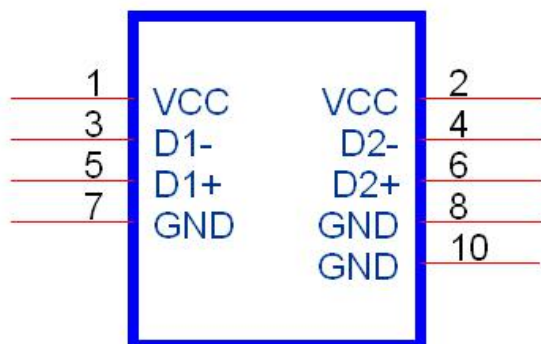
HDMI1 standard HDMI output interface

2.4 USB30, USB2

USB30 is 2*standard USB3.0 interface, It supports two USB3.0 devices and is compatible with USB 1.0 / 1.1 / 2.0 devices.USB2 is 2*standard USB2.0 interface

2.5 USB89、USB01、USB23

USB01is 2x5、2mm pin interface , support USB 1.0/1.1/2.0 Device, defined as follows:



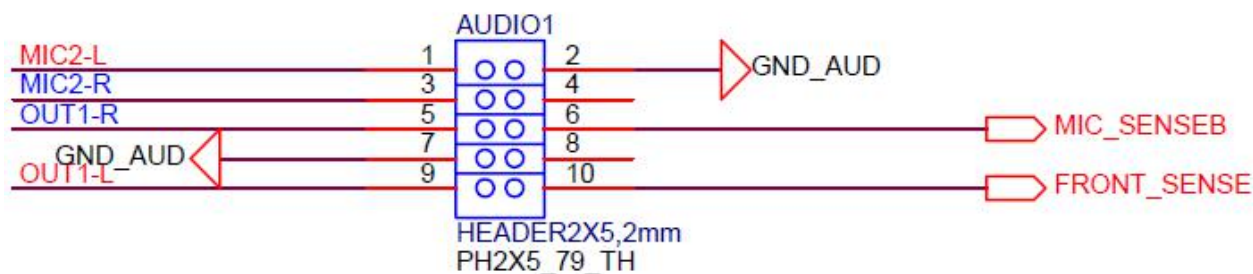
2.6 LAN1、LAN2 (When the I / O interface is 4 USB, there is only one Intel I211AT)

10/100/1000 M LAN Standard RJ45 interface, LAN1 is Intel I219V, LAN2 is Intel I211AT

2.7 LINE_OUT2 and AUDIO1

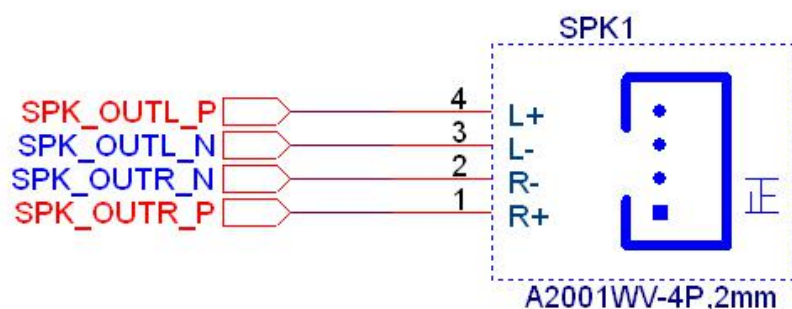
LINE_OUT2 Audio output interface, using universal connector.

AUDIO1 is 2x5、2mm pin interface, The definitions are as follows:



2.8 Audio power amplifier output interface SPK1 (option)

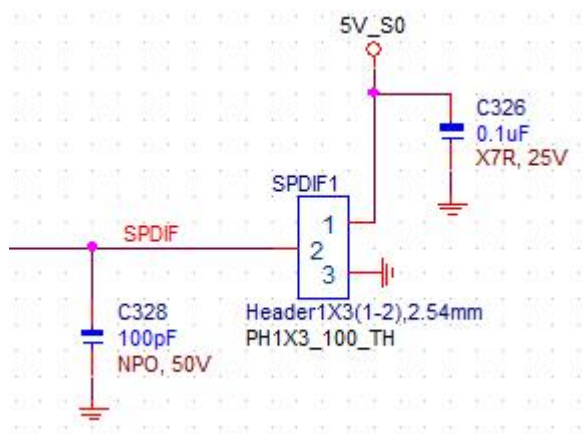
Define the following, two-channel power amplifier, each channel support 6W/8 Ω horn.



Remark : The front panel AUDIO1 has the highest priority. If the front panel AUDIO1 device is inserted, it can not be used. Plug in LINE_OUT audio output device SPK 1 without output.

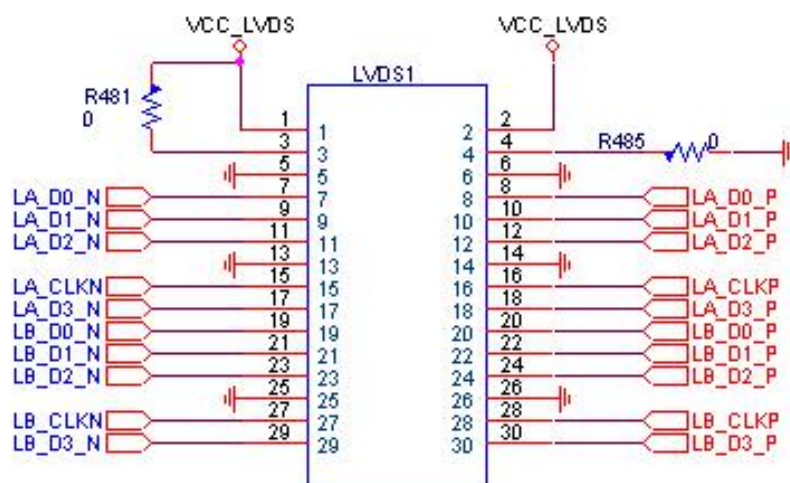
2.9 SPDIF1

use 1x3、2.54mm pin, the definitions are as follows

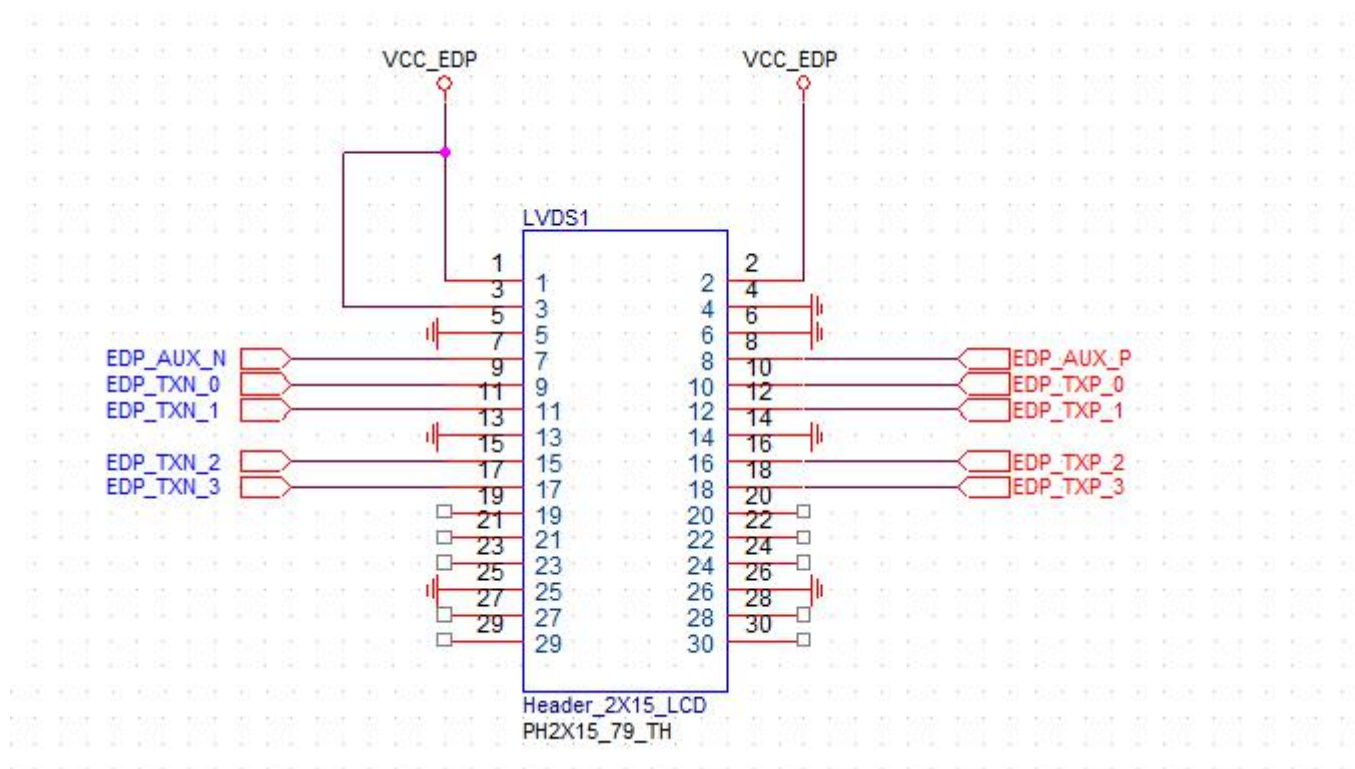


2.10 LVDS1 and EDP(choose one)

24-bit dual-channel LVDS screen interface, use 2x15、2mmpin interface, The definition is shown below.



EDP interface Define the following figure



2.11 LCD_3V_5V and LCD_12V

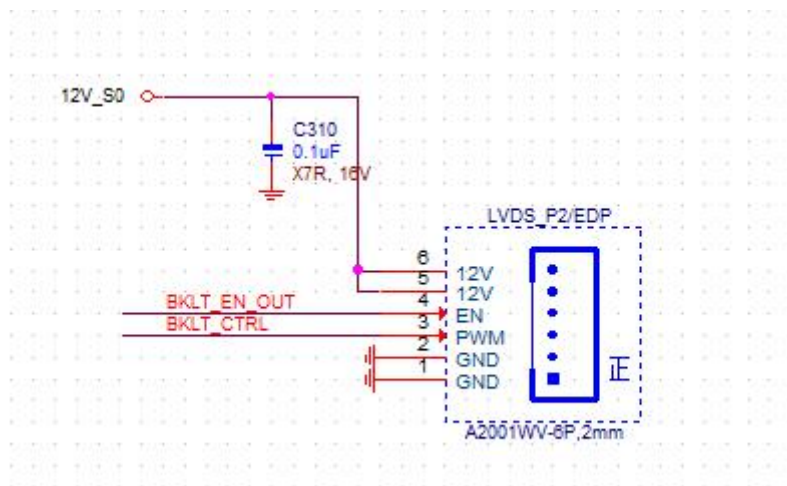
LVDS1 and EDP Power supply VCC Power selection.

selective mode	VCC_LVDS voltage
LCD_3V_5V(1-2)、LCD_12V (Open)	3.3V(default settings)
LCD_3V_5V(2-3)、LCD_12V (Open)	5V
LCD_3V_5V(Open)、LCD_12V (Close)	12V

2.12 LVDS_P1 and EDP

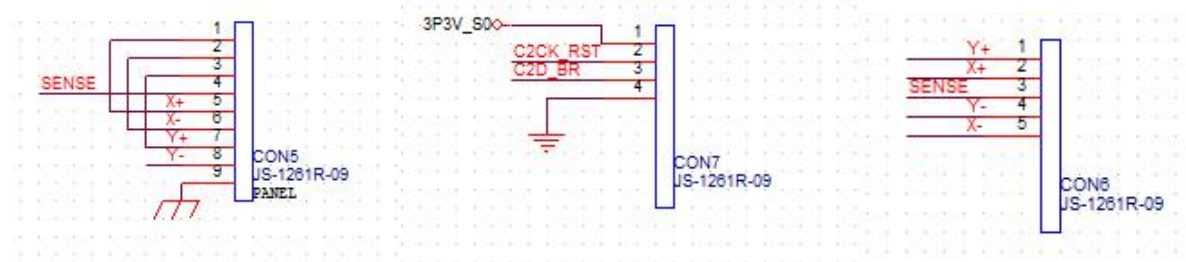
LVDS screen 和 EDP screen Backlight board interface, use

CJT company A2001WR-6P-1Connectors or other compatible connectors, Each pin is defined as follows:



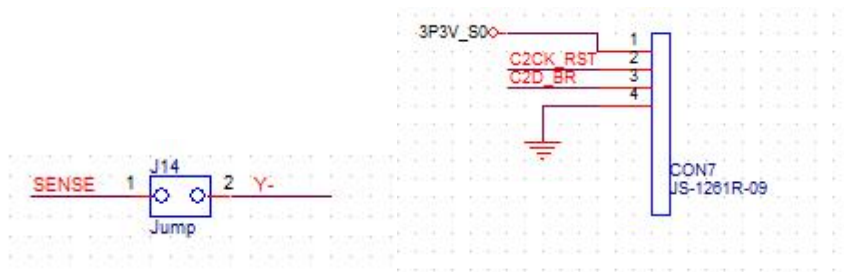
LVDS_P	LVDS_P Pin definition
1	Ground
2	Ground
3	Backlight brightness control
4	Backlight plate open
5	12V
6	12V

2.13 CON5 ,CON6,CON7



Touch screen interface definition			
	CON5	CON6	
	8-Wire	4-Wire	5-Wire
PIN1	Right sense	Right	LR (X)
PIN2	Left Sense	Left	LL (L)
PIN3	Bottom Sense	Bottom	Sense (S)
PIN4	TOP Sense	TOP	UR (H)
PIN5	Right Excite	GND	UL (Y)
PIN6	Left Excite	N/A	GND
PIN7	Bottom Excite	N/A	N/A
PIN8	Top Excite	N/A	N/A
PIN9	GND	N/A	N/A

2.14 J14, CON7

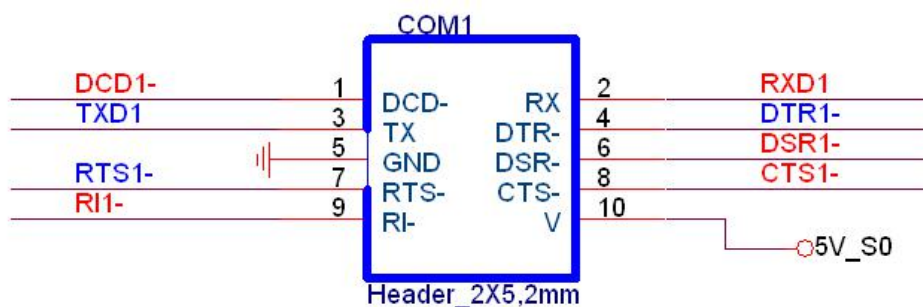


J14 Open: 5Wire Short: 4,8Wire

CON7 can connection brush and write touch screen data equipment

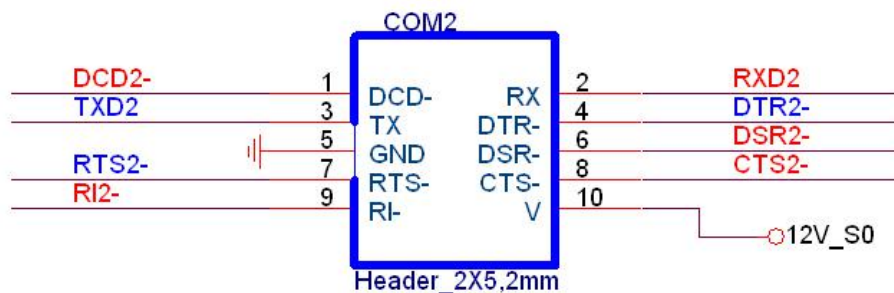
2.15 COM1、COM4、COM5

RSR232 pin interface, use 2x5、2mm pin, Pin10 is 5V source



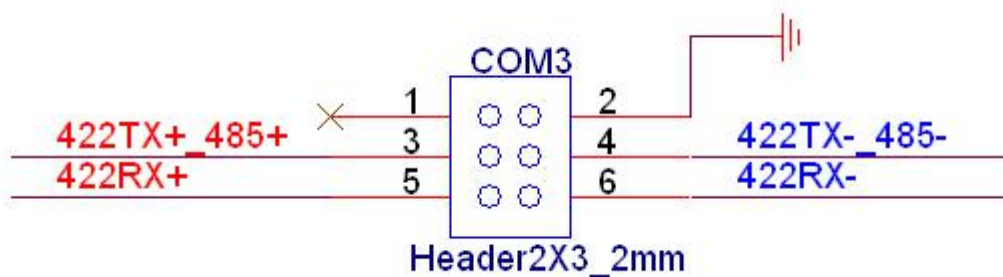
2.16 COM2、COM6

RSR232 pin interface, use 2x5、2mm pin, Pin10 is 12Vsource



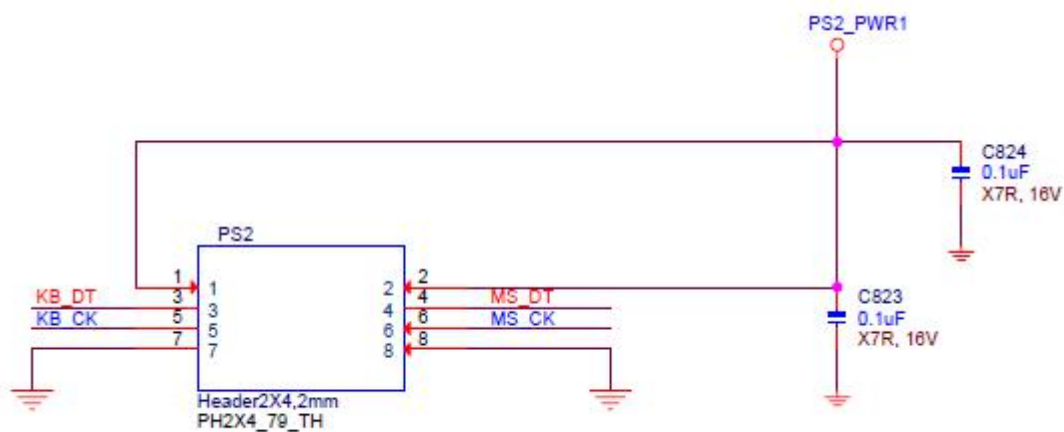
2.17 COM3

RS485/R422 Optional common interface, use 2x3、2mm pin, To cooperate CMOS COM3 Settings Selection COM3 Type of work.The definition is as follows.



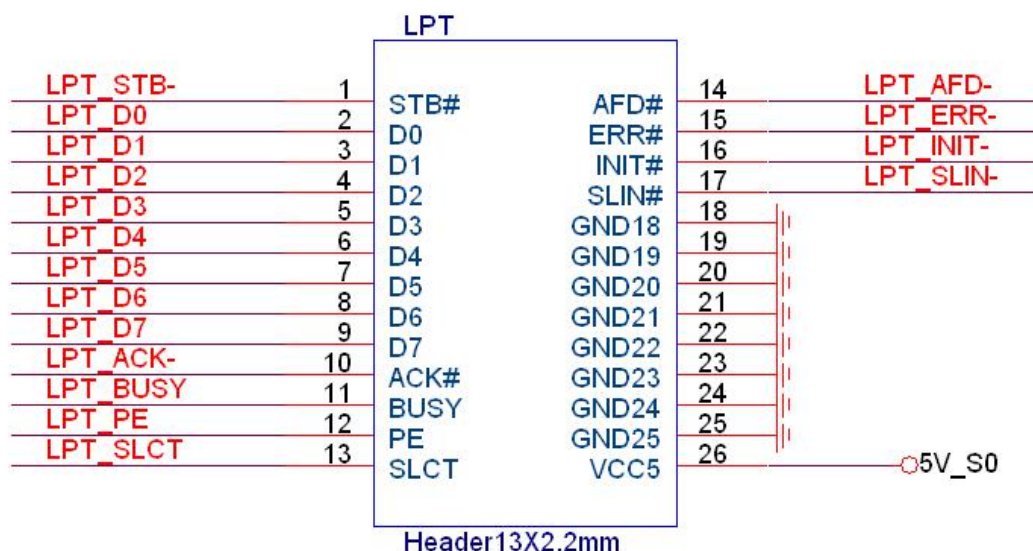
2.18 PS/2

PS/2 interface is 2x5 2mm pin, The definitions are as follows:



2.19 parallel port LPT

Use 13X2 pin, 2mm, The definitions are as follows

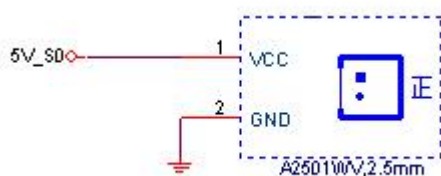


2.20 SATA1

standard SATA device interface, support SATA3.0 and below.

2.21 HD_P1、HD_P2

2*SATA Equipment power interface, using CJT A2501WV-2P devices or other compatible devices. The definition is similar to the figure below:



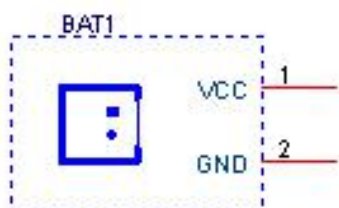
2.22 RTC1

RTC1 is RTC Zero jumper, use 1x2、2mm pin

RTC1	function declaration
Close	Clear RTC CMOS
Open	Default setting

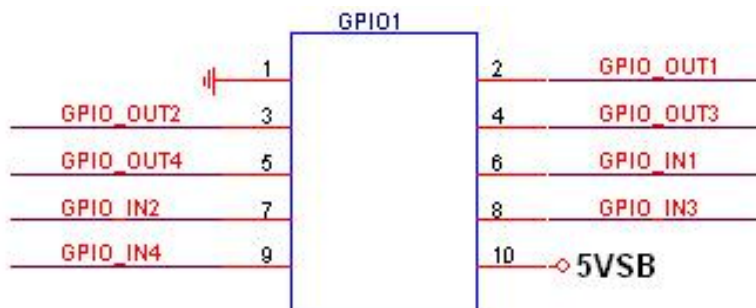
2.23 BAT1

Battery interface, convenient battery replacement. Adopt CJT company A1251WV-2P type interface or other compatible interface.



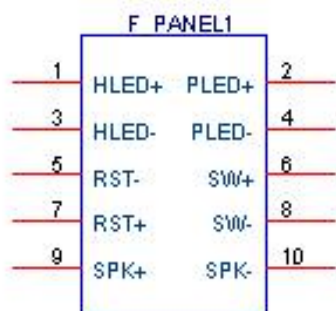
2.23 GPIO1

Alternate GPIO interface, using 2x5t2mm pin arrangement, define the following. GPIO input and output characteristics can be modified by BIOS. GPIO address entry please contact FAE.



2.24 FP1

The interface of the control panel is 2x5mm needle arrangement, and the HDDLED / PED / PWR\\The pin is defined as follows.



F_PANEL1	Pin definition
1, 3	Hard disk read-write indicator lamp positive, negative signal pin.
2, 4	Main power indicator lamp positive, negative signal pin.
5, 7	Main board reset signal positive, negative signal pin.
6, 8	Main board switch machine signal positive, negative signal pin.
9, 10	Standby buzzer interface.

2.25 JP2

When Close is selected, DC power supply is turned on and the main board is powered on.

PS_ON	Boot mode selection
Close	AT power supply boot mode
Open	ATX power supply boot mode

2.26 MPCIE1、MPCIE2

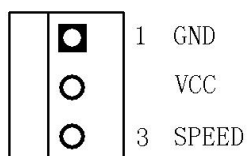
MPCIE1 is a standard Mini-PCIE connector, can be inserted full-length card. Half long card Mini-PCIE card, card must be lengthened fixed.

2.27 SIM1

3G/4G card SIM card holder.

2.28 CPU_FAN1、SYS_FAN1

The FAN interface supports the maximum current 0.3A, defined as follows.



CPU fan interface, support speed automatic adjustment. The maximum fan voltage is equal to the input power supply voltage. When the input power supply voltage is high, pay attention to select the appropriate fan. Sys fan does not support automatic speed adjustment.

2.29 DDR4 and onboard memory

DDR4 is an extrapolated DDR4 memory socket, the standard DDR4 SODIMM204 memory socket, with maximum support for 8GB memory 1066 / 1333 / 1600MHz.

Onboard DDR4 memory, with 2GB/4GB/ options above.

Use the same chip and capacity as possible when using both external memory and board memory, otherwise it may be unstable.

2.30 JP1 and U18

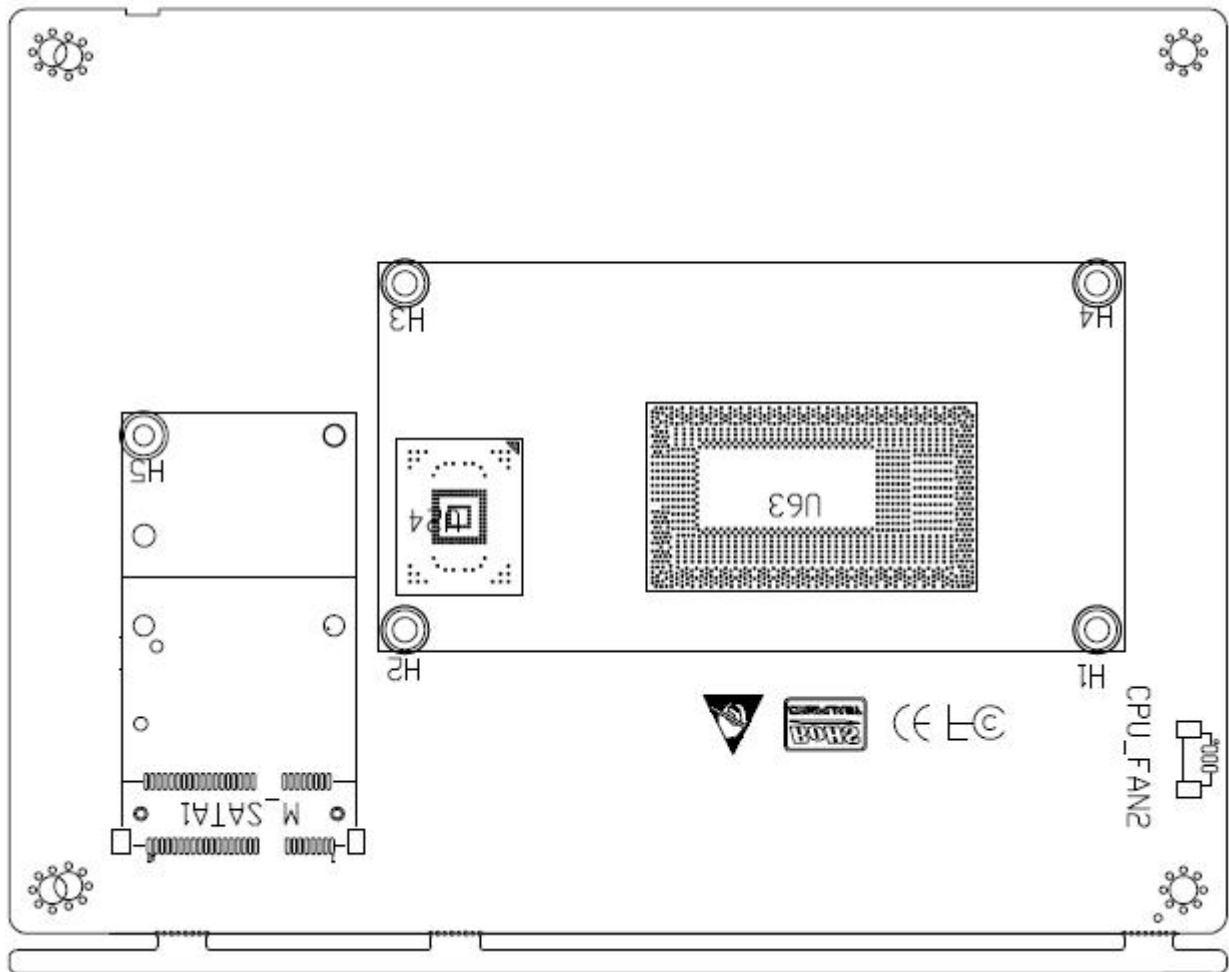
JP1 is used to set the number of LVDS channels and bits U18 to store LVDS screen resolution parameters.

JP1 settings should be consistent with U18 configuration parameters.

JP1	Function setting
1-2	Close indicates that a single channel LVDS screen is supported.
3-4	Close support 24-bit screen Open means 18-bit screen support.

3 Back interface layout

The layout of the opposite side of the motherboard is shown in the following figure



3.1 M_SATA

Support Mini-SATA memory card, due to industry standards are unclear, this board supports some large companies defined by the MINI-SATA card, specific models please consult the company business and technical support personnel.