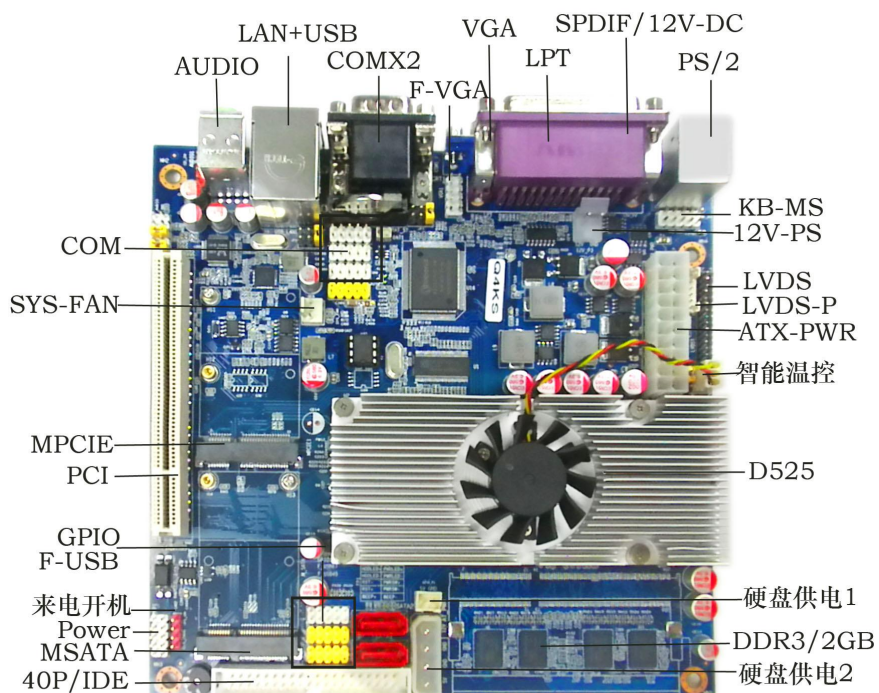
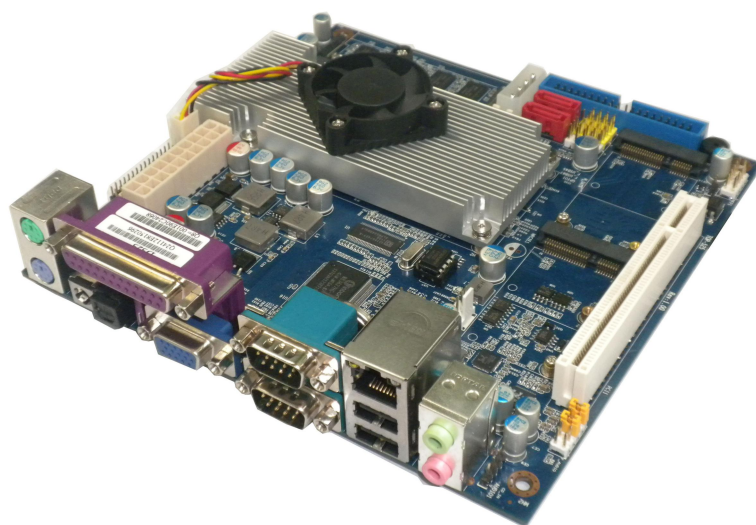


TOP525 Mainboard

(PCB Rev:1.10)

Manual Version 1.10

2012.02.15



1 Introduction

TOP525 mainboard is a mini-ITX low power consumption industrial motherboard, Adopt Intel Atom D525/N455/N550/N470/D425 processors & ICH8M chipsets.

1.1 Main Feature

- 1.1.1 Onboard CPU, support Intel Atom D525/N455/N550/N470/D425 processors etc.
- 1.1.2 Onboard 2GB DDR3 memory; DDR3 SO-DIMM 204 Socket, max up to 4GB DDR3 memory (optional).
- 1.1.3 Onboard 1* Gigabit Ethernet LAN.
- 1.1.4 Onboard Realtek HD ALC662 chipsets, provide MIC-IN/LINE-OUT and expansion header, and SPDIF interface.
- 1.1.5 1* Mini-PCIE socket; Onboard 1* SIM card slot.
- 1.1.6 1* Mini-SATA socket.
- 1.1.7 2* SATA 2.0 ports.
- 1.1.8 1* IDE-40pin interface.
- 1.1.9 1* PCI slot.
- 1.1.10 8* USB 2.0 ports.
- 1.1.11 2* RS232 DB9 ports. (Pin9 :RI、+5V、+12V optional);
2* RS232 Pin header; 1* RS485+RS422 Pin header.
- 1.1.12 1* DB25 LPT port.
- 1.1.13 Support RGB CRT output.
- 1.1.14 Support single channel 18bit LVDS output.
- 1.1.15 Provide 8bit GPIO.

1.2 Power Supply

DC-12V(+/-5%) or ATX-20pin power input. (Can not use at the same time.)

1.3 Form Factor

170mm × 170 mm

1.4 Working Environment

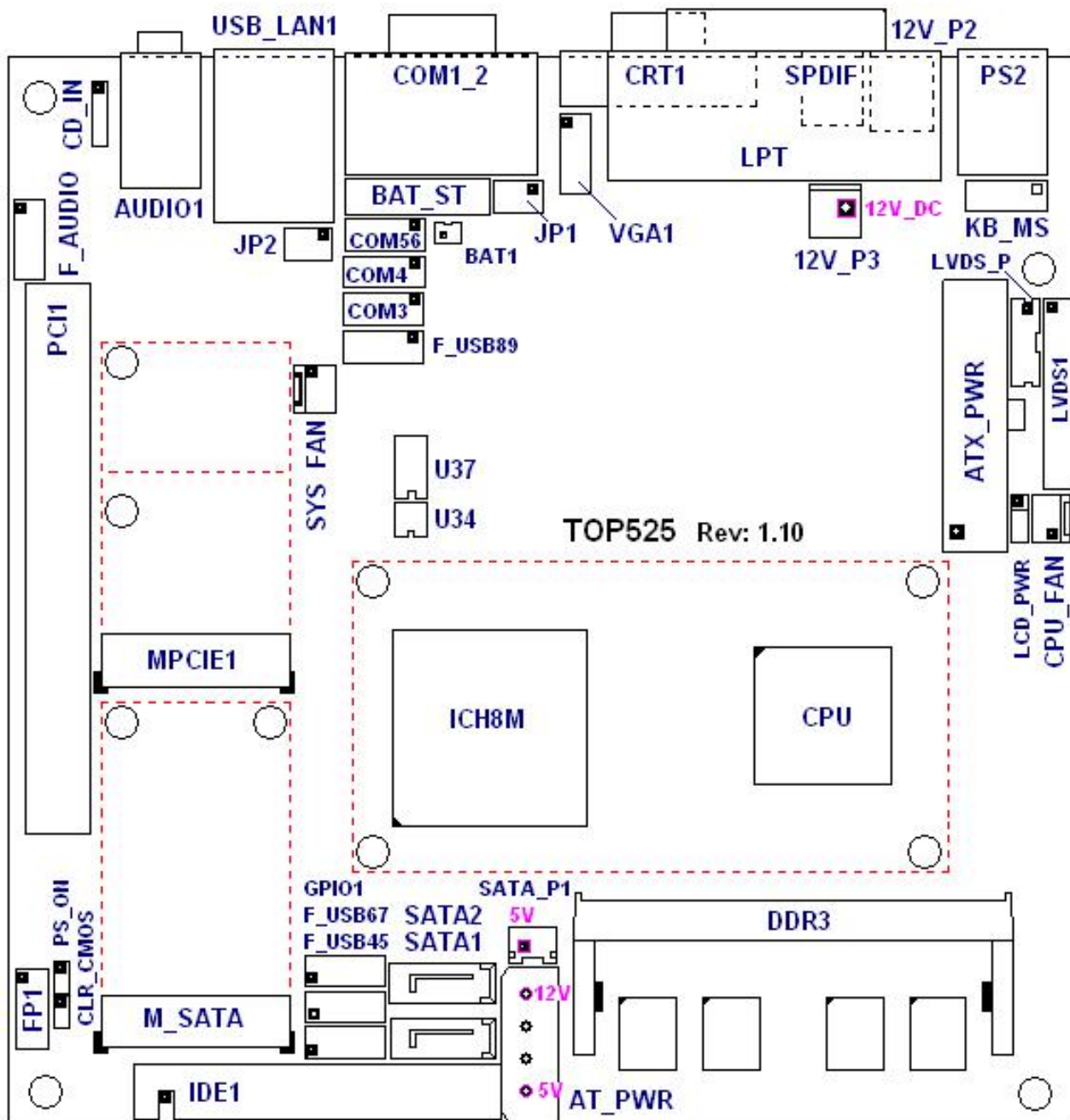
Working Temp: -20°C~70°C (-4°F~158°F)

Storage Temp: -20°C~80°C (-4°F~176°F)

Operating Humidity: 10%~90% (non-condensing)

2 TOP525 Front side interfaces layout

Rev: 1.10 TOP floor layout as below:



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

Mainboard Interface Description

2.1 12V_P2 & 12V_P3

Motherboard input power connectors, the same application can only choose to plug one input power.

12V_P2 adopt DC-JACK interface, power in the center. The dia of centre pin is: 2.5mm

12V_P3 adopt pin connector, lead pitch: 5.08mm.

When adoption of 12V_P2 is the input power, 12V_P3 available to supply the same power to other devices in the system.

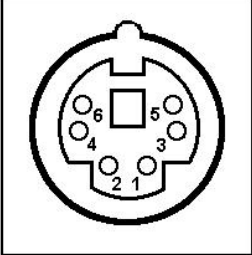
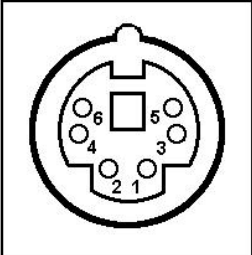
2.2 ATX_PWR

Standard ATX-20Pin input power connector.

Choose one of them as power supply. The 2 powers won't work, if they are both connected. (Motherboard protection automatically)

2.3 PS2 & KB_MS Interface

PS2 is standard mini DIN double socket, top layer is PS/2 Mouse interface, sub layer is Keyboard interface. Definition as below:

	<table><tr><th>Up</th><th>Signal Name</th></tr><tr><td>1</td><td>Mouse Data</td></tr><tr><td>3</td><td>Ground</td></tr><tr><td>4</td><td>5V</td></tr><tr><td>5</td><td>Mouse Clock</td></tr><tr><td>2, 6</td><td>NC</td></tr></table>	Up	Signal Name	1	Mouse Data	3	Ground	4	5V	5	Mouse Clock	2, 6	NC
Up	Signal Name												
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	<table><tr><th>Down</th><th>Signal Name</th></tr><tr><td>1</td><td>Keyboard Data</td></tr><tr><td>3</td><td>Ground</td></tr><tr><td>4</td><td>5V</td></tr><tr><td>5</td><td>Keyboard Clock</td></tr><tr><td>2, 6</td><td>NC</td></tr></table>	Down	Signal Name	1	Keyboard Data	3	Ground	4	5V	5	Keyboard Clock	2, 6	NC
Down	Signal Name												
1	Keyboard Data												
3	Ground												
4	5V												
5	Keyboard Clock												
2, 6	NC												

KB_MS is PS/2 2×5_2.54mm pin header, parallel with PS2, can not plug PS/2 device at the same time.



2.4 LPT

LPT is standard DB25 parallel interface, can connect to the LPT devices directly.

2.5 CRT1 & VGA1

CRT1 is a standard CRT monitor output interface.

VGA1 is 2×5,2.54mm Pin header,can not use at the same time



2.6 SPDIF (Optional)

Adopt 1×3_2.54mm pin header,interface selectable.

PIN	Definition
1	5V power
2	SPDIF
3	GND

2.7 COM1_2 and JP1、JP2

COM1_2 are standard DB9M RS232 serial port.Pin9 can choose RI/+5V/+12V.

JP1 choose COM1 (down) Pin9 definition; JP2 choose COM2 (up) Pin9 definition:

JP1、JP2	Function introduction
1-2	DB9M Pin9 defined as: RI-signal (default setting)
3-4	DB9M Pin9 defined as: +5V power.
5-6	DB9M Pin9 defined as: +12V power.

2.8 USB_LAN1

2 USB and 10/100/1000M LAN is standard RJ45 combination interface.Main control chipset is Realtek RTL8111E.

Below the RJ45 port is 2*USB 2.0 A Type port.

2.9 AUDIO1

Standard audio interface,support LINE-OUT & MIC-IN.

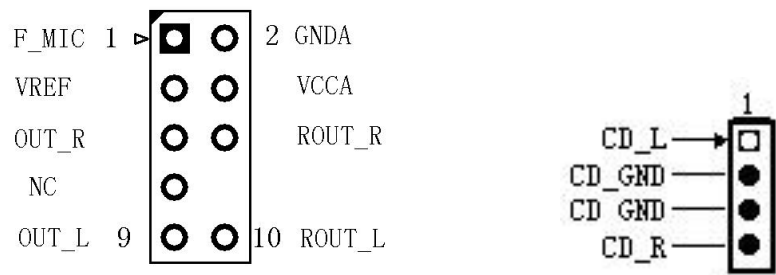
2.10 F_AUDIO

F_AUDIO is 2×5_2.54mm audio connect pin header.Users need to use the audio connecting cable to connect audio device which is the standard accessory of mainboard.

Pin1~4 is Front panel MIC connector;Pin5、9 is the connector of headset and speaker in front panel.

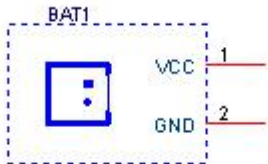
If the front-panel headphone or speakers Missed shall in Pin5, 6 and Pin9 10 were added jumpered.

Note: some batches of products in response to customer requirements, the front and rear panels, regardless of priority, would not add jumper.



2.11 CD_IN (Option)
CD-IN signal connector,adopt 1×4_2.54mm pin header.Connector selectable.

2.12 BAT_ST & BAT1
BAT_ST is general battery socket,can connect 2032 battery directly.
BAT1 is Wafer battery interface,for battery changing.Adopt CJT company A1251WV-2P connector or other compatible connectors.

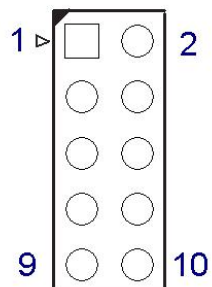


2.13 COM3 (optional)
COM3 is RS232 2×5_2.54mm pin header,and added 12V power pin.

The diagram shows the COM3 connector, which is a 2x5 pin header. The pins are labeled 1 through 10. The labels are: 1, 2, 9, 10.

Base PIN	Signal Name
	COM3
	RS-232
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI
10	12V

2.14 COM4 (optional)
COM4 is RS232 2×5_2.54mm pin header,and added 5V power pin.



Base PIN	Signal Name
	COM4
	RS-232
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI
10	5V

2.14 COM56 (optional)

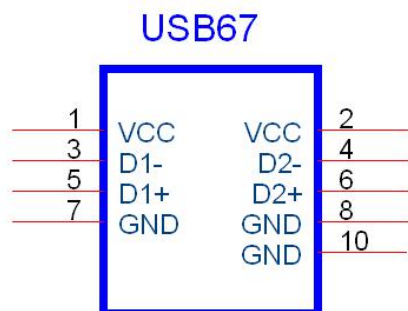
COM56 is RS485、RS422 combination pin header, 2×5_2.54mm.



2.15 F_USB45、F_USB67、F_USB89

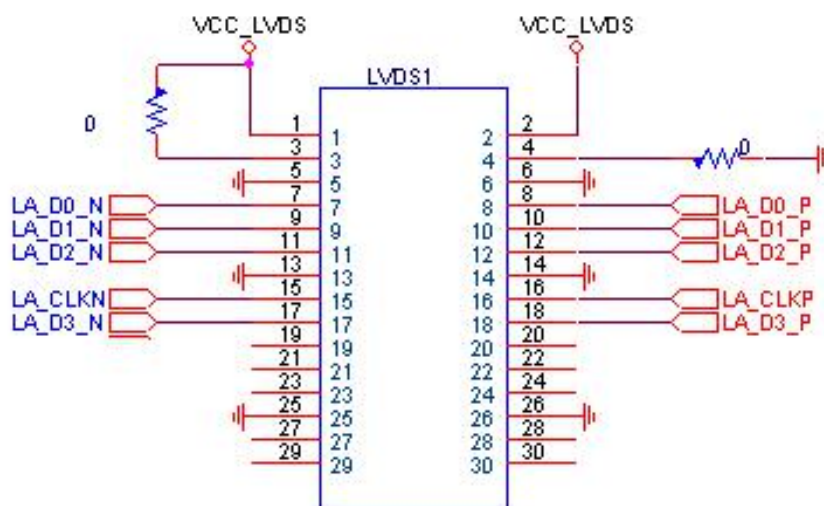
Are USB 2x5_2.54mm Pin header,support USB 1.0/1.1/2.0 devices.

Definition as below:



2.16 LVDS1

18bit single channel LVDS connector,adopt 2×15、2mm pin header.Definition as below:



2.17 LVDS_P

LVDS screen back light interface,adopt CJT A2001WR-6P-1connector or other compatible connector.Definition as below:

LVDS_P	LVDS_P definition
1	Ground
2	Ground
3	Back light luminance control
4	Back light-ON
5	12V
6	12V

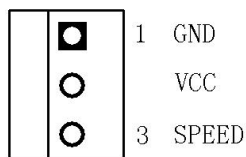
2.18 LCD_PWR

It's the LVDS screen selectable jumper,adopt 1×3、2.54mm pin header.

LCD_PWR	VCC_LVDS Voltage
1-2	3.3V (Default setting)
2-3	5V

2.19 CPU_FAN1、SYS_FAN1

FAN interfaces,support maximum current 0.3A,definition as below:



CPU fan connector,rotational speed adjust automatically.The maximum voltage is the power input voltage.Please choose a suitable fan,when the input voltage is higher.SYS fan does not support adjust automatically.

2.20 U37 and 34

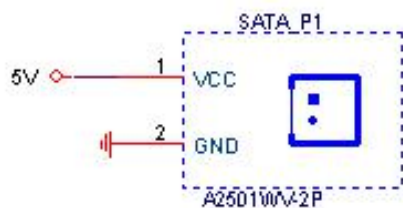
SPI BIOS chipset,only need one.

2.21 SATA1、SATA2

Standard SATA device interfaces.

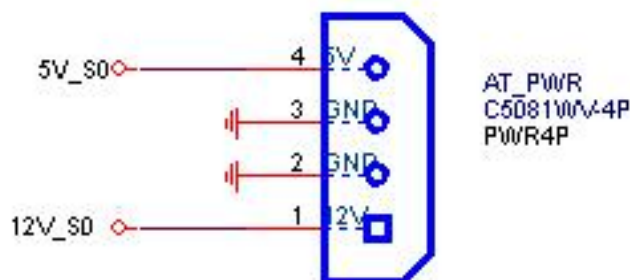
2.22 SATA_P1

SATA power interface,adopt CJT A2501WV-2P device or other compatible devices,definition as below:



2.23 AT_PWR

Mainboard power output interface,supply power for the hard disk.Definition as below:

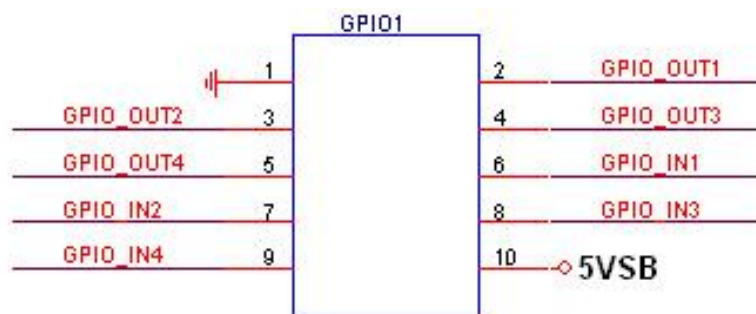


2.24 IDE1

Standard 40-Pin IDE hard disk interface.

2.25 GPIO1

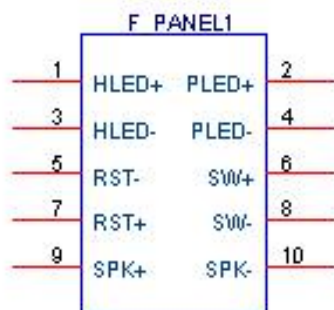
Spare GPIO interface,adopt 2×5,2.54mm pin,definition as below:



The I/O features of GPIO can be amend through BIOS.

2.26 FP1

Mainboard control interfaces, adopt 2×5, 2.54mm pin, integrated HDD_LED、PWR_LED、on/off、reset switch、SPEAKER function. Pin definition as below:



F_PANEL1	Pin Definition
1, 3	Hard disk access lamp positive and negative signal pins.
2, 4	Main power indicator light positive and negative signal pins.
5, 7	Mainboard reset positive and negative signal pins.
6, 8	Mainboard on/off positive and negative signal pins.
9, 10	Spare buzzer connector.

2.27 CLR_CMOS

The pin for clear CMOS. It's on "OPEN" status normally, adopt 2×5, 2.54mm pin header, definition as below:

CLR_CMOS	Function Introduction
Close	Clear RTC CMOS
Open	normal, working status, default-setting

2.28 PS_ON

AT boot mode select jumper, adopt 2×5, 2.54mm pin header, definition as below:

PS_ON	Function Introduction
Close	AT power Boot Mode
Open	ATX power Boot Mode

2.29 DDR3

Standard SO-DIMM-204 DDR3 socket.Support 4GB DDR3 without onboard memory;Maximum up to 2GB DDR3 memory with onboard 2GB memory.

2.30 MPCIE1

Standard Mini PCIE socket(both for full size and half size card),support Rev1.00 Mini-PCIE standard, support SIM card,SIM card slot in the rear side.

2.31 M_SATA

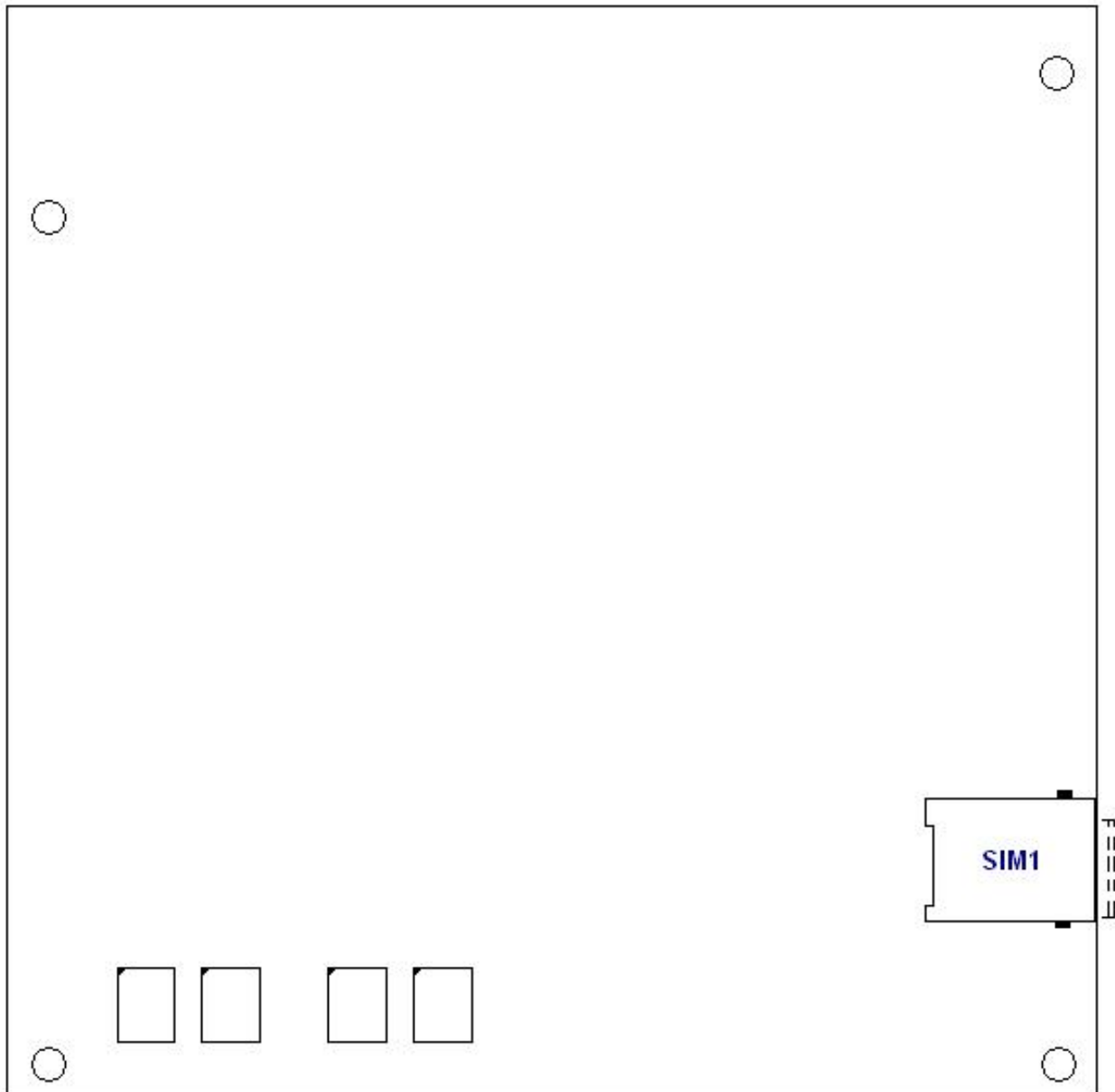
Support Mini-SATA SSD.This motherboard support most of the large company's Mini-SATA card.For detailed informations.please contact with our salesman and technician.

2.32 PCI1

Standard PCI Slot.

3 Rear Side Interface Layout

Mainboard rear side layout as below:



- 3.1 SIM1
SIM card slot.