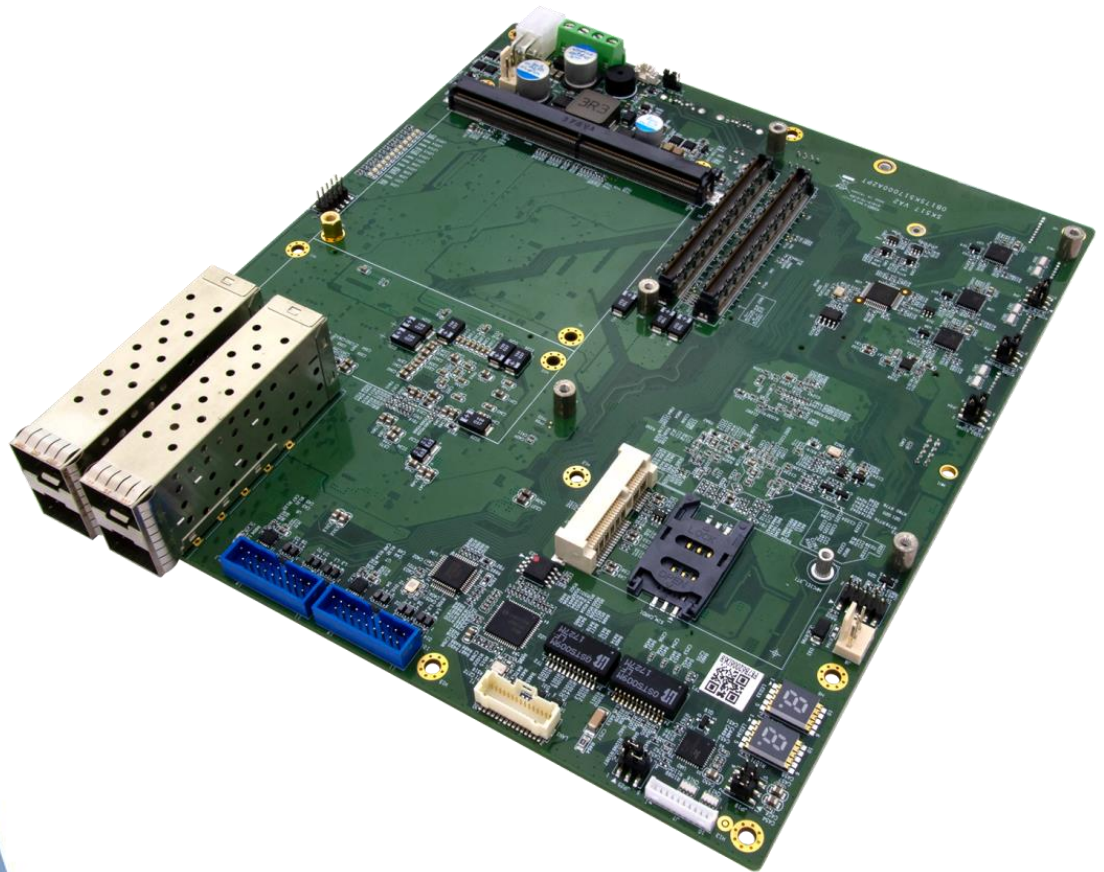




SK517

COM Express® Type 7 Carrier Board w/PCIe 104



User's Manual

Revision Date: Mar. 04 2024

Safety Information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter any technical problems with the product, contact your local distributor.

Statement

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- All product specifications are subject to change without prior notice.

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Chapter 1: Product Information

1.1 Key Features

System	
COM Express CPU Options(Type 7)	Intel® Xeon® D-1700 processor (Ice Lake-D LCC) Intel Xeon® D-1746TER, 67W, Ice Lake,10C, 20T, Freq. 2.0/3.1GHz, 15MB cache Intel Xeon® D-1735TR, 59W, Ice Lake,8C, 16T, Freq. 2.2/3.4GHz, 15MB cache. Intel Xeon® D-1732TE, 52W, Ice Lake, 8C, 16T, Freq.1.9/3.0GHz, 15MB cache 8C
MXM GPU Module Options	NVIDIA® Ampere RTX A2000, 80W, 8GB GDDR6, 2,560 CUDA Cores NVIDIA® Ampere RTX A4500, 80/130W, 16GB GDDR6, 5,888 CUDA Cores
COM Express Compatibility	COM Express® Type 7
Expansion	
MiniPCIe Expansion	2x Full-size Mini PCIe (PCIe)
MXM	1x (MXM3.1 Type B), PCIe3.0 support
M.2 Expansion	1x M.2 2280 M-key Slot (PCIe Gen.3 x4, NVMe)
PCIe/104 Expansion	1x Type 2: 2x PCIe x1+2x PCIe x4
SIM Slot	2x
Display	
Display	2x DP (Each DP from each MXM DP output)
Chipset	Based on CPU module
Ethernet	
LAN1 (GbE)	1x (from CPU module)
LAN2 (GbE)	1x (Intel i210IT)
LAN#3~6	4x 10G SFP+(Intel® C827 10G Retimer)
Rear I/O	
10G SFP+	4x
Front I/O	
Power-system	1x 4P terminal DC-IN
Power -MXM	1x 2x2P terminal DC-IN
Internal I/O	
COM Port	4x RS232/422/485 Header
Display port	1x Header with 2x DP ports
MXM_VGA	1x Header (By MXM GPU support)

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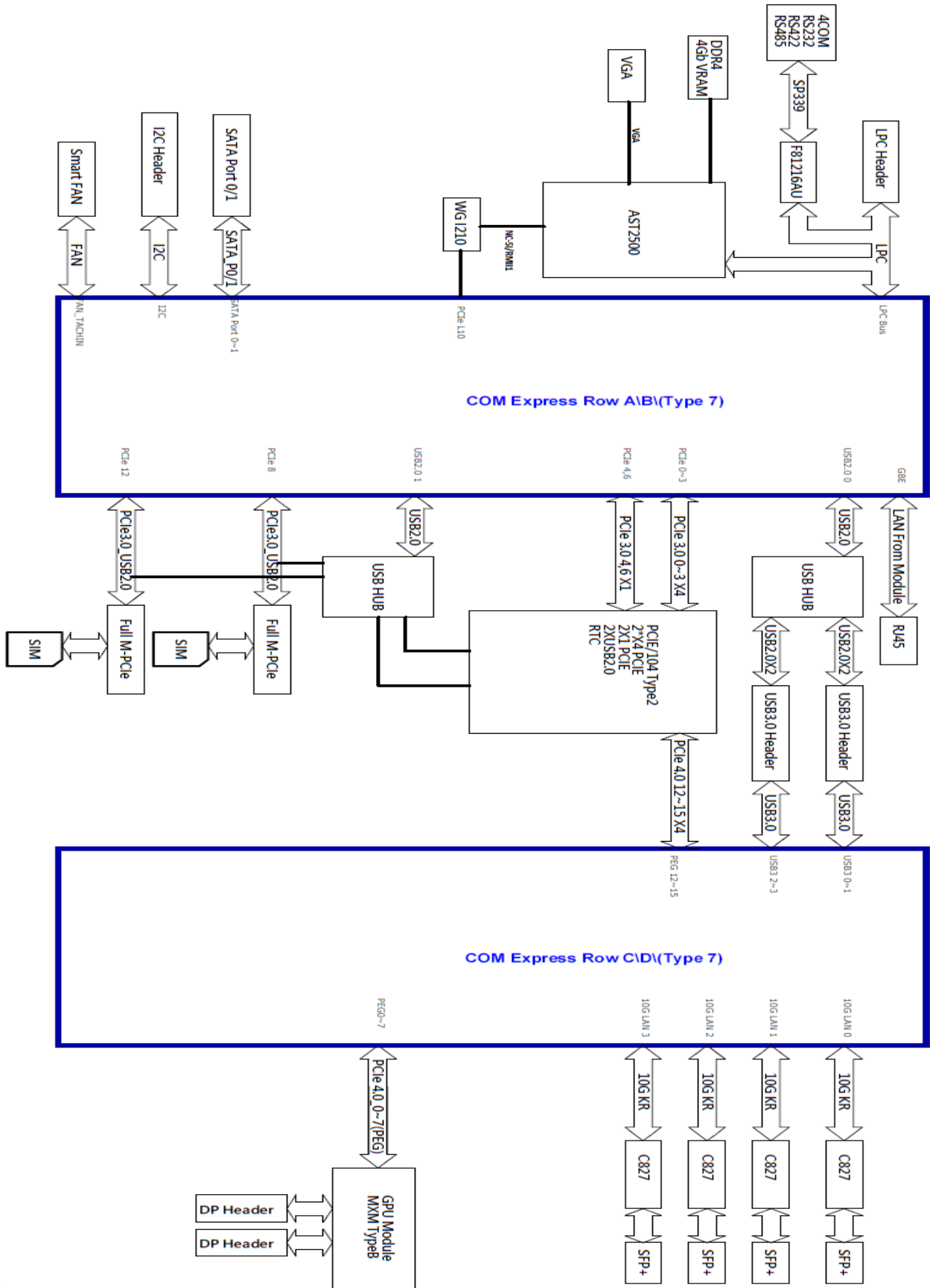
RJ45 LAN	1x Header with 2x LAN ports,
USB	2x USB3.0 Header, each with 2x USB3.0 ports
SATA	2x SATA connector
SATA Power	2x SATA Power connector
DI/DO	1x DI/DO (4 in / 4 out) Header
I2C	1x Header
LPC	1x Header
CPU FAN	1x CPU FAN connector
MXM FAN	1x MXM FAN connector
Battery	1x Battery connector
Front Panel	1x Header
Power System	
Input Power_SYS	9V~36V (4P Terminal Block)
Input Power_MXM	12V (ATX 4P)
Power Consumption	Varies per COM Express /MXM with different CPU and GPU models
RTC Battery	3V CR2032
Mechanical and Environment	
Dimension	190mm x 210mm
Operating Temp.	-40 to 85°C
Storage Temp	-40 to 85°C
Relative Humidity	10% to 90%, non-condensing
Standard Compliance	
Standard Compliance	CE/FCC
OS	
OS Support	Windows®10 64bit , Linux(Support by request)

***All specifications and photos are subject to change without notice.**

Revision History

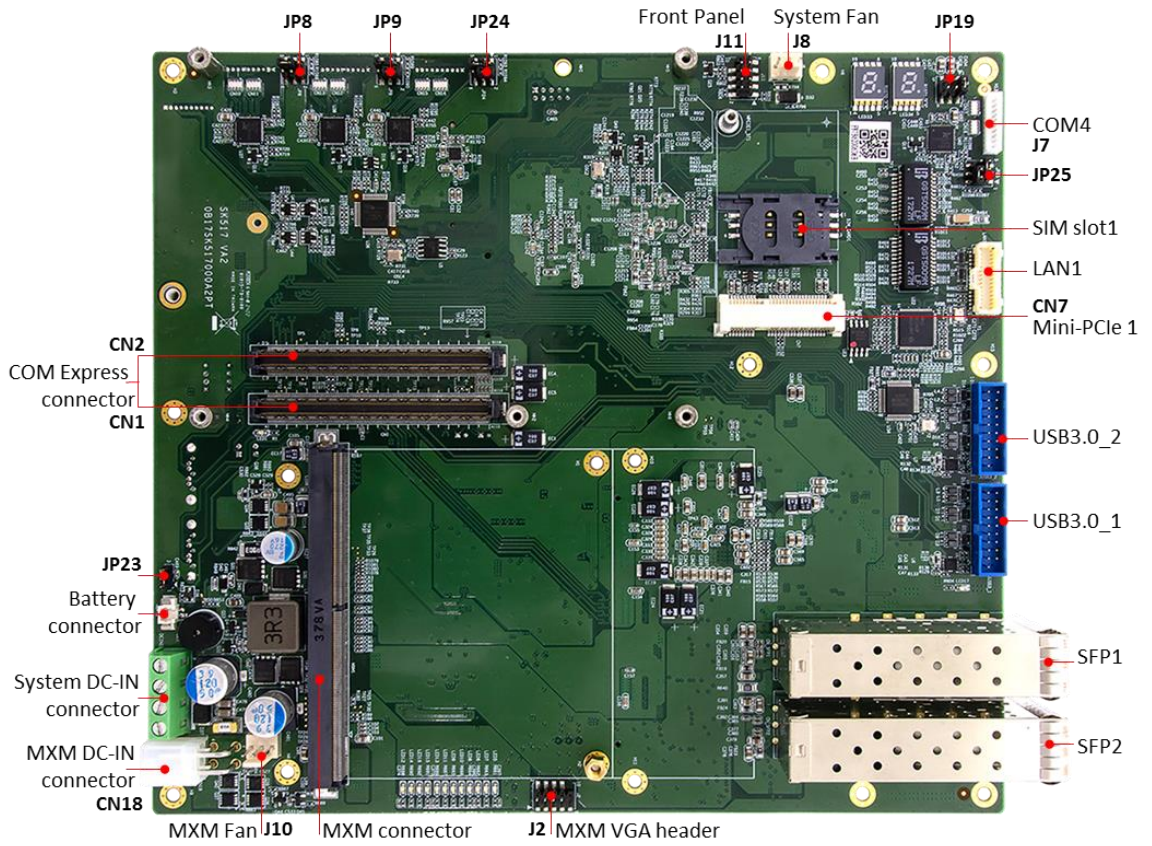
Revision	Date (yyyy/mm/dd)	Changes
V1.0	2024/03/04	Initial Release
V2.0	2024/08/05	SK517 VA2 design update

1.2 Block Diagram

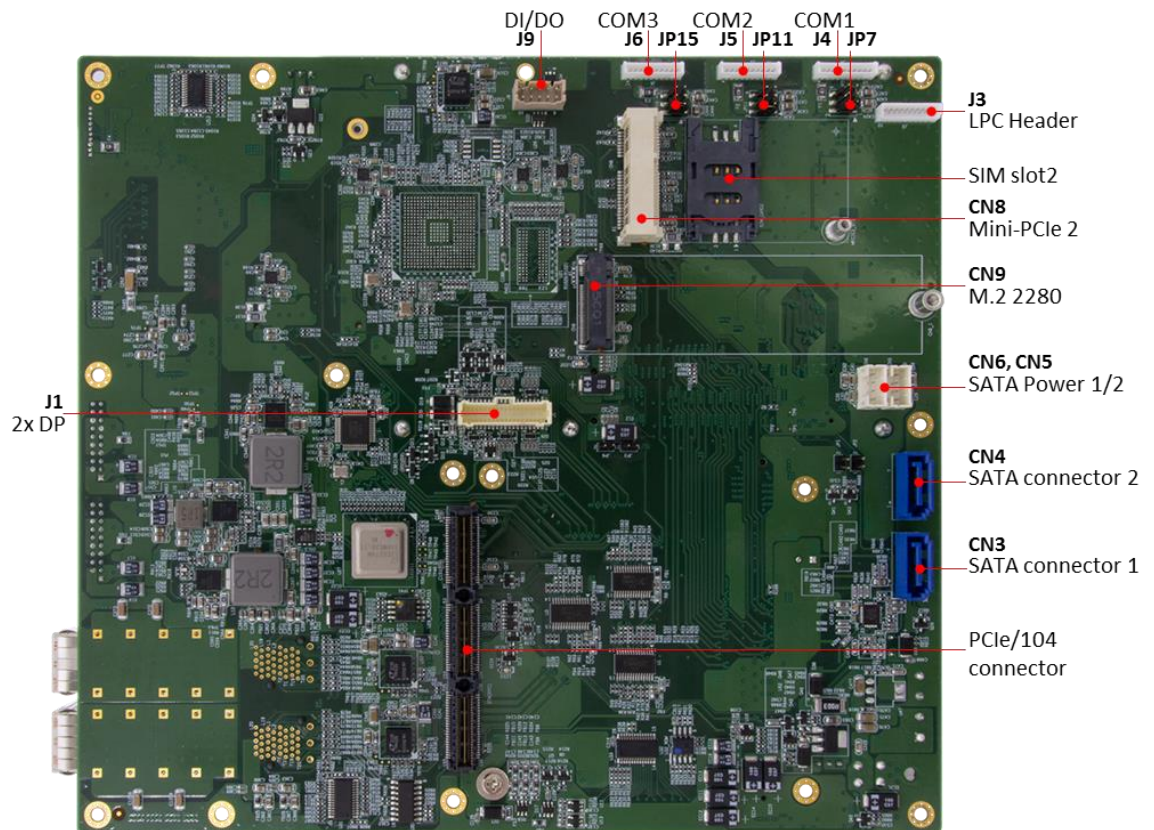


1.3 Connector & Pin Header

Top View



Bottom View

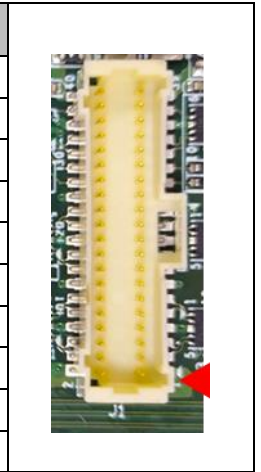


Chapter 2: Jumpers and Connectors

2.1 Connector & Pin Definitions

2.1.1 J1: MXM_DP(A/B)

Pin	Function	Pin	Function	Pin	Function	Pin	Function
1	GND	11	DPA_TN1	21	DPA_TP3	31	DPA_AUXP_CLK
2	GND	12	DPB_TN1	22	DPB_TP3	32	DPB_AUXP_CLK
3	DPA_TP0	13	GND	23	DPA_TN3	33	DPA_AUXN_DAT
4	DPB_TP0	14	GND	24	DPB_TN3	34	DPB_AUXN_DAT
5	DPA_TN0	15	DPA_TP2	25	GND	35	GND
6	DPB_TN0	16	DPB_TP2	26	GND	36	GND
7	GND	17	DPA_TN2	27	DPA_AUX_SEL	37	DPA_DET
8	GND	18	DPB_TN2	28	DPB_AUX_SEL	38	DPB_DET
9	DPA_TP1	19	GND	29	GND	39	DPA_PWR
10	DPB_TP1	20	GND	30	GND	40	DPB_PWR



2.1.2 J2: MXM_VGA

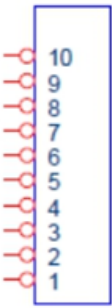
Pin	Function
1	MVGA_VS
2	MVGA_SCL
3	MVGA_HS
4	MVGA_SDA
5	GND
6	MVGA_VCC
7	MVGA_R
8	MVGA_B
9	MVGA_G

2.1.3 J3: LPC

Pin	Function
1	GND
2	GND
3	3V3
4	LPC_AD0
5	LPC_AD1
6	LPC_AD2
7	LPC_AD3
8	LPC_FRAME-
9	LPC_RST#
10	CLK_DBG

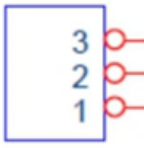
2.1.4 J4: COM1 / J5: COM2 / J6: COM3 / J7: COM4

Pin	RS232	RS422	RS485
1	5V	NC	NC
2	GND	GND	GND
3	COMx_P9	NC	NC
4	DTR-	RX-	NC
5	CTS-	NC	NC
6	TXD	RX+	NC
7	RTS-	NC	NC
8	RXD	TX+	Data+
9	DSR-	NC	NC
10	DCD-	TX-	Data-




2.1.5 J8: CPU FAN Connector

Pin	Function
1	GND
2	CPUFANOUT
3	+12V



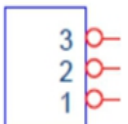
2.1.6 J9: DIO

Pin	Function
1	GPI0
2	GPO0
3	GPI1
4	GPO1
5	GPI2
6	GPO2
7	GPI3
8	GPO3
9	5V
10	GND



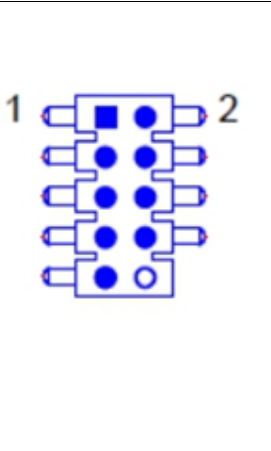
2.1.7 J10: MXM FAN connector

Pin	Function
1	GND
2	PWM_FAN0
3	+12V




2.1.8 J11: Front Panel

Pin	Function
1	HDLED+
2	PWLED+
3	SATALED-
4	GND
5	GND
6	PWRBTN-N
7	RESET
8	GND
9	NC



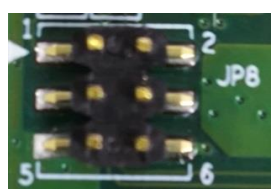
2.1.9 JP7: COM1/JP11:COM2/JP15:COM3/JP19:COM4 Pin select

Pin	Function
(1-2) Closed	RI
(3-4) Closed	+5V
(5-6) Closed	+12V




2.1.10 JP8: COM1 Mode select

JP8	JP8	Function
(3-5)	(4-6)	Loopback
(3-5)	(2-4)	RS232
(1-3)	(4-6)	RS485 Half Duplex
(1-3)	(2-4)	RS485/422 Full Duplex




2.1.11 JP9: COM2 Mode select

JP9	JP9	Function
(3-5)	(4-6)	Loopback
(3-5)	(2-4)	RS232
(1-3)	(4-6)	RS485 Half Duplex
(1-3)	(2-4)	RS485/422 Full Duplex



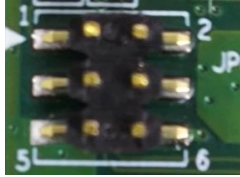
2.1.12 JP24: COM3 Mode select

JP24	JP24	Function
(3-5)	(4-6)	Loopback
(3-5)	(2-4)	RS232
(1-3)	(4-6)	RS485 Half Duplex
(1-3)	(2-4)	RS485/422 Full Duplex




2.1.13 JP25: COM4 Mode select

JP25	JP25	Function
(3-5)	(4-6)	Loopback
(3-5)	(2-4)	RS232
(1-3)	(4-6)	RS485 Half Duplex
(1-3)	(2-4)	RS485/422 Full Duplex



2.1.14 JP23: Clear CMOS

Pin	Function
(1-2) Closed	Normal
(2-3) Closed	Clear



2.1.15 CN1, CN2: COM Express Connector

Support COM Express Basic Size Type 7 Module



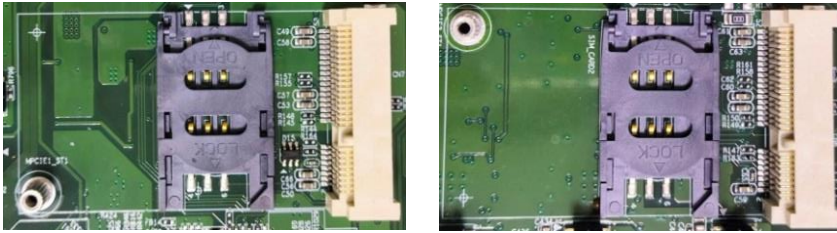
2.1.16 CN3, CN4: SATA Connector

Pin	Function
1	GND
2	SATA_TP
3	SATA_TN
4	GND
5	SATA_RN
6	SATA_RP
7	GND

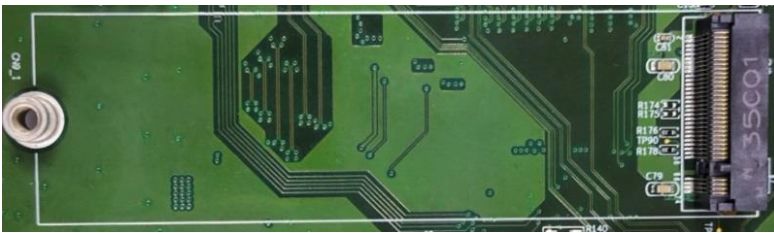
2.1.17 CN5, CN6: SATA Power Connector

Pin	Definition
1	12V
2	GND
3	GND
4	5V

2.1.18 CN7: m-PCIe 1 / CN8: m-PCIe 2 (Mini PCIe Slot)

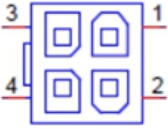


2.1.19 CN9: M.2 2280 M-key Slot (PCIex4 GEN3, NVMe)




2.1.20 CN18: MXM DC-IN

Pin	Definition
1	12V
2	12V
3	GND
4	GND



2.1.21 DC-IN1: System DC-IN

Pin	Definition
1	12V
2	12V
3	GND
4	GND

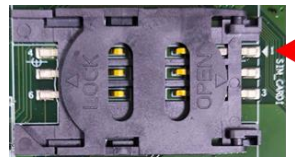


2.1.22 MXM1: MXM socket



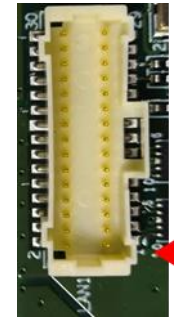
2.1.23 SIM_CARD1 / SIM_CARD2

Pin	Function	Pin	Function
1	UIM_PWR	4	GND
2	UIM_RESET	5	UIM_VPP
3	UIM_CLK_R	6	UIM_DATA



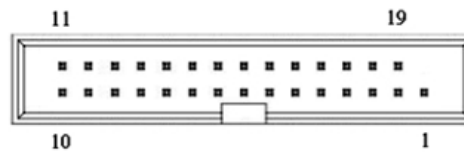
2.1.24 LAN1: LAN1/LAN2

Pin	Function	Pin	Function	Pin	Function
1	MDI2_0PX	12	MDI1_2NX	23	3V3SB
2	MDI1_0PX	13	MDI2_3PX	24	3V3SB
3	MDI2_0NX	14	MDI1_3PX	25	LAN2_LED_100#
4	MDI1_0NX	15	MDI2_3NX	26	GBE_LED_100-
5	MDI2_1PX	16	MDI1_3NX	27	LAN2_LED_1000#
6	MDI1_1PX	17	GND	28	GBE_LED_1000-
7	MDI2_1NX	18	GND	29	GND
8	MDI1_1NX	19	VCC_1V5	30	GND
9	MDI2_2PX	20	GB0_CTREF	31	GND
10	MDI1_2PX	21	LAN2_LED_ACT#	32	GND
11	MDI2_2NX	22	GBE_ACT-		



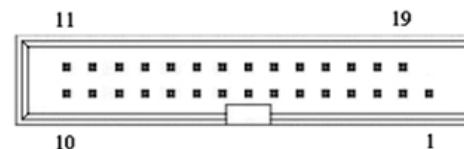
2.1.25 JUSB3_1: USB 3.0 Port

Pin	Function	Pin	Function
1	+5V_USB0	11	USB2_DP1
2	USB3_RXN0	12	USB2_DN1
3	USB3_RXP0	13	GND
4	GND	14	USB3_TXP1
5	USB3_TXN0	15	USB3_TXN1
6	USB3_TXP0	16	GND
7	GND	17	USB3_RXP1
8	USB2_DN0	18	USB3_RXN1
9	USB2_DP0	19	+5V_USB1
10	N/C		



2.1.26 JUSB3_2: USB 3.0 Port

Pin	Function	Pin	Function
1	+5V_USB2	11	USB2_DP3
2	USB3_RXN2	12	USB2_DN3
3	USB3_RXP2	13	GND
4	GND	14	USB3_TXP3
5	USB3_TXN2	15	USB3_TXN3
6	USB3_TXP2	16	GND
7	GND	17	USB3_RXP3
8	USB2_DN2	18	USB3_RXN3
9	USB2_DP2	19	+5V_USB3
10	N/C		



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2.1.27 STACKPC 1

