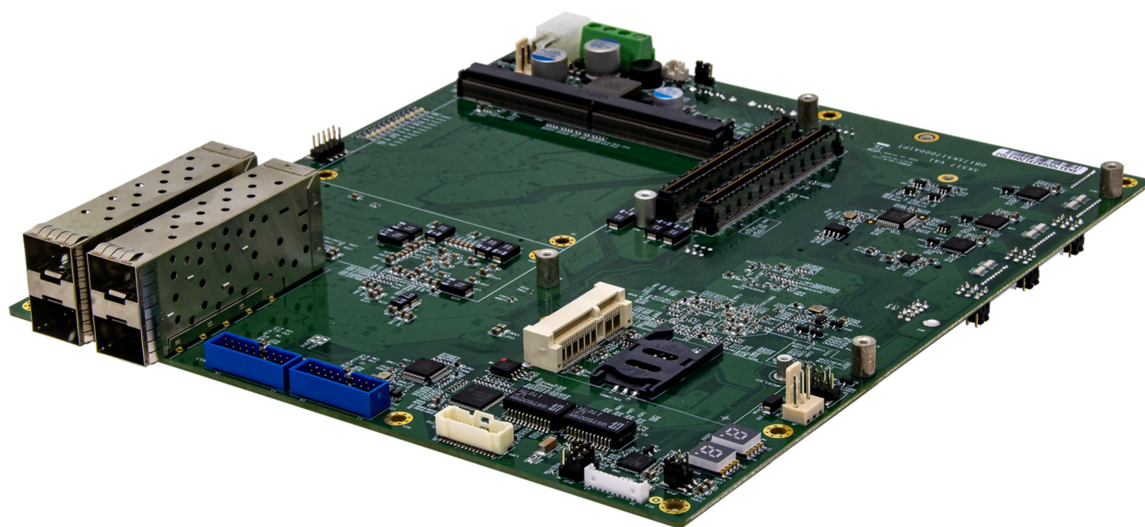




SK517

COM Express® Type 7 Carrier Board w/PCIe 104



User's Manual

Revision Date: Mar.5. 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 trademarks are the properties of the respective owners.
- All product specifications are subject to change without prior notice

SK517 User's Manual

Revision Date: Mar.5.2024

Revision History

Revision	Date (yyyy/mm/dd)	Changes
Version 1.0	2024/03/05	Initial release

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1. CHAPTER 1: PRODUCT INTRODUCTION

1-1. Specifications

System

COM Express (Type 7)	Intel® Xeon® D-1700 processor (Ice Lake-D LCC)
COM Express CPU Options (Type 7)	Intel® Xeon® D-1700 processor (Ice Lake-D LCC) • Xeon® D-1746TER 2.0/3.1GHz 15MB, 67W, 10C • Xeon® D-1735TR 2.2/3.4GHz 15MB, 59W, 8C • Xeon® D-1732TE 1.9/3.0GHz 15MB, 52W, 8C
GPU Module Options	NVIDIA® Ampere RTX A2000, 80W, 8GB GDDR6, 2,560 CUDA Cores NVIDIA® Ampere RTX A4500, 80W/130W, 16GB GDDR6, 5,888 CUDA Cores
COM Express Compatibility	COM Express® Type 7
Memory type	Base On CPU module
Chipset	Base On CPU module
Watchdog	Base On CPU module

Display

Internal Display Port	2x Display Port outputs from MXM GPU
VGA	1x VGA(Through BMC to convert VGA signal)/VGA: resolution up to 1920 x 1200 x 32bpp (share with SOC 16MB memory)

Ethernet

RJ45 GbE LAN	2x GbE (one from module; another from BMC for remote management)
10GbE SFP+	4x (Intel C827 10G Retimer)

Expansion`

MXM	1x (MXM3.1 Type B)
PCIe/104	1x (Type 2, 2x PCIe Gen3 x4 + 4x PCIe Gen3 x1)
mPCIe	2x Full-size mini PCIe Expansion Slot
M.2	1x M.2 2280 M-Key Slot (PCIe x4 GEN3, NVMe)
SIM Slot	2

Front I/O

10GbE SFP+	4
Terminal Block DIP 1x4P	1x (Vin: 2PIN; GND: 2PIN)

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Internal I/O

Display Port Header	2x (1x20Pin)
SATA Port (Standard 7Pin)	2x (up to 6Gb/s)
SATA Power	2
COM (RS232)	6x (2 TX/RX form COMe module)
USB 3.0 (2x10Pin)	4
Front Panel (2x5Pin)	1
Smart Fan	2x (1x CPU Fan, 1x System Fan)
I2C(1x 4pin)	1
DIO (1x10pin)	8 Bits (4DI/4DO)
Battery Header	1
eSPI/LPC Header	1x (1x 10Pin)

Power System

Sleep State	S0, S1, S4, S5
ACPI	ACPI3.0
Power Type	Wide Voltage DC-IN 9V~36V (Support AT/ATX mode)

Mechanical and Environmental

Dimension	190mm x 210mm
Operation Temperature	-40 to 85°C
Storage Temperature	-40 to 85°C
Relative Humidity	10% to 90%, non-condensing

Standard Compliance

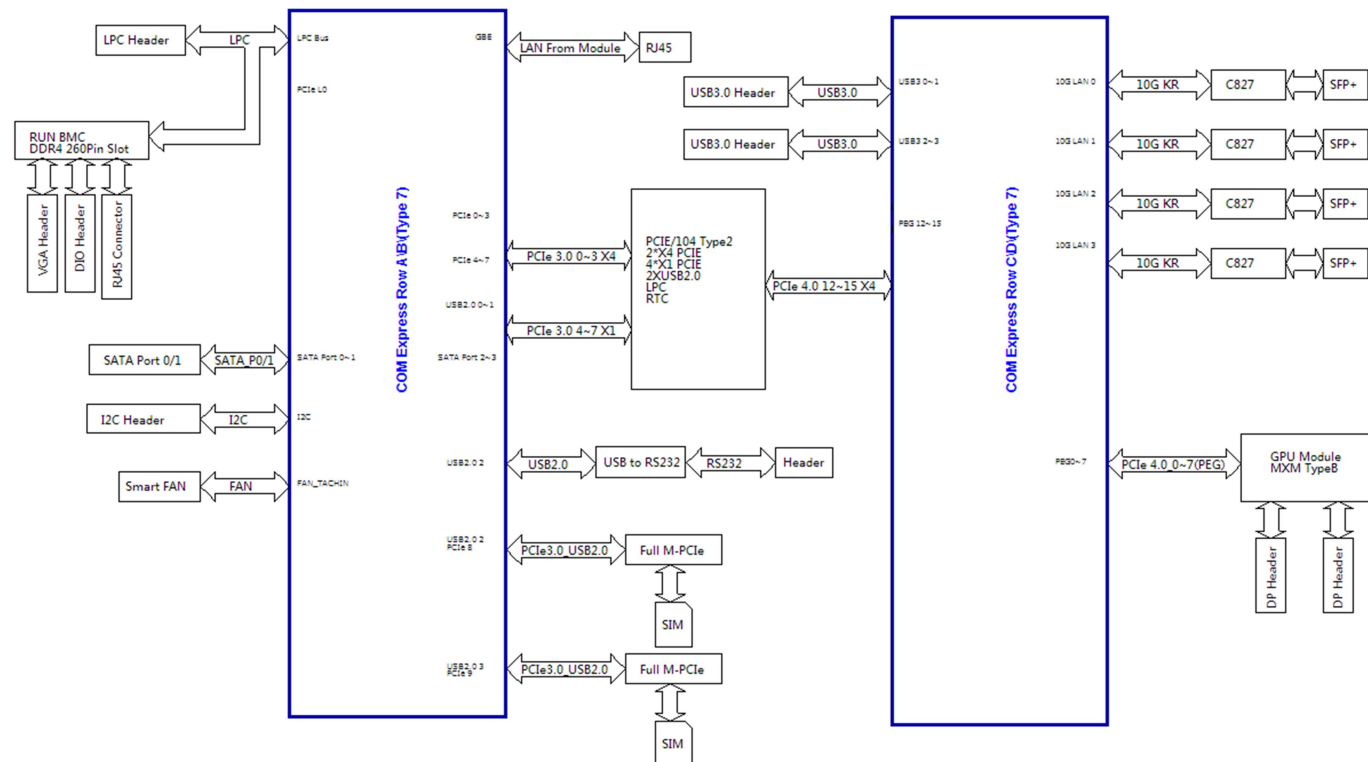
Standard Compliance	CE / FCC
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OS

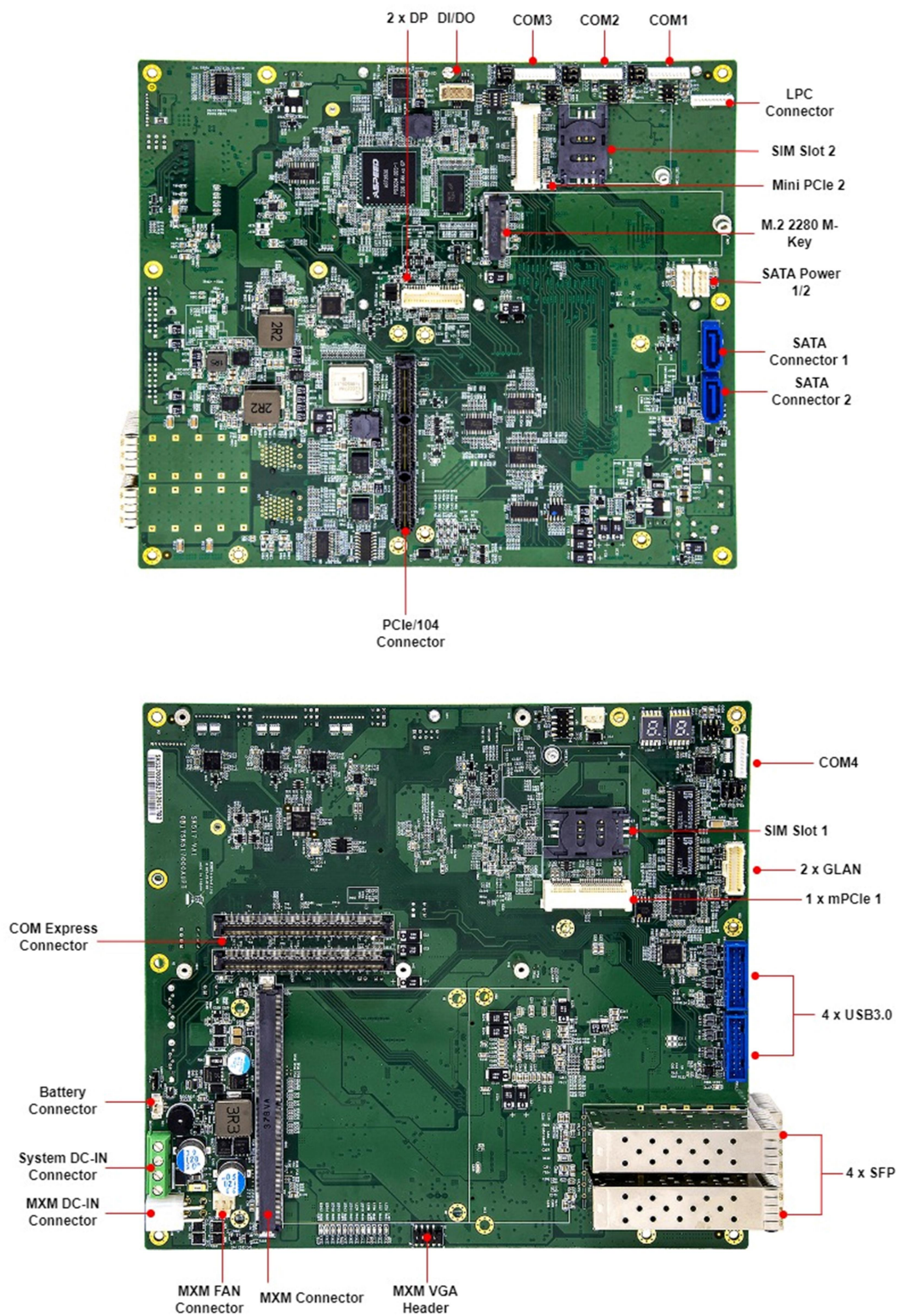
OS Support	Windows®10 64bit, Linux(Support by request)
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1-2. Board Diagram

SK517 BLOCK DIAGRAM



1-3. Connector & Pin Header



2. CHAPTER 2: JUMPERS AND CONNECTORS LOCATIONS

2.1. Connector & Pin Definitions

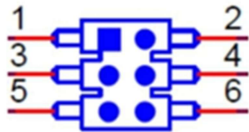
J4 /J5/ J6/ J7 : COM1 / COM2 / COM3 / COM4

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



JP7: COM1 Pin9 select

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

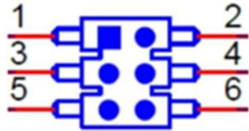


JP8/ JP9: COM1 Mode select

JP12	JP13	Mode
(2-3)	(2-3)	Loopback
(2-3)	(1-2)	RS232
(1-2)	(2-3)	RS485 Half Duplex
(1-2)	(1-2)	RS485/422 Full Duplex

JP11: COM2 Pin9 select

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

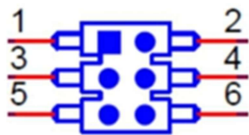


JP12/ JP13: COM2 Mode select

JP12	JP13	Mode
(2-3)	(2-3)	Loopback

(2-3)	(1-2)	RS232
(1-2)	(2-3)	RS485 Half Duplex
(1-2)	(1-2)	RS485/422 Full Duplex

JP15: COM3 Pin9 select

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

JP16/ JP17: COM3 Mode select

JP12	JP13	Mode
(2-3)	(2-3)	Loopback
(2-3)	(1-2)	RS232
(1-2)	(2-3)	RS485 Half Duplex
(1-2)	(1-2)	RS485/422 Full Duplex

JP20: COM4 Pin9 select

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

JP21/ JP22: COM4 Mode select

JP12	JP13	Mode
(2-3)	(2-3)	Loopback
(2-3)	(1-2)	RS232
(1-2)	(2-3)	RS485 Half Duplex
(1-2)	(1-2)	RS485/422 Full Duplex

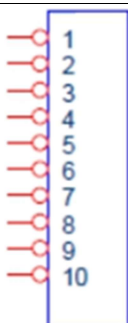
J17: MXM_DP(A/B)

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



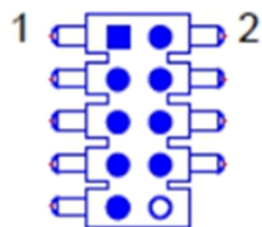
J3: LPC

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



J9: DIO

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



SIM_CARD1

Pin	Function	Pin	Function
1	UIM1_PWR	4	GND
2	UIM1_RESET	5	UIM1_VPP
3	UIM1_CLK_R	6	UIM1_DATA



SIM_CARD2

Pin	Function	Pin	Function
1	UIM2_PWR	4	GND
2	UIM2_RESET	5	UIM2_VPP
3	UIM2_CLK_R	6	UIM2_DATA



CN5, CN6: SATA Power

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



CN3, CN4: SATA

Pin	Function
1	GND
2	SATA_TXOP
3	SATA_TXON
4	GND
5	SATA_RXON
6	SATA_RXOP
7	GND



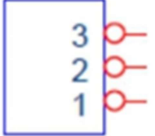
LAN 1

Pin	Function	Pin	Function	Pin	Function
1	MDI2_0PX	12	MDI1_2NX	23	LAN2_V3P3
2	MDI1_0PX	13	MDI2_3PX	24	LAN1_V3P3
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-		



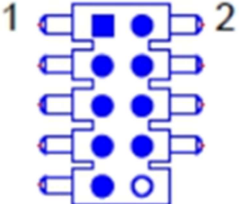
J8: System FAN Connector

Pin	Function
1	GND
2	System FAN OUT
3	+12V



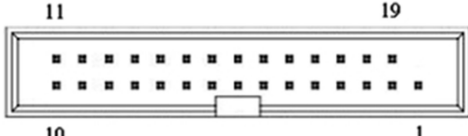
J11: Front Panel

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



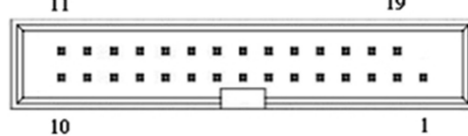
JUSB3_1: USB 3.0 Port

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		

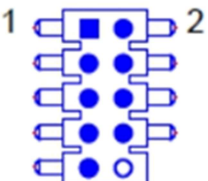


JUSB3_2: USB 3.0 Port

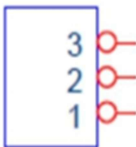
Pin	Function	Pin	Function
1	+5V USB2	11	USB2 DP3
2	USB3 RXN2	12	USB2 DN3
3	USB3 RXP2	13	GND
4	GND	14	USB3 TXP3
5	USB3 TXN2	15	USB3 TXN3
6	USB3 TXP2	16	GND
7	GND	17	USB3 RXP3
8	USB2 DN2	18	USB3 RXN3
9	USB2 DP2	19	+5V USB3
10	N/C		



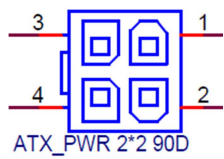
J2: MXM_VGA

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	

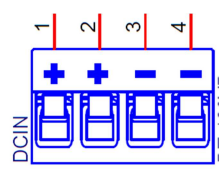
J10: MXM FAN connector

Pin	Function	
1	GND	
2	GND	
3	+12V	

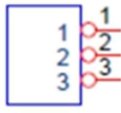
CN18: MXM DC-IN

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

DC-IN: System DC-IN

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

JP23: Clear CMOS

Pin	Function	
(1-2) Closed	Normal(default)	
(3-4) Closed	Clear CMOS	

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STACKPC1:

PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION	PIN	DEFINITION
1	USB_HUB_OC#	2	Stack_RST#	53	STK0	54	STK1	105	STK2	106	STK_LPC
3	3V3	4	3V3	55	TYPE_DET#	56	GND	107	GND	108	GND
5	USB_HUB_DIN_P	6	USB_HUB_DIN1_P	57	N/A	58	PCIE_TX4P	109	N/A	110	PCIE_RX4P
7	USB_HUB_DIN_M	8	USB_HUB_DIN1_M	59	N/A	60	PCIE_TX4N	111	N/A	112	PCIE_RX4N
9	GND	10	GND	61	GND	62	GND	113	GND	114	GND
11	PEX1_TX_DP	12	PEX0_TX_DP	63	N/A	64	PCIE_TX5P	115	N/A	116	PCIE_RX5P
13	PEX1_TX_DN	14	PEX0_TX_DN	65	N/A	66	PCIE_TX5N	117	N/A	118	PCIE_RX5N
15	GND	16	GND	67	GND	68	GND	119	GND	120	GND
17	PEX2_TX_DP	18	PEX3_TX_DP	69	N/A	70	PCIE_TX6P	121	N/A	122	PCIE_RX6P
19	PEX2_TX_DN	20	PEX3_TX_DN	71	N/A	72	PCIE_TX6N	123	N/A	124	PCIE_RX6N
21	GND	22	GND	73	GND	74	GND	125	GND	126	GND
23	PEX1_RX_DP	24	PEX0_RX_DP	75	N/A	76	PCIE_TX7P	127	N/A	128	PCIE_RX7P
25	PEX1_RX_DN	26	PEX0_RX_DN	77	N/A	78	PCIE_TX7N	129	N/A	130	PCIE_RX7N
27	GND	28	GND	79	GND	80	GND	131	GND	132	GND
29	PEX2_RX_DP	30	PEX3_RX_DP	81	N/A	82	N/A	133	N/A	134	N/A
31	PEX2_RX_DN	32	PEX3_RX_DN	83	N/A	84	N/A	135	N/A	136	N/A
33	GND	34	GND	85	GND	86	GND	137	GND	138	GND
35	CK_PEx_100M_SLT1	36	CK_PEx_100M_SLT0	87	USB_HUB_DIN4_P	88	USB_HUB_DIN3_P	139	N/A	140	N/A
37	CK_PEx_100M_SLT1	38	CK_PEx_100M_SLT0	89	USB_HUB_DIN4_M	90	USB_HUB_DIN3_M	141	N/A	142	N/A
39	+5V_SB	40	+5V_SB	91	GND	92	GND	143	GND	144	GND
41	CK_PEx_100M_SLT2	42	CK_PEx_100M_SLT3	93	USB_HUB_DIN6_P	94	USB_HUB_DIN5_P	145	LPC_AD0	146	LPC_DRQ#
43	CK_PEx_100M_SLT2	44	CK_PEx_100M_SLT3	95	USB_HUB_DIN6_M	96	USB_HUB_DIN5_M	147	LPC_AD1	148	LPC_SERIRQ
45	N/A	46	PWRGOOD	97	GND	98	GND	149	GND	150	GND
47	SMB_DAT	48	CK_PEx_100M_SLT4	99	N/A	100	N/A	151	LPC_AD2	152	LPC_FRAME
49	SMB_CLK	50	CK_PEx_100M_SLT4	101	N/A	102	N/A	153	LPC_AD3	154	N/A
51	SMB_ALERT	52	PSON	103	GND	104	GND	155	GND	156	GND

