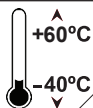


**Wide Operating
Temperature**



EmCOMe-i94M0

COM Express® Basic Type 6 CPU Module

Quick Installation Guide

Version 1.0

Form Factor <i>COM Express® Basic Type 6 CPU Module</i>	CPU <i>13th Gen. Intel® Raptor Lake Core™ i7/ i5/ i3 processor</i>	Video <i>24-bit Dual Channels LVDS/ DDI/ Analog RGB</i>
LAN <i>Intel® i226 Series PCIe Ethernet Controller</i>	Audio <i>HD Audio Link</i>	I/O <i>USB / SATA/ PCIe / PC/ UART</i>

◆ Technical Support

If you have any technical difficulties, please consult the user's manual first on our website.

<http://www.arbor-technology.com>

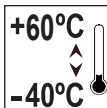
Please do not hesitate to call or e-mail our customer service when you still can not find out the answer.

E-mail: info@arbor.com.tw

FCC Class A

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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COM Express supports seven pin-out Type applying to Basic and Extended form factors:

Module Type 1 and 10 support single connector with two rows of pins (220 pins)

Module Type 2, 3, 4, 5 and 6 support two connectors with four rows of pins (440 pins) Connector placement and most mounting holes have transparency between Form Factors.

The differences among the Module Type 6 and EmCOMe-i94M0 are summarized in table below:

Module Type	Standard Type 6	EmCOMe-i94M0
Connectors	2	2
Connector Rows	A, B, C, D	A, B, C, D
PCIe Lanes (Max)	24	24
LAN (Max)	1	1
Serial Ports (Max)	2	2
Digital Display I/F (Max)	3	3
USB 3.0 Ports (Max)	4	4

Packing List

Before you begin installing your single board, please make sure that the following materials have been shipped:



1 x EmCOMe-i94M0 COM Express CPU Module



1 x Quick Installation Guide

If any of the above items is damaged or missing, contact your vendor immediately.

Specifications

System	
CPU	Soldered onboard 13th Generation Intel® Core™ - i7-13800HE 4.0GHz (E-core) / 5.0GHz (P-core) - i5-13600HE 3.6GHz (E-core) / 4.8GHz (P-core) - i3-13300HE 3.4GHz (E-core) / 4.6GHz (P-core) - i7-1370PE 3.7GHz (E-core) / 4.8GHz (P-core) - i5-1350PE 3.4GHz (E-core) / 4.6GHz (P-core) - i3-1320PE 3.3GHz (E-core) / 4.5GHz (P-core)
Memory	2 x DDR5 SO-DIMM 4800MHz up to 64GB
BIOS	AMI UEFI BIOS
TPM	Supports TPM 2.0
Watchdog Timer	1~255 levels reset
I/O Interface	
Storage	2 x SATA Gen3 ports 1 x BGA NVMe SSD (Optional) (Share PCIe x 4)
Serial Port	2 x UART ports (RX/TX only)
Others	I²C, GPIO, SMBUS, LPC Interface
USB Port	8 x USB 2.0 ports 4 x USB 3.0 ports
Expansion Bus	1 x PCIe x8 lanes 2 x PCIe x4 lanes 8 x PCIe x1 lanes (or 1 x PCIe x4 + 4 x PCIe x1)
Ethernet Chipset	1 x Intel® i226 series PCIe 2.5GbE Ethernet controller
Audio	Intel® High Definition Audio
Display	
Graphic Chipset	Integrated Intel® Iris Xe or UHD Graphics (Depends on CPU SKU)
Graphic Interface	1 x Dual Channel 24-bit LVDS (default) or eDP 1 x Analog RGB port 3 x DDI ports
Graphic Resolution	VGA : up to 1920x1200 @ 60Hz DVI : up to 1920x1200 @ 60Hz LVDS: up to 1920x1200 @ 60Hz (dual channel 24-bit) DP: up to 3840x2160 @ 60Hz

OS Support	
Microsoft	Windows 10 64-bit / Windows 11 64-bit
Linux	Ubuntu
Mechanical & Environmental	
Power Requirement	8.5V ~ 20V wide range voltage input, +5VSB
Operating Temp.	-40 ~ 60°C (-40 ~ 140°F)
Operating Humidity	10 ~ 95% @ 85°C (non-condensing)
Dimensions (L x W)	95 x 125 mm (3.7" x 4.9")

Ordering Information

EmCOMe-i94M0-13800HE	13 th Gen. Intel® Core™ i7-13800HE COMe Basic Type 6 CPU Module, -40 ~ 60°C
EmCOMe-i94M0-13600HE	13 th Gen. Intel® Core™ i5-13600HE COMe Basic Type 6 CPU Module, -40 ~ 60°C
EmCOMe-i94M0-13300HE	13 th Gen. Intel® Core™ i3-13300HE COMe Basic Type 6 CPU Module, -40 ~ 60°C
EmCOMe-i94M0-1370PE	13 th Gen. Intel® Core™ i7-1370PE COMe Basic Type 6 CPU Module, -40 ~ 60°C
EmCOMe-i94M0-1350PE	13 th Gen. Intel® Core™ i5-1350PE COMe Basic Type 6 CPU Module, -40 ~ 60°C
EmCOMe-i94M0-1320PE	13 th Gen. Intel® Core™ i3-1320PE COMe Basic Type 6 CPU Module, -40 ~ 60°C

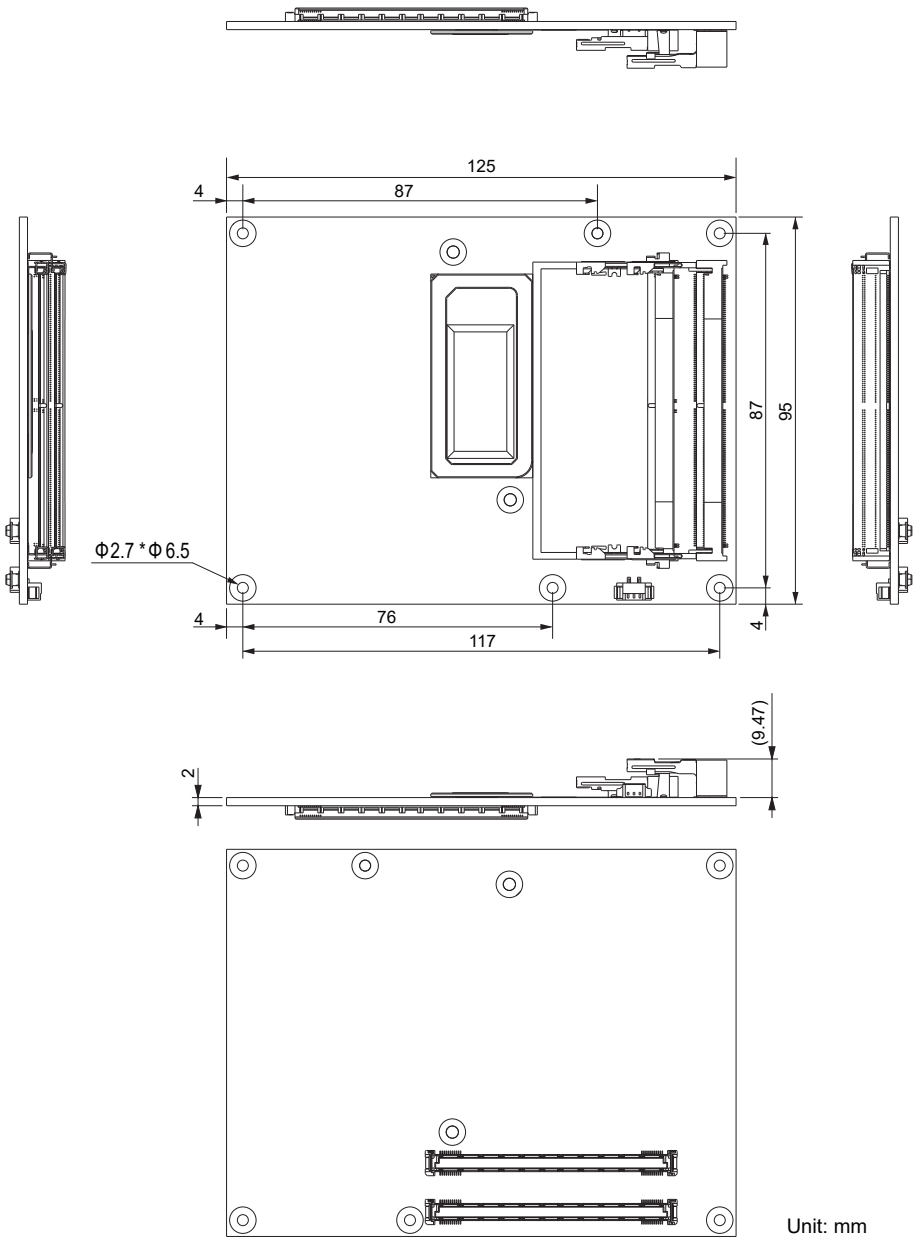
Optional Accessories

HS-93M0-C1	Heat sink 95 x 125mm, W/ FAN+PAD
PBC-1705	COM Express® Type 6 evaluation carrier board (ATX form factor)
CBK-03-1705-00	Cable kit 1 x SATA cable 2 x COM Flat cables

Driver Installation

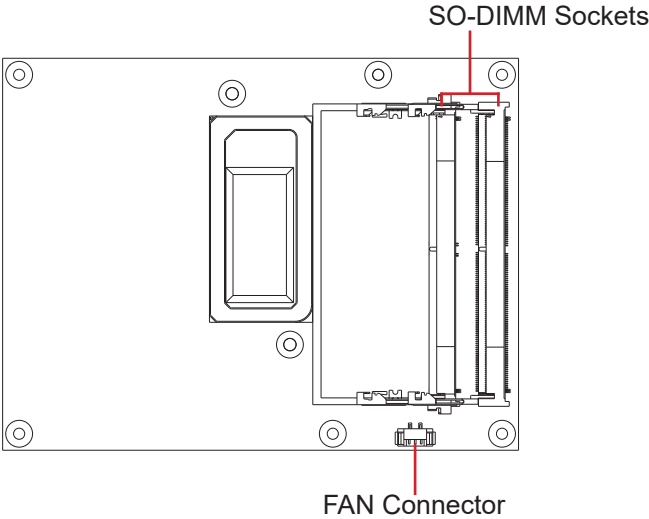
To install the drivers, please visit our website at **www.arbor-technology.com** and download the driver pack from the product page.

Board Dimensions

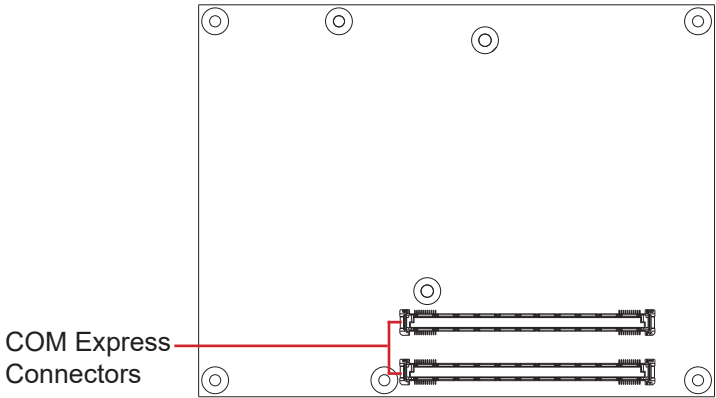


Connectors Quick Reference

Top Side



Bottom Side



FAN: Fan connector

Connector type: Wafer 3-pin 1.25mm 85204-0300L

Pin	Description
1	GND
2	Fan out
3	Fan Tachometer Input



COM Express AB Connector (bottom side)

B1	GND	GND	A1	B56	PCIE3_P3_RXN	PCIE3_P3_TXN	A56
B2	LAN_LED_LNK#_ACT	LAN1_MDI3N	A2	B57	DIO_6	GND	A57
B3	LPC_FRAME#	LAN1_MDI3P	A3	B58	PCIE3_P8_RXP	PCIE3_P8_TXP	A58
B4	LPC_AD0	LAN_LED_1000#	A4	B59	PCIE3_P8_RXN	PCIE3_P8_TXN	A59
B5	LPC_AD1	LAN_LED_2500#	A5	B60	GND	GND	A60
B6	LPC_AD2	LAN1_MDI2N	A6	B61	PCIE3_P7_RXP	PCIE3_P7_TXP	A61
B7	LPC_AD3	LAN1_MDI2P	A7	B62	PCIE3_P7_RXN	PCIE3_P7_TXN	A62
B8	LPC_DRQ0#	LAN_LED_LNK#	A8	B63	DIO_7	DIO_1	A63
B9	LPC_DRQ1#	LAN1_MDI1N	A9	B64	PCIE3_P6_RXP	PCIE3_P6_TXP	A64
B10	LPC_CLK	LAN1_MDI1P	A10	B65	PCIE3_P6_RXN	PCIE3_P6_TXN	A65
B11	GND	GND	A11	B66	PCH_WAKE#	GND	A66
B12	CB_PWRBTN#	LAN1_MDI0N	A12	B67	EC_WAKE_IN#	DIO_2	A67
B13	CB_SMB_CLK	LAN1_MDI0P	A13	B68	PCIE3_P5_RXP	PCIE3_P5_TXP	A68
B14	CB_SMB_DATA	OV9_LAN	A14	B69	PCIE3_P5_RXN	PCIE3_P5_TXN	A69
B15	SMB_ALERT_N	SLP_S3#	A15	B70	GND	GND	A70
B16	SATA_TXP1	SATA_TXP0	A16	B71	LVDSB_DATA0P	LVDSA_DATA0P_EDP_TXP2	A71
B17	SATA_TXN1	SATA_TXN0	A17	B72	LVDSB_DATA0N	LVDSA_DATA0N_EDP_TXN2	A72
B18	SUS_STAT#	SLP_S4#	A18	B73	LVDSB_DATA1P	LVDSA_DATA1P_EDP_TXP1	A73
B19	SATA_RXP1	SATA_RXP0	A19	B74	LVDSB_DATA1N	LVDSA_DATA1N_EDP_TXN1	A74
B20	SATA_RXN1	SATA_RXN0	A20	B75	LVDSB_DATA2P	LVDSA_DATA2P_EDP_TXP0	A75
B21	GND	GND	A21	B76	LVDSB_DATA2N	LVDSA_DATA2N_EDP_TXN0	A76
B22	N/C	N/C	A22	B77	LVDSB_DATA3P	LVDS_VDD_EN	A77
B23	N/C	N/C	A23	B78	LVDSB_DATA3N	LVDS_DATA3P	A78
B24	CB_PWROK	SLP_S5#	A24	B79	LVDS_BKLTEN	LVDS_DATA3N	A79
B25	N/C	N/C	A25	B80	GND	GND	A80
B26	N/C	N/C	A26	B81	LVDSB_CLKP	LVDSA_CLKP_EDP_TXP3	A81
B27	WDT	PM_BATLOW#	A27	B82	LVDSB_CLKN	LVDSA_CLKN_EDP_TXN3	A82
B28	N/C	SATA_LED	A28	B83	COM_BKLT_CTRL	LVDS_DDC_CLK_EDP_AUXP	A83
B29	HDA_SDIN1	HDA_SYNC	A29	B84	VCC_5V_SBY	LVDS_DDC_DATA_EDP_AUXN	A84
B30	HDA_SDIN0	HDA_RST_N	A30	B85	VCC_5V_SBY	DIO_3	A85
B31	GND	GND	A31	B86	VCC_5V_SBY	H_RCIN#	A86
B32	SPKR	HDA_BIT_CLK	A32	B87	VCC_5V_SBY	COME_EDP_HPD	A87
B33	EC_I2C_CLK	HDA_SDOUT	A33	B88	BIOS_DISABLE1#	COM_EXP_CLK_P	A88
B34	EC_I2C_DATA	BIOS_DISABLE0#	A34	B89	VGA_RED	COM_EXP_CLK_N	A89
B35	THRM#	CB_TRIP#	A35	B90	GND	GND	A90
B36	USB2_P9_DN	USB2_P8_DN	A36	B91	VGA_GREEN	SPI_POWER_+V3.3A	A91
B37	USB2_P9_DP	USB2_P8_DP	A37	B92	VGA_BLUE	SPI_MISO	A92
B38	USB_OC6789_N	USB_OC6789_N	A38	B93	VGA_HSYNC	DIO_4	A93
B39	USB2_P7_DN	USB2_P6_DN	A39	B94	VGA_VSYNC	SPI_CLK	A94
B40	USB2_P7_DP	USB2_P6_DP	A40	B95	VGA_I2C_CK	SPI_MOSI	A95
B41	GND	GND	A41	B96	VGA_I2C_DAT	COM_TPM_PP	A96
B42	USB2_P5_DN	USB2_P4_DN	A42	B97	SPI_CS0#	N/C	A97
B43	USB2_P5_DP	USB2_P4_DP	A43	B98	N/C	UART_TX0	A98
B44	USB_OC2345_N	USB_OC2345_N	A44	B99	N/C	UART_RX0	A99
B45	USB2_P3_DN	USB2_P2_DN	A45	B100	GND	GND	A100
B46	USB2_P3_DP	USB2_P2_DP	A46	B101	FAN_PWMOUT	UART_TX1	A101
B47	PLTRST#_BUFF	+VRTC_BATT	A47	B102	FAN_TACHIN	UART_RX1	A102
B48	EXCD1_CCPE#	PLTRST#_BUFF	A48	B103	SLEEP#	LID#	A103
B49	CB_SYSRST#	EXCD0_CCPE#	A49	B104	VCC_12V	VCC_12V	A104
B50	CB_RESET#	LPC_SERIRQ	A50	B105	VCC_12V	VCC_12V	A105
B51	GND	GND	A51	B106	VCC_12V	VCC_12V	A106
B52	PCIE3_P4_RXP	PCIE3_P4_TXP	A52	B107	VCC_12V	VCC_12V	A107
B53	PCIE3_P4_RXN	PCIE3_P4_TXN	A53	B108	VCC_12V	VCC_12V	A108
B54	DIO_5	DIO_0	A54	B109	VCC_12V	VCC_12V	A109
B55	PCIE3_P3_RXP	PCIE3_P3_TXP	A55	B110	GND	GND	A110

COM Express CD Connector (bottom side)

D1	GND	GND	C1	D56	PCIE8_P1_EXP_TX_DN	PCIE8_P1_EXP_RX_DN	C56
D2	GND	GND	C2	D57	GND	N/C	C57
D3	USB3_DWN_TXN1	USB3_DWN_RXN1	C3	D58	PCIE8_P2_EXP_TX_DP	PCIE8_P2_EXP_RX_DP	C58
D4	USB3_DWN_TXP1	USB3_DWN_RXP1	C4	D59	PCIE8_P2_EXP_TX_DN	PCIE8_P2_EXP_RX_DN	C59
D5	GND	GND	C5	D60	GND	GND	C60
D6	USB3_DWN_TXN2	USB3_DWN_RXN2	C6	D61	PCIE8_P3_EXP_TX_DP	PCIE8_P3_EXP_RX_DP	C61
D7	USB3_DWN_TXP2	USB3_DWN_RXP2	C7	D62	PCIE8_P3_EXP_TX_DN	PCIE8_P3_EXP_RX_DN	C62
D8	GND	GND	C8	D63	N/C	N/C	C63
D9	USB3_DWN_TXN3	USB3_DWN_RXN3	C9	D64	N/C	N/C	C64
D10	USB3_DWN_TXP3	USB3_DWN_RXP3	C10	D65	PCIE8_P4_EXP_TX_DP	PCIE8_P4_EXP_RX_DP	C65
D11	GND	GND	C11	D66	PCIE8_P4_EXP_TX_DN	PCIE8_P4_EXP_RX_DN	C66
D12	USB3_DWN_TXN4	USB3_DWN_RXN4	C12	D67	GND	N/C	C67
D13	USB3_DWN_TXP4	USB3_DWN_RXP4	C13	D68	PCIE8_P5_EXP_TX_DP	PCIE8_P5_EXP_RX_DP	C68
D14	GND	GND	C14	D69	PCIE8_P5_EXP_TX_DN	PCIE8_P5_EXP_RX_DN	C69
D15	DDIO_CLK_AUXP	N/C	C15	D70	GND	GND	C70
D16	DDIO_DATA_AUXN	N/C	C16	D71	PCIE8_P6_EXP_TX_DP	PCIE8_P6_EXP_RX_DP	C71
D17	N/C	N/C	C17	D72	PCIE8_P6_EXP_TX_DN	PCIE8_P6_EXP_RX_DN	C72
D18	N/C	N/C	C18	D73	GND	GND	C73
D19	PCIE3_P2_TXP	PCIE3_P2_RXP	C19	D74	PCIE8_P7_EXP_TX_DP	PCIE8_P7_EXP_RX_DP	C74
D20	PCIE3_P2_TXN	PCIE3_P2_RXN	C20	D75	PCIE8_P7_EXP_TX_DN	PCIE8_P7_EXP_RX_DN	C75
D21	GND	GND	C21	D76	GND	GND	C76
D22	PCIE3_P10_TXP	PCIE3_P10_RXP	C22	D77	N/C	N/C	C77
D23	PCIE3_P10_TXN	PCIE3_P10_RXN	C23	D78	PCIE4_A_P0_EXP_TX_DP	PCIE4_A_P0_EXP_RX_DP	C78
D24	N/C	DDP0_HPD	C24	D79	PCIE4_A_P0_EXP_TX_DN	PCIE4_A_P0_EXP_RX_DN	C79
D25	N/C	N/C	C25	D80	GND	GND	C80
D26	DDIO_PAIR_0P	N/C	C26	D81	PCIE4_A_P1_EXP_TX_DP	PCIE4_A_P1_EXP_RX_DP	C81
D27	DDIO_PAIR_0N	N/C	C27	D82	PCIE4_A_P1_EXP_TX_DN	PCIE4_A_P1_EXP_RX_DN	C82
D28	N/C	N/C	C28	D83	N/C	N/C	C83
D29	DDIO_PAIR_1P	N/C	C29	D84	GND	GND	C84
D30	DDIO_PAIR_1N	N/C	C30	D85	PCIE4_A_P2_EXP_TX_DP	PCIE4_A_P2_EXP_RX_DP	C85
D31	GND	GND	C31	D86	PCIE4_A_P2_EXP_TX_DN	PCIE4_A_P2_EXP_RX_DN	C86
D32	DDIO_PAIR_2P	DDI1_CLK_AUXP	C32	D87	GND	GND	C87
D33	DDIO_PAIR_2N	DDI1_DATA_AUXN	C33	D88	PCIE4_A_P3_EXP_TX_DP	PCIE4_A_P3_EXP_RX_DP	C88
D34	DDIO_DDC_AUX_SEL	DDI1_DDC_AUX_SEL	C34	D89	PCIE4_A_P3_EXP_TX_DN	PCIE4_A_P3_EXP_RX_DN	C89
D35	N/C	N/C	C35	D90	GND	GND	C90
D36	DDIO_PAIR_3P	DDI2_CLK_AUXP	C36	D91	PCIE4_B_P0_EXP_TX_DP	PCIE4_B_P0_EXP_RX_DP	C91
D37	DDIO_PAIR_3N	DDI2_DATA_AUXN	C37	D92	PCIE4_B_P0_EXP_TX_DN	PCIE4_B_P0_EXP_RX_DN	C92
D38	N/C	DDI2_DDC_AUX_SEL	C38	D93	GND	GND	C93
D39	DDI1_PAIR_0P	DDI2_PAIR_0P	C39	D94	PCIE4_B_P1_EXP_TX_DP	PCIE4_B_P1_EXP_RX_DP	C94
D40	DDI1_PAIR_0N	DDI2_PAIR_0N	C40	D95	PCIE4_B_P1_EXP_TX_DN	PCIE4_B_P1_EXP_RX_DN	C95
D41	GND	GND	C41	D96	GND	GND	C96
D42	DDI1_PAIR_1P	DDI2_PAIR_1P	C42	D97	N/C	N/C	C97
D43	DDI1_PAIR_1N	DDI2_PAIR_1N	C43	D98	PCIE4_B_P2_EXP_TX_DP	PCIE4_B_P2_EXP_RX_DP	C98
D44	DDP1_HPD	DDP2_HPD	C44	D99	PCIE4_B_P2_EXP_TX_DN	PCIE4_B_P2_EXP_RX_DN	C99
D45	N/C	N/C	C45	D100	GND	GND	C100
D46	DDI1_PAIR_2P	DDI2_PAIR_2P	C46	D101	PCIE4_B_P3_EXP_TX_DP	PCIE4_B_P3_EXP_RX_DP	C101
D47	DDI1_PAIR_2N	DDI2_PAIR_2N	C47	D102	PCIE4_B_P3_EXP_TX_DN	PCIE4_B_P3_EXP_RX_DN	C102
D48	N/C	N/C	C48	D103	GND	GND	C103
D49	DDI1_PAIR_3P	DDI2_PAIR_3P	C49	D104	VCC_12V	VCC_12V	C104
D50	DDI1_PAIR_3N	DDI2_PAIR_3N	C50	D105	VCC_12V	VCC_12V	C105
D51	GND	GND	C51	D106	VCC_12V	VCC_12V	C106
D52	PCIE8_P0_EXP_TX_DP	PCIE8_P0_EXP_RX_DP	C52	D107	VCC_12V	VCC_12V	C107
D53	PCIE8_P0_EXP_TX_DN	PCIE8_P0_EXP_RX_DN	C53	D108	VCC_12V	VCC_12V	C108
D54	PEG_LANE_RV#	N/C	C54	D109	VCC_12V	VCC_12V	C109
D55	PCIE8_P1_EXP_TX_DP	PCIE8_P1_EXP_RX_DP	C55	D110	GND	GND	C110

Block Diagram

