

EEV-MX01

COM Express Type 6 evaluation carrier board support MXM
graphic card

User's Manual



1st Ed – 15 May 2020

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1. Getting Started

1.1 Safety Precautions

Warning!



Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!



Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

1.2 Packing List

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

- 1 x EEV-MX01 COM Express Type 6 evaluation carrier board support MXM graphic card
- Power cable ATX/10P-ATX/4P 15cm for power supply 12V
- Power cable ATX/24P 2cm for power supply PS_ON



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

1.3 Document Amendment History

Revision	Date	By	Comment
1 st	May 2020	Avalue	Initial Release

1.4 System Specifications

I/O Chip	NCT6106D
Expansion Slot	
mPCIe	1 x Full Size mPCIe (1-PCIex1, 1-USB2.0, 1-SIM Slot)
M.2	1 x Key-B (3042/2242/2260/2280, 2-PCIex1, 1-USB 2.0, 1-SATAIII, 1-SIM Slot) 1 x Key-E (2230, 1-PCIex1 , 1-USB 2.0)
MXM Module Slot	1 x MXM Type A/B Module Slot
Storage	
M.2	1 x Key-B (2242/2260/2280)
SATA Interface	2 x SATAIII (7-Pin)
Edge I/O	
LAN	2 x RJ45 (Independent)
USB 3.2	4 x USB 3.2 GEN.1 (Gen depends on COMe module) (Dual Deck, Type A)
HDMI	7 x HDMI2.0 (Vertical)
Audio	1 x Mic-In (Audio Jack) 1 x Line-Out (Audio Jack)
Onboard I/O	
COM	2 x 2 x 5-Pin Header (RS232, 2.0mm)
GPIO	1 x 2 x 6-Pin (8-Bit GPIO,2.0mm) & 1 x 2 x 10-Pin Header (16-Bit GPIO,2.0mm)
SATA Power	2 x 2-Pin Wafer (2.0mm)
Buzzer	1 x Onboard Buzzer
Front Panel	1 x 2 x 7-Pin Header (2.0mm)
RTC Battery	1 x 2-Pin Wafer (1.25mm)
AT/ATX Selector	1 x 2-Pin DIP Switch
Clear CMOS	1 x 3-Pin Header (2.54mm)
LPC	1 x 2 x 7-Pin Header (2.0mm)
CPU/System FAN	2 x 4-Pin Connector (Smart Fan, 2.54mm)
MXM FAN	1 x 4-Pin Connector (Smart Fan, 2.54mm)
DC-Input	1 x 2 x 5-Pin Connector (4.2mm)
Display	
Graphic	3-CPU Graphic (COM Express® Module)

Chipset	4-GPU Graphic (MXM Graphic Card)			
Spec. & Resolution	Reflects the CPU and GPU Graphic engines. For Example: ESM-CFH + NVIDIA GeForce GTX 1060			
	Maximum of 7 Simultaneous Displays			
	Item	NVIDIA GTX 1060	ESM-CFH	TYPE
	Resolution#1	4xHDMI 2.0: 3840x2160@29Hz	3 x HDMI 1.4 3840x2160@30Hz	Clone
	Resolution#2	1 st Column 4xHDMI 2.0: 3840x2160@60Hz	2 nd Column 3 x HDMI 1.4 3840x2160@30Hz	Two column
	Resolution#3	1 st Column 15360x2160 @30Hz	2 nd Column 3 x HDMI 1.4 3840x2160@30Hz	Extend
Multiple Display	Max. Up to 7-Display via Intel IGCC.			
Audio				
Audio Codec	Realtek ALC892			
Ethernet				
LAN Chipset	1 x Intel I210 Chipset 1 x LAN Chipset from COM Express®			
Ethernet Spec.	10/100/1000 Base-Tx compatible			
Mechanical & Environmental				
Power Requirement	+12Vdc (±5%)			
Power Connector	1 x 2 x 5-Pin Power Connector			
Power Type	AT/ATX Selectable(Default Setting: AT)			
Operating Temp.	EEV-MX01 Industrial: -40~85°C With General MXM Card 0°C 50°C With Wide-Temp. MXM Card -20°C 70°C *The design philosophy and component selection for EEV-MX01 will be based on -40°C~85°C, but the operating temp. is not only considering itself but also the COMe and MXM card.			
Storage Temp.	-40°C ~ 75°C (-40°F ~ 167°F)			
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing			
Size (L x W)	L x W x H :220 x 210 x 31.32mm			

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Weight	0.73lbs(0.33kg)
Vibration Test	Random Vibration Operation 1. Test PSD : 0.00454G²/Hz , 1.5 Grms 2. System condition : operation mode 3. Test frequency : 5~500 Hz 4. Test axis : X,Y and Z axis 5. Test time : 30 minutes per each axis 6. IEC60068-2-64 Test Fh 7. Storage : mSATA Random vibration test (Non-operation) 1. PSD: 0.01818G²/Hz , 3.0 Grms 2. Non-Operation mode 3. Test Frequency : 5-500Hz 4. Test Axis : X,Y and Z axis 5. 30 min. per each axis 6. IEC 60068-2-64 Test:Fh Package Vibration Test: 1. Test PSD : 0.026G²/Hz , 2.16 Grms 2. Test frequency : 5~500 Hz 3. Test axis : X,Y and Z axis 4. Test time : 30 minutes per each axis 5. IEC 60068-2-64 Test Fh
Shock Test	1. Wave from : Half Sine wave 2. Acceleration Rate : 10g 3. Duration Time : 11ms 4. No. of shock : Z axis 300 times 5. Test Axis : Z axis 6. operation mode 7. Reference IEC 60068-2-27 testing procedures Test Eb : Shock Test
Drop Test	Package drop test Reference ISTA 2A, Method : IEC-60068-2-32 Test:Ed Test Ea : Drop Test 1. Test phase : One corner, three edges, six faces 2. Test high : 96.5cm 3. Package weight : 5Kg 4. Test drawing
OS Support	According to COMe Module Spec.

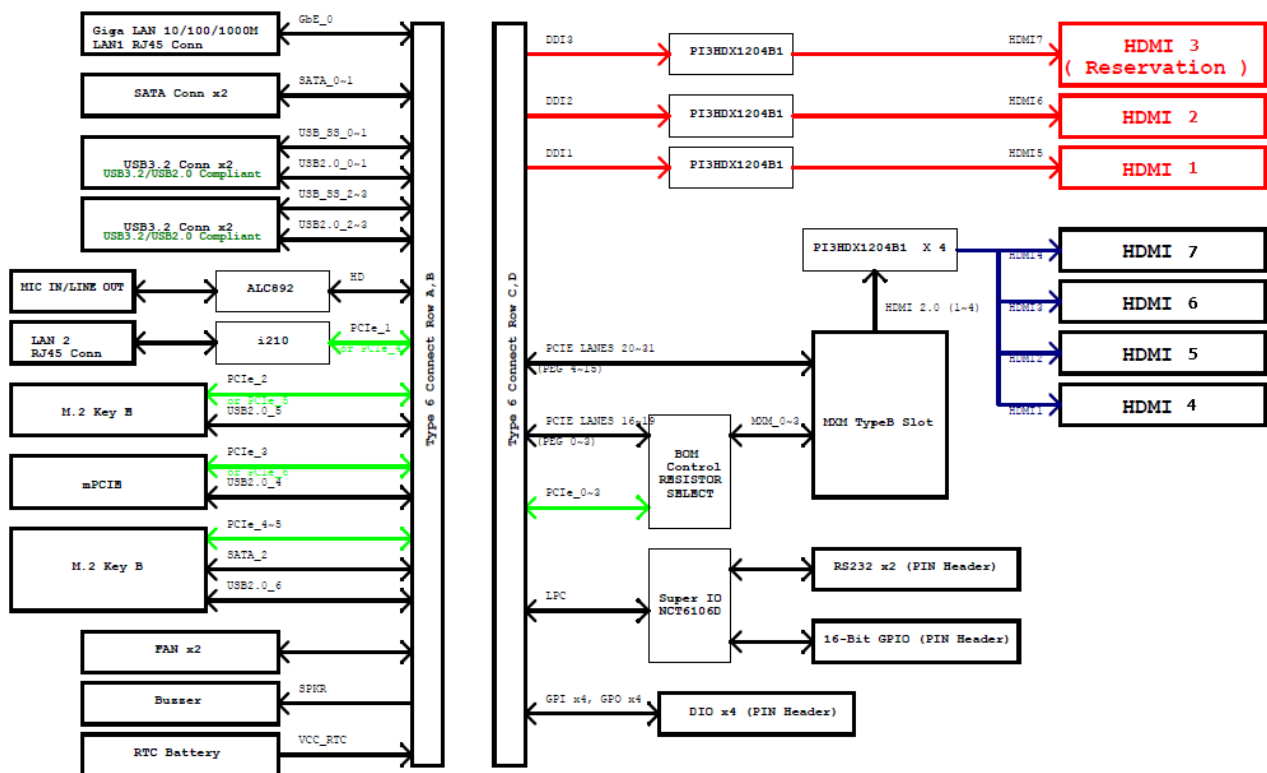
(listed in accordance with Intel document)	
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Note: Specifications are subject to change without notice.

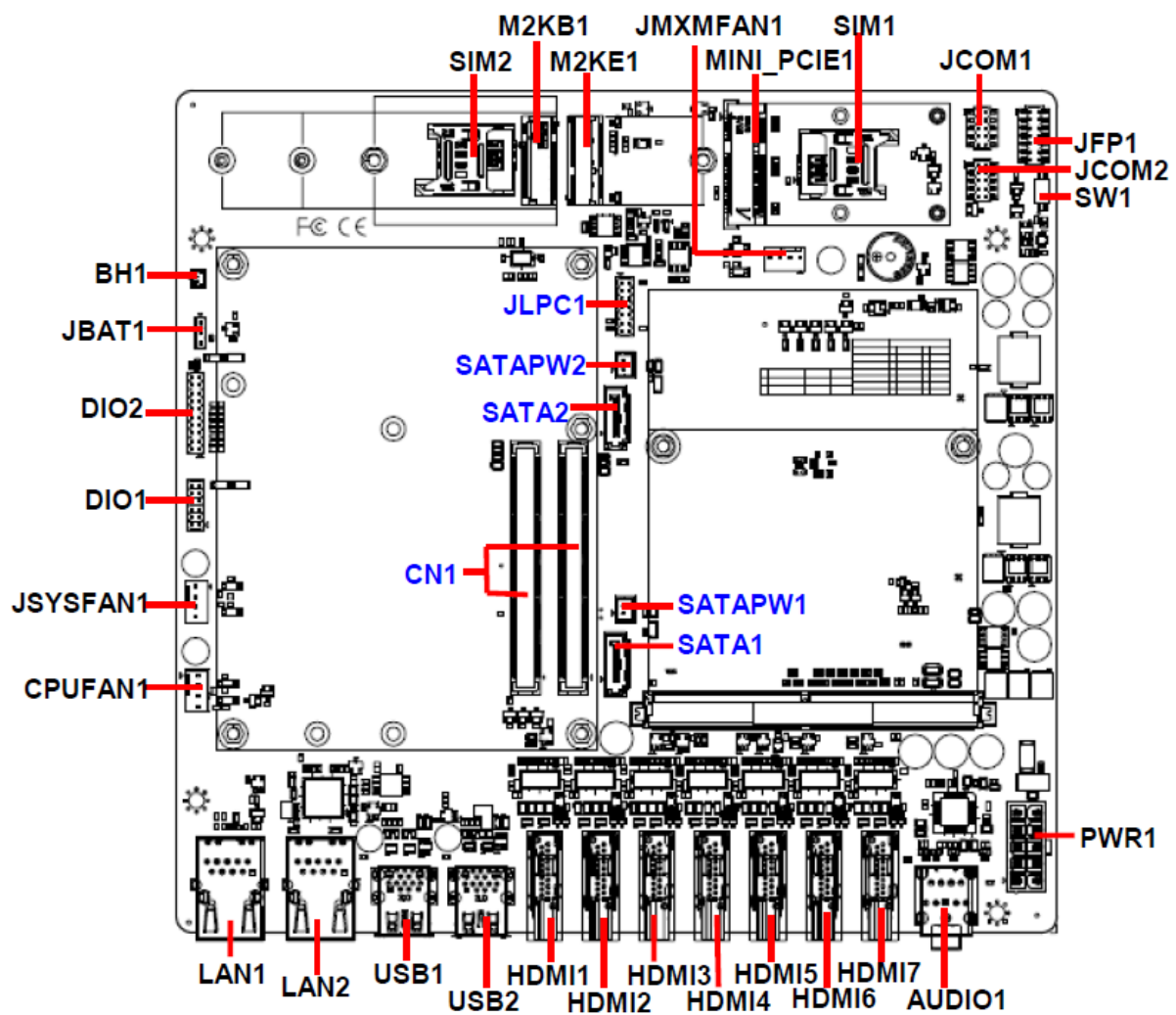
1.5 Architecture Overview—Block Diagram

The following block diagram shows the architecture and main components of EEV-MX01.



2. Hardware Configuration

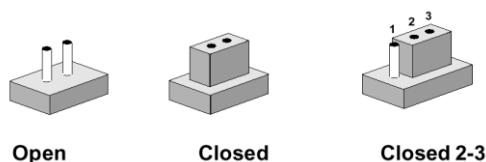
2.1 Product Overview



2.2 Jumper and Connector List

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip. To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.



The jumper settings are schematically depicted in this manual as follows:



A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

The following tables list the function of each of the board's jumpers and connectors.

Jumpers

Label	Function	Note
SW1	Multi-function select	
JBAT1	Clear CMOS	3 x 1 header, pitch 2.54mm

Connectors

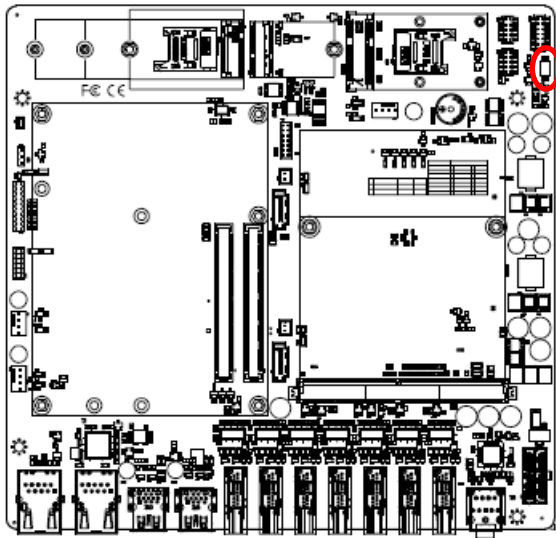
Label	Function	Note
PWR1	Power connector	5 x 2 wafer, pitch 4.20mm
CPUFAN1	CPU Fan connector	4 x 1 wafer, pitch 2.54mm
JMXMFAN1	MXM Fan connector	4 x 1 wafer, pitch 2.54mm
JSYSFAN1	System Fan connector	4 x 1 wafer, pitch 2.54mm
HDMI1~7	7 x HDMI connector	
DIO1	General Purpose I/O connector	6 x 2 header, pitch 2.00mm

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DIO2	General Purpose I/O connector	10 x 2 header, pitch 2.00mm
JFP1	Front panel connector	7 x 2 header, pitch 2.00mm
LAN1/2	2 x Ethernet connector	
USB1/2	4 x USB3.2 connector	
AUDIO1	1 x Mic-In (Audio Jack) 1 x Line-Out (Audio Jack)	
SATA1/2	2 x Serial ATA connector	
SATAPW1	SATA power connector 1	2 x 1 wafer, pitch 2.00mm
SATAPW2	SATA power connector 2	2 x 1 wafer, pitch 2.00mm
JLPC1	LPC port connector	7 x 2 header, pitch 2.00mm
BH1	Battery connector	2 x 1 wafer, pitch 1.25mm
JCOM1	Serial port 1 connector	5 x 2 header, pitch 2.00mm
JCOM2	Serial port 2 connector	5 x 2 header, pitch 2.00mm
SIM1/2	SIM card slot 1/2	
M2KB1	Key-B Slot	
M2KE1	Key-E Slot	
MINI_PCIE1	Full size Mini-PCI-e connector	
CN1	COM Express connector	

2.3 Setting Jumpers & Connectors

2.3.1 Multi-function select (SW1)



	Function	ON	OFF
1	ERP setting	ERP ON	ERP OFF
2	PWR Mode	AT	ATX

*Default

ERP ON/ERP OFF mode

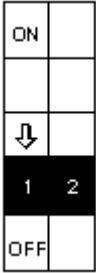
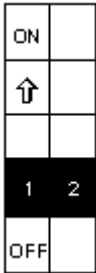


AT/ATX mode



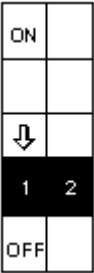
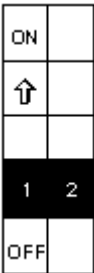
ERP ON mode

ERP OFF mode*

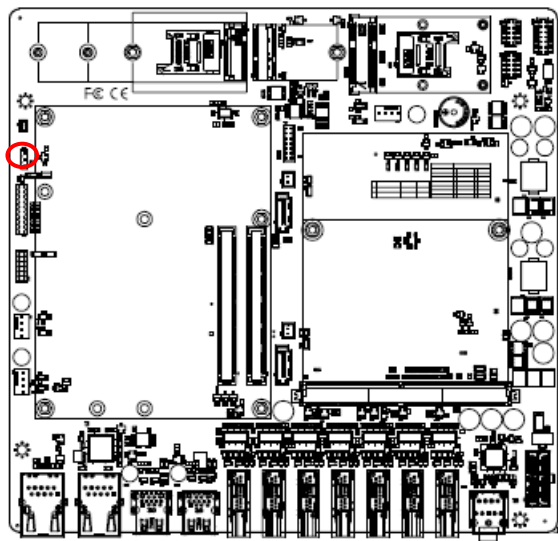


AT mode*

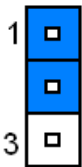
ATX mode



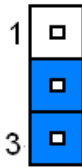
2.3.2 Clear CMOS (JBAT1)



Protect*

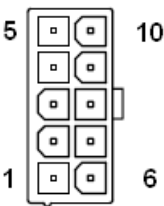
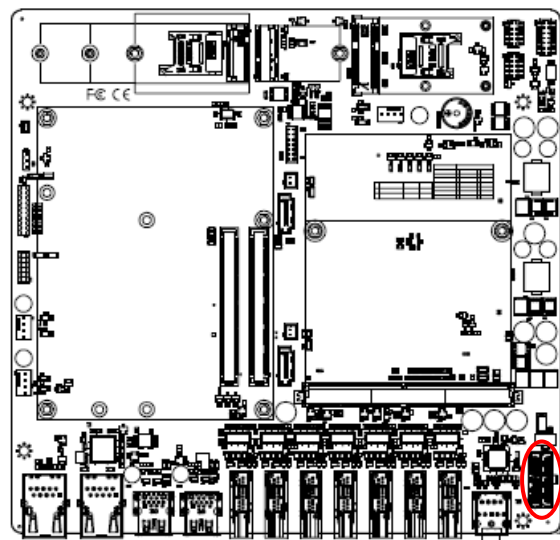


Clear CMOS



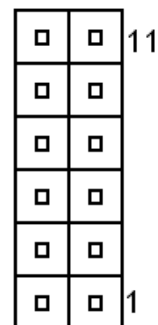
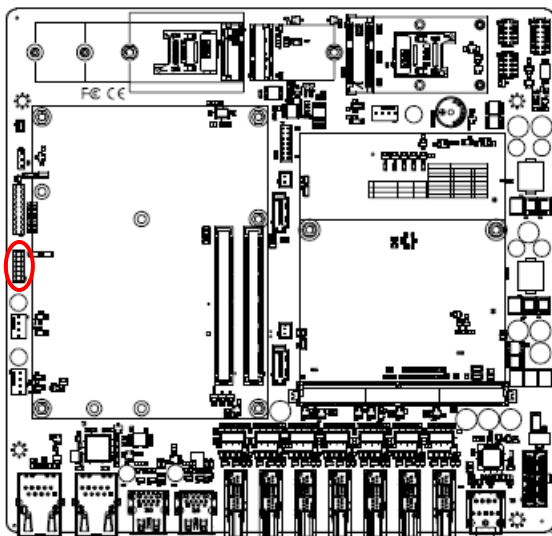
* Default

2.3.3 Power connector (PWR1)



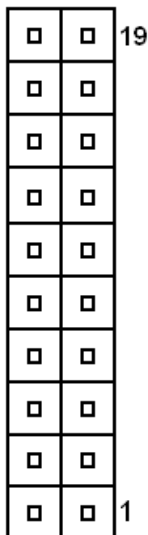
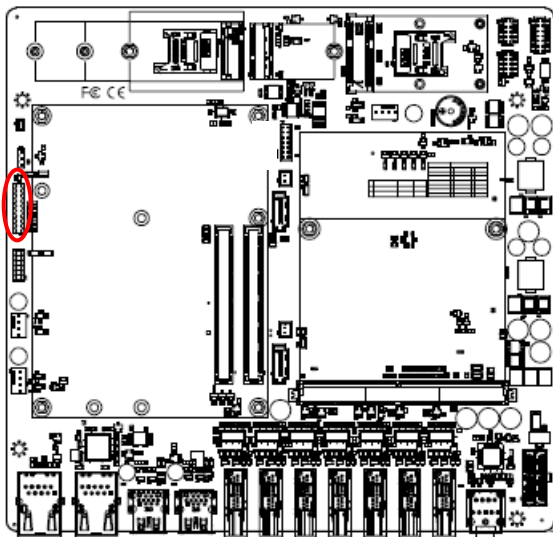
Signal	PIN	PIN	Signal
+DC_IN	5	10	GND
+DC_IN	4	9	GND
+DC_IN	3	8	GND
+DC_IN	2	7	GND
+DC_IN	1	6	GND

2.3.4 General Purpose I/O connector (DIO1)



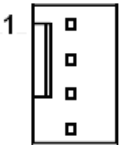
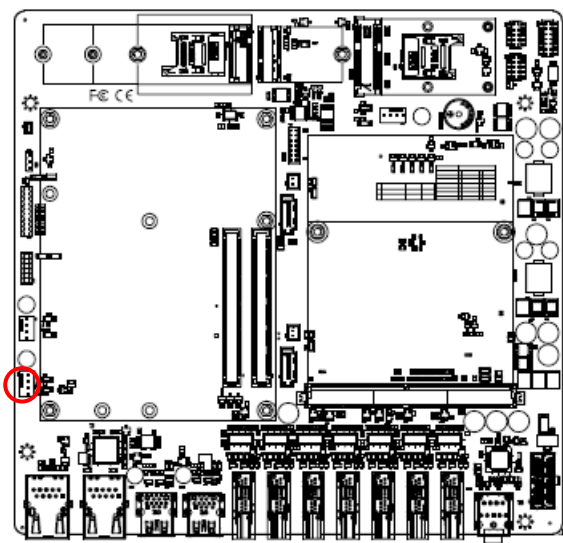
Signal	PIN	PIN	Signal
+5V	12	11	GND
SMB_DAT	10	9	SMB_CLK
DIO_IN3	8	7	DIO_OUT3
DIO_IN2	6	5	DIO_OUT2
DIO_IN1	4	3	DIO_OUT1
DIO_IN0	2	1	DIO_OUT0

2.3.5 General Purpose I/O connector (DIO2)



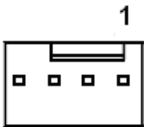
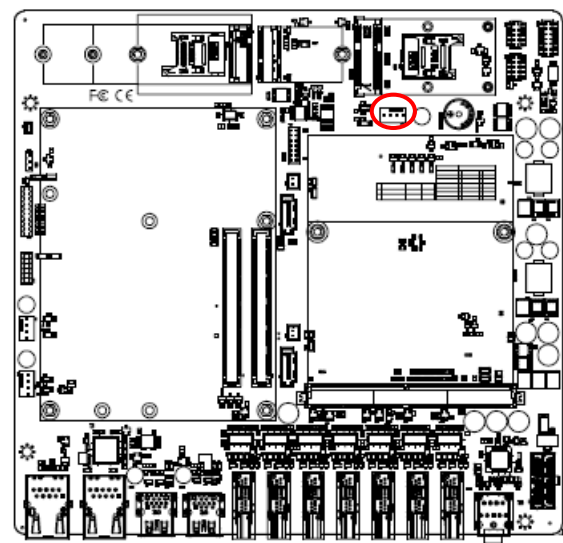
Signal	PIN	PIN	Signal
+5V	20	19	GND
SMB_DAT	18	17	SMB_CLK
GPO_8	16	15	GPI_8
GPO_7	14	13	GPI_7
GPO_6	12	11	GPI_6
GPO_5	10	9	GPI_5
GPO_4	8	7	GPI_4
GPO_3	6	5	GPI_3
GPO_2	4	3	GPI_2
GPO_1	2	1	GPI_1

2.3.6 CPU Fan connector (CPUFAN1)



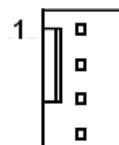
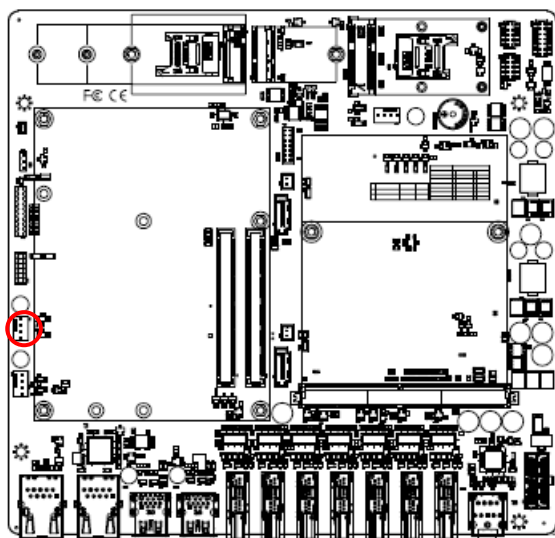
Signal	PIN
GND	1
+12V	2
CPUFANIN	3
+5V	4

2.3.7 MXM Fan connector (JMXMFAN1)



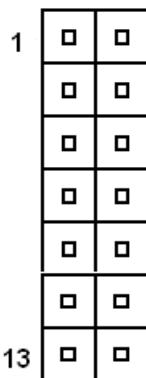
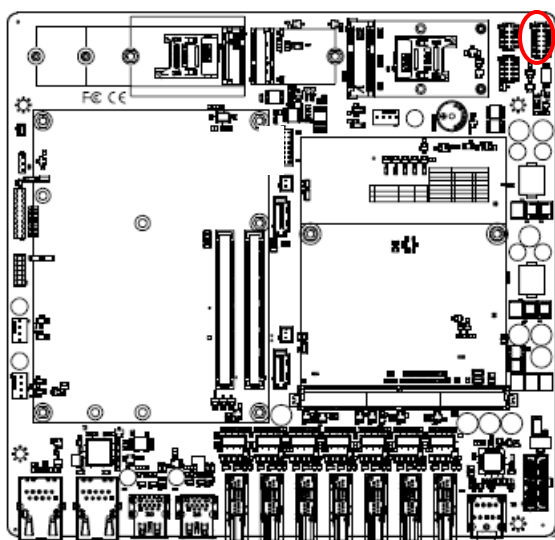
Signal	PIN
GND	1
+12V	2
MXMFANIN	3
+5V	4

2.3.8 System Fan connector (JSYSFAN1)



Signal	PIN
GND	1
+12V	2
SYSFANIN	3
+5V	4

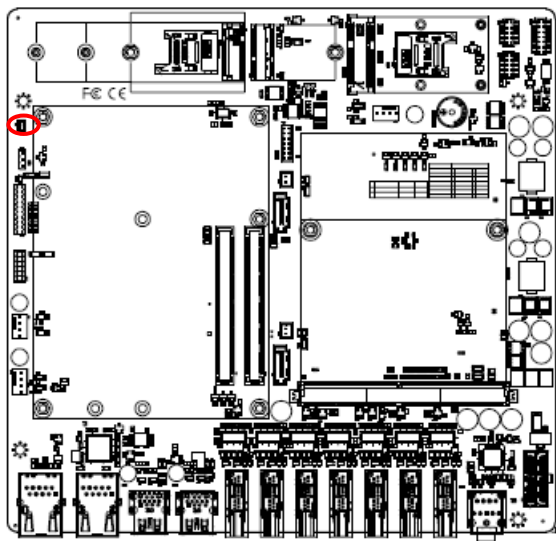
2.3.9 Front panel connector (JFP1)



Signal	PIN	PIN	Signal
EXT_PWRBTN#	1	2	GND
SYS_RST#	3	4	GND
+5V	5	6	GND
SATA_LED_OUT#	7	8	+5V
SER0_TX	9	10	SER0_RX
SER1_TX	11	12	SER1_RX
LID#	13	14	GND

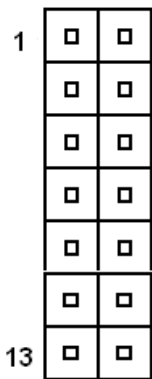
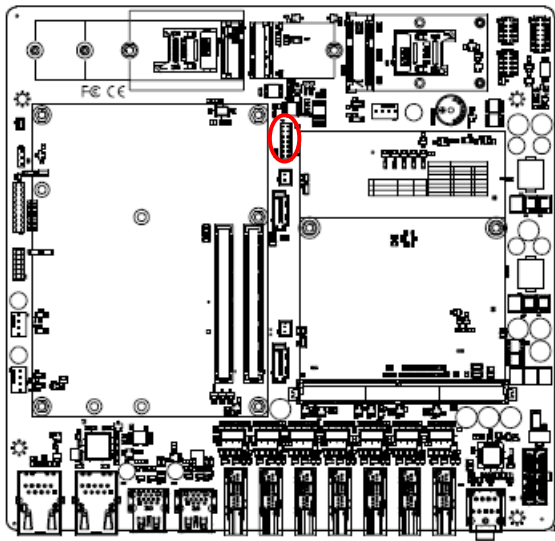
Pin	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Signal	Power Button		Reset Button		Power LED		SATA LED		Serial port0		Serial port1		LID switch	

2.3.10 Battery connector (BH1)



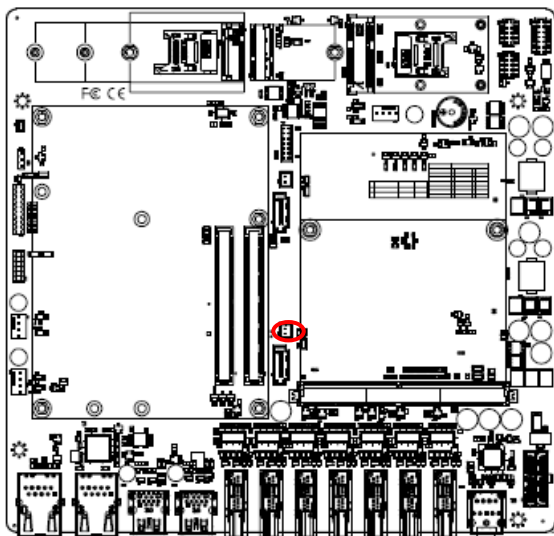
Signal	PIN
+3.3VSB	1
GND	2

2.3.11 LPC port connector (JLPC1)



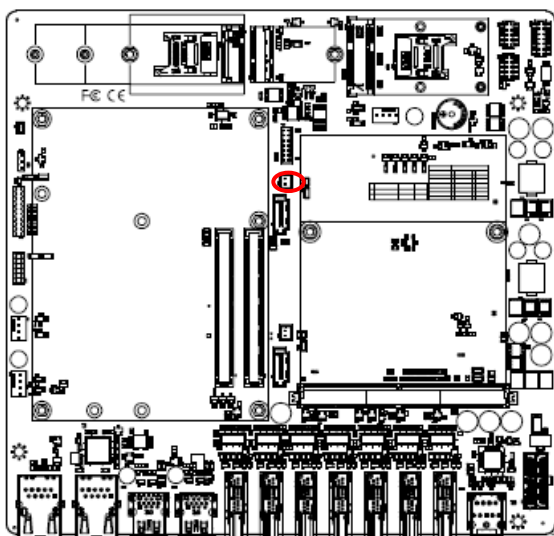
Signal	PIN	PIN	Signal
LPC_AD0	1	2	+3.3V
LPC_AD1	3	4	CB_RST#
LPC_AD2	5	6	LPC_FRAME#
LPC_AD3	7	8	PORT80_CLK
LPC_SERIRQ	9	10	GND
+5V	11	12	GND
+5VSB	13	14	LPC_DRQ1#

2.3.12 SATA power connector 1 (SATAPW1)



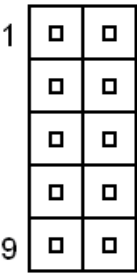
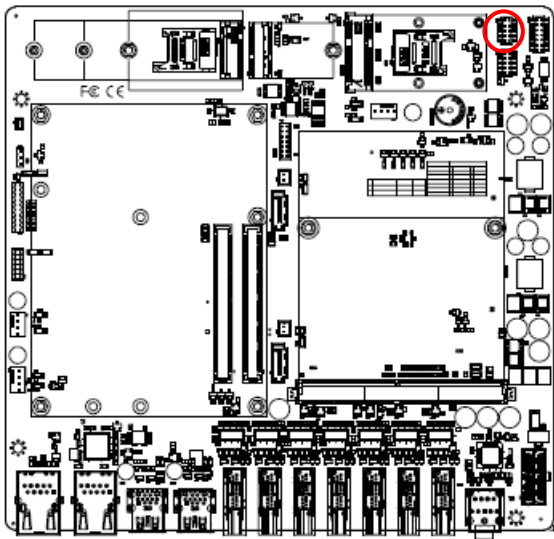
Signal	PIN
+5V	2
GND	1

2.3.13 SATA power connector 2 (SATAPW2)



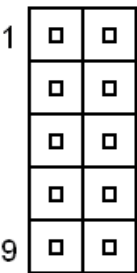
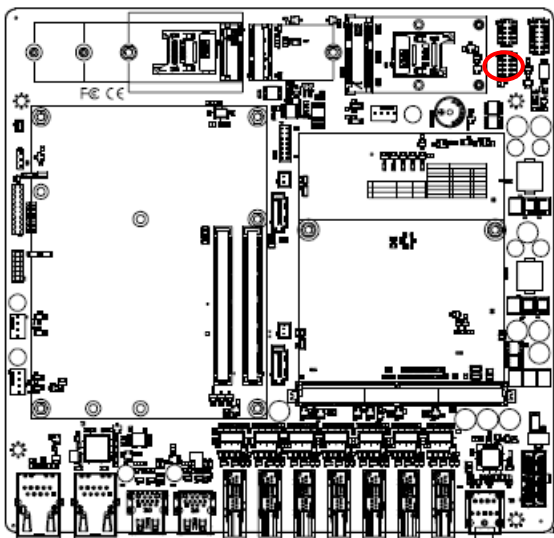
Signal	PIN
+5V	2
GND	1

2.3.14 Serial port 1 connector (JCOM1)



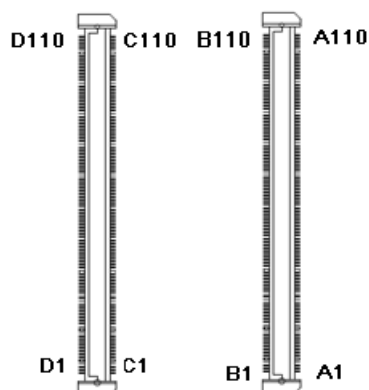
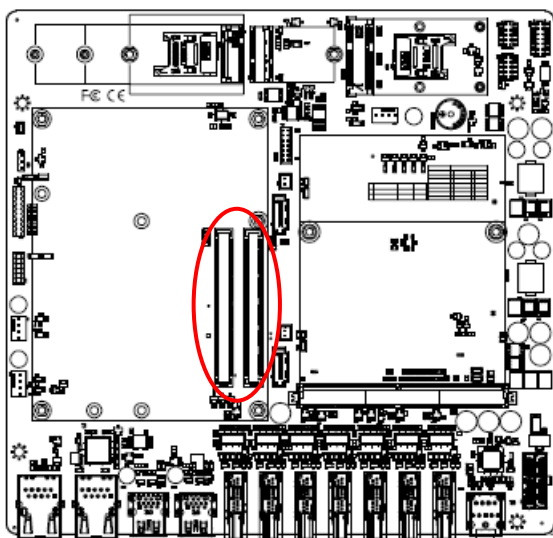
Signal	PIN	PIN	Signal
COM_DCD#_2	1	2	COM_RXD_2
COM_TXD_2	3	4	COM_DTR#_2
GND	5	6	COM_DSR#_2
COM_RTS#_2	7	8	COM_CTS#_2
COM_RI_2	9	10	NC

2.3.15 Serial port 2 connector (JCOM2)

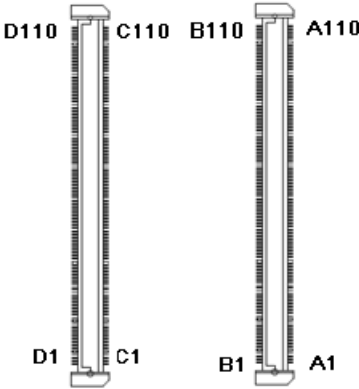
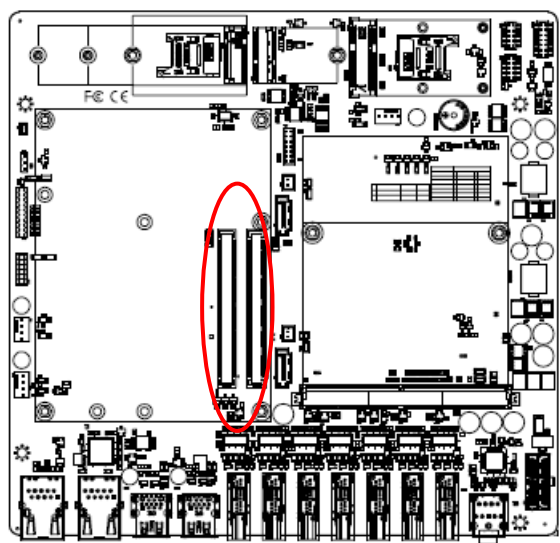


Signal	PIN	PIN	Signal
COM_DCD#_5	1	2	COM_RXD_5
COM_TXD_5	3	4	COM_DTR#_5
GND	5	6	COM_DSR#_5
COM_RTS#_5	7	8	COM_CTS#_5
COM_RI_5	9	10	NC

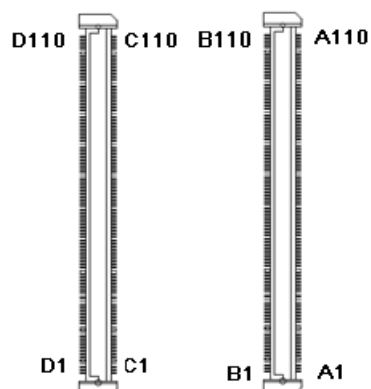
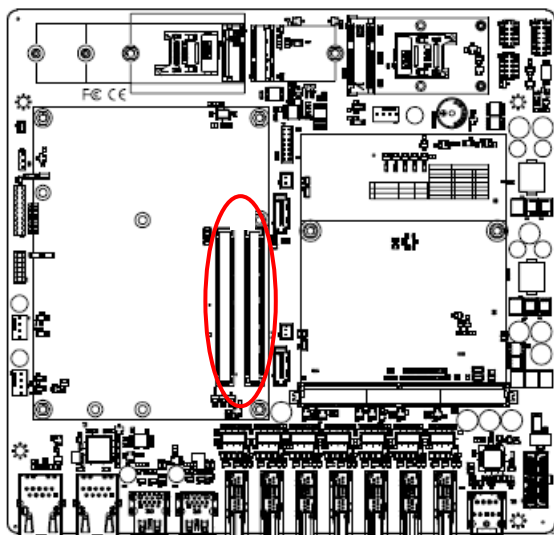
2.3.16 COM Express connector (CN1)



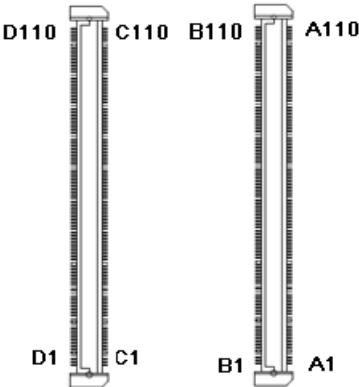
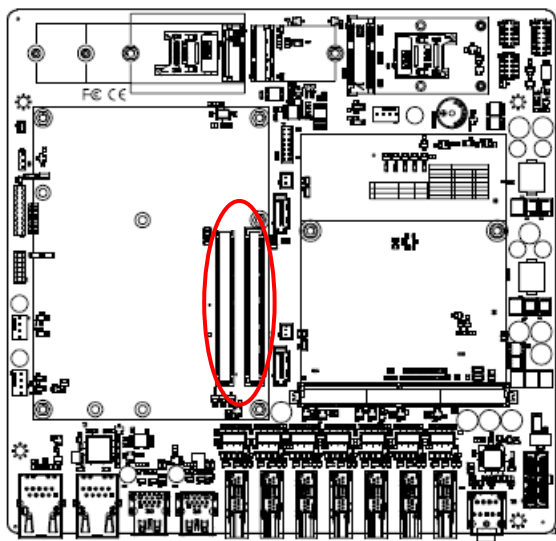
Signal	PIN	PIN	Signal
GND	B110	A110	GND
+12V	B109	A109	+12V
+12V	B108	A108	+12V
+12V	B107	A107	+12V
+12V	B106	A106	+12V
+12V	B105	A105	+12V
+12V	B104	A104	+12V
NC	B103	A103	LID#
FAN_TACHIM	B102	A102	SER1_RX
FAN_PWMOUT	B101	A101	SER1_TX
GND	B100	A100	GND
NC	B99	A99	SER0_RX
NC	B98	A98	SER0_TX
NC	B97	A97	NC
NC	B96	A96	NC
NC	B95	A95	NC
NC	B94	A94	NC
NC	B93	A93	GPO0
NC	B92	A92	NC
NC	B91	A91	NC
GND	B90	A90	GND
NC	B89	A89	PCIE_CLK_REF-
NC	B88	A88	PCIE_CLK_REF+
+VCC_5VSB	B87	A87	NC
+VCC_5VSB	B86	A86	NC
+VCC_5VSB	B85	A85	GPI3
+VCC_5VSB	B84	A84	NC
NC	B83	A83	NC
NC	B82	A82	NC
NC	B81	A81	NC



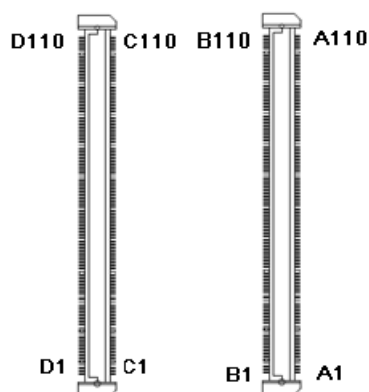
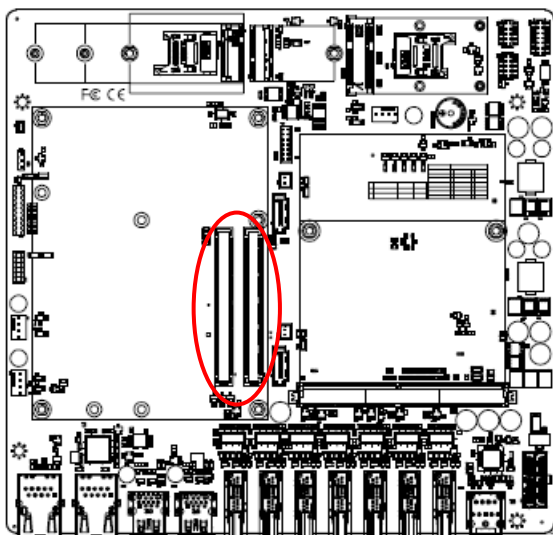
Signal	PIN	PIN	Signal
GND	B80	A80	GND
NC	B79	A79	NC
NC	B78	A78	NC
NC	B77	A77	NC
NC	B76	A76	NC
NC	B75	A75	NC
NC	B74	A74	NC
NC	B73	A73	NC
NC	B72	A72	NC
NC	B71	A71	NC
GND	B70	A70	GND
PCIE_RX0-	B69	A69	PCIE_TX0-
PCIE_RX0+	B68	A68	PCIE_TX0+
WAKE1#	B67	A67	GPI2
WAKE0#	B66	A66	GND
PCIE_RX1-	B65	A65	PCIE_TX1-
PCIE_RX1+	B64	A64	PCIE_TX1+
GPO3	B63	A63	GPI1
PCIE_RX2-	B62	A62	PCIE_TX2-
PCIE_RX2+	B61	A61	PCIE_TX2+
GND	B60	A60	GND
PCIE_RX3-	B59	A59	PCIE_TX3-
PCIE_RX3+	B58	A58	PCIE_TX3+
GPO2	B57	A57	GND
PCIE_RX4-	B56	A56	PCIE_TX4-
PCIE_RX4+	B55	A55	PCIE_TX4+
GPO1	B54	A54	GPI0
PCIE_RX5-	B53	A53	PCIE_TX5-
PCIE_RX5+	B52	A52	PCIE_TX5+
GND	B51	A51	GND



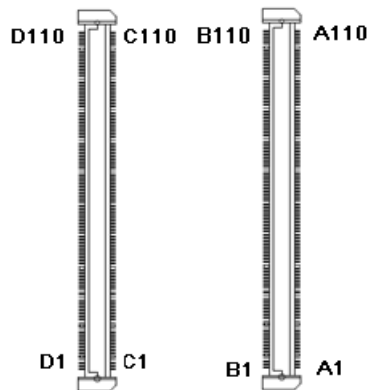
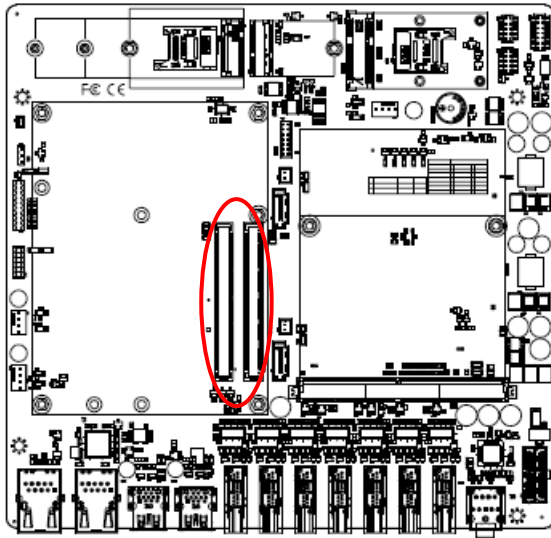
Signal	PIN	PIN	Signal
CB_RESET#	B50	A50	LPC_SERIRQ
SYS_RESET#	B49	A49	NC
NC	B48	A48	MXM_PRSENT#
NC	B47	A47	+3.3V
USB1+	B46	A46	USB0+
USB1-	B45	A45	USB0-
USB_0_1_OC#	B44	A44	USB_2_3_OC#
USB3+	B43	A43	USB2+
USB3-	B42	A42	USB2-
GND	B41	A41	GND
USB5+	B40	A40	USB4+
USB5-	B39	A39	USB4-
NC	B38	A38	NC
NC	B37	A37	USB6+
NC	B36	A36	USB6-
THRM#	B35	A35	NC
I2C_DAT	B34	A34	NC
I2C_CLK	B33	A33	HDA_SDOUT
HDA_SPKR	B32	A32	HDA_BITCLK
GND	B31	A31	GND
HDA_SDIN0	B30	A30	HDA_RST#
NC	B29	A29	HDA_SYNC
NC	B28	A28	SATA_ACT#
WDT	B27	A27	NC
NC	B26	A26	SATA2_RX-
NC	B25	A25	SATA2_RX+
PWR_OK	B24	A24	SUS_S5#
NC	B23	A23	SATA2_TX-
NC	B22	A22	SATA2_TX+
GND	B21	A21	GND



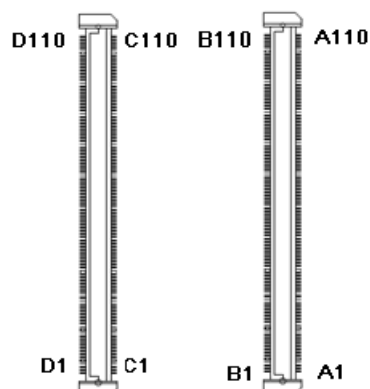
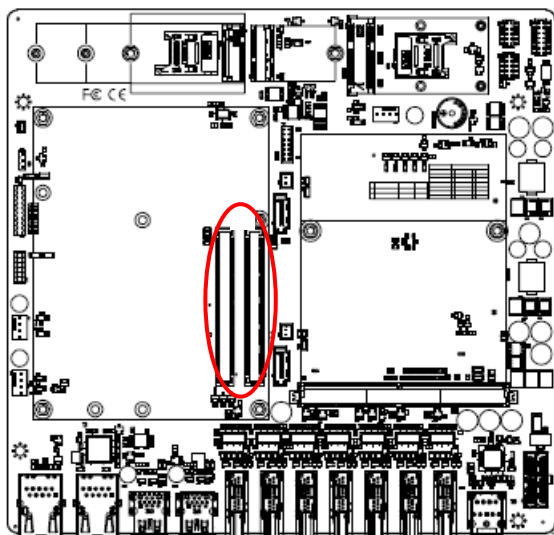
Signal	PIN	PIN	Signal
SATA1_RX-	B20	A20	SATA0_RX-
SATA1_RX+	B19	A19	SATA0_RX+
NC	B18	A18	SUS_S4#
SATA1_TX-	B17	A17	SATA0_TX-
SATA1_TX+	B16	A16	SATA0_TX+
SMB_ALERT#	B15	A15	SUS_S3#
SMB_DAT	B14	A14	GBE0_CTREF
SMB_CK	B13	A13	GBE0_MDI0+
PWRBTN#	B12	A12	GBE0_MDI0-
GND	B11	A11	GND
LPC_CLK	B10	A10	GBE0_MDI1+
LPC_DRQ1#	B9	A9	GBE0_MDI1-
LPC_DRQ0#	B8	A8	GBE0_LINK#
LPC_AD3	B7	A7	GBE0_MDI2+
LPC_AD2	B6	A6	GBE0_MDI2-
LPC_AD1	B5	A5	GBE0_LINK1000#
LPC_AD0	B4	A4	GBE0_LINK100#
LPC_FRAME#	B3	A3	GBE0_MDI3+
GBE0_ACT#	B2	A2	GBE0_MDI3-
GND	B1	A1	GND



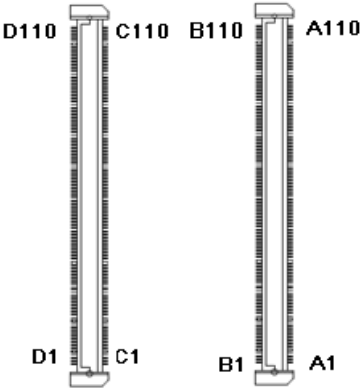
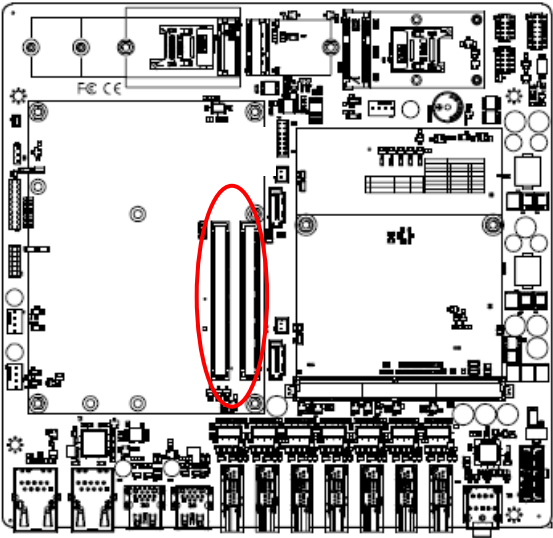
Signal	PIN	PIN	Signal
GND	D110	C110	GND
+12V	D109	C109	+12V
+12V	D108	C108	+12V
+12V	D107	C107	+12V
+12V	D106	C106	+12V
+12V	D105	C105	+12V
+12V	D104	C104	+12V
GND	D103	C103	GND
PEG_TX15-	D102	C102	PEG_RX15-
PEG_TX15+	D101	C101	PEG_RX15+
GND	D100	C100	GND
PEG_TX14-	D99	C99	PEG_RX14-
PEG_TX14+	D98	C98	PEG_RX14+
NC	D97	C97	NC
GND	D96	C96	GND
PEG_TX13-	D95	C95	PEG_RX13-
PEG_TX13+	D94	C94	PEG_RX13+
GND	D93	C93	GND
PEG_TX12-	D92	C92	PEG_RX12-
PEG_TX12+	D91	C91	PEG_RX12+
GND	D90	C90	GND
PEG_TX11-	D89	C89	PEG_RX11-
PEG_TX11+	D88	C88	PEG_RX11+
GND	D87	C87	GND
PEG_TX10-	D86	C86	PEG_RX10-
PEG_TX10+	D85	C85	PEG_RX10+
GND	D84	C84	GND
NC	D83	C83	NC
PEG_TX9-	D82	C82	PEG_RX9-
PEG_TX9+	D81	C81	PEG_RX9+



Signal	PIN	PIN	Signal
GND	D80	C80	GND
PEG_TX8-	D79	C79	PEG_RX8-
PEG_TX8+	D78	C78	PEG_RX8+
NC	D77	C77	NC
GND	D76	C76	GND
PEG_TX7-	D75	C75	PEG_RX7-
PEG_TX7+	D74	C74	PEG_RX7+
GND	D73	C73	GND
PEG_TX6-	D72	C72	PEG_RX6-
PEG_TX6+	D71	C71	PEG_RX6+
GND	D70	C70	GND
PEG_TX5-	D69	C69	PEG_RX5-
PEG_TX5+	D68	C68	PEG_RX5+
GND	D67	C67	NC
PEG_TX4-	D66	C66	PEG_RX4-
PEG_TX4+	D65	C65	PEG_RX4+
NC	D64	C64	NC
NC	D63	C63	NC
PEG_TX3-	D62	C62	PEG_RX3-
PEG_TX3+	D61	C61	PEG_RX3+
GND	D60	C60	GND
PEG_TX2-	D59	C59	PEG_RX2-
PEG_TX2+	D58	C58	PEG_RX2+
TYPE2#	D57	C57	NC
PEG_TX1-	D56	C56	PEG_RX1-
PEG_TX1+	D55	C55	PEG_RX1+
PEG_LANE_RV#	D54	C54	NC
PEG_TX0-	D53	C53	PEG_RX0-
PEG_TX0+	D52	C52	PEG_RX0+
GND	D51	C51	GND



Signal	PIN	PIN	Signal
DDI2_PAIR3-	D50	C50	DDI3_PAIR3-
DDI2_PAIR3+	D49	C49	DDI3_PAIR3+
NC	D48	C48	NC
DDI2_PAIR2-	D47	C47	DDI3_PAIR2-
DDI2_PAIR2+	D46	C46	DDI3_PAIR2+
NC	D45	C45	NC
DDI2_HPD	D44	C44	DDI3_HPD
DDI2_PAIR1-	D43	C43	DDI3_PAIR1-
DDI2_PAIR1+	D42	C42	DDI3_PAIR1+
GND	D41	C41	GND
DDI2_PAIR0-	D40	C40	DDI3_PAIR0-
DDI2_PAIR0+	D39	C39	DDI3_PAIR0+
NC	D38	C38	DDI3_DDC_AUX_SEL
DDI1_PAIR3-	D37	C37	DDI3_CTRLDATA_AUX-
DDI1_PAIR3+	D36	C36	DDI3_CTRLCLK_AUX+
NC	D35	C35	NC
DDI1_DDC_AUX_SEL	D34	C34	DDI2_DDC_AUX_SEL
DDI1_PAIR2-	D33	C33	DDI2_CTRLDATA_AUX-
DDI1_PAIR2+	D32	C32	DDI2_CTRLCLK_AUX+
GND	D31	C31	GND
DDI1_PAIR1-	D30	C30	NC
DDI1_PAIR1+	D29	C29	NC
NC	D28	C28	NC
DDI1_PAIR0-	D27	C27	RSVD7
DDI1_PAIR0+	D26	C26	NC
NC	D25	C25	NC
NC	D24	C24	DDI1_HPD
NC	D23	C23	NC
NC	D22	C22	NC
GND	D21	C21	GND



Signal	PIN	PIN	Signal
PCIE_TX6-	D20	C20	PCIE_RX6-
PCIE_TX6+	D19	C19	PCIE_RX6+
NC	D18	C18	NC
NC	D17	C17	NC
DDI1_CTRLDATA_AUX-	D16	C16	NC
DDI1_CTRLCLK_AUX+	D15	C15	NC
GND	D14	C14	GND
USB_SSTX3+	D13	C13	USB_SSRX3+
USB_SSTX3-	D12	C12	USB_SSRX3-
GND	D11	C11	GND
USB_SSTX2+	D10	C10	USB_SSRX2+
USB_SSTX2-	D9	C9	USB_SSRX2-
GND	D8	C8	GND
USB_SSTX1+	D7	C7	USB_SSRX1+
USB_SSTX1-	D6	C6	USB_SSRX1-
GND	D5	C5	GND
USB_SSTX0+	D4	C4	USB_SSRX0+
USB_SSTX0-	D3	C3	USB_SSRX0-
GND	D2	C2	GND
GND	D1	C1	GND

2.3.15.1 Signal Description – COM Express connector (CN1)

2.3.15.1.1 Audio Signals

Signal	Signal Description
HDA_SYNC	HD Audio Sync
HDA_RST#	HD Audio Reset

2.3.15.1.2 Gigabit Ethernet Signals

Signal	Signal Description			
GBE0_MD[0:3] +/-	Gigabit Ethernet Controller 0: Media Dependent Interface Differential Pairs 0,1,2,3. The MDI can operate in 1000, 100 and 10 Mbit / sec modes. Some pairs are unused in some modes, per the following:			
		1000B-T	100B-T	10B-T
	MDI[0]+/-	B1_DA+/-	TX+/-	TX+/-
	MDI[1]+/-	B1_DB+/-	RX+/-	RX+/-
	MDI[2]+/-	B1_DC+/-	X	X
	MDI[3]+/-	B1_DD+/-	X	X
GBE0_ACT#	Gigabit Ethernet Controller 0 activity indicator, active low.			
GBE0_Link#	Gigabit Ethernet Controller 0 link indicator, active low.			
GBE0_Link100#	Gigabit Ethernet Controller 0 100 Mbit / sec link indicator, active low.			
GBE0_Link1000#	Gigabit Ethernet Controller 0 1000 Mbit / sec link indicator, active low.			

2.3.15.1.3 PCI Express Signals

Signal	Signal Description
PCIE_TX[0:6] +/-	PCI Express Differential Transmit Pair 0-6
PCIE_RX[0:6] +/-	PCI Express Differential Receive Pair 0-6

2.3.15.1.4 LPC Signals

Signal	Signal Description
LPC_FRAME#	LPC frame indicates the start of an LPC cycle
LPC_AD[0:3]	LPC multiplexed address, command and data bus
LPC_CLKOUT1	LPC clock output - 33MHz nominal
LPC_SERIRQ	LPC serial interrupt

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2.3.15.1.5 GPIO Signals

Signal	Signal Description
GPI[0:4]	General purpose input pins.
GPO[0:4]	General purpose output pins.

2.3.15.1.6 Power & System Management Signals

Signal	Signal Description
SUS_S3#	Indicates system is in Suspend to RAM state. Active low output.
PWRBTN#	Power button to bring system out of S5 (soft off), active on rising edge.
SMB_SCL_S5	System Management Bus bidirectional clock line.
SMB_SDA_S5	System Management Bus bidirectional data line.
SMB_ALERT#	System Management Bus Alert - input can be used to generate an SMI# (System Management Interrupt) or to wake the system.
SUS_STAT#/ESPI_RESET#	Indicates imminent suspend operation.
PWR_OK	Power OK from main power supply
SYS_RESET#	Reset button input. Active low input.
WAKE0#	PCI Express wake up signal.
WAKE1#	General purpose wake up signal.

2.3.15.1.7 SATA Signals

Signal	Signal Description
SATA[0:2]_TX +/-	Serial ATA Channel 0-2 transmit differential pair.
SATA[0:2]_RX +/-	Serial ATA Channel 0-2 receive differential pair.
ATA_ACT#	ATA (parallel and serial) activity indicator, active low.

2.3.15.1.8 USB Signals

Signal	Signal Description
USB[0:7] +/-	USB differential pairs, channels 0 through 7
USB_0_1_OC#	USB over-current sense, USB channels 0 and 1
USB_2_3_OC#	USB over-current sense, USB channels 2 and 3

2.3.15.1.9 I2C Signals

Signal	Signal Description
I2C_CLK	General purpose I2C port clock output.
I2C_DATA	General purpose I2C port data I/O line.

2.3.15.1.10 USB3.0 Signals

Signal	Signal Description
USB_SSTX[0:1]+ USB_SSTX[0:1]-	Additional transmit signal differential pairs for the SuperSpeed USB data path.
USB_SSRX[0:1]+ USB_SSRX[0:1]-	Additional receive signal differential pairs for the SuperSpeed USB data path.

2.3.15.1.11 DDI Signals

Signal	Signal Description
DDIO_PAIR[0:2]+ DDIO_PAIR[0:2]-	Digital Display Interface0 Pair[0:2] differential pairs
DDIO_DDC_AUX_SEL	Selects the function of DDIO_CTRLCLK_AUX+ and DDIO_CTRLDATA_AUX-. If this input is floating the AUX pair is used for the DP AUX+/- signals. If pulled-high the AUX pair contains the CTRLCLK and CTRLDATA signals.
DDIO_CTRLCLK_AUX+	DP AUX+function if DDIO_DDC_AUX_SEL is no connect HDMI/DVI 12C CTRLCLK if DDIO_DDC_AUX_SEL is pulled high
DDIO_CTRLDATA_AUX-	DP AUX-function if DDIO_DDC_AUX_SEL is no connect HDMI/DVI 12C CTRLDATA if DDIO_DDC_AUX_SEL is pulled high
DDIO_HPD	Digital Display Interface Hot-Plug Detect

2.3.15.1.12 USB3.0 Signals

Signal	Signal Description
USB_SSTX[0:3]+ USB_SSTX[0:3]-	Additional transmit signal differential pairs for the SuperSpeed USB data path.
USB_SSRX[0:3]+ USB_SSRX[0:3]-	Additional receive signal differential pairs for the SuperSpeed USB data path.

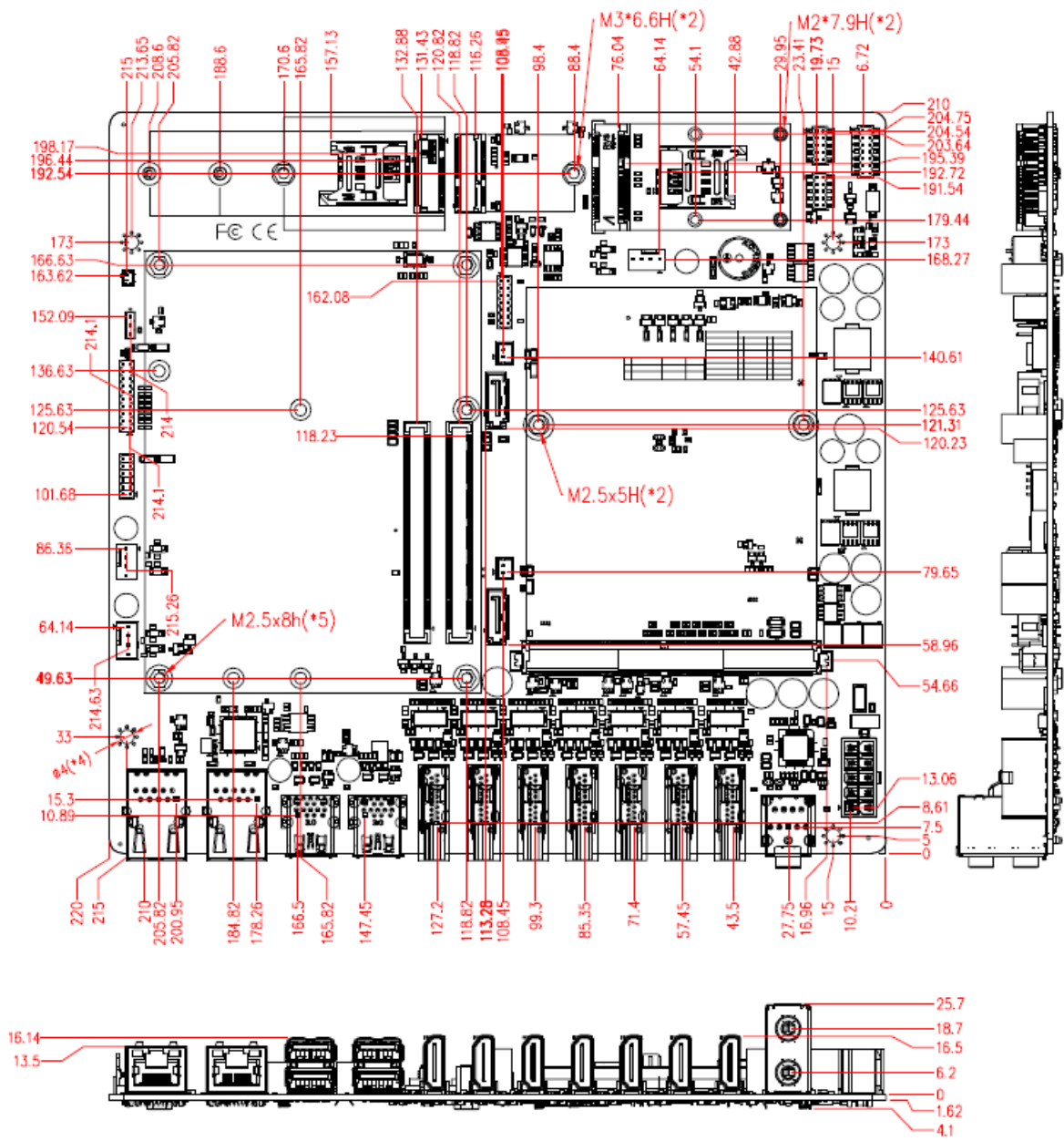
2.3.15.1.13 DDI Signals

Signal	Signal Description
DDI[1:3]_PAIR[0:3]+ DDI[1:3]_PAIR[0:3]-	Digital Display Interface 1 to 3Pair[0:3] differential pairs
DDI[1:3]_DDC_AUX_SEL	Selects the function of DDI[1:3]_CTRLCLK_AUX+ and DDI[1:3]_CTRLDATA_AUX-. If this input is floating the AUX pair is used for the DP AUX+/- signals. If pulled-high the AUX pair contains the CTRLCLK and CTRLDATA signals.
DDI[1:3]_CTRLCLK_AUX+	DP AUX+function if DDI[1:3]_DDC_AUX_SEL is no connect HDMI/DVI 12C CTRLCLK if DDI[1:3]_DDC_AUX_SEL is pulled high
DDI[1:3]_CTRLDATA_AUX-	DP AUX-function if DDI[1:3]_DDC_AUX_SEL is no connect HDMI/DVI 12C CTRLDATA if DDI[1:3]_DDC_AUX_SEL is pulled high
DDI[1:3]_HPD	Digital Display Interface Hot-Plug Detect

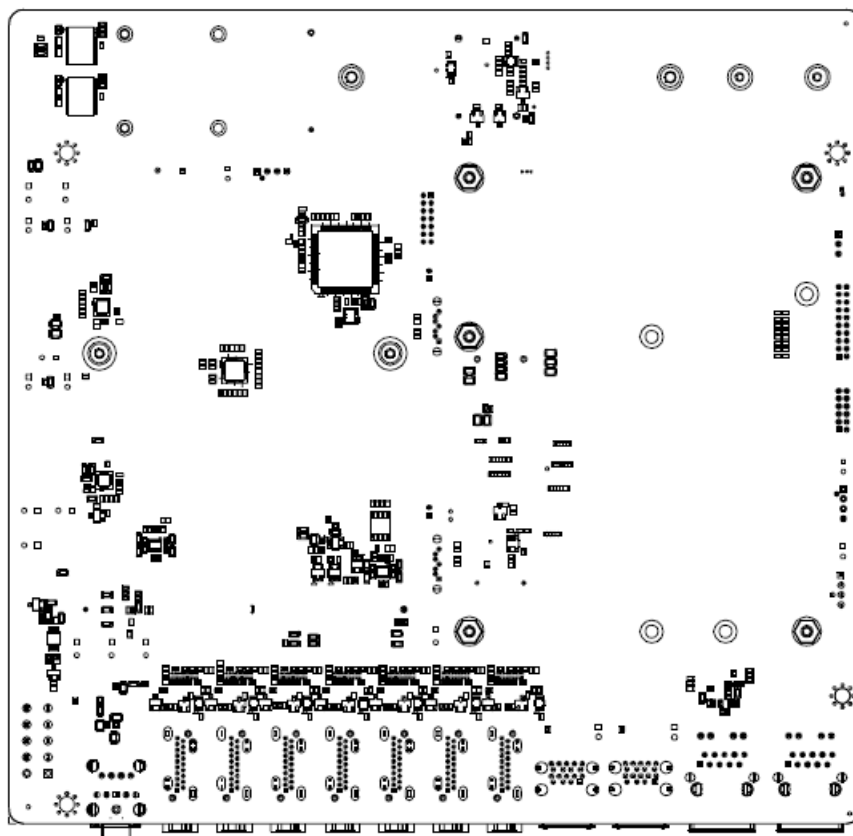
2.3.15.1.14 PEG PCI Express Lanes Signals

Signal	Signal Description
PEG_TX[0:15]+ PEG_TX[0:15]-	PCI Express Graphics transmit differential paris.
PEG_RX[0:15]+ PEG_RX[0:15]-	PCI Express Graphics recevie differential paris.

3. Mechanical Drawing



Unit: mm



Unit: mm

