

**ATX Motherboard Supports LGA1700 12th/13th Gen. Intel® Core™  
i9/i7/i5/i3, Pentium® and Celeron® Processor, DDR5,  
Triple Independent Display, Dual 2.5GbE LAN, M.2,  
USB 3.2, SATA 6Gb/s, and RoHS**

# **IMBA-R680**

## **Quick Installation Guide** **Version 1.0**

July 28, 2022

### **Package List**

IMBA-R680 package includes the following items:

- 1 x IMBA-R680 single board computer
- 2 x SATA cable
- 1 x I/O shielding
- 1 x QIG



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## Specifications

- CPU:  
LGA1700 12<sup>th</sup>/13<sup>th</sup> Generation Intel® Core™ i9/i7/i5/i3, Celeron® and Pentium® processors (up to 125W TDP)
- Chipset:  
Intel® R680E
- Memory:  
Four 288-pin 4800 MHz dual-channel unbuffered DDR5 SDRAM DIMM slots supporting up to 128 GB memory (ECC & non-ECC supported)
- BIOS:  
AMI UEFI BIOS
- Graphics Engine:  
New Intel® Xe Graphics architecture with SRIOV, Genlock
- Display Output:  
Triple independent display  
1 x DP (up to 4096 x 2304 @ 60Hz)  
1 x HDMI (up to 4096 x 2304 @ 30Hz)  
1 x iDPM IEI eDP/ LVDS/ VGA module
- Ethernet:  
2 x 2.5GbE RJ-45 port via Intel® I225V controller (colay I225-LM support vPro)
- External I/O Interface:  
4 x USB 3.2 Gen 2 (Type-A) (10Gb/s)  
2 x USB 3.2 Gen 1 (Type-A) (5Gb/s)  
2 x RS-232/422/485 (RS-485 support AFC)
- Internal I/O Interface:  
4 x SATA 6Gb/s (RAID 0/1/5/10 supported)  
4 x USB 2.0 (2x4 pin, p=2.0)  
2 x USB 3.2 Gen 1 (5Gb/s) (2x10 pin, p=2.00, wafer)  
4 x RS-232 (2x5 pin, p=2.54)

- Audio:
  - 1 x iAUDIO supports IEI AC-KIT-888S Audio Kit (2x5 pin)
- Front Panel:
  - 1 x Front panel (2x7 pin, p=2.54; power LED, HDD LED, speaker, power button, reset button)
- LAN LED:
  - 2 x LAN LED (1x2 pin, p=2.0)
- Expansions:
  - 2 x PCIe Gen5 x16 slot with x8 signal
  - 3 x PCIe Gen4 x4 open-end slot
  - 2 x PCIe Gen3 x1 slot
  - 1 x M.2 M key (2242/2280, PCIe x4), NVMe supported
  - 1 x M.2 M key (2242/2280, PCIe x2 for SSD), NVMe supported
- Digital I/O:
  - 1 x 12-bit digital I/O (2x7 pin, p=2.0)
- SMBus:
  - 1 x SMBus (1x4 pin, p=1.25)
- I<sup>2</sup>C:
  - 1 x I<sup>2</sup>C (1x4 pin, p=1.25)
- Fan Connector:
  - 1 x CPU fan connector (1x4 pin)
  - 2 x System fan connector (1x4 pin)
- Chassis Intrusion:
  - 1 x Chassis intrusion connector (1x2 pin, p=2.0)
- TPM
  - Intel® PTT (TPM 2.0)
- Power Supply:
  - ATX/AT power supply
  - Support AT/ATX mode
  - ErP/EuP compliant

- Power Consumption:  
3.3V@0.89A, 5V@10.05A, 12V@6.05A, 5VSB@0.64A  
(Intel® Core™ i7-12700E CPU with four 16 GB 4800 MHz DDR5 memory, EuP mode enabled)
- Watchdog Timer:  
Software programmable support 1–255 sec. system reset
- Operation Temperature: 0°C – 60°C
- Storage Temperature: -30°C – 70°C
- Operation Humidity: 5% – 95%, non-condensing
- Dimensions: 244 mm x 305 mm
- Weight: GW:1200 g / NW:700 g
- Safety: CE/FCC compliant

All the drivers and utility for the IMBA-R680 are available on IEI Resource Download Center. Type IMBA-R680 and press Enter to find all the relevant software, utilities, and documentation. To install software from the downloaded ISO file, mount the file as a virtual drive to view its content.

IEI Resource Download Center

<https://download.ieiworld.com>



## Ordering Information

- **IMBA-R680-R10:**  
ATX motherboard supports LGA1700 12th/13th Generation Intel® Core™ i9/i7/i5/i3, Pentium® and Celeron® processor, DDR5, triple independent display, dual 2.5GbE LAN, M.2, USB 3.2, SATA 6Gb/s, and RoHS
- **AC-KIT-888S-R10:**  
Realtek ALC888S 7.1 Channel HD Audio board, RoHS
- **CB-USB02A-RS:**  
Dual-port USB cable with bracket, 300mm, p=2.0
- **19800-010500-200-RS:**  
USB 3.0/USB3.2 cable with bracket, 450mm, p=2.0
- **32102-000100-200-RS:**  
SATA power cable, MOLEX 5264-4P to SATA15P
- **32205-000702-100-RS:**  
RS-232 cable, 230mm, p=2.54
- **iDPM-eDP-R10:**  
eDP to eDP converter board (for IEI iDPM connector)
- **iDPM-LVDS-R10:**  
eDP to LVDS converter board (for IEI iDPM connector)

## Jumpers Setting and Connectors

LABEL	FUNCTION
J_ATX_AT1	AT/ATX power mode setting
J_CMOS1	Clear CMOS jumper
ME_FLASH1	Flash descriptor security override jumper
IAUDIO	Audio connector for IEI AC-KIT-888S kit
ATX1	ATX power connector
CPU12V1	ATX CPU 12V power connector
BAT2	RTC battery connector
CHASSIS1	Chassis intrusion connector
DIMM1, DIMM2, DIMM3, DIMM4	DDR5 DIMM slots
DIO1	Digital I/O connector
DEBUG_1	EC debug connector
CPU_FAN1, SYS_FAN1, SYS_FAN2	Fan connectors
F_PANEL1	Front panel connector
J_I2C1	I <sup>2</sup> C connector
JLAN_LED1	LAN1 link LED connector
JLAN_LED2	LAN2 link LED connector
COM3, COM4, COM5, COM6	RS-232 serial port connectors
SATA1, SATA2, SATA3, SATA4	SATA 6Gb/s connectors
J_SMB1	SMBus connector
JSPI1	Flash SPI ROM connector
JEC1	Flash EC ROM connector
USB2_CN1, USB2_CN2	Internal USB 2.0 connectors
USB3_2	Internal USB 3.2 Gen 1 connector
M2_M1, M2_M2	M.2 M key slots
IDPM	IEI iDPM slot
PCIE3, PCIE7	PCIe x1 slots
PCIE1, PCIE5, PCIE6	PCIe x4 slots
PCIE2, PCIE4	PCIe x16 slots
PWR_BTN1	Onboard power button

COM1_2	External dual RS-232/422/485 connector
HDMI_DP1	External HDMI and DP combo connector
LAN1_USB1	External 2.5GbE RJ-45 and dual USB 3.2 Gen 1 combo connector
LAN2_USB2	External 2.5GbE RJ-45 and dual USB 3.2 Gen 2 combo connector
USB3_1	External dual USB 3.2 Gen 2 connector

**J\_ATX\_AT1: AT/ATX Power Mode Setting**

PIN NO.	DESCRIPTION
Short A - B	ATX Power Mode (default)
Short B - C	AT Power Mode

**J\_CMOS1: Clear CMOS Button**

Status	DESCRIPTION
NC	Keep CMOS Setup (Normal Operation)
Press	Clear CMOS Setup

**ME\_FLASH1: Flash Descriptor Security Override Jumper**

PIN NO.	DESCRIPTION
Short	Disabled (default)
Open	Enabled

**IAUDIO: Audio Connector for IEI AC-KIT-888S kit**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	HDA_SYNC_R	2	HDA_BCLK_R
3	HDA_SDO_R	4	HDA_PCBEPC
5	HDA_SDI_0_R	6	HDA_RST_R
7	+5V	8	GND
9	+12V	10	GND

<b>ATX1: ATX Power Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	Power good	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

<b>CPU12V1: ATX CPU 12V Power Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	5	+12V
2	GND	6	+12V
3	GND	7	+12V
4	GND	8	+12V

<b>BAT2: RTC Battery Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VBATT	2	GND

<b>CHASSIS1: Chassis Intrusion Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	CASEOPEN_N	2	GND



<b>DIO1 : Digital Input/Output Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	VCC
3	Output 5	4	Output 4
5	Output 3	6	Output 2
7	Output 1	8	Output 0
9	Input 5	10	Input 4
11	Input 3	12	Input 2
13	Input 1	14	Input 0

<b>DEBUG_1: EC Debug Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	NC	4	EDICLK
2	EDICS	5	EDIDI
3	EDIDO	6	GND

<b>CPU_FAN1: CPU Fan Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	+12V
3	FANIO	4	PWM (+5V)

<b>SYS_FAN1, SYS_FAN2: System Fan Connectors</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	+12V
3	FANIO	4	PWM (+5V)

<b>F_PANEL1: Front Panel Connector</b>					
	<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>	
PWR LED	1	PWR_LED+	2	SPKR+	SPKR
	3	NC	4	NC	
	5	PWR_LED-	6	NC	
PWR BTN	7	PWR_BTN+	8	SPKR-	
	9	PWR_BTN-	10	NC	
HDD LED	11	HDD_LED+	12	Reset+	RESET
	13	HDD_LED-	14	Reset-	

<b>J_I2C1: I<sup>2</sup>C Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	3	I2C_CLK
2	I2C_DATA	4	+5V

<b>JLAN_LED1: LAN1 Link LED Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	+3.3V	2	I225_LINK_ACT_N

<b>JLAN_LED2: LAN2 Link LED Connector</b>			
<b>PIN</b>	<b>DESCRIPTION</b>	<b>PIN</b>	<b>DESCRIPTION</b>
1	+3.3V	2	I225_LINK_ACT_N

<b>COM3, COM4, COM5, COM6: RS-232 Serial Port Connectors</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	DCD	2	DSR
3	RXD	4	RST
5	TXD	6	CTS
7	DTR	8	RI
9	GND	10	GND

<b>SATA1, SATA2, SATA3, SATA4: SATA 6Gb/s Connectors</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	5	SATA_RX-
2	SATA_TX+	6	SATA_RX+
3	SATA_TX-	7	GND
4	GND	8	N/C

<b>J_SMB1: SMBus Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	3	SMB_CLK
2	SMB_DATA	4	+5V

<b>JSPI1: Flash SPI ROM Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+3.3V	4	SPI_CLK
2	SPI_CS#	5	SPI_SI
3	SPI_SO	6	GND

<b>JEC1: Flash EC ROM Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	FSCE#	2	+3.3V
3	FMISO	4	NC
5	EC_DET_FLASH	6	FSCK
7	GND	8	FMOSI

<b>USB2_CN1, USB2_CN2: Internal USB 2.0 Connectors</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC	2	GND
3	USB_DATA-	4	USB_DATA+
5	USB_DATA+	6	USB_DATA-
7	GND	8	VCC

<b>USB3_2: Internal USB 3.2 Gen 1 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	+5V	11	USB2_4_P
2	USB3_RX3_N	12	USB2_4_N
3	USB3_RX3_P	13	GND
4	GND	14	USB3_TX4_P
5	USB3_TX3_N	15	USB3_TX4_N
6	USB3_TX3_P	16	GND
7	GND	17	USB3_RX4_P
8	USB2_3_N	18	USB3_RX4_N
9	USB2_3_P	19	+5V
10	N/C		

<b>M2_M1: M.2 M-key Slot</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	+3.3V
3	GND	4	+3.3V
5	PCIE_4_RX_DN	6	N/C
7	PCIE_4_RX_DP	8	N/C
9	GND	10	NGFF1_ACT_N
11	PCIE_TX_DN4	12	+3.3V
13	PCIE_TX_DP4	14	+3.3V
15	GND	16	+3.3V
17	PCIE_3_RX_DN	18	+3.3V
19	PCIE_3_RX_DP	20	N/C
21	GND	22	N/C
23	PCIE_TX_DN3	24	N/C
25	PCIE_TX_DP3	26	N/C
27	GND	28	N/C
29	PCIE_2_RX_DN	30	N/C
31	PCIE_2_RX_DP	32	N/C
33	GND	34	N/C
35	PCIE_TX_DN2	36	N/C
37	PCIE_TX_DP2	38	M_2_SSD_SLP
39	GND	40	N/C

41	PCIE_1_RX_DN	42	N/C
43	PCIE_1_RX_DP	44	N/C
45	GND	46	N/C
47	PCIE_TX_DN1	48	N/C
49	PCIE_TX_DP1	50	PLT_RST_N
51	GND	52	SRCCLKREQB_17_N
53	PCIE_CLK_DN17	54	NC
55	PCIE_CLK_DP17	56	N/C
57	GND	58	N/C
59	N/C	60	N/C
61	N/C	62	N/C
63	N/C	64	N/C
65	N/C	66	N/C
67	N/C	68	NC
69	PEDET	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		

<b>M2_M2: M.2 M-key Slot</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	GND	2	+3.3V
3	GND	4	+3.3V
5	PCIE_20_RX_DN	6	N/C
7	PCIE_20_RX_DP	8	N/C
9	GND	10	NGFF2_ACT_N
11	PCIE_TX_DN20	12	+3.3V
13	PCIE_TX_DP20	14	+3.3V
15	GND	16	+3.3V
17	PCIE_19_RX_DN	18	+3.3V
19	PCIE_19_RX_DP	20	N/C
21	GND	22	N/C
23	PCIE_TX_DN19	24	N/C
25	PCIE_TX_DP19	26	N/C

27	GND	28	N/C
29	PCIE_18_RX_DN	30	N/C
31	PCIE_18_RX_DP	32	N/C
33	GND	34	N/C
35	PCIE_TX_DN18	36	N/C
37	PCIE_TX_DP18	38	M_2_SATA_SLP
39	GND	40	N/C
41	PCIE_17_RX_DN	42	N/C
43	PCIE_17_RX_DP	44	N/C
45	GND	46	N/C
47	PCIE_TX_DN17	48	N/C
49	PCIE_TX_DP17	50	PERST_N
51	GND	52	SRCCLKREQB_15_N
53	PCIE_CLK_DN15	54	NC
55	PCIE_CLK_DP15	56	N/C
57	GND	58	N/C
59	N/C	60	N/C
61	N/C	62	N/C
63	N/C	64	N/C
65	N/C	66	N/C
67	N/C	68	NC
69	N/C	70	+3.3V
71	GND	72	+3.3V
73	GND	74	+3.3V
75	GND		

<b>COM1, COM2: External RS-232/422/485 Connectors</b>			
	<b>RS-232</b>	<b>RS-422</b>	<b>RS-485</b>
1	DCD	TXD422-	TXD485-
2	RXD	TXD422+	TXD485+
3	TXD	RXD422+	--
4	DTR	RXD422-	--
5	GND	--	--
6	DSR	--	--
7	RTS	--	--
8	CTS	--	--
9	RI	--	--

<b>HDMI_DP1</b>			
<b>External DP Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	LANE0P	11	GND
2	GND	12	LANE3N
3	LANE0N	13	AUX_CTRL_DET_C
4	LANE1P	14	GND
5	GND	15	AUXP
6	LANE1N	16	GND
7	LANE2P	17	AUXN
8	GND	18	HPD
9	LANE2N	19	GND
10	LANE3P	20	+5V
<b>External HDMI Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
21	HDMI_DATA2	31	GND
22	GND	32	HDMI_CLK#
23	HDMI_DATA2#	33	N/C
24	HDMI_DATA1	34	N/C
25	GND	35	HDMI_SCL
26	HDMI_DATA1#	36	HDMI_SDA
27	HDMI_DATA0	37	GND

28	GND	38	+5V
29	HDMI_DATA0#	39	HDMI_HPD
30	HDMI_CLK		

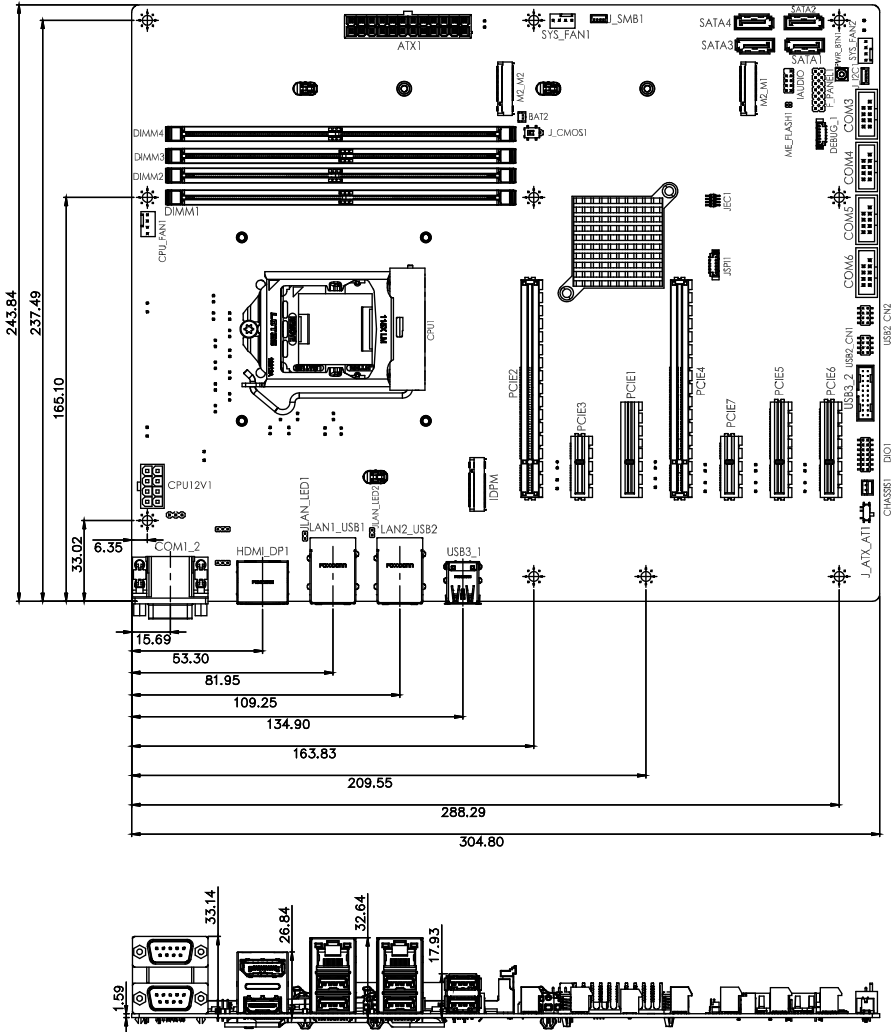
<b>LAN1_USB1</b>			
<b>External Dual USB 3.2 Gen 1 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+
<b>2.5GbE RJ-45 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
20	LAN1_MDI0P	24	LAN1_MDI2P
21	LAN1_MDI0N	25	LAN1_MDI2N
22	LAN1_MDI1P	26	LAN1_MDI3P
23	LAN1_MDI1N	27	LAN1_MDI3N



<b>LAN2_USB2</b>			
<b>External Dual USB 3.2 Gen 2 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+
<b>2.5GbE RJ-45 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
20	LAN1_MDI0P	24	LAN1_MDI2P
21	LAN1_MDI0N	25	LAN1_MDI2N
22	LAN1_MDI1P	26	LAN1_MDI3P
23	LAN1_MDI1N	27	LAN1_MDI3N

<b>USB3_1: External Dual USB 3.2 Gen 2 Connector</b>			
<b>PIN NO.</b>	<b>DESCRIPTION</b>	<b>PIN NO.</b>	<b>DESCRIPTION</b>
1	VCC	10	VCC
2	USB_DATA-	11	USB_DATA-
3	USB_DATA+	12	USB_DATA+
4	GND	13	GND
5	USB3_RX-	14	USB3_RX-
6	USB3_RX+	15	USB3_RX+
7	GND	16	GND
8	USB3_TX-	17	USB3_TX-
9	USB3_TX+	18	USB3_TX+

# Board Layout: Jumper and Connector Locations



(Unit: mm)