Giada

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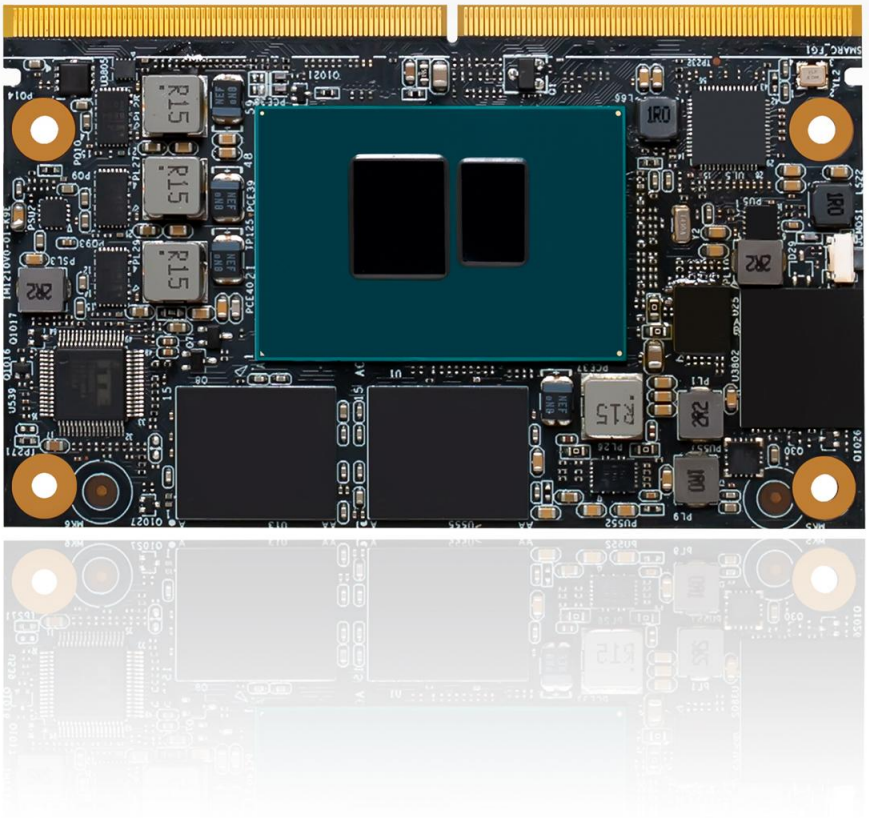
iM1-210 User Manual



Statement

Safety Notice

- Read the user manual carefully before setting up the Giada product.
- Disconnect the power cord before installing the internal components
- Most electronic components are sensitive to static electrical charge, please wear a wrist-grounding strap when installing the internal components.
- Don't disconnect the power cord when the system is running to avoid damage to the sensitive components by instantaneous surge voltage.

Contact Information

Shenzhen JIEHE Technology Development Co., Ltd.

Website: www.giadatech.com

Phone: +86-755-3330 0336

Email: support@giadatech.com

Address: 37F, Holdfound Sky Plaza Office Building, 11008 Beihuan Blvd., Nanshan, SZ, China, 518051

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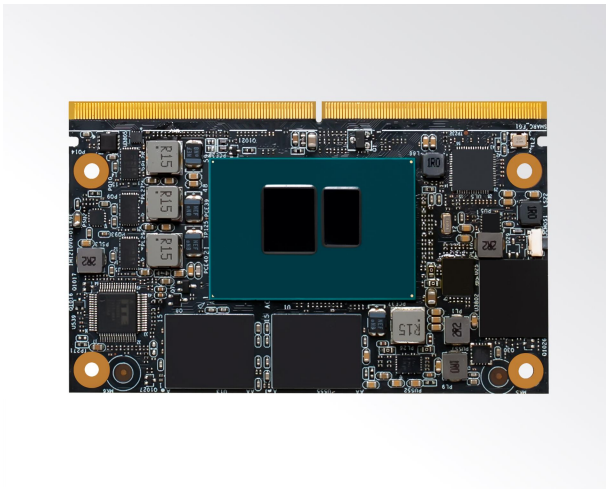
1. Product Introduction

1.1 Brief Introduction

The Giada IM1-210 is a SMARC V2.1.1 Module based on the Intel® Atom X7211RE/X7433RE with a long life cycle. It features integrated LPDDR5 on-board memory, on-board eMMC storage of up to 64GB. It offers a range of interfaces tailored for embedded applications, including GPIO extension, USB 2.0, CAN-FD, dual-channel LVDS for display, and MIPI-CSI for camera connectivity. These compact module is an ideal choice for automation and industrial control applications.

1.2 Motherboard Picture



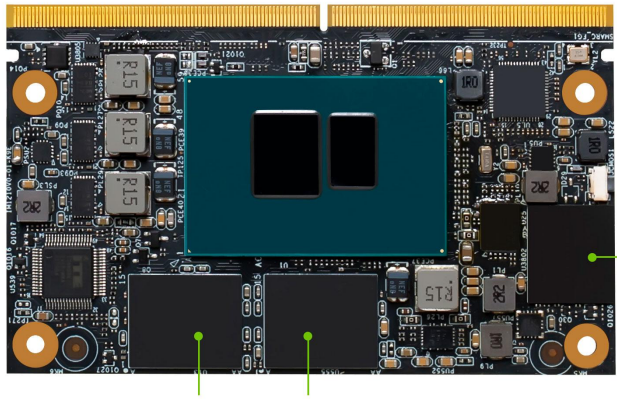
1.3 Spec

CPU	CPU	Intel® Atom X7211RE Processor Intel® Atom X7433RE Processor
System	GPU	Intel® UHD Graphics
	System Memory	8GB/16GB, Onboard LPDDR5-4800MHz
	Storage	64 GB, Onboard eMMC (Optional: 32 GB); 1 x SATAIII
	TPM	N/A
	Power Requirement	DC-IN 5 V, supports 4 ~5.25V
	Dimensions	82 mm x 50 mm (3.23” x 1.97”)
	Operating system	Windows 11/Linux (64bit)

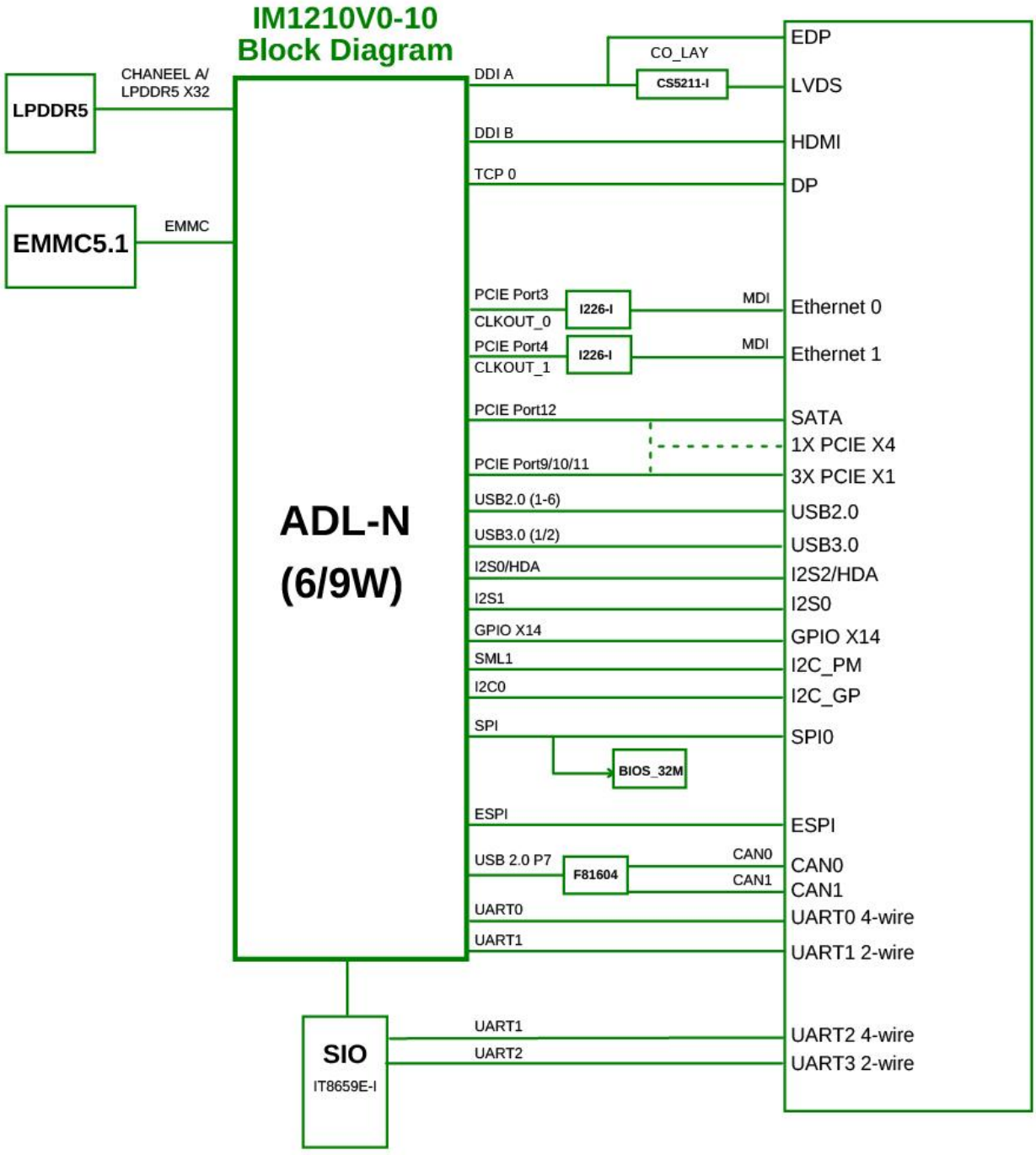
	Operating Temperature	-40°C ~85°C (-40°F ~185°F) @0.7m/sAir Flow
	Storage Temperature	-55°C ~85°C (-67°F ~185°F)
	Operating Humidity	5% ~90% (non-condensing)
	Humidity	5% ~95% (non-condensing)
I/O Signal	Display	1 x HDMI (Max. 4096 x 2160 @60 Hz) 1 x DP (Max. 4096 x 2160 @60 Hz) 1 x eDP (Up to 3840 x 2160 @60 Hz) 1 x Dual-channel LVDS (Up to 1920 x 1080@60 Hz) eDP colay with LVDS
	Camera	1 x 2-lane MIPI-CSI, 1 x 4-lane MIPI-CSI
	Audio	HDA / 2 x I2S
	Wi-Fi/BT	1 x SDIO3.0
	Ethernet	2 x 2.5 Gigabit Ethernet, support TSN
	USB	2 x USB3.2 Gen2, 6 x USB2.0
	Serial Port	2 x 4-wire UART, 2 x 2-wire UART, 1 x SPI, 1 x I2C
	CAN	2 x CAN-FD
	GPIO	14 x GPIO

2. Electrical Information

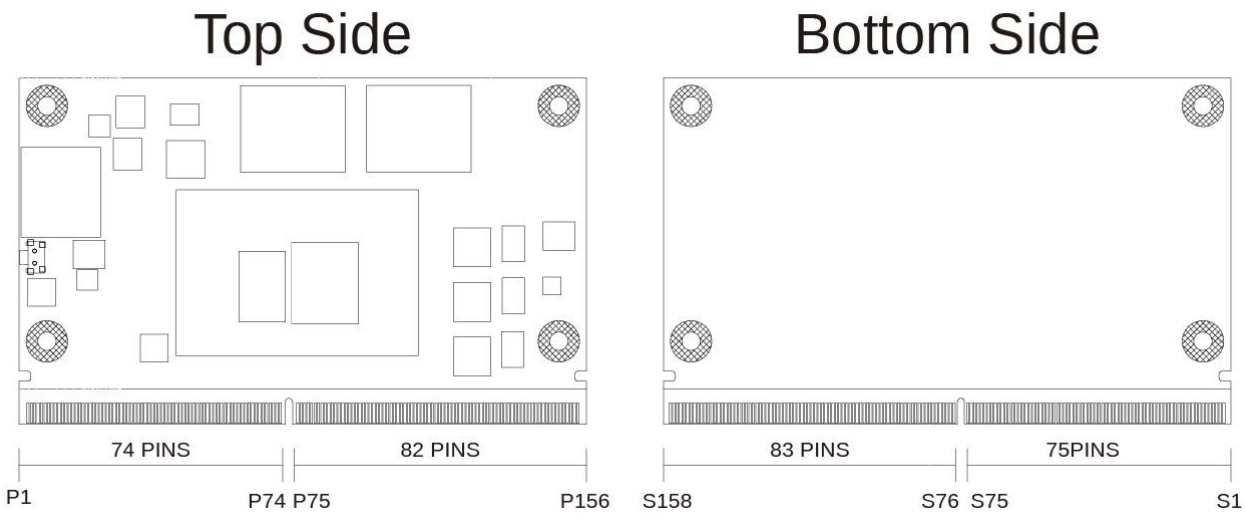
2.1 Board Information



2.2 Block Diagram



2.3 Interface Definitionn



P-PIN Primary (Top) Side

Pin No.	SMARC2.1	IM1210V0
P1	SMB_ALERT#	SMB_ALERT#
P2	GND	GND
P3	CSI1_CK+	NC
P4	CSI1_CK-	NC
P5	GBE1_SDP	GBE1_SDP
P6	GBE0_SDP	GBE0_SDP
P7	CSI1_RX0+	NC
P8	CSI1_RX0-	NC
P9	GND	GND
P10	CSI1_RX1+	NC
P11	CSI1_RX1-	NC
P12	GND	GND
P13	CSI1_RX2+	NC
P14	CSI1_RX2-	NC
P15	GND	GND
P16	CSI1_RX3+	NC
P17	CSI1_RX3-	NC
P18	GND	GND
P19	GBE0_MDI3-	GBE0_MDI3-
P20	GBE0_MDI3+	GBE0_MDI3+

P21	GBE0_LINK100#	GBE0_LINK100#
P22	GBE0_LINK1000#	GBE0_LINK1000#
P23	GBE0_MDI2-	GBE0_MDI2-
P24	GBE0_MDI2+	GBE0_MDI2+
P25	GBE0_LINK_ACT#	GBE0_LINK_ACT#
P26	GBE0_MDI1-	GBE0_MDI1-
P27	GBE0_MDI1+	GBE0_MDI1+
P28	GBE0_CTREF	NC
P29	GBE0_MDI0-	GBE0_MDI0-
P30	GBE0_MDI0+	GBE0_MDI0+
P31	SPI0_CS1#	SPI0_CS1#
P32	GND	GND
P33	SDIO_WP	NC
P34	SDIO_CMD	NC
P35	SDIO_CD#	NC
P36	SDIO_CK	NC
P37	SDIO_PWR_EN	NC
P38	GND	GND
P39	SDIO_D0	NC
P40	SDIO_D1	NC
P41	SDIO_D2	NC
P42	SDIO_D3	NC
P43	SPI0_CS0#	SPI0_CS0#
P44	SPI0_CK	SPI0_CK
P45	SPI0_DIN	SPI0_DIN
P46	SPI0_DO	SPI0_DO
P47	GND	GND
P48	SATA_TX+	SATA_TX+
P49	SATA_TX-	SATA_TX-
P50	GND	GND
P51	SATA_RX+	SATA_RX+
P52	SATA_RX-	SATA_RX-
P53	GND	GND
P54	ESPI_CS0# / SPI1_CS0# / QSPI_CS0#	ESPI Only
P55	ESPI_CS1# / SPI1_CS1# / QSPI_CS1#	ESPI Only
P56	ESPI_CK / SPI1_CK / QSPI_CK	ESPI Only
P57	ESPI_IO_1 / SPI1_DIN / QSPI_IO_1	ESPI Only
P58	ESPI_IO_0 / SPI1_DO / QSPI_IO_0	ESPI Only
P59	GND	GND

P60	USB0+	USB0+
P61	USB0-	USB0-
P62	USB0_EN_OC#	3.3V PU
P63	USB0_VBUS_DET	NC
P64	USB0_OTG_ID	NC
P65	USB1+	USB1+
P66	USB1-	USB1-
P67	USB1_EN_OC#	3.3V PU
P68	GND	GND
P69	USB2+	USB2+
P70	USB2-	USB2-
P71	USB2_EN_OC#	3.3V PU
P72	RSVD	NC
P73	RSVD	NC
P74	USB3_EN_OC#	3.3V PU
Key		
P75	PCIE_A_RST#	PCIE_A_RST#
P76	USB4_EN_OC#	3.3V PU
P77	PCIE_B_CKREQ#	PCIE_B_CKREQ#
P78	PCIE_A_CKREQ#	PCIE_A_CKREQ#
P79	GND	GND
P80	PCIE_C_REFCK+	PCIE_C_REFCK+
P81	PCIE_C_REFCK-	PCIE_C_REFCK-
P82	GND	GND
P83	PCIE_A_REFCK+	PCIE_A_REFCK+
P84	PCIE_A_REFCK-	PCIE_A_REFCK-
P85	GND	GND
P86	PCIE_A_RX+	PCIE_A_RX+
P87	PCIE_A_RX-	PCIE_A_RX-
P88	GND	GND
P89	PCIE_A_TX+	PCIE_A_TX+
P90	PCIE_A_TX-	PCIE_A_TX-
P91	GND	GND
P92	HDMI_D2+ / DP1_LANE0+	HDMI Only
P93	HDMI_D2- / DP1_LANE0-	HDMI Only
P94	GND	GND
P95	HDMI_D1+ / DP1_LANE1+	HDMI Only
P96	HDMI_D1- / DP1_LANE1-	HDMI Only
P97	GND	GND
P98	HDMI_D0+ / DP1_LANE2+	HDMI Only
P99	HDMI_D0- / DP1_LANE2-	HDMI Only
P100	GND	GND

P101	HDMI_CK+ / DP1_LANE3+	HDMI Only
P102	HDMI_CK- / DP1_LANE3-	HDMI Only
P103	GND	GND
P104	HDMI_HPD / DP1_HPD	HDMI Only
P105	HDMI_CTRL_CK / DP1_AUX+	HDMI Only
P106	HDMI_CTRL_DAT / DP1_AUX-	HDMI Only
P107	DP1_AUX_SEL	NC
P108	GPIO0 / CAM0_PWR#	GPIO Only
P109	GPIO1 / CAM1_PWR#	GPIO Only
P110	GPIO2 / CAM0_RST#	GPIO Only
P111	GPIO3 / CAM1_RST#	GPIO Only
P112	GPIO4 / HDA_RST#	Default HDA_RST#, Option GPIO
P113	GPIO5 / PWM_OUT	Default PWM_OUT, Option GPIO
P114	GPIO6 / TACHIN	Default TACHIN, Option GPIO
P115	GPIO7	GPIO7
P116	GPIO8	GPIO8
P117	GPIO9	GPIO9
P118	GPIO10	GPIO10
P119	GPIO11	GPIO11
P120	GND	GND
P121	I2C_PM_CK	I2C_PM_CK
P122	I2C_PM_DAT	I2C_PM_DAT
P123	BOOT_SEL0#	NC
P124	BOOT_SEL1#	NC
P125	BOOT_SEL2#	NC
P126	RESET_OUT#	RESET_OUT#
P127	RESET_IN#	RESET_IN#
P128	POWER_BTN#	POWER_BTN#
P129	SER0_TX	SER0_TX
P130	SER0_RX	SER0_RX
P131	SER0_RTS#	SER0_RTS#
P132	SER0_CTS#	SER0_CTS#
P133	GND	GND
P134	SER1_TX	SER1_TX
P135	SER1_RX	SER1_RX
P136	SER2_TX	SER2_TX
P137	SER2_RX	SER2_RX
P138	SER2_RTS#	SER2_RTS#
P139	SER2_CTS#	SER2_CTS#
P140	SER3_TX	SER3_TX

P141	SER3_RX	SER3_RX
P142	GND	GND
P143	CAN0_TX	CAN0_TX
P144	CAN0_RX	CAN0_RX
P145	CAN1_TX	CAN1_TX
P146	CAN1_RX	CAN1_RX
P147	VDD_IN	VDD_IN
P148	VDD_IN	VDD_IN
P149	VDD_IN	VDD_IN
P150	VDD_IN	VDD_IN
P151	VDD_IN	VDD_IN
P152	VDD_IN	VDD_IN
P153	VDD_IN	VDD_IN
P154	VDD_IN	VDD_IN
P155	VDD_IN	VDD_IN
P156	VDD_IN	VDD_IN

S-Pin Secondary (Bottom) Side

Pin No.	SMARC2.1	IM1210V0
S1	CSI1_TX+ / I2C_CAM1_CK	NC
S2	CSI1_TX- / I2C_CAM1_DAT	NC
S3	GND	GND
S4	RSVD	NC
S5	CSI0_TX+ / I2C_CAM0_CK	NC
S6	CAM_MCK	NC
S7	CSI0_TX- / I2C_CAM0_DAT	NC
S8	CSI0_CK+	NC
S9	CSI0_CK	NC
S10	GND	GND
S11	CSI0_RX0+	NC
S12	CSI0_RX0-	NC
S13	GND	GND
S14	CSI0_RX1+	NC
S15	CSI0_RX1-	NC
S16	GND	GND
S17	GBE1_MDI0+	GBE1_MDI0+
S18	GBE1_MDI0-	GBE1_MDI0-
S19	GBE1_LINK100#	GBE1_LINK100#
S20	GBE1_MDI1+	GBE1_MDI1+
S21	GBE1_MDI1-	GBE1_MDI1-
S22	GBE1_LINK1000#	GBE1_LINK1000#

S23	GBE1_MDI2+	GBE1_MDI2+
S24	GBE1_MDI2-	GBE1_MDI2-
S25	GND	GND
S26	GBE1_MDI3+	GBE1_MDI3+
S27	GBE1_MDI3-	GBE1_MDI3-
S28	GBE1_CTREF	NC
S29	PCIE_D_TX+ / SERDES_0_TX+	PCIE Only
S30	PCIE_D_TX- / SERDES_0_TX	PCIE Only
S31	GBE1_LINK_ACT#	GBE1_LINK_ACT#
S32	PCIE_D_RX+ / SERDES_0_RX+	PCIE Only
S33	PCIE_D_RX- / SERDES_0_RX	PCIE Only
S34	GND	GND
S35	USB4+	USB4+
S36	USB4-	USB4-
S37	USB3_VBUS_DET	NC
S38	AUDIO_MCK	AUDIO_MCK
S39	I2S0_LRCK	I2S0_LRCK
S40	I2S0_SDOUT	I2S0_SDOUT
S41	I2S0_SDIN	I2S0_SDIN
S42	I2S0_CK	I2S0_CK
S43	ESPI_ALERT0#	ESPI_ALERT0#
S44	ESPI_ALERT1#	ESPI_ALERT1#
S45	MDIO_CLK	NC
S46	MDIO_DAT	NC
S47	GND	GND
S48	I2C_GP_CK	I2C_GP_CK
S49	I2C_GP_DAT	I2C_GP_DAT
S50	HDA_SYNC / I2S2_LRCK	HDA Only
S51	HDA_SDO / I2S2_SDOUT	HDA Only
S52	HDA_SDI / I2S2_SDIN	HDA Only
S53	HDA_CK / I2S2_CK	HDA Only
S54	SATA_ACT#	SATA_ACT#
S55	USB5_EN_OC#	3.3V PU
S56	ESPI_IO_2 / QSPI_IO_2	ESPI Only
S57	ESPI_IO_3 / QSPI_IO_3	ESPI Only
S58	ESPI_RESET#	ESPI_RESET#
S59	USB5+	USB5+
S60	USB5-	USB5-
S61	GND	GND
S62	USB3_SSTX+	USB3_SSTX+
S63	USB3_SSTX	USB3_SSTX
S64	GND	GND
S65	USB3_SSRX+	USB3_SSRX+

S66	USB3_SSRX	USB3_SSRX
S67	GND	GND
S68	USB3+	USB3+
S69	USB3-	USB3-
S70	GND	GND
S71	USB2_SSTX+	USB2_SSTX+
S72	USB2_SSTX	USB2_SSTX
S73	GND	GND
S74	USB2_SSRX+	USB2_SSRX+
S75	USB2_SSRX	USB2_SSRX
Key		
S76	PCIE_B_RST#	PCIE_B_RST#
S77	PCIE_C_RST#	PCIE_C_RST#
S78	PCIE_C_RX+ / SERDES_1_RX+	PCIE Only
S79	PCIE_C_RX- / SERDES_1_RX	PCIE Only
S80	GND	GND
S81	PCIE_C_TX+ / SERDES_1_TX+	PCIE Only
S82	PCIE_C_TX- / SERDES_1_TX	PCIE Only
S83	GND	GND
S84	PCIE_B_REFCK+	PCIE_B_REFCK+
S85	PCIE_B_REFCK	PCIE_B_REFCK
S86	GND	GND
S87	PCIE_B_RX+	PCIE_B_RX+
S88	PCIE_B_RX	PCIE_B_RX
S89	GND	GND
S90	PCIE_B_TX+	PCIE_B_TX+
S91	PCIE_B_TX	PCIE_B_TX
S92	GND	GND
S93	DP0_LANE0+	DP0_LANE0+
S94	DP0_LANE0-	DP0_LANE0-
S95	DP0_AUX_SEL	DP0_AUX_SEL
S96	DP0_LANE1+	DP0_LANE1+
S97	DP0_LANE1-	DP0_LANE1-
S98	DP0_HPD	DP0_HPD
S99	DP0_LANE2+	DP0_LANE2+
S100	DP0_LANE2-	DP0_LANE2-
S101	GND	GND
S102	DP0_LANE3+	DP0_LANE3+
S103	DP0_LANE3-	DP0_LANE3-
S104	USB3_OTG_ID	NC
S105	DP0_AUX+	DP0_AUX+
S106	DP0_AUX	DP0_AUX
S107	LCD1_BKLT_EN	LCD1_BKLT_EN

S108	LVDS1_CK+ / eDP1_AUX+ / DSI1_CLK+	LVDS Only
S109	LVDS1_CK- / eDP1_AUX- / DSI1_CLK	LVDS Only
S110	GND	GND
S111	LVDS1_0+ / eDP1_TX0+ / DSI1_D0+	LVDS Only
S112	LVDS1_0- / eDP1_TX0- / DSI1_D0-	LVDS Only
S113	eDP1_HPD / DSI1_TE	NC
S114	LVDS1_1+ / eDP1_TX1+ / DSI1_D1+	LVDS Only
S115	LVDS1_1- / eDP1_TX1- / DSI1_D1-	LVDS Only
S116	LCD1_VDD_EN	LCD1_VDD_EN
S117	LVDS1_2+ / eDP1_TX2+ / DSI1_D2+	LVDS Only
S118	LVDS1_2- / eDP1_TX2- / DSI1_D2-	LVDS Only
S119	GND	GND
S120	LVDS1_3+ / eDP1_TX3+ / DSI1_D3+	LVDS Only
S121	LVDS1_3- / eDP1_TX3- / DSI1_D3-	LVDS Only
S122	LCD1_BKLT_PWM	LCD1_BKLT_PWM
S123	GPIO13	GPIO13
S124	GND	GND
S125	LVDS0_0+ / eDP0_TX0+ / DSI0_D0+	Default LVDS, Option EDP
S126	LVDS0_0- / eDP0_TX0- / DSI0_D0-	Default LVDS, Option EDP
S127	LCD0_BKLT_EN	LCD0_BKLT_EN
S128	LVDS0_1+ / eDP0_TX1+ / DSI0_D1+	Default LVDS, Option EDP
S129	LVDS0_1- / eDP0_TX1- / DSI0_D1-	Default LVDS, Option EDP
S130	GND	GND
S131	LVDS0_2+ / eDP0_TX2+ / DSI0_D2+	Default LVDS, Option EDP
S132	LVDS0_2- / eDP0_TX2- / DSI0_D2-	Default LVDS, Option EDP
S133	LCD0_VDD_EN	LCD0_VDD_EN
S134	LVDS0_CK+ / eDP0_AUX+ /	Default LVDS,

	DSI0_CLK+	Option EDP
S135	LVDS0_CK- / eDP0_AUX- / DSI0_CLK	Default LVDS, Option EDP
S136	GND	GND
S137	LVDS0_3+ / eDP0_TX3+ / DSI0_D3+	Default LVDS, Option EDP
S138	LVDS0_3- / eDP0_TX3- / DSI0_D3-	Default LVDS, Option EDP
S139	I2C_LCD_CK	NC
S140	I2C_LCD_DAT	NC
S141	LCD0_BKLT_PWM	LCD0_BKLT_PWM
S142	GPIO12	GPIO12
S143	GND	GND
S144	eDP0_HPD / DSI0_TE	EDP Only
S145	WDT_TIME_OUT#	NC
S146	PCIE_WAKE#	PCIE_WAKE#
S147	VDD_RTC	VDD_RTC
S148	LID#	NC
S149	SLEEP#	NC
S150	VIN_PWR_BAD#	VIN_PWR_BAD#
S151	CHARGING#	NC
S152	CHARGER_PRSNT#	NC
S153	CARRIER_STBY#	CARRIER_STBY#
S154	CARRIER_PWR_ON	CARRIER_PWR_ON
S155	FORCE_RECOV#	NC
S156	BATLOW#	NC
S157	TEST#	NC
S158	GND	GND

Shenzhen JIEHE Technology Development Co., Ltd.
Website: www.giadatech.com
Phone: +86-755-3330 0326
Email: support@giadatech.com
Address: 37F, Holdfound Sky Plaza Office Building, 11008 Beihuan Blvd., Nanshan, SZ, China, 518051