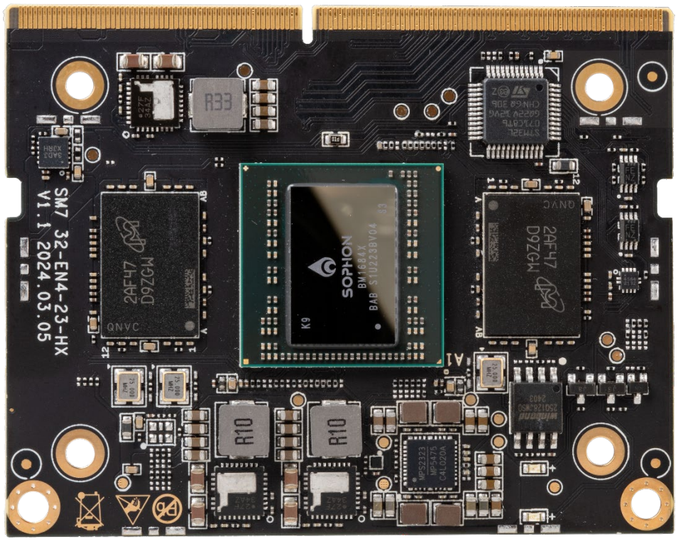
Core-1684XJD4

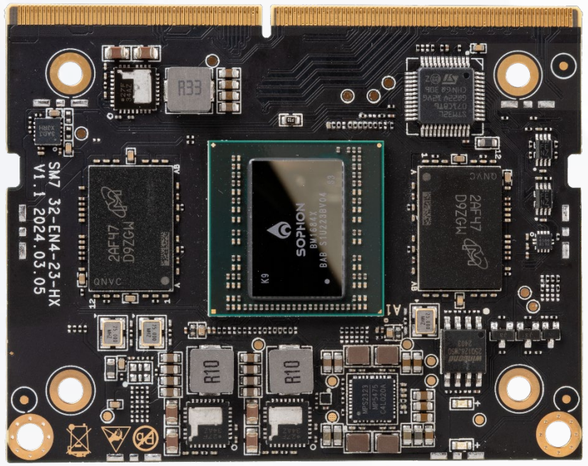
32T High Computing Power AI Core Board



V1.1 2024-12-9

T-CHIP INTELLIGENCE TECHNOLOGY

Product features



New-gen Octa-core AI processor BM1684X

This core board is powered by SOPHON AI processor BM1684X, which features octa-core ARM Cortex-A53, frequency of up to 2.3GHz and 12nm lithography process. With up to 32Tops (INT8) computing power, or 16TFLOPS (FP16/BF16) computing power, or 2Tops (FP32) high-precision computing power.

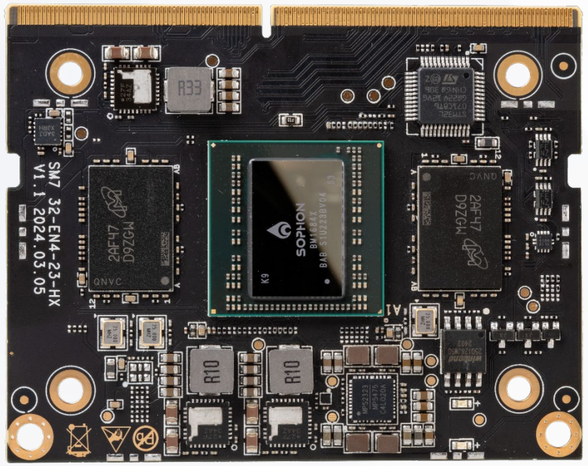
Powerful multi-channel video AI performance

The core board supports up to 32-channel 1080P H.264/H.265 video decoding. It is able to simultaneously process and analyze over 16-channel HD video, making it ideal for various AI applications such as face detection and license plate recognition on video streaming.

Abundant algorithms

It supports multiple algorithms porting such as "person/vehicle/object" recognition, video structuring, and trajectory behavior, with high security and reliability. It can be flexibly applied to various product development.

Product features



One-stop toolkit, convenient and efficient

The BMNNSDK2 one-stop deep learning development toolkit provides a series of software tools, including the underlying driver environment, compiler and inference deployment tool. Support deep learning frameworks such as Caffe/Pytorch/PaddlePaddle, mainstream network models, custom operator development and Docker containerization.

A variety of interfaces

It adopts 260P standard SODIMM immersion-gold interface, and has expansion interfaces such as PCIe3.0, GMAC, SDIO3.0, I2C, PWM, UART, GPIO, etc., which is easy to integrate into various edge computing products.

A wide range of applications

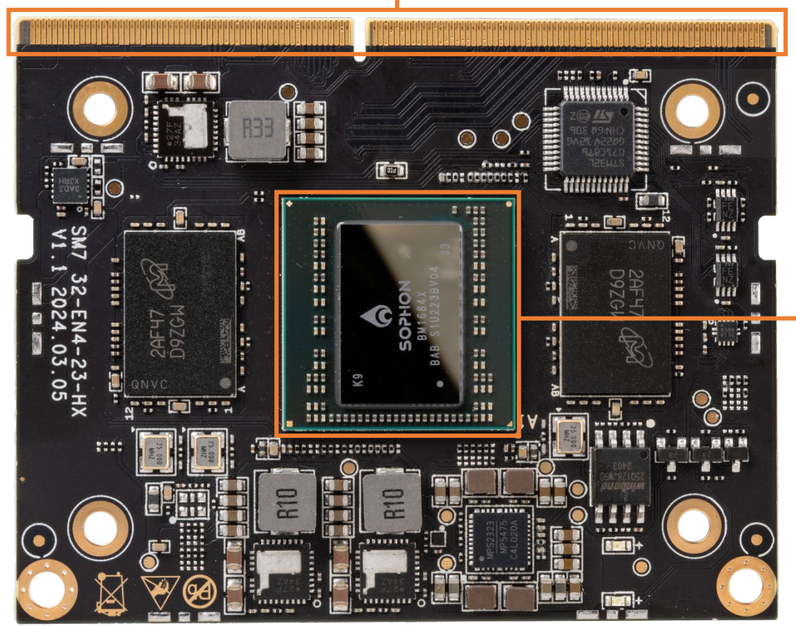
The core board supports flexible deployment in multiple fields and scenarios, such as intelligent security, intelligent transportation, smart park, smart retail, smart finance, smart city, smart industry, and smart energy.

Specifications

Specification		
Basic Specifications	SOC	SOPHON BM1684X
	CPU	Integrated high-performance ARM A53, 12nm lithography process, clock speed up to 2.3GHz
	TPU	Built-in tensor computing module TPU, computing power up to: 32TOPS (INT8), 16TFLOPS (FP16/BF16), 2TFLOPS (FP32) Support mainstream programming frameworks, such as TensorFlow/Caffe/PyTorch/PaddlePaddle/ONNX/MXNet/DarkNet
	VPU	32-channel H.265/H.264 1080p@25fps video decoding 32-channel 1080P@25fps HD video full-process processing (decoding + AI analysis) 12-channel H.265/H.264 1080p@25fps video encoding JPEG codec: 1080P@600fps, maximum resolution 32768×32768 Video preprocessing: supports image CSC, Resize, Crop, Padding, Border, Font, Contrast, Brightness Adjustment
	RAM	6GB/12GB/16GB LPDDR4/LPDDR4X
	Storage	32GB/64GB/128GB eMMC, 128MB SPI Flash
	OS	Linux
	Power	DC 12V/5A
	Power consumption	Normal: 18W(12V/1500mA), Max: 33.6W(12V/2800mA)
	Size	69.9mm × 55mm
	Weight	≈ 24g
	Environment	Operating Temperature: -20℃ ~ 60℃, Storage Temperature: -20℃ ~ 70℃, Storage humidity: 10% ~ 90%RH (non-condensing)
Interface Specifications	Ethernet	2 × RGMII, expandable dual 10/100/1000Mbps Ethernet
	Others	1 × PCIe3.0 PHY (×16 EP or ×8 RC + ×8 EP), 1 × SDIO3.0, 3 × I2C, 2 × PWM, 3 × UART, GPIO

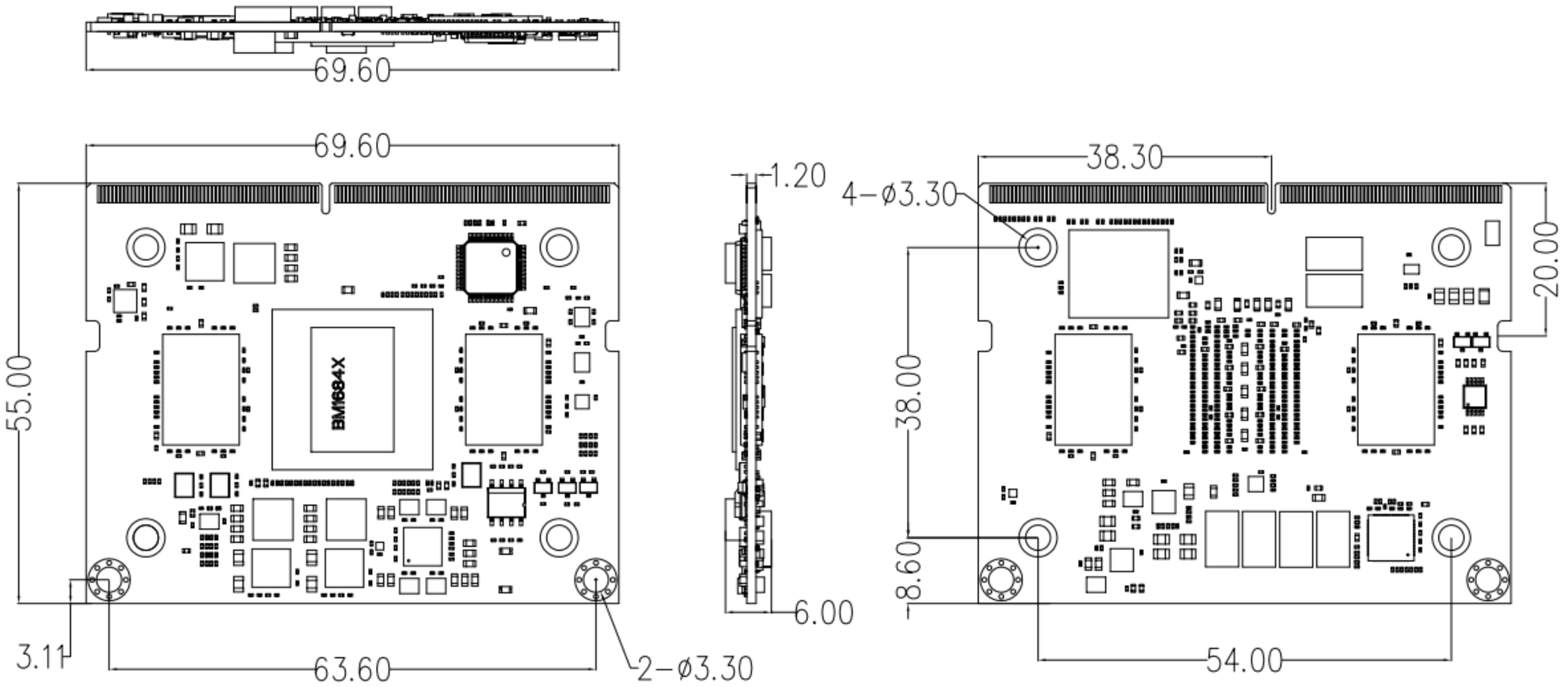
Core Board Interface description

Goldfinger
(SODIMM, 260Pin, 0.5mm pitch)

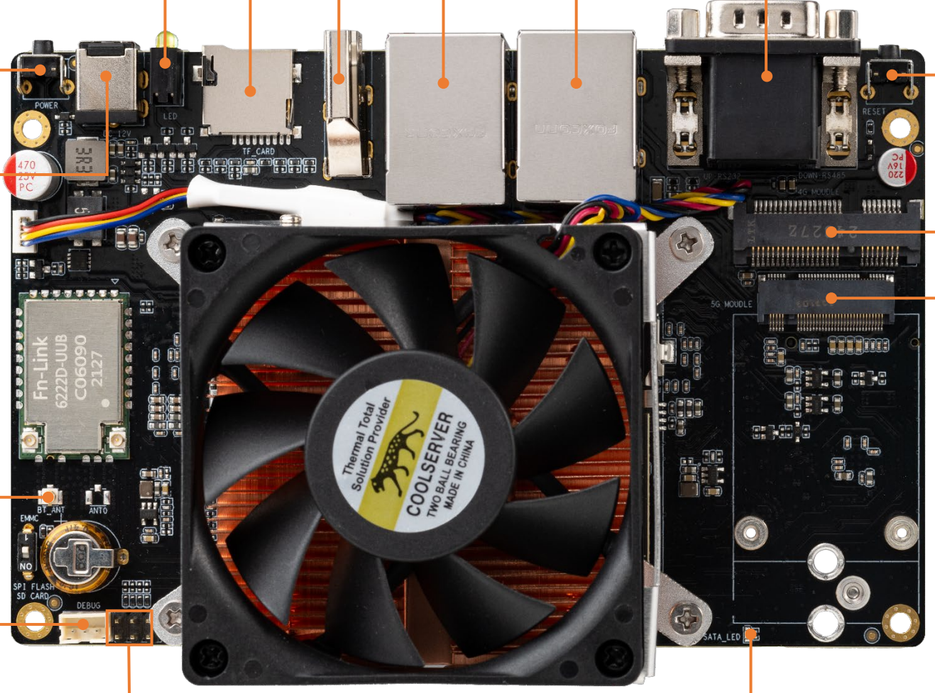


SOPHON BM1684X
(Main frequency up to 2.3GHz)

Core Board Dimension



Mainboard Interface description



UP: Gigabit Ethernet
DOWN: 2×USB2.0

HDMI1.4
1080P@30fps

UP: Gigabit Ethernet
DOWN: 2×USB3.0

Work indicator

TF Card

UP: RS232
DOWN: RS485

Power button

Reset button

DC 12V
5.5×2.5mm, support
9V~16V wide voltage input

Mini PCIe
Expand 4G LTE

M.2
Expanding 5G

Bluetooth antenna

Debug
3P-2mm

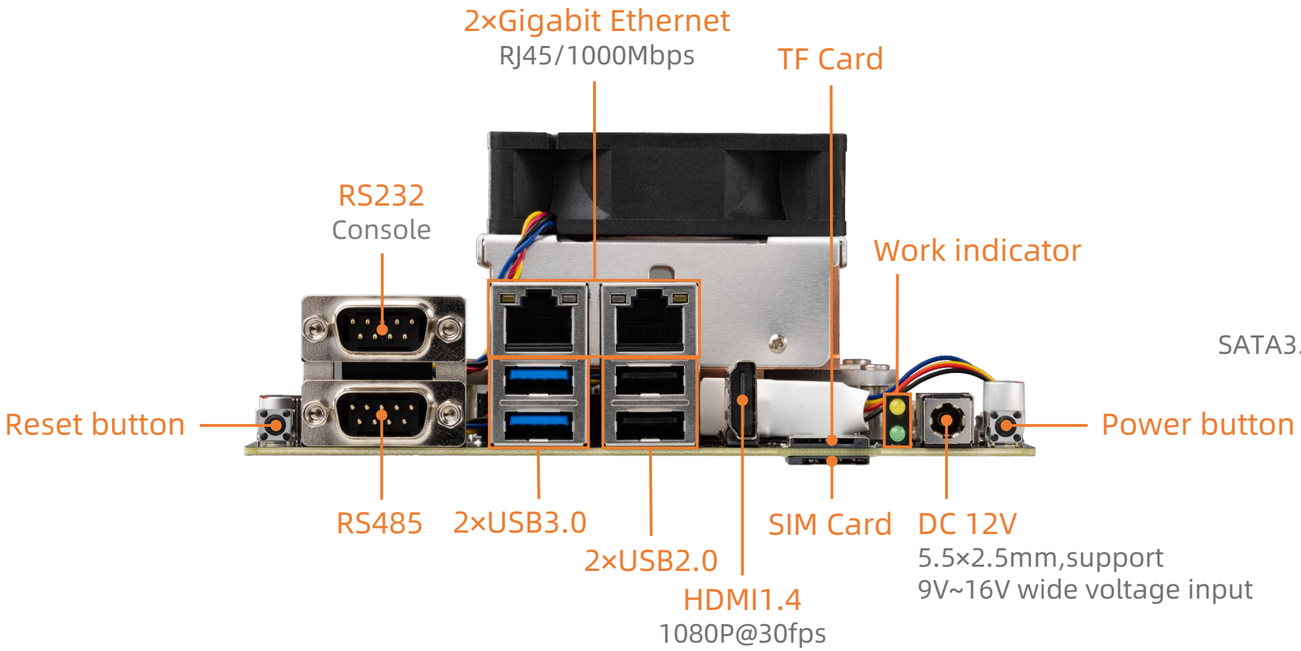
GND	TX	RX

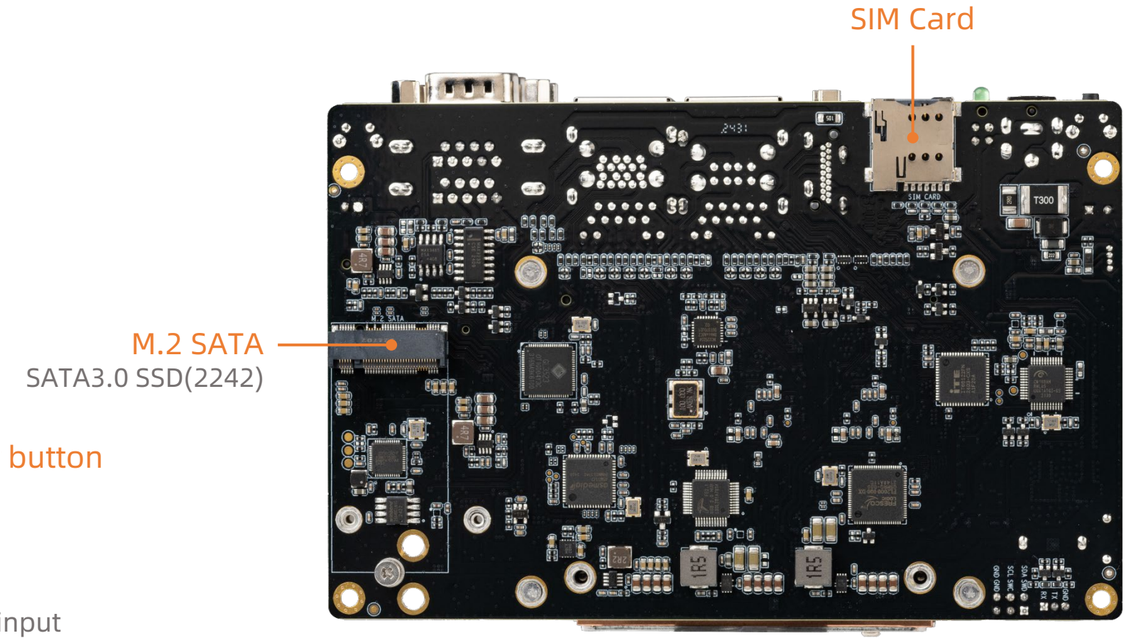
Double-row pin headers
6P-2.54mm

SDA	SCL	GND
SWD	SWC	GND

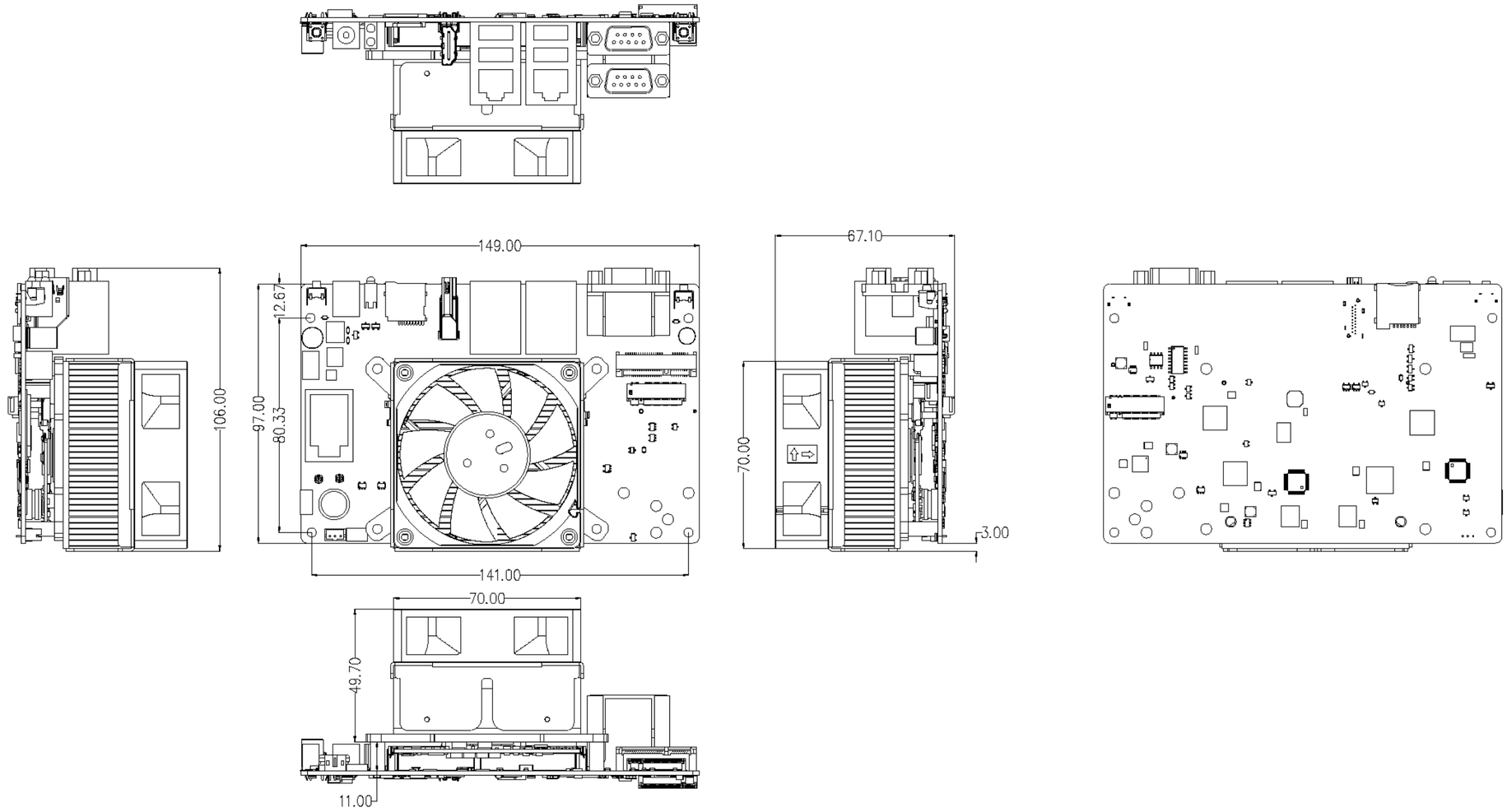
SATA LED

Mainboard Interface description





Mainboard Dimension



Interface definition

①: Pad types: I = input, O = output, I/O = input/output (bidirectional) , G= Ground ,
P = power supply , DOWN = Internal pull down , UP = Internal pull UP L = Lowe Level H = High level"

PIN	CORE-BM1684X-JD4 pin definition	BM1684X Pin NO.	Pad type	IO Pull	Function for Main BOARD (MB-JD4-BM1684)	Defual function description	IO Power domain
1	GND		G		GND	GND	
3	GPIO20/JTAG0_TMS	C41	I/O	Down	RTCIC_INT_L	RTC_IC_INT_Input, Active L	1.8V
5	GPIO21/JTAG0_TRST	E33	I/O	Up	USB30_HUB_RST	USB30_HUB_Reset Output, Active H, core board pull up resistance 4.7K	1.8V
7	GPIO18/JTAG0_TCK	E32	I/O	Down	NC	NC	1.8V
9	GPIO17/JTAG0_TDO	D36	I/O	Down	EXT_PWR_EN	EXT_Power_EN Output Active H	1.8V
11	GPIO22/JTAG0_SRST	D32	I/O	Up	PCIE_CLK_EN	PCIE_CLK_EN Output, Default ---NC core board pull up resistance 4.7K	1.8V
13	GND		G		GND	GND	
15	MCU_PMIC_SCL	STM32_Pin21	I/O		NC	NC; core board pull up resistance 4.7K	3.3V
17	MCU_PMIC_SDA	STM32_Pin22	I/O		NC	NC; core board pull up resistance 4.7K	3.3V
19	MCU_CPLD_ERR	STM32_Pin28	I/O		NC	NC	3.3V
21	NC	NC			NC	NC	
23	NC	NC			NC	NC	
25	GND		G		GND	GND	
27	PCIE0_RX_M	BK12			NC	NC	
29	PCIE0_RX_P	BJ12			NC	NC	
31	PCIE1_RX_M	BK14			NC	NC	
33	PCIE1_RX_P	BJ14			NC	NC	
35	PCIE2_RX_M	BK16			NC	NC	
37	PCIE2_RX_P	BJ16			NC	NC	
39	PCIE3_RX_M	BK18			NC	NC	
41	PCIE3_RX_P	BJ18			NC	NC	
43	GND		G		GND	GND	
45	PCIE4_RX_M	BK20			NC	NC	

47	PCIE4_RX_P	BJ20			NC	NC	
49	PCIE5_RX_M	BK22			NC	NC	
51	PCIE5_RX_P	BJ22			NC	NC	
53	PCIE6_RX_M	BK24			NC	NC	
55	PCIE6_RX_P	BJ24			NC	NC	
57	PCIE7_RX_M	BK26			NC	NC	
59	PCIE7_RX_P	BJ26			NC	NC	
61	PCIE8_RX_M	BK28			NC	NC	
63	PCIE8_RX_P	BJ28			NC	NC	
65	GND		G		GND	GND	
67	PCIE9_RX_M	BK30			NC	NC	
69	PCIE9_RX_P	BJ30			NC	NC	
71	PCIE10_RX_M	BK32			NC	NC	
73	PCIE10_RX_P	BJ32			NC	NC	
75	PCIE11_RX_M	BK34			NC	NC	
77	PCIE11_RX_P	BJ34			NC	NC	
79	PCIE12_RX_M	BK38			NC	NC	
81	PCIE12_RX_P	BJ38			NC	NC	
83	PCIE13_RX_M	BK40			NC	NC	
85	PCIE13_RX_P	BJ40			NC	NC	
87	GND		G		GND	GND	
89	PCIE14_RX_M	BK42			RC_PCIE_RX1_N	RC_PCIE_RX1_N	
91	PCIE14_RX_P	BJ42			RC_PCIE_RX1_P	RC_PCIE_RX1_P	
93	PCIE15_RX_M	BK44			RC_PCIE_RX0_N	RC_PCIE_RX0_N	
95	PCIE15_RX_P	BJ44			RC_PCIE_RX0_P	RC_PCIE_RX0_P	
97	GND		G		GND	GND	
99	PCIE_REFCLK1_M	BG29			PCIE_REFCLK1_M	PCIE_REFCLK1_M	
101	PCIE_REFCLK1_P	BH29			PCIE_REFCLK1_P	PCIE_REFCLK1_P	
103	GND		G		GND	GND	

105	PCIE_REFCLK0_M	AK34			PCIE_REFCLK0_M	PCIE_REFCLK0_M	
107	PCIE_REFCLK0_P	AK35			PCIE_REFCLK0_P	PCIE_REFCLK0_P	
109	GND		G		GND	GND	
111	PCIER_RST_X	C24			PCIER_RST_X	PCIER_Reset Output Active L core board pull up resistance 4.7K	3.3V
113	PCIER_WAKEUP_X_OUT	E24			NC	NC	3.3V
115	PCIER_CLKREQ_X	A24			NC	NC	3.3V
117	PCIEE_WAKEUP_X_OUT	B24			NC	NC	3.3V
119	PCIEE_CLKREQ_X	D24			NC	NC	3.3V
121	PCIEE_RST_X	C26			PCIEE_RST_X	NC	3.3V
123	NC				NC	NC	
125	I2C2_SCL/GPIO84	E41	I/O		WL_WAKE_HOST_H	WL_WAKE_HOST_H	1.8V
127	I2C2_SDA/GPIO83	D41	I/O		WL_REG_DIS_H	WIFI_EN, Active H	1.8V
129	FAN1/GPIO78	B45	I/O		DIY_LED	DIY_LED (PWM1 Output)	1.8V
131	FAN0/GPIO77	A45	I/O		FAN_TACH	FAN_TACH Input, Active L	1.8V
133	MCU_SWDIO	STM32_Pin34	I/O		MCU_SWDIO	MCU_SWDIO	3.3V
135	MCU_SWCLK	STM32_Pin37	I/O		MCU_SWCLK	MCU_SWCLK	3.3V
137	PWM0/GPIO75	A44	I/O		FAN_PWM	FAN_PWM (PWM0 Output)	1.8V
139	GND		G		GND	GND	
141	I2C0_SDA/GPIO79	D42	I/O	Up	I2C0_SDA	I2C0_SDA (core board pull up resistance 2.2K)	3.3V
143	I2C0_SCL/GPIO80	E42	I/O	Up	I2C0_SCL	I2C0_SCL (core board pull up resistance 2.2K)	3.3V
145	NC				NC	NC	
147	GND		G		GND	GND	
149	SDIO_CD_X	BG6	I/O	Up	SDIO_CD_X	TF Card Det Input ,Active L	1.8V
151	SDIO_DAT0	BH8	I/O		SDIO_DAT0	SDIO_DAT0	3.3V
153	SDIO_DAT2	BJ8	I/O		SDIO_DAT2	SDIO_DAT2	3.3V
155	SDIO_DAT3	BJ7	I/O		SDIO_DAT3	SDIO_DAT3	3.3V
157	SDIO_DAT1	BK8	I/O		SDIO_DAT1	SDIO_DAT1	3.3V

159	SDIO_CMD	BK7	I/O		SDIO_CMD	SDIO_CMD	3.3V
161	SDIO_CLK	BG8	I/O		SDIO_CLK	SDIO_CLK	3.3V
163	GND		G		GND	GND	
165	SDIO_PWR_EN/GPIO42	BH6	I/O	N.A	SDIO_PWR_EN	SDIO_Power_EN Output, Active H	3.3V
167	GPIO9/PCIE_EP_RC[0]	E26	I/O		USB20_5V_EN	USB20_5V_EN Output, Active H	1.8V
169	GPIO10/PCIE_EP_RC[1]	A33	I/O		USB30_VCC5V0_EN	USB30_VCC5V0_EN Output, Active H	1.8V
171	GPIO11/PCIE_EP_RC[2]	A27	I/O		HUB20_PWR_EN	HUB20_Power_EN Output, Active H	1.8V
173	GPIO5/IIC_ADDR0	A26	I/O		USB30_HDMI_PWR_EN	USB30_HDMI_Power_EN Output, Active H	1.8V
175	GPIO6/IIC_ADDR1	B27	I/O		VCC5V0_AUDIO_EN	VCC5V0_AUDIO_Power_EN Output, Active H	1.8V
177	GPIO7/IIC_ADDR2	B26	I/O		SATA_PWR_EN	SATA__Power_EN Output, Active H	1.8V
179	NC				NC	NC	
181	NC				NC	NC	
183	NC				NC	NC	
185	GND		G		GND	GND	
187	GPIO23/JTAG_1_2_TDO	C39	I/O		NC	NC	1.8V
189	GPIO24/JTAG_1_2_TCK	C36	I/O		POWER_KEY_DET	POWER_KEY_DET Input,Active L	1.8V
191	GPIO27/JTAG_1_2_TRST	B36	I/O		SATA_DEVSLP	SATA_SLEEP Output	1.8V
193	GPIO26/JTAG_1_2_TMS	C42	I/O		ASM3142_INT_1V8	ASM3142_INT Input,Active L	1.8V
195	GPIO25/JTAG_1_2_TDI	D39	I/O		ASM3142_RST_1V8	ASM3142_RST Output,Active H	1.8V
197	GND		G		GND	GND	
199	NC				NC	NC	
201	NC				NC	NC	
203	NC				NC	NC	
205	NC				NC	NC	
207	NC				NC	NC	
209	NC				NC	NC	
211	NC				NC	NC	
213	NC				NC	NC	
215	NC				NC	NC	

217	NC				NC	NC	
219	GND		G		GND	GND	
221	NC				NC	NC	
223	NC				NC	NC	
225	VDDIO18		P		VDDIO18	1.8V Output (Pin224/225 Tatal Max: 500mA)	1.8V
227	3P3V		P		3P3V	3.3V Output (Pin226/227/234/235 Tatal Max: 1000mA)	3.3V
229	NC				NC		
231	NC				NC		
233	NC				NC		
235	3P3V		P		3P3V	3.3V Output (Pin226/227/234/235 Tatal Max: 1000mA)	3.3V
237	NC				NC		
239	NC				NC		
241	NC				NC		
243	GND		G		GND	GND	GND
245	GND		G				GND
247	GND		G				GND
249	GND		G				GND
251	VCC_SYS_12V		P		VCC_SYS_12V	Input Voltage 12.0V +/-5%	12.0V
253	VCC_SYS_12V		P				12.0V
255	VCC_SYS_12V		P				12.0V
257	VCC_SYS_12V		P				12.0V
259	VCC_SYS_12V		P				12.0V
PIN	**CORE-BM1684X-JD4 pin definition**	**BM1684X Pin NO.**	**Pad type**	**IO Pull**	**Function for Main BOARD (MB-JD4-BM1684)**	**Defual function description**	**IO Power domain**
2	GND		G		GND	GND	
4	GPIO19/JTAG0_TDI	C35	I/O	Down	4G_PWR_EN	4G_Power_EN, Active H	1.8V

6	PCIE0_TX_M	BH13			NC	NC (core board series capacitance 220nF)	
8	PCIE0_TX_P	BG13			NC	NC (core board series capacitance 220nF)	
10	PCIE1_TX_M	BH15			NC	NC (core board series capacitance 220nF)	
12	PCIE1_TX_P	BG15			NC	NC (core board series capacitance 220nF)	
14	PCIE2_TX_M	BH17			NC	NC (core board series capacitance 220nF)	
16	PCIE2_TX_P	BG17			NC	NC (core board series capacitance 220nF)	
18	PCIE3_TX_M	BH19			NC	NC (core board series capacitance 220nF)	
20	PCIE3_TX_P	BG19			NC	NC (core board series capacitance 220nF)	
22	I2C1_SDA/GPIO81	C38			NC	NC (core board pull up resistance 1.8K)	1.8V
24	I2C1_SCL/GPIO82	D38			NC	NC (core board pull up resistance 1.8K)	1.8V
26	GND		G		GND	GND	
28	PCIE4_TX_M	BH21			NC	NC (core board series capacitance 220nF)	
30	PCIE4_TX_P	BG21			NC	NC (core board series capacitance 220nF)	
32	PCIE5_TX_M	BH23			NC	NC (core board series capacitance 220nF)	
34	PCIE5_TX_P	BG23			NC	NC (core board series capacitance 220nF)	
36	PCIE6_TX_M	BH25			NC	NC (core board series capacitance 220nF)	
38	PCIE6_TX_P	BG25			NC	NC (core board series capacitance 220nF)	
40	GND		G		GND	GND	
42	PCIE7_TX_M	BH27			NC	NC (core board series capacitance 220nF)	
44	PCIE7_TX_P	BG27			NC	NC (core board series capacitance 220nF)	
46	GPIO30/DBG_IIC_SDA	A36	I/O	N.A	WIFI_PWR_EN	WIFI_Power_EN, Active H	1.8V
48	GPIO29/DBG_IIC_SCL	D9	I/O	N.A	WORK_LED	WORK_LED_EN, Active H	1.8V
50	UART1_RX/GPIO88	D30	I/O	Up	UART1_RX	UART1_RX	1.8V
52	UART1_TX/GPIO87	B29	I/O	Up	UART1_TX	UART1_TX (core board series esistance 33R)	1.8V
54	UART2_RX/GPIO90	E30	I/O	Up	UART2_RX	UART2_RX	1.8V
56	UART2_TX/GPIO89	C30	I/O	Up	UART2_TX	UART2_TX (core board series esistance 33R)	1.8V
58	GND		G		GND	GND	
60	PCIE8_TX_M	BH31			NC	NC (core board series capacitance 220nF)	
62	PCIE8_TX_P	BG31			NC	NC (core board series capacitance 220nF)	

64	PCIE9_TX_M	BH33			NC	NC (core board series capacitance 220nF)	
66	PCIE9_TX_P	BG33			NC	NC (core board series capacitance 220nF)	
68	PCIE10_TX_M	BH35			NC	NC (core board series capacitance 220nF)	
70	PCIE10_TX_P	BG35			NC	NC (core board series capacitance 220nF)	
72	PCIE11_TX_M	BH37			NC	NC (core board series capacitance 220nF)	
74	PCIE11_TX_P	BG37			NC	NC (core board series capacitance 220nF)	
76	GND		G		GND	GND	
78	PCIE12_TX_M	BH39			NC	NC (core board series capacitance 220nF)	
80	PCIE12_TX_P	BG39			NC	NC (core board series capacitance 220nF)	
82	PCIE13_TX_M	BH41			NC	NC (core board series capacitance 220nF)	
84	PCIE13_TX_P	BG41			NC	NC (core board series capacitance 220nF)	
86	PCIE14_TX_M	BH43			RC_PCIE_TX1_N	RC_PCIE_TX1_N (core board series capacitance 220nF)	
88	PCIE14_TX_P	BG43			RC_PCIE_TX1_P	RC_PCIE_TX1_P (core board series capacitance 220nF)	
90	PCIE15_TX_M	BH45			RC_PCIE_TX0_N	RC_PCIE_TX0_N (core board series capacitance 220nF)	
92	PCIE15_TX_P	BG45			RC_PCIE_TX0_P	RC_PCIE_TX0_P (core board series capacitance 220nF)	
94	NC				NC	NC	
96	NC				NC	NC	
98	SALRT_68127				NC	NC (ISL68127 Serial alert Output,, Active L)	2.0V
100	UART0_RX/GPIO86	C29	I/O	Up	UART0_RX	UART0_RX (System Debug)	1.8V
102	UART0_TX/GPIO85	D29	I/O	Up	UART0_TX	UART0_TX (System Debug)	1.8V
104	NC				NC	NC	
106	GPIO28/JTAG_1_2_SRST	B42	I/O	Up	GMAC0_RSTN_L	GMAC0_RSTN_L, core board pull up resistance 4.7K	1.8V
108	NC				NC	NC	
110	PWM1/GPIO76	B44	I/O	Down	NC	NC	1.8V
112	RGMII0_IRQ/GPIO56	A18	I/O	Down	GMAC0_INT/PMEB	GMAC0_INT Input, Active L	1.8V
114	NC				NC	NC	

116	NC				NC	NC	
118	RGMII0_RXCTRL	D23	I/O		GMAC0_RXDV_CRS	GMAC0_RXDV_CRS	1.8V
120	RGMII0_RXD0	C23	I/O		GMAC0_RXD0	GMAC0_RXD0	1.8V
122	RGMII0_RXD2	B23	I/O		GMAC0_RXD2	GMAC0_RXD2	1.8V
124	RGMII0_RXD1	A23	I/O		GMAC0_RXD1	GMAC0_RXD1	1.8V
126	RGMII0_RXD3	B21	I/O		GMAC0_RXD3	GMAC0_RXD3	1.8V
128	RGMII0_RXC	C21	I/O		GMAC0_RXCLK	GMAC0_RXCLK	1.8V
130	GND		G		GND	GND	
132	RGMII0_TXC	A20	I/O		GMAC0_TXCLK	GMAC0_TXCLK	1.8V
134	RGMII0_TXD0	D20	I/O		GMAC0_TXD0	GMAC0_TXD0	1.8V
136	RGMII0_TXD2	C20	I/O		GMAC0_TXD2	GMAC0_TXD2	1.8V
138	RGMII0_TXCTRL	B20	I/O		GMAC0_TXEN	GMAC0_TXEN	1.8V
140	RGMII0_TXD3	D21	I/O		GMAC0_TXD3	GMAC0_TXD3	1.8V
142	RGMII0_TXD1	A21	I/O		GMAC0_TXD1	GMAC0_TXD1	1.8V
144	RGMII0_MDC	E23	I/O		GMAC0_MDC	GMAC0_MDC	1.8V
146	RGMII0_MDIO	E20	I/O		GMAC0_MDIO	GMAC0_MDIO	1.8V
148	GND		G		GND	GND	
150	ADC_IN0	MS1112_Pin1	I	Up	NC	NC (core board pull up resistance 10K)	3.3V
152	BOOT_SEL0	B11	I		BOOT_SEL0	BOOT_SELECT: H--EMMC ; L--SPI flash (core board pull down resistance 10K)	1.8V
154	ADC_IN1	MS1112_Pin2	I	Up	ADC_IN1	ADC1 Input (core board pull up resistance 10K)	3.3V
156	ADC_IN2	MS1112_Pin4	I	Up	NC	NC (core board pull up resistance 10K)	3.3V
158	GND		G		GND	GND	
160	NC				NC	NC	
162	NC				NC	NC	
164	NC				NC	NC	
166	NC				NC	NC	
168	NC				NC	NC	
170	NC				NC	NC	
172	NC				NC	NC	

174	NC				NC	NC	
176	NC				NC	NC	
178	NC				NC	NC	
180	GND		G		GND	GND	
182	RGMII1_MDIO	E17	I/O		GMAC1_MDIO	GMAC1_MDIO	1.8V
184	RGMII1_MDC	D15	I/O		GMAC1_MDC	GMAC1_MDC	1.8V
186	RGMII1_TXC	C17	I/O		GMAC1_TXCLK	GMAC1_TXCLK	1.8V
188	RGMII1_RXC	B14	I/O		GMAC1_RXCLK	GMAC1_RXCLK	1.8V
190	GND		G		GND	GND	
192	NC				NC	NC	
194	RGMII1_RXD1	C15	I/O		GMAC1_RXD1	GMAC1_RXD1	1.8V
196	RGMII1_RXD3	C14	I/O		GMAC1_RXD3	GMAC1_RXD3	1.8V
198	RGMII1_RXD0	A14	I/O		GMAC1_RXD0	GMAC1_RXD0	1.8V
200	RGMII1_RXD2	A15	I/O		GMAC1_RXD2	GMAC1_RXD2	1.8V
202	RGMII1_RXCTRL	B15	I/O		GMAC1_RXDV_CRS	GMAC1_RXDV_CRS	1.8V
204	RGMII1_TXD0	B18	I/O		GMAC1_TXD0	GMAC1_TXD0	1.8V
206	RGMII1_TXD2	A17	I/O		GMAC1_TXD2	GMAC1_TXD2	1.8V
208	RGMII1_TXD3	C18	I/O		GMAC1_TXD3	GMAC1_TXD3	1.8V
210	RGMII1_TXD1	B17	I/O		GMAC1_TXD1	GMAC1_TXD1	1.8V
212	RGMII1_TXCTRL	E18	I/O		GMAC1_TXEN	GMAC1_TXEN	1.8V
214	RGMII1_IRQ/GPIO72	D17	I/O	Down	GMAC1_INT/PMEB	GMAC1_INT Input, Active L	1.8V
216	GPIO31/DBG_IIC_OE	C27	I/O		GMAC1_RSTN_L	GMAC1_Reset Output, Active L	1.8V
218	MCU_NRST	STM32_Pin7	I	Up	MCU_NRST	MCU_RESET Input , Active L	3.3V
220	NC				NC	NC	
222	GND		G		GND	GND	
224	VDDIO18		P		VDDIO18	1.8V Output (Pin224/225 Tatal Max: 500mA)	1.8V
226	3P3V		P		3P3V	3.3V Output (Pin226/227/234/235 Tatal Max: 1000mA)	3.3V
228	NC				NC	NC	
230	NC				NC	NC	

232	NC				NC	NC	
234	3P3V		P		3P3V	3.3V Output (Pin226/227/234/235 Tatal Max: 1000mA)	3.3V
236	NC				NC	NC	
238	NC				NC	NC	
240	NC				NC	NC	
242	NC		G		NC	NC	
244	GND		G		GND	GND	GND
246	GND		G				GND
248	GND		G				GND
250	GND		G				GND
252	VCC_SYS_12V		P		VCC_SYS_12V	Input Voltage 12.0V +/-5%	12.0V
254	VCC_SYS_12V		P				12.0V
256	VCC_SYS_12V		P				12.0V
258	VCC_SYS_12V		P				12.0V
260	VCC_SYS_12V		P				12.0V

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