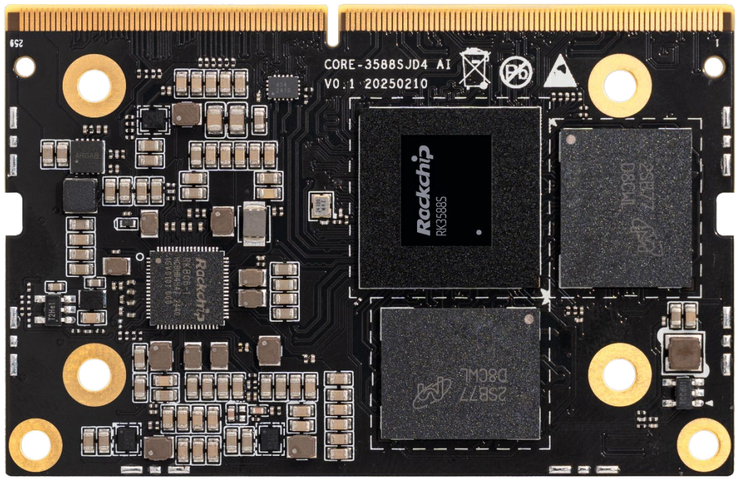
人工智能核心板

Core-3588SJD4

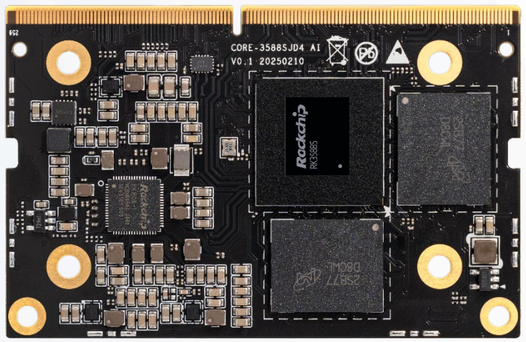
Core-3588SJD4 AI



V0.1　2025-4-16

天 启 智 能 科 技

产品特点 Product features



全新一代AIOT处理器

全新一代八核64位高性能AIOT处理器RK3588S，8nm先进工艺制程，主频高达2.4GHz

8K高清视频编解码

支持8K@60fps H.265/VP9、8K@30fps H.264、4K@60fps AV1视频解码；
8K@30fps H.265/H.264视频编码

6TOPS强劲算力NPU

算力可达6TOPS，支持INT4/INT8/INT16混合运算，能进行更智能的数据处理、语音识别、图像分析，满足大多数终端设备边缘计算AI应用需求

支持大型语言模型的私有化部署

支持 Transformer 架构下超大规模参数模型的私有化部署，如Gemma系列、Qwen系列、ChatGLM系列、Phi系列等大型语言模型。支持Docker容器化管理技术

支持多种深度学习框架

支持CNN、RNN、LSTM等传统网络架构
支持多种深度学习框架，如TensorFlow、TensorFlow Lite、PyTorch、Caffe等

支持多种操作系统

支持Android、Linux OS、国产操作系统，并支持UEFI启动；为产品研产提供安全稳定的系统环境，满足不同用户的需求

丰富的扩展接口

核心板采用260Pin标准SODIMM接口，拥有MIPI-CSI、DVP、HDMI2.1、SATA3.0、PCIe2.1、USB3.0、SPI、I2C等扩展接口

广泛的应用场景

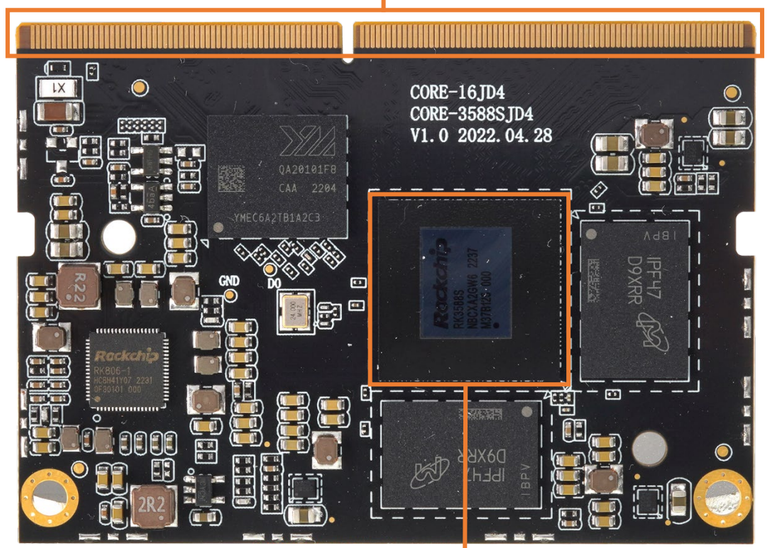
广泛适用于：边缘计算、大模型私有化部署、人工智能、算力服务、智能安防、智能家居、智能工业等领域

规格参数 Specifications

		Core-3588SJD4	Core-3588SJD4 AI
基本参数	SOC	RK3588S	RK3588S2
	CPU	八核64位（4×Cortex-A76 + 4×Cortex-A55），8nm先进工艺，主频高达2.4GHz	
	GPU	ARM Mali-G610 MP4四核GPU，支持 OpenGL ES3.2 / OpenCL 2.2 / Vulkan1.1，450 GFLOPS	
	NPU	6 TOPS，支持INT4/INT8/INT16/FP16混合运算	
	编解码	视频解码：8K@60fps H.265/VP9/AVS2、8K@30fps H.264 AVC/MVC、4K@60fps AV1、1080P@60fps MPEG-2/-1/VC-1/VP8 视频编码：8K@30fps H.265/H.264	
	内存	4GB/8GB/16GB/32GB 64-bit LPDDR4/LPDDR4x	4GB/8GB/16GB/32GB 64-bit LPDDR5
	存储	16GB/32GB/64GB/128GB eMMC	
	电源	4V（电压误差 ±5%）	5V（电压误差 ±5%）
	功耗	典型功耗：1.6W(4V/400mA) 最大功耗：12W(4V/3000mA) 休眠功耗：0.04W(4V/10mA)	典型功耗：1W(5V/200mA) 最大功耗：12.5W(5V/2500mA) 休眠功耗：0.05W(5V/10mA)
	系统	Android、Ubuntu桌面版、Ubuntu Server版、Debian、Buildroot、RTLinux、麒麟Linux * 支持UEFI启动方式	
	软件支持	支持Transformer架构下超大规模参数模型的私有化部署，如Gemma系列、ChatGLM系列、Qwen系列、Phi系列等大型语言模型 支持CNN、RNN、LSTM等传统网络架构，支持RKNN模型导入导出，支持多种深度学习框架，包括TensorFlow、TensorFlow Lite、PyTorch、Caffe、ONNX和Darknet，并支持自定义算子开发 支持Docker容器化管理技术	
	接口类型	SODIMM（260 PIN，0.5mm 间距）	
	尺寸	69.60mm × 49.32mm × 4.05mm	69.6mm × 45.0mm × 4.2mm
	重量	≈50g	≈17g
	环境	工作温度：-20℃ ~ 60℃，存储温度：-20℃ ~ 70℃，工作湿度: 10% ~ 90%RH（无凝露）	
接口参数	网络	集成 GMAC/SDIO3.0/USB3.0 接口，可扩展1路千兆以太网、WiFi6/蓝牙，5G/4G LTE	集成 GMAC/SDIO3.0/USB3.0 接口，支持1路千兆以太网，可扩展WiFi6/蓝牙，5G/4G LTE
	视频输入	2 × MIPI D/C PHY（MIPI DPHY V2.0 (4lanes, 4.5Gbps/lane)；MIPI CPHY V1.1 (3lanes, 2.5Gsps/lane)） 1 × MIPI-CSI DPHY（1×4Lanes或2×2Lanes） 1 × DVP（8/10/12/16-bit 标准 DVP 接口，最高 150MHz 数据输入；支持 BT.601/BT.656 和 BT.1120 VI 接口）	1 × MIPI D/C PHY（MIPI DPHY V2.0 (4lanes, 4.5Gbps/lane)；MIPI CPHY V1.1 (3lanes, 2.5Gsps/lane)） 2 × MIPI-CSI DPHY（1×4Lanes或2×2Lanes） 1 × DVP（8/10/12/16-bit 标准 DVP 接口，最高 150MHz 数据输入；支持 BT.601/BT.656 和 BT.1120 VI 接口）
	视频输出	1 × HDMI2.1/eDP1.3 -- HDMI2.1：最高8K@60Hz，支持 HDCP2.3 -- eDP1.3：4K@60Hz，支持 HDCP1.3 -- HDMI 和 eDP 不能同时工作 2 × MIPI-DSI -- 支持 2 × MIPI DPHY 2.0/CPHY 1.1，分辨率可达 4K@60Hz -- 支持左右双 MIPI 显示，支持 RGB/YUV 格式（最高 10bit） 1 × DP1.4 -- 支持 DP TX 1.4a，与 USB3.1 Gen1 复用，支持1,2,4 lanes -- 分辨率可达 7680 × 4320@30Hz -- 支持 HDCP2.3，HDCP 1.3 1 × BT.1120 -- 支持 RGB 格式（最高 8bit），数据速率可达 150MHz -- 分辨率可达 1920 × 1080@60Hz * 最高可以实现四屏异显（1 × HDMI + 2 × MIPI-DSI + 1 × DP）	1 × HDMI2.1/eDP1.3 -- HDMI2.1：最高8K@60Hz，支持 HDCP2.3 -- eDP1.3：4K@60Hz，支持 HDCP1.3 -- HDMI 和 eDP 不能同时工作
	音频	2 × I2S（8ch，支持 TX 和 RX，音频分辨率 16~32 位，采样率达 192KHz） 2 × I2S（2ch，支持 TX 和 RX，音频分辨率 16~32 位，采样率达 192KHz） 2 × SPDIF（支持 2×16bit 音频数据存储，支持双相立体声输出） 2 × PDM（8ch，最高 8 通道，音频分辨率 16 ~24 位，采样率达 192KHz，支持 PDM 主接收模式，支持多 MIC 阵列）	2 × I2S（2ch，支持 TX 和 RX，音频分辨率 16~32 位，采样率达 192KHz） 2 × SPDIF（支持 2×16bit 音频数据存储，支持双相立体声输出） 2 × PDM（8ch，最高 8 通道，音频分辨率 16 ~24 位，采样率达 192KHz，支持 PDM 主接收模式，支持多 MIC 阵列）
	SATA	2 × SATA3.0（与PCIe2.1复用，其中一个与USB3.1(Gen1) HOST复用）	
	PCIe	2 × PCIe2.1（与SATA3.0复用，其中一个与USB3.1(Gen1) HOST复用）	
	USB	1 × USB3.1(Gen1) OTG、1 × USB3.1(Gen1) HOST（与SATA、PCIe复用）、2 × USB2.0 HOST、1 × USB2.0 OTG	
	I2C	9 × I2C（支持 7 位和 10 位地址模式，标准模式数据传输速率可达 100k bits/s，在快速模式下高达 400k bits/s）	
	SPI	5 × SPI（每个控制器支持 2 路片选输出；支持串行主、串行从模式，软件可配置）	4 × SPI（每个控制器支持 2 路片选输出；支持串行主、串行从模式，软件可配置）
	UART	10 × UART（内置 2 路 64 bit FIFO，可分别用于 TX 和 RX；支持 5 位、6 位、7 位、8 位串行数据收发，波特率高达 4Mbps；UART 均支持自动流控模式）	
	CAN	3 × CAN 2.0B（支持 CAN 标准帧和扩展帧收发）	
	ADC	12 × ADC（12bit 单端输入 SAR-ADC，采样率高达 1MS/s）	2 × ADC（12bit 单端输入 SAR-ADC，采样率高达 1MS/s）
	其他接口	1 × SDMMC、PWM、GPIOs	

核心板接口描述　Core board Interface description

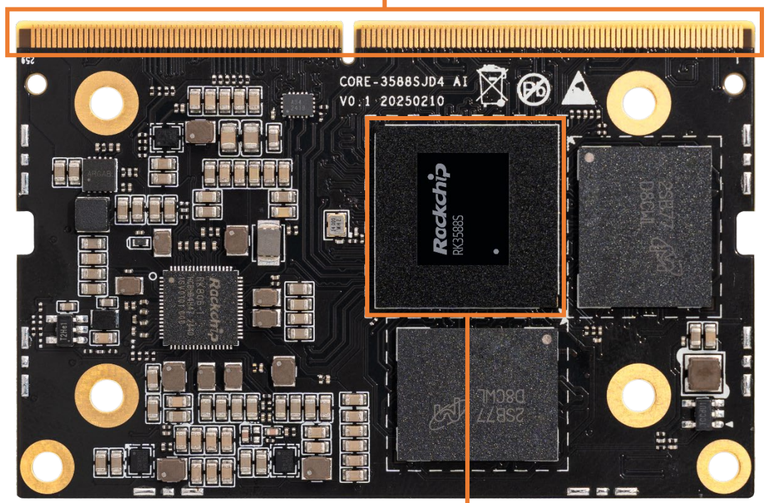
金手指
（260 PIN，SODIMM，0.5mm间距）



Rockchip RK3588S
（主频最高2.4GHz）

Core-3588SJD4

金手指
（260 PIN，SODIMM，0.5mm间距）

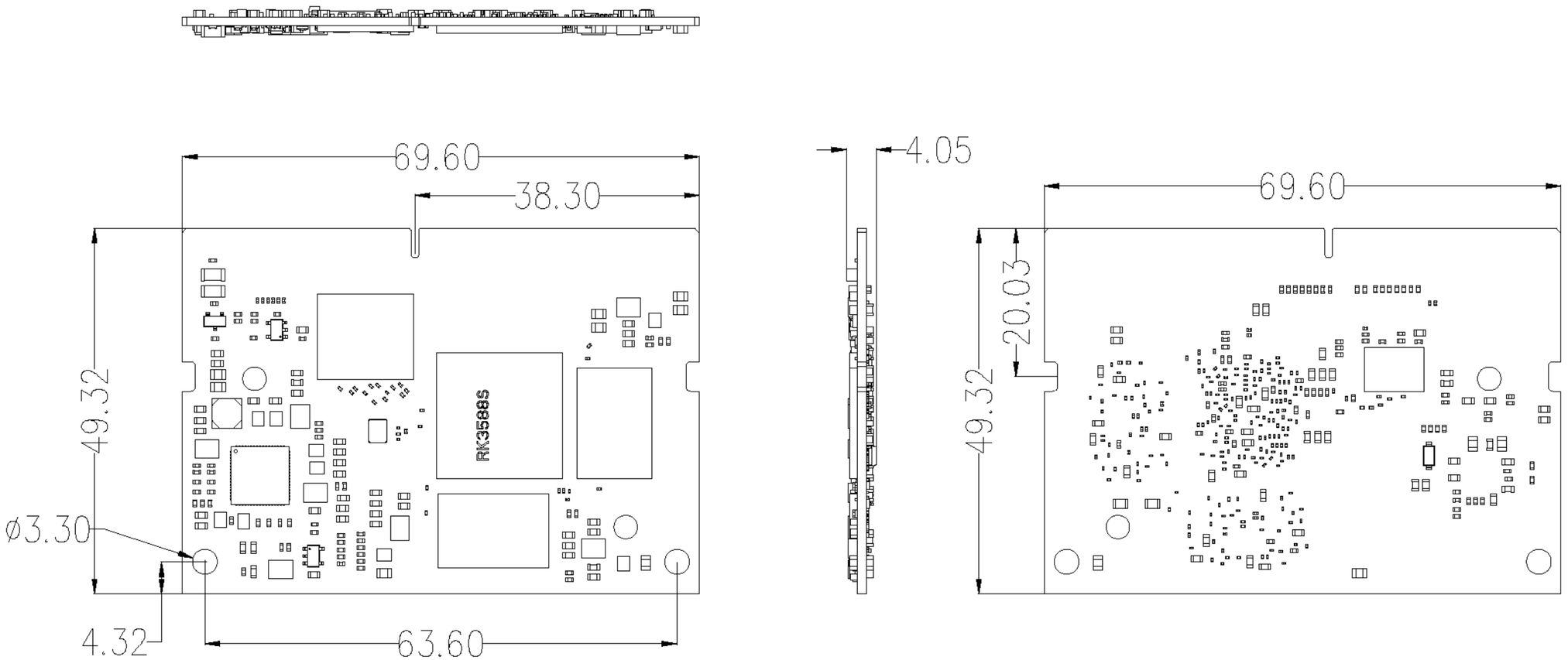


Rockchip RK3588S2
（主频最高2.4GHz）

Core-3588SJD4 AI

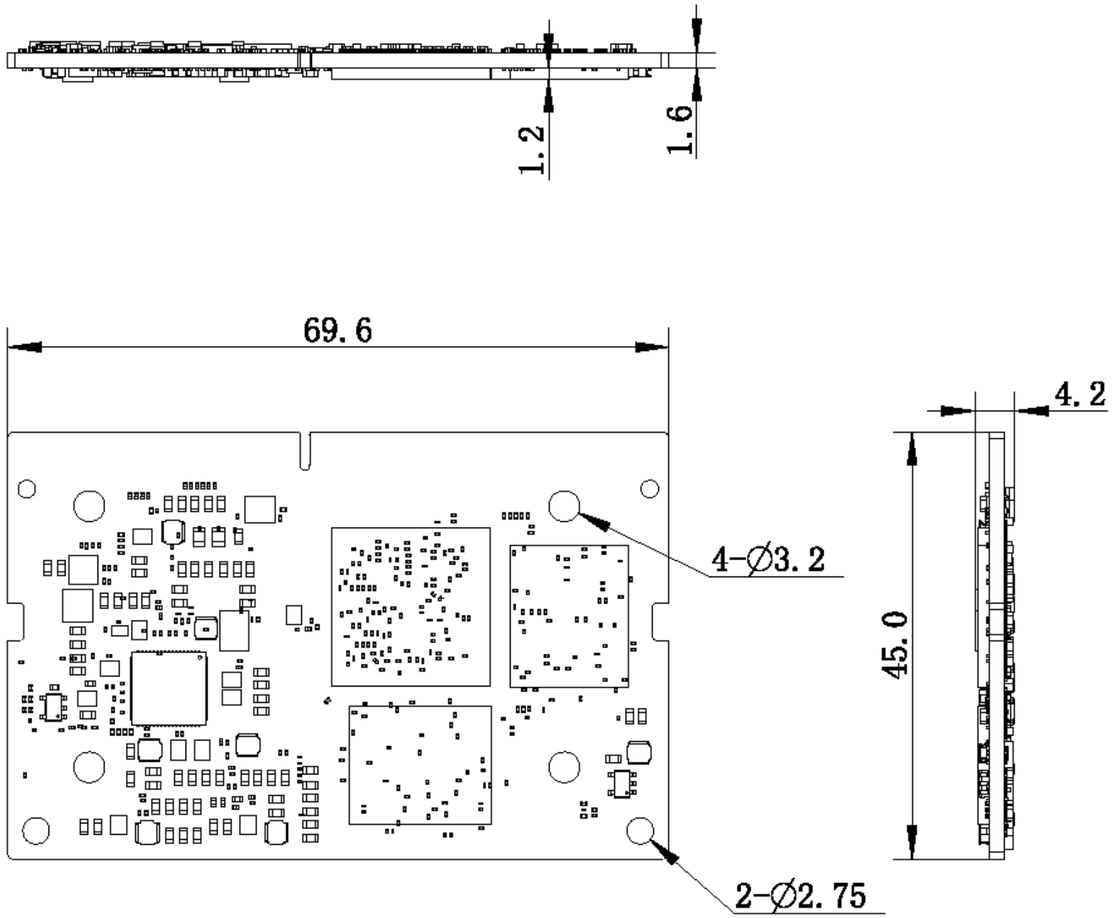
核心板尺寸　Core board Dimension

Core-3588SJD4



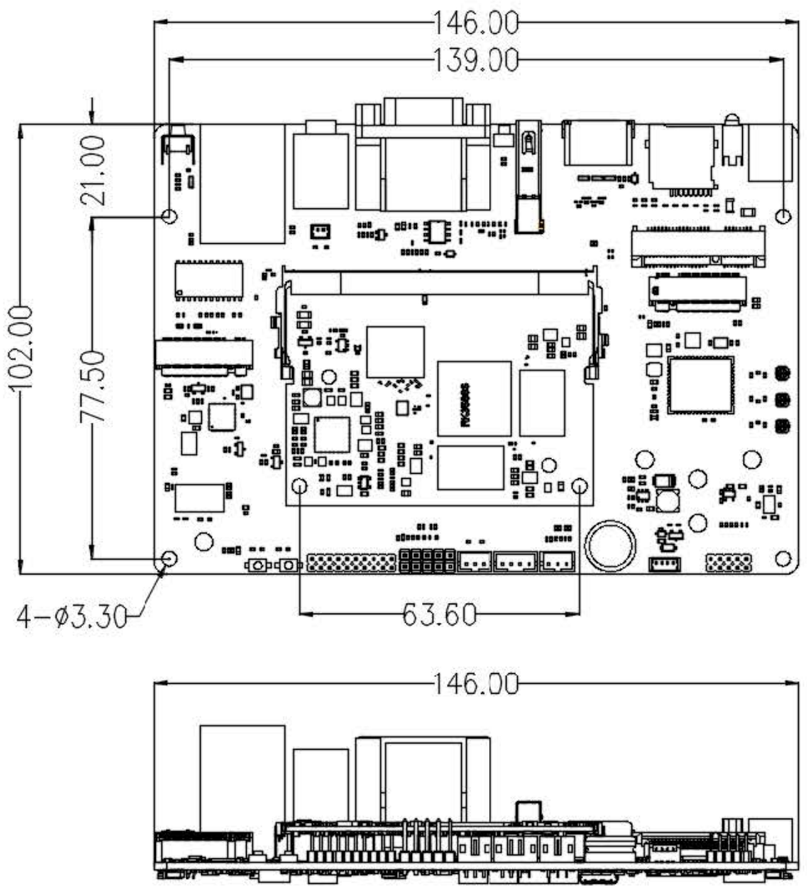
核心板尺寸　Core board Dimension

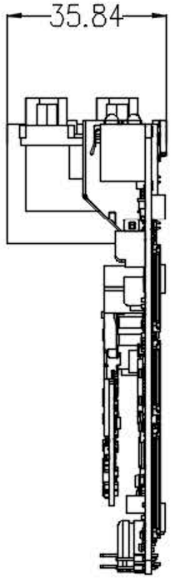
Core-3588SJD4 AI

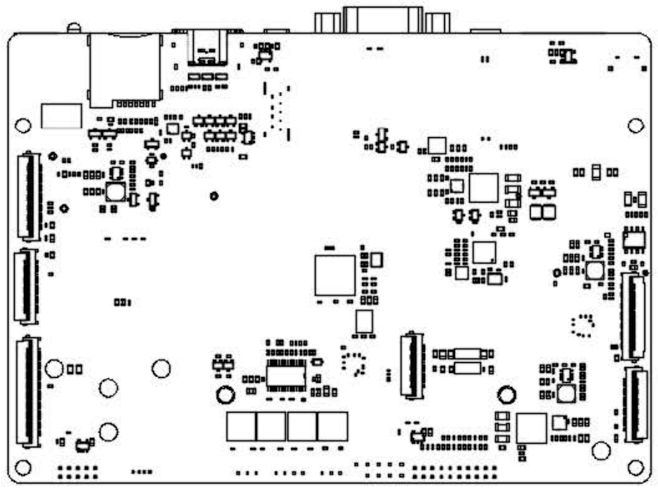


主板尺寸　Mainboard Dimension

AIO-3588SJD4

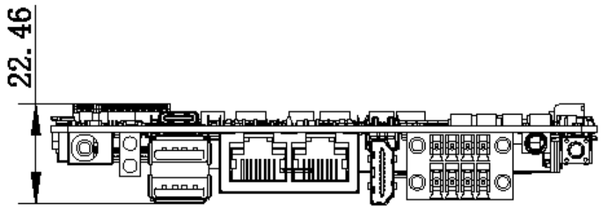


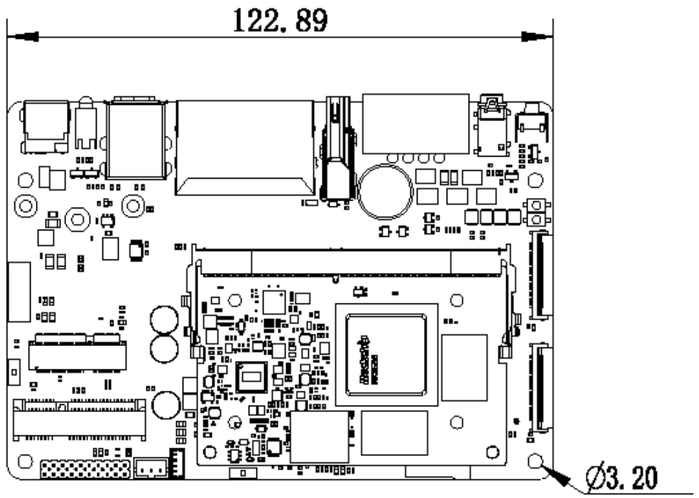


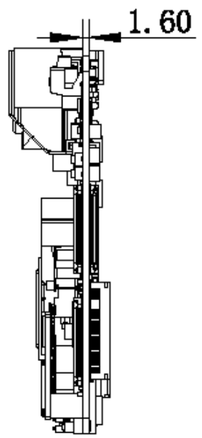


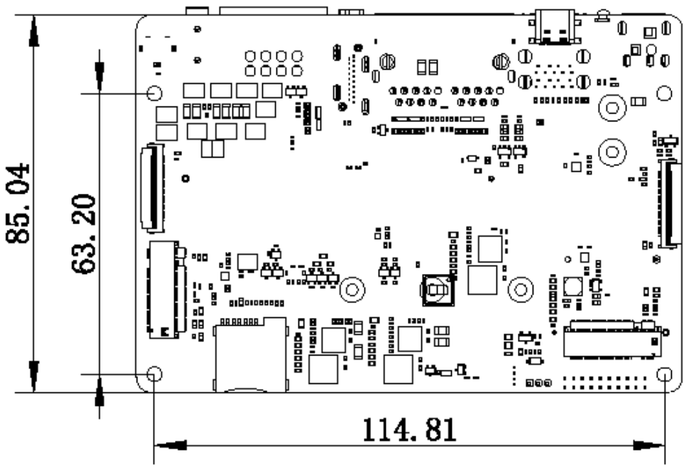
主板尺寸　Mainboard Dimension

AIO-3588SJD4 AI









接口定义 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-3588SJD4-AI pin definition	IO Power domain	RK3588S Pin NO.	IO Pull	Pad type	Function for Main BOARD (MB-JD4-BM1688)	Defual function description
1	GND	GND		G		GND	GND
3	MIPI_CSI0_D2N	-	BA42	I		MIPI_CSI0_RX_D2N	MIPI_CSI0_RX_D2N
5	MIPI_CSI0_D2P	-	AY42	I		MIPI_CSI0_RX_D2P	MIPI_CSI0_RX_D2P
7	GND	GND		G		GND	GND
9	MIPI_CSI0_CLK1N	-	AN38	I		MIPI_CSI0_RX_CLK1N	MIPI_CSI0_RX_CLK1N
11	MIPI_CSI0_CLK1P	-	AN37	I		MIPI_CSI0_RX_CLK1P	MIPI_CSI0_RX_CLK1P
13	GND	GND		G		GND	GND
15	MIPI_CSI0_D3N	-	AW42	I		MIPI_CSI0_RX_D3N	MIPI_CSI0_RX_D3N
17	MIPI_CSI0_D3P	-	AW41	I		MIPI_CSI0_RX_D3P	MIPI_CSI0_RX_D3P
19	GND	GND		G		GND	GND
21	MIPI_CSI1_D2N	-	AT42	I		MIPI_CSI1_RX_D2N	MIPI_CSI1_RX_D2N
23	MIPI_CSI1_D2P	-	AT41	I		MIPI_CSI1_RX_D2P	MIPI_CSI1_RX_D2P
25	GND	GND		G		GND	GND
27	MIPI_CSI1_CLK1N	-	AU42	I		MIPI_CSI1_RX_CLK1N	MIPI_CSI1_RX_CLK1N
29	MIPI_CSI1_CLK1P	-	AU41	I		MIPI_CSI1_RX_CLK1P	MIPI_CSI1_RX_CLK1P

接口定义 Interface definition

31	GND	GND		G		GND	GND
33	MIPI_CSI1_D3N	-	AP41	I		MIPI_CSI1_RX_D3N	MIPI_CSI1_RX_D3N
35	MIPI_CSI1_D3P	-	AP42	I		MIPI_CSI1_RX_D3P	MIPI_CSI1_RX_D3P
37	GND	GND		G		GND	GND
39	TYPEC0_SSRX1N	-	BA10	AI/O		TYPEC0_SSRX1N	TYPEC0_SSRX1N
41	TYPEC0_SSRX1P	-	BB10	AI/O		TYPEC0_SSRX1P	TYPEC0_SSRX1P
43	GND	GND		G		GND	GND
45	TYPEC0_SSTX1N	-	BA11	AI/O		TYPEC0_SSTX1N	TYPEC0_SSTX1N
47	TYPEC0_SSTX1P	-	BB11	AI/O		TYPEC0_SSTX1P	TYPEC0_SSTX1P
49	GND	GND		G		GND	GND
51	MIPI_DPHY1_RX_D2N/MIPI_CPHY1_RX_TRIO2_A	-	BA28	O		MIPI_DPHY1_RX_D2N	MIPI_DPHY1_RX_D2N
53	MIPI_DPHY1_RX_D2P/MIPI_CPHY1_RX_TRIO2_B	-	BB28	O		MIPI_DPHY1_RX_D2P	MIPI_DPHY1_RX_D2P
55	GND	GND		G		GND	GND
57	HDMI_TX0_SBDN/EDP_TX0_AUXN	-	AY1	I		HDMI0_TX_SBDN	HDMI0_TX_SBDN
59	HDMI_TX0_SBDP/EDP_TX0_AUXP	-	BA1	I		HDMI0_TX_SBDP	HDMI0_TX_SBDP
61	GND	GND		G		GND	GND
63	HDMI_TX0_D2N/EDP_TX0_D2N	-	BA7	O		HDMI0_TX2N	HDMI0_TX2N
65	HDMI_TX0_D2P/EDP_TX0_D2P	-	BB7	O		HDMI0_TX2P	HDMI0_TX2P

接口定义 Interface definition

67	GND	GND		G		GND	GND
69	HDMI_TX0_D1N/EDP_TX0_D1N	-	BB5	O		HDMI0_TX1N	HDMI0_TX1N
71	HDMI_TX0_D1P/EDP_TX0_D1P	-	BA5	O		HDMI0_TX1P	HDMI0_TX1P
73	GND	GND		G		GND	GND
75	HDMI_TX0_D0N/EDP_TX0_D0N	-	BA4	O		HDMI0_TX0N	HDMI0_TX0N
77	HDMI_TX0_D0P/EDP_TX0_D0P	-	BB4	O		HDMI0_TX0P	HDMI0_TX0P
79	GND	GND		G		GND	GND
81	HDMI_TX0_D3N/EDP_TX0_D3N	-	BB2	O		HDMI0_TX3N	HDMI0_TX3N
83	HDMI_TX0_D3P/EDP_TX0_D3P	-	BA2	O		HDMI0_TX3P	HDMI0_TX3P
85	GND	GND		G		GND	GND
87	PDM0_CLK1_M1/PWM2_M0/UART0_RX_M0/I2C4_SDA_M2/DP0_HPDIN_M1/GPIO0_C4_d	1.8V	AL38	I/O	DOWN	WD_EN	WD_EN
89	PDM1_SDI3_M1/UART4_RX_M2/SPI0_MOSI_M2/GPIO1_B2_d	1.8V	M38	I/O	DOWN	SPI0_MOSI_M2	SPI0_MOSI_M2
91	PDM1_CLK1_M1/SATA0_ACT_LED_M1/UART4_TX_M2/SPI0_CLK_M2/GPIO1_B3_d	1.8V	M37	I/O	DOWN	SPI0_CLK_M2	SPI0_CLK_M2
93	PDM1_SDI2_M1/SPI0_MISO_M2/GPIO1_B1_d	1.8V	G39	I/O	DOWN	SPI0_MISO_M2	SPI0_MISO_M2
95	PDM1_CLK0_M1/UART7_RX_M2/SPI0_CS0_M2/GPIO1_B4_u	1.8V	M39	I/O	UP	SPI0_CS0_M2	SPI0_CS0_M2
97	UART7_TX_M2/SPI0_CS1_M2/GPIO1_B5_u	1.8V	D40	I/O	UP	CAM3_PWDN	CAM3_PWDN
99	PCIE20X1_1_WAKEN_M2/I2C2_SCL_M4/UART6_TX_M1/SPI4_MOSI_M2/GPIO1_A1_d	1.8V	L40	I/O	DOWN	UART6_TX_M1	UART6_TX_M1
101	PCIE20X1_1_CLKREQN_M2/DP0_HPDIN_M2/I2C2_SDA_M4/UART6_RX_M1/SPI4_MISO_M2/GPIO1_A0_d	1.8V	G40	I/O	DOWN	UART6_RX_M1	UART6_RX_M1

接口定义 Interface definition

103	VOP_POST_EMPTY/I2C4_SDA_M3/UART6_RTSN_M1/PWM0_M2/SPI4_CLK_M2/GPIO1_A2_d	1.8V	D38	I/O	DOWN	UART6_RTSN_M1	UART6_RTSN_M1
105	I2C4_SCL_M3/UART6_CTSN_M1/PWM1_M2/SPI4_CS0_M2/GPIO1_A3_d	1.8V	L39	I/O	DOWN	UART6_CTSN_M1	UART6_CTSN_M1
107	GND	GND		G		GND	GND
109	TYPEC0_USB20_OTG_DM	-	AY10	AI/O		TYPEC0_OTG_DM	TYPEC0_OTG_DM
111	TYPEC0_USB20_OTG_DP	-	AY11	AI/O		TYPEC0_OTG_DP	TYPEC0_OTG_DP
113	GND	GND		G		GND	GND
115	USB20_HOST0_DM	-	AV6	AI/O		USB20_HOST0_DM	USB20_HOST0_DM
117	USB20_HOST0_DP	-	AW6	AI/O		USB20_HOST0_DP	USB20_HOST0_DP
119	GND	GND		G		GND	GND
121	USB20_HOST1_DM	-	AW7	AI/O		USB20_HOST1_DM	USB20_HOST1_DM
123	USB20_HOST1_DP	-	AV7	AI/O		USB20_HOST1_DP	USB20_HOST1_DP
125	GND	GND		G		GND	GND
127	PMIC_SLEEP3/GPIO0_C1_d	1.8V	AM38	I/O	DOWN	BL_EN	BL_EN
129	GND	GND		G		GND	GND
131	PCIE20_0_RXN/SATA30_0_RXN	-	J41	I		PCIE20_0_RXN	PCIE20_0_RXN
133	PCIE20_0_RXP/SATA30_0_RXP	-	J42	I		PCIE20_0_RXP	PCIE20_0_RXP
135	GND	GND		G		GND	GND
137	NC					NC	NC

接口定义 Interface definition

139	NC					NC	NC
141	GND	GND		G		GND	GND
143	CIF_HREF/BT1120_D8/I2S1_SDO1_M0/PCIE20X1_1_BUTTON_RSTN/DDRPHY_CH2_DTB2/I2C7_SCL_M3/UART8_RTSN_M0/PWM14_M1/SPI0_CS0_M1/CAN1_RX_M1/GPIO4_B2_u	3.3V	AT15	I/O	UP	CAN1_RX_M1	CAN1_RX_M1
145	CIF_VSYNC/BT1120_D9/I2S1_SDO2_M0/PCIE20X1_2_BUTTON_RSTN/DDRPHY_CH2_DTB3/I2C7_SDA_M3/UART8_CTSN_M0/PWM15_IR_M1/CAN1_TX_M1/GPIO4_B3_u	3.3V	AV23	I/O	UP	CAN1_TX_M1	CAN1_TX_M1
147	SARADC_IN2	1.8V	AV11	I		SARADC_VIN2	ADC2 Input （core board pull up resistance 10K ）
149	NC					NC	NC
151	NC					NC	NC
153	GND	GND		G		GND	GND
155	NC					NC	NC
157	NC					NC	NC
159	GND	GND		G		GND	GND
161	USB30_2_SSRXN **(Defalt,GPIO0_C7:H)**	-	C42	I		USB30_2_SSRXN	USB30_2_SSRXN
163	USB30_2_SSRXP **(Defalt,GPIO0_C7:H)**	-	D42	I		USB30_2_SSRXP	USB30_2_SSRXP
165	GND	GND		G		GND	GND
167	PCIE20_2_RXN/SATA30_2_RXN (Option, ,GPIO0_C7:L)	-	C42	I		PCIE20_2_RXN	PCIE20_2_RXN
169	PCIE20_2_RXP/SATA30_2_RXP (Option, ,GPIO0_C7:L)	-	D42	I		PCIE20_2_RXP	PCIE20_2_RXP
171	GND	GND		G		GND	GND

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173	PCIE20_2_REFCLKN	-	F42	AI/O		PCIE20_2_REFCLKN	PCIE20_2_REFCLKN
175	PCIE20_2_REFCLKP	-	F41	AI/O		PCIE20_2_REFCLKP	PCIE20_2_REFCLKP
177	GND	GND		G		GND	GND
179	PCIE20X1_2_WAKEN_M0/Gpio3_D0; PCIE20X1_1_WAKEN_M1/Gpio4_A1	3.3V	AW31/AW18	I/O	DOWN	PCIE_WAKE*	PCIE_WAKE*
181	CIF_D13/PCIE20X1_2_PERSTN_M0/UART4_TX_M1/PWM9_M2/SPI0_MISO_M3/GPIO3_D1_d	3.3V	AY27	I/O	DOWN	PCIE20X1_2_PERSTN_M0	PCIE20X1_2_PERSTN_M0 （core board pull up resistance 10K ）
183	CIF_D2/BT1120_D2/I2S1_LRCK_M0/PCIE20X1_1_PERSTN_M1/DDRPHY_CH0_DTB2/SPI0_CLK_M1/GPIO4_A2_d	3.3V	AV26	I/O	DOWN	PCIE20X1_1_PERSTN_M1	PCIE20X1_1_PERSTN_M1
185	CIF_D4/BT1120_D4/DDRPHY_CH1_DTB_0/I2C3_SCL_M2/UART0_RX_M2/SPI2_MISO_M1/GPIO4_A4_d	3.3V	AW19	I/O	DOWN	I2C3_SCL_M2	I2C3_SCL_M2 （core board pull up resistance 2.2K ）
187	CIF_D5/BT1120_D5/I2S1_SDI0_M0/DDRPHY_CH1_DTB_1/I2C3_SDA_M2/UART3_TX_M2/SPI2_MOSI_M1/GPIO4_A5_d	3.3V	AU15	I/O	DOWN	I2C3_SDA_M2	I2C3_SDA_M2 （core board pull up resistance 2.2K ）
189	CIF_D6/BT1120_D6/I2S1_SDI1_M0/DDRPHY_CH1_DTB2/I2C5_SCL_M2/UART3_RX_M2/SPI2_CLK_M1/GPIO4_A6_d	3.3V	AV18	I/O	DOWN	I2C5_SCL_M2	I2C5_SCL_M2 （core board pull up resistance 2.2K ）
191	CIF_D7/BT1120_D7/I2S1_SDI2_M0/DDRPHY_CH1_DTB3/I2C5_SDA_M2/SPI2_CS0_M1/GPIO4_A7_d	3.3V	AW26	I/O	DOWN	I2C5_SDA_M2	I2C5_SDA_M2 （core board pull up resistance 2.2K ）
193	I2S0_SDO0/I2C4_SCL_M4/UART4_CTSN/GPIO1_C7_d	1.8V	P41	I/O	DOWN	I2S0_SDO0	I2S0_SDO0 (Data Out)
195	I2S0_SDI0/GPIO1_D4_d	1.8V	N42	I/O	DOWN	I2S0_SDI0	I2S0_SDI0 (Data In)
197	I2S0_LRCK/I2C2_SCL_M3/UART4_RTSN/GPIO1_C5_d	1.8V	P39	I/O	DOWN	I2S0_LRCK_TX	I2S0_LRCK_ Output
199	I2S0_SCLK/I2C6_SCL_M1/UART3_CTSN/PWM7_IR_M2/SPI4_CS0_M0/GPIO1_C3_d	1.8V	M42	I/O	DOWN	I2S0_SCLK_TX	I2S0_SCLK_ Output
201	GND	GND		G		GND	GND
203	MCU_JTAG_TMS_M1/UART9_TX_M2/PWM11_IR_M3/SPI0_CS1_M3/GPIO3_D5_d	1.8V	AW30	I/O	DOWN	UART9_TX_M2	UART9_TX_M2
205	HDMI_TX0_HPD_M1/MCU_JTAG_TCK_M1/UART9_RX_M2/SPI0_CS0_M3/GPIO3_D4_d	1.8V	AV31	I/O	DOWN	UART9_RX_M2	UART9_RX_M2

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207	CIF_D14/I2C7_SCL_M2/UART9_RTSN_M2/SPI0_MOSI_M3/GPIO3_D2_d	1.8V	AY30	I/O	DOWN	UART9_RTSN_M2	UART9_RTSN_M2
209	CIF_D15/I2C7_SDA_M2/UART9_CTSN_M2/PWM10_M2/SPI0_CLK_M3/GPIO3_D3_d	1.8V	AY31	I/O	DOWN	UART9_CTSN_M2	UART9_CTSN_M2
211	I2S0_MCLK/I2C6_SDA_M1/UART3_RTSN/PWM3_IR_M2/SPI4_CLK_M0/GPIO1_C2_d	1.8V	U36	I/O	DOWN	I2S0_MCLK	I2S0_MCLK
213	MIPI_CAMERA0_CLK_M0/SPDIF1_TX_M1/I2S1_SDO0_M0/SATA2_ACT_LED_M0/DDRPHY_CH2_DTB1/I2C6_SCL_M3/UART8_RX_M0/SPI0_CS1_M1/GPIO4_B1_u	3.3V	AU22	I/O	UP	I2C6_SCL_M3	I2C6_SCL_M3 （core board pull up resistance 2.2K ）
215	CIF_CLKIN/BT1120_CLKOUT/I2S1_SDI3_M0/DDRPHY_CH2_DTB0/I2C6_SDA_M3/UART8_TX_M0/SPI2_CS1_M1/GPIO4_B0_d	3.3V	AW27	I/O	DOWN	I2C6_SDA_M3	I2C6_SDA_M3 （core board pull up resistance 2.2K ）
217	MODULE ID (Pull-down resistor 1KΩ)	1.8V	AW30	I/O	DOWN	NC	NC
219	SDMMC_D0/PDM1_SDI3_M0/JTAG_TCK_M1/I2C3_SCL_M4/UART2_TX_M1/PWM8_M1/GPIO4_D0_u	3.3V/1.8V Auto	AV2	I/O	UP	SDMMC_D0	SDMMC_D0 to TF Card,
221	SDMMC_D1/PDM1_SDI2_M0/JTAG_TMS_M1/I2C3_SDA_M4/UART2_RX_M1/PWM9_M1/GPIO4_D1_u		AR2	I/O	UP	SDMMC_D1	SDMMC_D1 to TF Card,
223	SDMMC_D2/PDM1_SDI1_M0/JTAG_TCK_M0/I2C8_SCL_M0/UART5_CTSN_M0/GPIO4_D2_u		AV1	I/O	UP	SDMMC_D2	SDMMC_D2 to TF Card,
225	SDMMC_D3/PDM1_SDI0_M0/JTAG_TMS_M0/I2C8_SDA_M0/UART5_RTSN_M0/PWM10_M1/GPIO4_D3_u		AT1	I/O	UP	SDMMC_D3	SDMMC_D3 to TF Card,
227	SDMMC_CMD/PDM1_CLK1_M0/MCU_JTAG_TCK_M0/CAN0_TX_M1/UART5_RX_M0/PWM7_IR_M1/GPIO4_D4_u		AU1	I/O	UP	SDMMC_CMD	SDMMC_CMD to TF Card,
229	SDMMC_CLK/PDM1_CLK0_M0/TEST_CLKOUT_M0/MCU_JTAG_TMS_M0/CAN0_RX_M1/UART5_TX_M0/GPIO4_D5_d		AR1	I/O	DOWN	SDMMC_CLK	SDMMC_CLK to TF Card,
231	GND	GND		G		GND	GND
233	PMIC_EXT_EN_OUT	5.0V		O		PMIC_EXT_EN_OUT	PMIC_EXT_EN_Output Active H
235	RTC_BAT	3.0V/5V	P	I/O	DOWN	RTC_BAT INPUT	RTC_BAT INPUT
237	POWER_EN (Default :NC)					VDC Input--NC	NC
239	NPOR (System Reset Input)	1.8V	V42	I	UP	RESET_L	System Reset Input, Active L

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241	GND	GND		G		GND	GND
243	GND	GND		G			
245	GND	GND		G			
247	GND	GND		G			
249	GND	GND		G			
251	VCC5V0_SYS	5.0V		P		VCC5V0_SYS Input	Input Voltage 5.0V +/-5% Sleep.: 0.05W(5.0V/10mA) Normal:1.0W(5.0V/200mA) Max: 12.5W(5.0V/2.5A) Recommended Power Supply: 5.0V/3.0A
253	VCC5V0_SYS	5.0V		P			
255	VCC5V0_SYS	5.0V		P			
257	VCC5V0_SYS	5.0V		P			
259	VCC5V0_SYS	5.0V		P			
PIN	**CORE-3588SJD4-AI pin definition**	**IO Power domain**	**RK3588S Pin NO.**	**IO Pull**	**Pad type**	**Function for Main BOARD (MB-JD4-BM1688)**	**Defual function description**
2	GND	GND		G		GND	GND
4	MIPI_CSI0_D0N	-	BB38	I		MIPI_CSI0_RX_D0N	MIPI_CSI0_RX_D0N
6	MIPI_CSI0_D0P	-	BA38	I		MIPI_CSI0_RX_D0P	MIPI_CSI0_RX_D0P
8	GND	GND		G		GND	GND
10	MIPI_CSI0_CLK0N	-	BA41	I		MIPI_CSI0_RX_CLK0N	MIPI_CSI0_RX_CLK0N
12	MIPI_CSI0_CLK0P	-	BB41	I		MIPI_CSI0_RX_CLK0P	MIPI_CSI0_RX_CLK0P
14	GND	GND		G		GND	GND

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16	MIPI_CSI0_D1N	-	AY40	I		MIPI_CSI0_RX_D1N	MIPI_CSI0_RX_D1N
18	MIPI_CSI0_D1P	-	BA40	I		MIPI_CSI0_RX_D1P	MIPI_CSI0_RX_D1P
20	GND	GND		G		GND	GND
22	MIPI_CSI1_D0N	-	AL41	I		MIPI_CSI1_RX_D0N	MIPI_CSI1_RX_D0N
24	MIPI_CSI1_D0P	-	AL42	I		MIPI_CSI1_RX_D0P	MIPI_CSI1_RX_D0P
26	GND	GND		G		GND	GND
28	MIPI_CSI1_CLK0N	-	AN41	I		MIPI_CSI1_RX_CLK0N	MIPI_CSI1_RX_CLK0N
30	MIPI_CSI1_CLK0P	-	AN42	I		MIPI_CSI1_RX_CLK0P	MIPI_CSI1_RX_CLK0P
32	GND	GND		G		GND	GND
34	MIPI_CSI1_D1N	-	AK42	I		MIPI_CSI1_RX_D1N	MIPI_CSI1_RX_D1N
36	MIPI_CSI1_D1P	-	AK41	I		MIPI_CSI1_RX_D1P	MIPI_CSI1_RX_D1P
38	GND	GND		G		GND	GND
40	MIPI_DPHY1_RX_D0N/MIPI_CPHY1_RX_TRIO0_A	-	BB23	O		MIPI_DPHY1_RX_D0N	MIPI_DPHY1_RX_D0N
42	MIPI_DPHY1_RX_D0P/MIPI_CPHY1_RX_TRIO0_B	-	BA23	O		MIPI_DPHY1_RX_D0P	MIPI_DPHY1_RX_D0P
44	GND	GND		G		GND	GND
46	MIPI_DPHY1_RX_CLKN/MIPI_CPHY1_RX_TRIO1_B	-	BB26	O		MIPI_DPHY1_RX_CLKN	MIPI_DPHY1_RX_CLKN
48	MIPI_DPHY1_RX_CLKP/MIPI_CPHY1_RX_TRIO1_C	-	BA26	O		MIPI_DPHY1_RX_CLKP	MIPI_DPHY1_RX_CLKP
50	GND	GND		G		GND	GND

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52	MIPI_DPHY1_RX_D1N/MIPI_CPHY1_RX_TRIO0_C	-	BA25	O		MIPI_DPHY1_RX_D1N	MIPI_DPHY1_RX_D1N
54	MIPI_DPHY1_RX_D1P/MIPI_CPHY1_RX_TRIO1_A	-	BB25	O		MIPI_DPHY1_RX_D1P	MIPI_DPHY1_RX_D1P
56	GND	GND		G		GND	GND
58	MIPI_DPHY1_RX_D3N/MIPI_CPHY1_RX_TRIO2_C	-	BB29	O		MIPI_DPHY1_RX_D3N	MIPI_DPHY1_RX_D3N
60	MIPI_DPHY1_RX_D3P/NO_USE	-	BA29	O		MIPI_DPHY1_RX_D3P	MIPI_DPHY1_RX_D3P
62	GND	GND		G		GND	GND
64	NC					NC	
66	NC					NC	
68	GND	GND		G		GND	GND
70	NC					NC	
72	NC					NC	
74	NC					NC	
76	NC					NC	
78	GND	GND		G		GND	GND
80	NC					NC	
82	NC					NC	
84	NC					NC	
86	NC					NC	

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88	BT1120_D12/SATA0_ACT_LED_M0/DDRPHY_CH3_DTB2/I2C5_SCL_M1/PWM13_M1/SPI3_MOSI_M1/GPIO4_B6_d	3.3V	AW22	I/O	DOWN	HDMI0_TX_ON_H	HDMI0_TX_ON_H
90	NC					NC	
92	NC					NC	
94	BT1120_D15/SPDIF1_TX_M2/PCIE20X1_2_PERSTN_M1/HDMI_TX0_CEC_M0/I2C8_SDA_M3/PWM6_M1/SPI3_CS1_M1/GPIO4_C1_d	3.3V	AY26	I/O	DOWN	HDMI_TX0_CEC_M0	HDMI_TX0_CEC_M0
96	HDMI_TX0_HPD_M0/SPI2_MOSI_M0/GPIO1_A5_d	1.8V	M40	I/O	DOWN	HDMI_TX0_HPD_M0	HDMITX0_HPD Input, Active H
98	BT1120_D14/PCIE20X1_2_WAKEN_M1/HDMI_TX0_SDA_M0/I2C8_SCL_M3/SPI3_CS0_M1/GPIO4_C0_u	3.3V	AW23	I/O	UP	HDMI_TX0_SDA_M0	HDMI_TX0_SDA_M0
100	BT1120_D13/PCIE20X1_2_CLKREQN_M1/HDMI_TX0_SCL_M0/DDRPHY_CH3_DTB3/I2C5_SDA_M1/SPI3_CLK_M1/GPIO4_B7_u	3.3V	AV22	I/O	UP	HDMI_TX0_SCL_M0	HDMI_TX0_SCL_M0
102	GND	GND		G		GND	GND
104	I2S0_SDO2/I2S0_SDI3/PDM0_SDI1_M0/I2C7_SDA_M0/UART6_RX_M2/SPI1_MOSI_M2/GPIO1_D1_d	1.8V	U38	I/O	DOWN	SPI1_MOSI_M2	SPI1_MOSI_M2
106	I2S0_SDO3/I2S0_SDI2/PDM0_SDI2_M0/I2C1_SCL_M4/UART4_TX_M0/PWM0_M1/SPI1_CLK_M2/GPIO1_D2_d	1.8V	P40	I/O	DOWN	SPI1_CLK_M2	SPI1_CLK_M2
108	I2S0_SDO1/I2C7_SCL_M0/UART6_TX_M2/SPI1_MISO_M2/GPIO1_D0_d	1.8V	U37	I/O	DOWN	SPI1_MISO_M2	SPI1_MISO_M2
110	I2S0_SDI1/PDM0_SDI3_M0/I2C1_SDA_M4/UART4_RX_M0/PWM1_M1/SPI1_CS0_M2/GPIO1_D3_d	1.8V	R39	I/O	DOWN	SPI1_CS0_M2	SPI1_CS0_M2
112	PDM0_SDI0_M0/SPI1_CS1_M2/GPIO1_D5_d	1.8V	P38	I/O	DOWN	SPI1_CS1_M2	SPI1_CS1_M2
114	SPI2_MISO_M0/GPIO1_A4_d	1.8V	G37	I/O	DOWN	MIPI_CAM1_PDN_L	MIPI_CAM1_PDN_L
116	MIPI_CAMERA1_CLK_M0/SPDIF0_TX_M0/I2C5_SCL_M3/UART1_TX_M1/GPIO1_B6_u	1.8V	L38	I/O	UP	MIPI_CAMERA1_CLK_M0	MIPI_CAMERA1_CLK_M0
118	MIPI_CAMERA2_CLK_M0/SPDIF1_TX_M0/SATA2_ACT_LED_M1/I2C5_SDA_M3/UART1_RX_M1/PWM13_M2/GPIO1_B7_u	1.8V	F37	I/O	UP	MIPI_CAMERA2_CLK_M0	MIPI_CAMERA2_CLK_M0
120	SPI2_CLK_M0/GPIO1_A6_d	1.8V	D39	I/O	DOWN	MIPI_CAM2_PDN_L	MIPI_CAM2_PDN_L

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122	MIPI_CAMERA3_CLK_M0/I2C8_SCL_M2/UART1_RTSN_M1/PWM14_M2/GPIO1_D6_u	1.8V	L37	I/O	UP	MIPI_CAMERA3_CLK_M0	MIPI_CAMERA3_CLK_M0
124	ETH1_REFCLKO_25M/MIPI_CAMERA1_CLK_M1/I2C4_SCL_M0/GPIO3_A6_d	1.8V	AV37	I/O	DOWN	GPIO3_A6_d	BT_M2_WAKE_AP
126	GMAC1_PPSTRIG/I2C3_SDA_M1/UART7_TX_M1/SPI1_MISO_M1/GPIO3_C0_d	1.8V	AR36	I/O	DOWN	GPIO3_C0_d	BT_DISABLE_L
128	LITCPU_AVS/SPI3_CLK_M2/GPIO0_D3_u	1.8V	AG37	I/O	UP	GPIO0_D3_u	WIFI_DISABLE_L
130	GMAC1_PPSCLK/UART7_RX_M1/SPI1_CLK_M1/GPIO3_C1_d	1.8V	AW38	I/O	DOWN	GPIO3_C1_d	CAM I2C Switch
132	GND	GND		G		GND	GND
134	PCIE20_0_TXN/SATA30_0_TXN	-	H42	O		PCIE20_0_TXN	PCIE20_0_TXN
136	PCIE20_0_TXP/SATA30_0_TXP	-	H41	O		PCIE20_0_TXP	PCIE20_0_TXP
138	GND	GND		G		GND	GND
140	NC					NC	
142	NC					NC	
144	GND	GND		G		GND	GND
146	SARADC_IN3	1.8V	AV13	I		SARADC_VIN3_HP_HOOK	ADC3 Input （core board pull up resistance 10K ）
148	NC					NC	
150	NC					NC	
152	GND	GND		G		GND	GND
154	NC					NC	
156	NC					NC	

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158	GND	GND		G		GND	GND
160	PCIE20_0_REFCLKN	-	K41	AI/O		PCIE20_0_REFCLKN	PCIE20_0_REFCLKN
162	PCIE20_0_REFCLKP	-	L42	AI/O		PCIE20_0_REFCLKP	PCIE20_0_REFCLKP
164	GND	GND		G		GND	GND
166	USB30_2_SSTXN **(Defalt,GPIO0_C7:H)**	-	D41	O		USB30_2_SSTXN	USB30_2_SSTXN
168	USB30_2_SSTXP **(Defalt,GPIO0_C7:H)**	-	E41	O		USB30_2_SSTXP	USB30_2_SSTXP
170	GND	GND		G		GND	GND
172	PCIE20_2_TXN/SATA30_2_TXN **(Option, ,GPIO0_C7:L)**	-	D41	O		PCIE1_TXN	PCIE1_TXN
174	PCIE20_2_TXP/SATA30_2_TXP **(Option, ,GPIO0_C7:L)**	-	E41	O		PCIE1_TXP	PCIE1_TXP
176	GND	GND		G		GND	GND
178	I2S1_SDI0_M1/GPU_AVS/UART0_TX_M0/I2C4_SCL_M2/PWM4_M0/GPIO0_C5_u	1.8V	AG38	I/O	UP	MOD_SLEEP	MOD_SLEEP （core board pull up resistance 4.7K ）
180	CIF_D11/PCIE20X1_2_CLKREQN_M0/HDMI_TX0_SCL_M2/I2C5_SCL_M0/SPI3_MOSI_M3/GPIO3_C7_u	3.3V	AU30	I/O	UP	PCIE20X1_2_CLKREQN_M0	PCIE1_CLKREQ* （core board pull up resistance 10K ）
182	CIF_D0/BT1120_D0/I2S1_MCLK_M0/PCIE20X1_1_CLKREQN_M1/DDRPHY_CH0_DTB0/UART9_RTSN_M1/SPI0_MISO_M1/GPIO4_A0_d	3.3V	AV19	I/O	DOWN	PCIE20X1_1_CLKREQN_M1	PCIE0_CLKREQ*
184	PHY1_MDI0-	-		I/O		PHY1_MDI0-	From RTL8211F
186	PHY1_MDI0+	-		I/O		PHY1_MDI0+	From RTL8211F
188	PHY1_LED_LINK	-		I/O		PHY1_LED_LINK	From RTL8211F
190	PHY1_MDI1-	-		I/O		PHY1_MDI1-	From RTL8211F
192	PHY1_MDI1+	-		I/O		PHY1_MDI1+	From RTL8211F

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194	PHY1_LED2/CFG_LDO1	-		I/O		PHY1_LED2/CFG_LDO1	From RTL8211F
196	PHY1_MDI2-	-		I/O		PHY1_MDI2-	From RTL8211F
198	PHY1_MDI2+	-		I/O		PHY1_MDI2+	From RTL8211F
200	GND	GND		G		GND	GND
202	PHY1_MDI3-	-		I/O		PHY1_MDI3-	From RTL8211F
204	PHY1_MDI3+	-		I/O		PHY1_MDI3+	From RTL8211F
206	SDMMC_DET/GPIO0_A4_u	1.8V	AC38	I/O	UP	SDMMC_DET_L	SDMMC0_DET Input, Active L
208	PDM0_CLK0_M0/I2C4_SDA_M4/PWM15_IR_M2/GPIO1_C6_d	1.8V	M41	I/O	DOWN	GPIO1_C6_d	FAN_TACH
210	32KOUT_WIFI	1.8V		O		32KOUT_WIFI	clock 32.768KHz Output for WIFI
212	CIF_D8/FSPI_CS0N_M2/CAN2_RX_M0/UART5_TX_M1/SPI3_CS0_M3/GPIO3_C4_u	1.8V	AU34	I/O	UP	HP_DET_L	HP_DET_L, Input, Active L
214	SARADC_IN0_BOOT （BOOT_KEY must be retained for update)	1.8V	AW15	I		SARADC_VIN0_BOOT	ADC0 Input （BOOT Mode) （core board pull up resistance 100K ）
216	MIPI_CAMERA4_CLK_M0/I2C8_SDA_M2/UART1_CTSN_M1/PWM15_IR_M3/GPIO1_D7_u	1.8V	G38	I/O	UP	CAM2_PWDN	CAM2_PWDN
218	PDM1_SDI0_M1/PCIE20X1_1_PERSTN_M2/PWM3_IR_M3/SPI2_CS0_M0/GPIO1_A7_u	1.8V	H38	I/O	UP	SD0_PWR_EN	SD0_PWR_EN,, Active H
220	GMAC1_PTP_REF_CLK/I2C3_SCL_M1/SPI1_MOSI_M1/GPIO3_B7_d	1.8V	AY34	I/O	DOWN	GPIO3_B7_d	GPIO3_B7_d
222	GMAC1_TXER/I2S2_SDI_M1/UART2_RX_M2/PWM3_IR_M1/GPIO3_B2_d	1.8V	AW34	I/O	DOWN	GPIO3_B2_d	GPIO3_B2_d
224	GMAC1_MCLKINOUT/I2S2_LRCK_M1/CAN1_TX_M0/UART3_RX_M1/PWM13_M0/GPIO3_B6_d	1.8V	AW37	I/O	DOWN	GPIO3_B6_d	GPIO3_B6_d
226	PDM1_SDI1_M1/SPI2_CS1_M0/GPIO1_B0_u	1.8V	H39	I/O	UP	GPIO1_B0_u	GPIO1_B0_u
228	PDM0_CLK1_M0/I2C2_SDA_M3/PWM11_IR_M2/SPI4_CS1_M0/GPIO1_C4_d	1.8V	U35	I/O	DOWN	SATA_LED	SATA_LED

接口定义 Interface definition

230	I2S1_SDI1_M1/NPU_AVS/UART0_RTSN/PWM5_M1/SPI0_CLK_M0/SATA_CP_POD/GPIO0_C6_u	1.8V	AH42	I/O	UP	FAN_PWM	FAN_PWM OUTPUT
232	I2C1_SCL_M2/CAN2_RX_M1/HDMI_TX0_SDA_M1/SPI3_CS0_M2/SATA_CPDET/GPIO0_D4_u	1.8V	AL39	I/O	UP	I2C1_SCL_M2	I2C1_SCL_M2 (core board pull up resistance 2.2K)
234	I2S1_SDO3_M1/CPU_BIG1_AVS/I2C1_SDA_M2/CAN2_TX_M1/HDMI_TX0_SCL_M1/SPI3_CS1_M2/SATA_MP_SWITCH/GPIO0_D5_u	1.8V	AM39	I/O	UP	I2C1_SDA_M2	I2C1_SDA_M2 (core board pull up resistance 2.2K)
236	I2S1_MCLK_M1/JTAG_TCK_M2/I2C1_SCL_M0/UART2_TX_M0/PCIE20X1_1_CLKREQN_M0/GPIO0_B5_d	1.8V	AH39	I/O	DOWN	UART2_TX_M0	**UART2_TX_M0 for system Debug**
238	I2S1_SCLK_M1/JTAG_TMS_M2/I2C1_SDA_M0/UART2_RX_M0/PCIE20X1_1_WAKEN_M0/GPIO0_B6_d	1.8V	AH40	I/O	DOWN	UART2_RX_M0	**UART2_RX_M0 for system Debug**
240	POWER_ON (Manual power on signal)	5.0V		I		PWRON_L	Power Key Input,Acive L
242	GND	GND		G		GND	GND
244	GND	GND		G			
246	GND	GND		G			
248	GND	GND		G			
250	GND	GND		G			
252	VCC5V0_SYS	5.0V		P		VCC5V0_SYS Input	Input Voltage 5.0V +/-5% Sleep.: 0.05W(5.0V/10mA) Normal:1.0W(5.0V/200mA) Max: 12.5W(5.0V/2.5A) Recommended Power Supply: 5.0V/3.0A
254	VCC5V0_SYS	5.0V		P			
256	VCC5V0_SYS	5.0V		P			
258	VCC5V0_SYS	5.0V		P			
260	VCC5V0_SYS	5.0V		P			

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