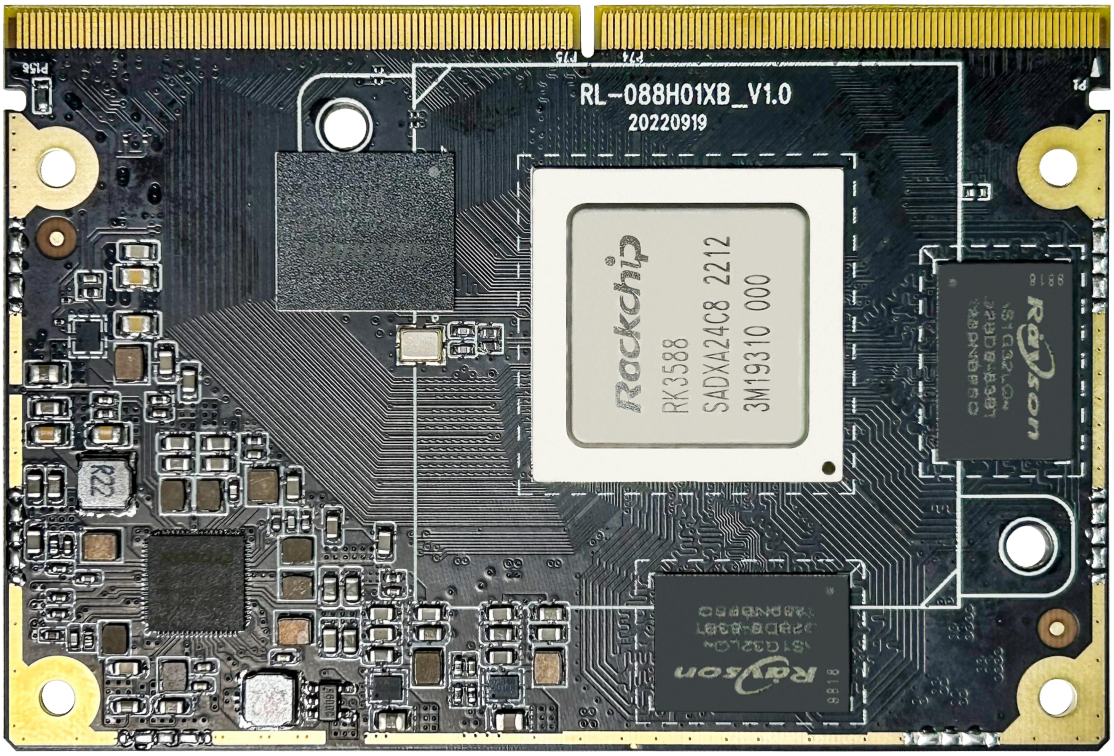
RL-088H01XB ARM核心板

硬 件 技 术 规 格 手 册 ▶



标准金手指SMARC_314接口

型号：	RL-088H01XB	PCBA No:	RL-088H01XB_V1.0
编制：		审核:	
批准:		制作：	

版本变更记录

版本	日期	页码	注释	审核
V1.0	2022/09/19	24	RL-088H01XB_V1.0	

目　录

一、产品功能

功能概述：

RK3588 采用新一代旗舰采八核 64 位 ARM 处理器， 8nm 先进制程,最大可支持 32G_Byte 内存，ARM Mali-G610 MC4 GPU,专用 2D 图形加速模块,支持 4K/8K 视频解码，拥有丰富的接口：支持多路 SATA 硬盘接口，多路网口，wifi6，4G/5G 扩展接口，多路摄像头输入，HDMI 输入和输出，以及 EDP，MIPI 屏显示接口；支持多种操作系统，可应用于 ARM PC,边缘计算，网络云服务，智能 AIOT,NVR 等领域。

全新特点：

RK3588 是全新一代 AIOT 芯片:8 核 64 位 8nm 制程,主频 2.4GHz，ARM Mali-G610 MC4 GPU,内置 AI 加速 NPU 支持 6Tops 算力;

支持 8K 视频编解码，8K@60fps H.265/VP9 视频解码，8K@30fps H.265/H.264 视频编码，支持同编同解最高 32 路 1080@P30 解码和 16 路 1080@P30 编码；

支持多通道视频输入和输出，支持多屏异显：HDMI2.1/eDP1.3/MIPI DSI/DP1.4/BT1120 视频输出，HDMI IN/MIPI CSI 视频输入；输入支持 4K,输出支持 8K;最多可以支持 7 屏异显；

支持多硬盘接入，扩展海量存储：支持原生 SATA3 接口 HDD 硬盘，可支持 PCIE3.0 扩展多个 SSD 固态存储盘；轻松扩大至 TB 级海量存储；

支持强大的网络通讯功能：芯片集成 PCIE3.0 & 2.0/GMAC/SDIO3.0/USB3.0,可以灵活扩展 2.5G/1G 以太网，WiFi2.4/5G & WiFi6/蓝牙,5G/4G 无线网络；

支持丰富的扩展接口：拥有
PCIE3.0,PCIE2.0,USB3.0,USB2.0,MIPI_DSI,MIPI_CSI,SDIO3.0,SPI,I2S,I2C,UART,CAN,GPIO,ADC 等多个扩展接口；

支持多种操作系统：Android12,Ubuntu 18.04/20.04,Buildroot,Debian 等；

支持广泛的应用领域：边缘计算，网络云服务，智能 AIOT,NVR，ARM_PC,智慧大屏，工业平板，多摄像头设备，智能汽车驾驶等领域。

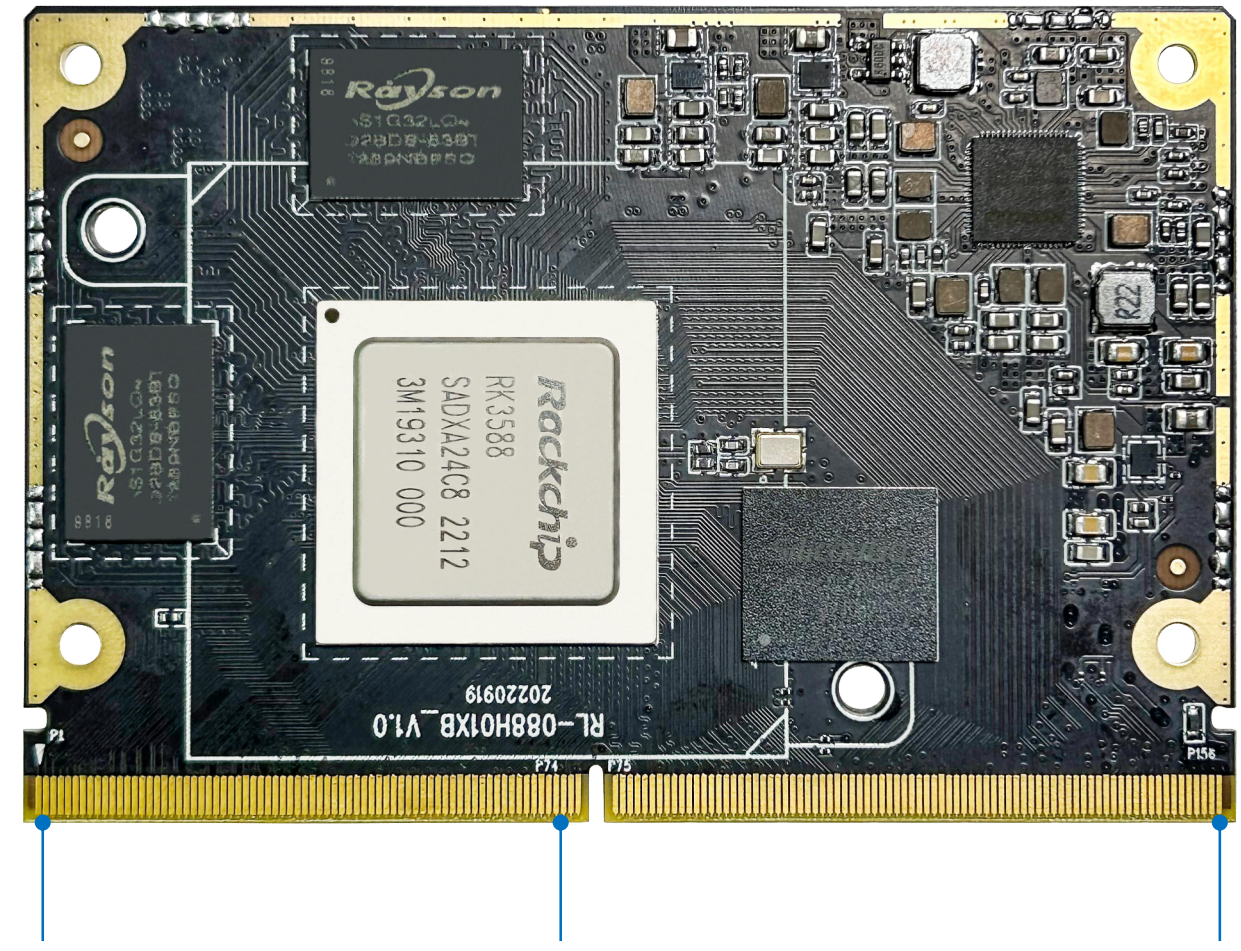
【本份 SPEC 上有可能没有完全反映 PCBA 所有最新的更改,以实际产品为准】

二.硬件特性

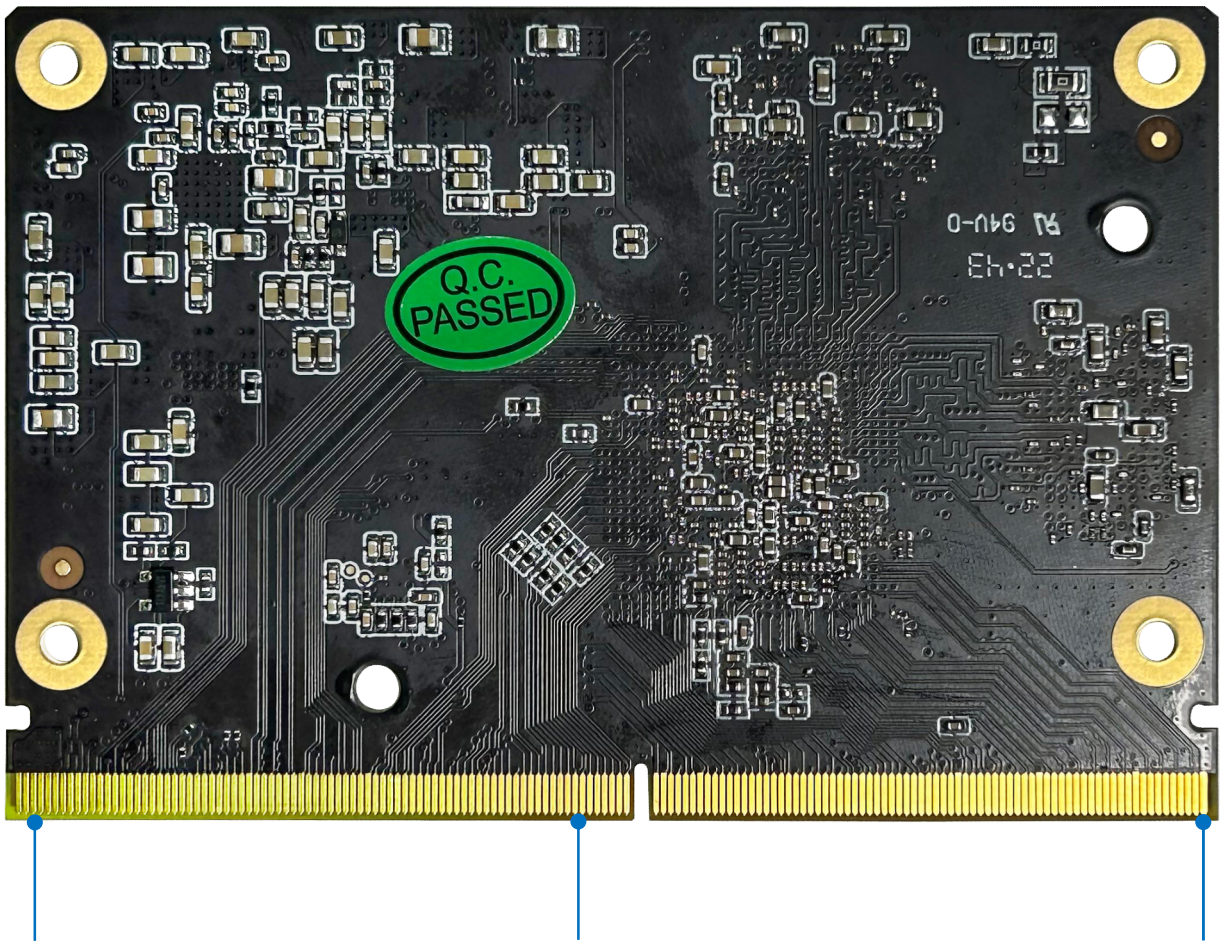
SOC	RockChip RK3588
CPU	ARM Cortex 8 核 64 位大小核架构（4xA76+4xA55）处理器，8nm 工艺制程，最高主频 2.4GHz
GPU	ARM Mali-G610 MC4 四核 GPU 支持 OpenGL ES3.2，OpenCL 2.2 and Vulkan 1.1；内嵌高性能 2D 图像加速模块；450 GFLOPS,解码支持 H.264 decoder by 8K@60fps 和 H.265 decoder by 8K@60fps，编码支持 H.264/H.265 encoder by 8K@30fps
NPU	支持 6Tops 算力，支持 INT4/INT8/INT16 混合运算
ISP	集成 48MP ISP with HDR&3DNR
内存 RAM	4G/8G/16G-Byte 64bit LPDDR4/4X，LPDDR5 最大支持 32G
存储 ROM	16G/32G/64G/128G 可选)最大 256G Byte EMMC
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 编码，支持 H.265 / H.264 *最高可实现 32 路 1080P@30fps 解码 和 16 路 1080P@30fps 编码
视频输出（EDP/DP/MIPI DSI/BT1120/HDMI)	2*eDP 接口：支持 eDP 1.3（4K@60Hz） 2*DP 接口： 支持 eDP 1.4（8K@30fps，与 USB 3.0 复用） 1*BT1120 接口：（1080@60fps） 2*MIPI DSI 接口：（4K@60Hz） 1*HDMI2.0 接口:(4K@60fps)support for HDMI1.4 and HDMI2.0；1*HDMI2.1 接口： （8K@60fps 或 4K@120fps） 支持双屏异显功能。
视频输入（HDMI_IN/MIPI CSI/MIPI DC/DVP)	1*HDMI-IN 接口：（4K@60fps),支持 HDCP 2.3 1*MIPI CSI（4 Lane）或者 2×MIPI CSI（2 Lane） 2*MIPI DC（4 通道 DPHY v2.0 或 3 通道 CPHY V1.1） 1*DVP 摄像头接口（最高 150MHz 输入数据）

USB	3*USB3.0 HOST super-speed, 支持最高 8.48Gbps bandwidth； 4*USB2.0 HOST High-speed, 最高 480Mbps 2*USB2.0 OTG
音频	2*8 通道 I2S 2*2 通道 I2S 2*SPDIF 2*8 通道 PDM（支持多 MIC 阵列） 1*双通道数字音频编解码器（16 位 DAC） 1*VAD
以太网	集成 PCIe3.0/GMAC/USB3.0，可扩展多路千兆(1G)或 2.5G 以太网
WIFI 及蓝牙	支持 2.4+5GHz WiFi6,支持 Wi-Fi 802.11b/g/n/ac 协议 支持蓝牙功能，V2.1+EDR/Bluetooth 3.0/3.0+HS/4.2/5.1BLE
无线网络	4G LTE/5G(USB2.0 或 USB3.0 扩展)
PCIE	PCIe3.0（2*2lanes,1*4lanes,4*1lanes) 3*PCIE2.0(1 lanes)
SATA	3*SATA3.0
电源	+4V（电压误差±5%）
IO 口	9*I2C,10*UART,5* SPI, 7* ADC,16*PWM 1*SDMMC,GPIO
操作系统	Android12,Ubuntu 18.04/20.04,Buildroot,Debian
音频格式	MP3,WMA,WAV, APE, FLAC, AAC, OGG,M4A,3GPP 等
图片	支持 JPG，BMP，PNG 等各种图片格式浏览并支持旋转/幻灯片播放/图片放大功能
系统自带应用软件	APK 安装器，电子邮件，计算器，浏览器，录音机，日历，设置，时钟。 视频播放器，搜索，通讯录，下载，相机，音乐播放器，资源管理器等
语言	支持多国语言（中文，英语等）
输入法	标准 Android 键盘，可选第三方输入法
系统管理	原生态 Android 系统，开放 root 权限,可以进行产品定制开发； 支持硬件或软件看门狗； 可支持 OTA 远程升级
其它参数	
尺寸	82mmx55mm
接口类型	SMARC（314 PIN，0.5mm 间距）
PCB 规格	10 层板 沉金工艺
散热	散热片安装孔距 50.7mm
功耗	典型功耗：约 4.8W

三、实物图及接口



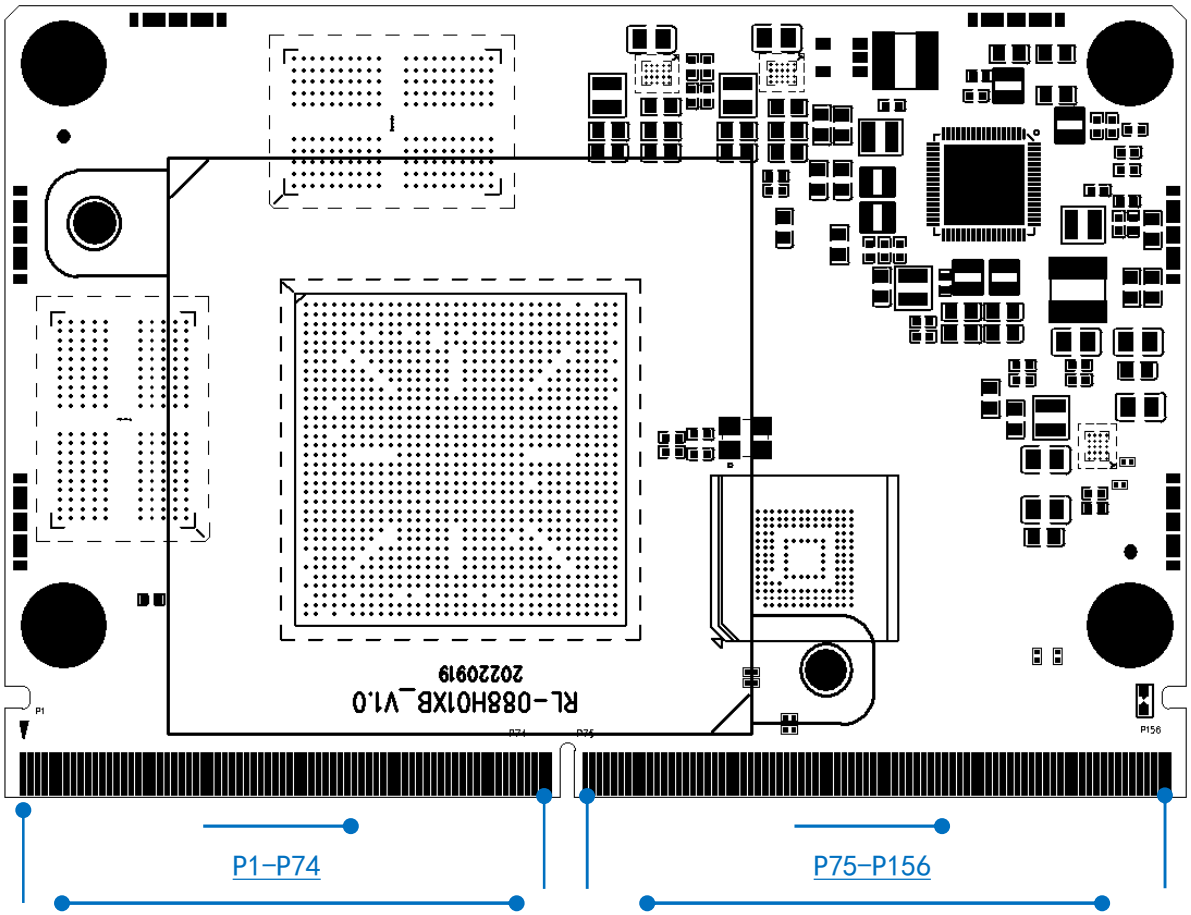
图一（实物图正面）



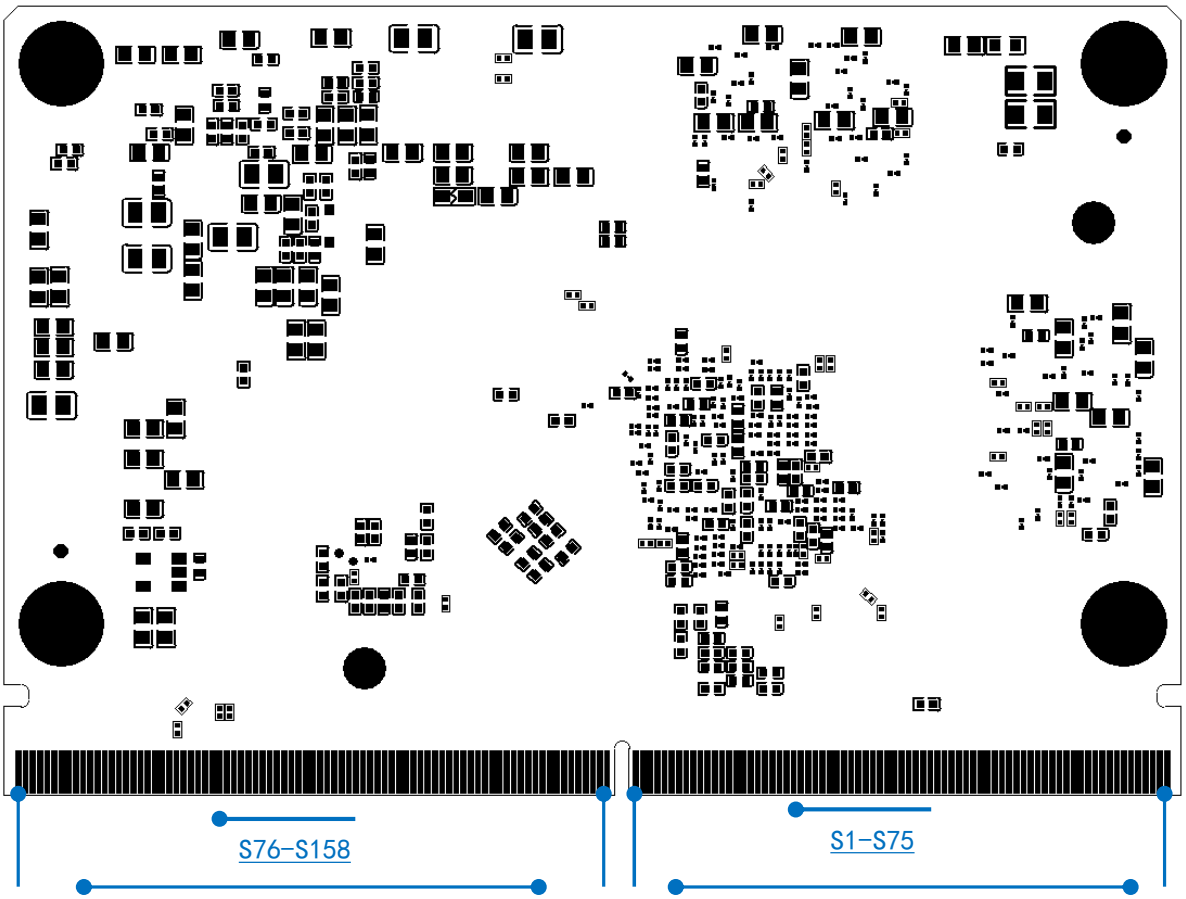
图二（实物图底面）

四、接口定义详解图表

A. 主板连接器丝印位置图示：



图三（正面丝印图）



图四（底面丝印图）

B. 引脚功能详细描叙：

SMARC_314:(P1-P156)，未标注管脚为空			
序号	RK3588 管脚名	管脚功能描述	备注
P1	AD1	**SDMMC_D1**/PDM1_SDI2_M0/JTAG_TMS_M1/I2C3_SDA_M4/UART2_RX_M1/PWM9_M1/GPIO4_D1_u	
P2	AD2	**SDMMC_D0**/PDM1_SDI3_M0/JTAG_TCK_M1/I2C3_SCL_M4/UART2_TX_M1/PWM8_M1/GPIO4_D0_u	
P3	AE1	**SDMMC_CLK**/PDM1_CLK0_M0/TEST_CLKOUT_M0/MCU_JTAG_TMS_M0/CAN0_RX_M1/UART5_TX_M0/GPIO4_D5_d	
P4	AE2	**SDMMC_CMD**/PDM1_CLK1_M0/MCU_JTAG_TCK_M0/CAN0_TX_M1/UART5_RX_M0/PWM7_IR_M1/GPIO4_D4_u	

P5	AF1	**SDMMC_D3**/PDM1_SDIO_M0/JTAG_TMS_M0/I2C8_SDA_M0/UART5_RTSN_M0/PWM10_M1/GPIO4_D3_u	
P6	AF2	**SDMMC_D2**/PDM1_SDI1_M0/JTAG_TCK_M0/I2C8_SCL_M0/UART5_CTSN_M0/GPIO4_D2_u	
P7		GND	
P8	AG1	HDMI_TX0_SBDN/eDP_TX0_AUXN	
P9	AG2	HDMI_TX0_SBDP/eDP_TX0_AUXP	
P10	AH2	HDMI_TX0_D3N/eDP_TX0_D3N	
P11	AH3	HDMI_TX0_D3P/eDP_TX0_D3P	
P12	AJ1	HDMI_TX0_D0N/eDP_TX0_D0N	
P13	AJ2	HDMI_TX0_D0P/eDP_TX0_D0P	
P14	AK2	HDMI_TX0_D1N/eDP_TX0_D1N	
P15	AK3	HDMI_TX0_D1P/eDP_TX0_D1P	
P16	AL1	HDMI_TX0_D2N/eDP_TX0_D2N	
P17	AL2	HDMI_TX0_D2P/eDP_TX0_D2P	
P18		GND	
P19	AP2	HDMI_TX1_SBDN/eDP_TX1_AUXN	
P20	AN2	HDMI_TX1_SBDP/eDP_TX1_AUXP	
P21	AN3	HDMI_TX1_D3N/eDP_TX1_D3N	
P22	AM3	HDMI_TX1_D3P/eDP_TX1_D3P	
P23	AP4	HDMI_TX1_D0N/eDP_TX1_D0N	
P24	AN4	HDMI_TX1_D0P/eDP_TX1_D0P	
P25	AN5	HDMI_TX1_D1N/eDP_TX1_D1N	
P26	AM5	HDMI_TX1_D1P/eDP_TX1_D1P	
P27	AP6	HDMI_TX1_D2N/eDP_TX1_D2N	
P28	AN6	HDMI_TX1_D2P/eDP_TX1_D2P	
P29		GND	
P30	AP8	TYPEC1_SSRX1N/DP1_TX0N	
P31	AN8	TYPEC1_SSRX1P/DP1_TX0P	
P32	AP9	TYPEC1_SSTX1P/DP1_TX1P	
P33	AN9	TYPEC1_SSTX1N/DP1_TX1N	
P34	AP10	TYPEC1_SSRX2N/DP1_TX2N	
P35	AN10	TYPEC1_SSRX2P/DP1_TX2P	
P36	AP11	TYPEC1_SSTX2P/DP1_TX3P	
P37	AN11	TYPEC1_SSTX2N/DP1_TX3N	
P38		GND	
P39	AP13	TYPEC0_SSRX1N/DP0_TX0N	
P40	AN13	TYPEC0_SSRX1P/DP0_TX0P	
P41	AP14	TYPEC0_SSTX1P/DP0_TX1P	
P42	AN14	TYPEC0_SSTX1N/DP0_TX1N	
P43	AP15	TYPEC0_SSRX2N/DP0_TX2N	
P44	AN15	TYPEC0_SSRX2P/DP0_TX2P	
P45	AP16	TYPEC0_SSTX2P/DP0_TX3P	
P46	AN16	TYPEC0_SSTX2N/DP0_TX3N	

P47		GND	
P48	AP18	MIPI_DPHY1_TX_D0N/MIPI_CPHY1_TX_TRIO0_A	
P49	AN18	MIPI_DPHY1_TX_D0P/MIPI_CPHY1_TX_TRIO0_B	
P50	AP19	MIPI_DPHY1_TX_D1N/MIPI_CPHY1_TX_TRIO0_C	
P51	AN19	MIPI_DPHY1_TX_D1P/MIPI_CPHY1_TX_TRIO1_A	
P52	AP20	MIPI_DPHY1_TX_CLKN/MIPI_CPHY1_TX_TRIO1_B	
P53	AN20	MIPI_DPHY1_TX_CLKP/MIPI_CPHY1_TX_TRIO1_C	
P54	AP21	MIPI_DPHY1_TX_D2N/MIPI_CPHY1_TX_TRIO2_A	
P55	AN21	MIPI_DPHY1_TX_D2P/MIPI_CPHY1_TX_TRIO2_B	
P56	AP22	MIPI_DPHY1_TX_D3N/MIPI_CPHY1_TX_TRIO2_C	
P57	AN22	MIPI_DPHY1_TX_D3P/NO_USE	
P58		GND	
P59	AP24	MIPI_DPHY0_TX_D0N/MIPI_CPHY0_TX_TRIO0_A	
P60	AN24	MIPI_DPHY0_TX_D0P/MIPI_CPHY0_TX_TRIO0_B	
P61	AP25	MIPI_DPHY0_TX_D1N/MIPI_CPHY0_TX_TRIO0_C	
P62	AN25	MIPI_DPHY0_TX_D1P/MIPI_CPHY0_TX_TRIO1_A	
P63	AP26	MIPI_DPHY0_TX_CLKN/MIPI_CPHY0_TX_TRIO1_B	
P64	AN26	MIPI_DPHY0_TX_CLKP/MIPI_CPHY0_TX_TRIO1_C	
P65	AP27	MIPI_DPHY0_TX_D2N/MIPI_CPHY0_TX_TRIO2_A	
P66	AN27	MIPI_DPHY0_TX_D2P/MIPI_CPHY0_TX_TRIO2_B	
P67	AP28	MIPI_DPHY0_TX_D3N/MIPI_CPHY0_TX_TRIO2_C	
P68	AN28	MIPI_DPHY0_TX_D3P/NO_USE	
P69		GND	
P70	AP29	MIPI_DPHY0_RX_D0N/MIPI_CPHY0_RX_TRIO0_A	
P71	AN29	MIPI_DPHY0_RX_D0P/MIPI_CPHY0_RX_TRIO0_B	
P72	AP30	MIPI_DPHY0_RX_D1N/MIPI_CPHY0_RX_TRIO0_C	
P73	AN30	MIPI_DPHY0_RX_D1P/MIPI_CPHY0_RX_TRIO1_A	
P74		GND	
P75	AP31	MIPI_DPHY0_RX_CLKN/MIPI_CPHY0_RX_TRIO1_B	
P76	AN32	MIPI_DPHY0_RX_CLKP/MIPI_CPHY0_RX_TRIO1_C	
P77	AP32	MIPI_DPHY0_RX_D2N/MIPI_CPHY0_RX_TRIO2_A	
P78	AN33	MIPI_DPHY0_RX_CLKP/MIPI_CPHY0_RX_TRIO1_C	
P79	AP33	MIPI_DPHY0_RX_D3N/MIPI_CPHY0_RX_TRIO2_C	
P80	AN34	MIPI_DPHY0_RX_D3P/NO_USE	
P81		GND	
P82	AM33	MIPI_CSI0_CLK1P	
P83	AM34	MIPI_CSI0_CLK1N	
P84	AL33	MIPI_CSI0_D3P	
P85	AL34	MIPI_CSI0_D3N	
P86	AK33	MIPI_CSI0_D2P	
P87	AK34	MIPI_CSI0_D2N	
P88	AJ33	MIPI_CSI0_CLK0P	
P89	AJ34	MIPI_CSI0_CLK0N	
P90	AH33	MIPI_CSI0_D1P	

P91	AH34	MIPI_CSI0_D1N	
P92	AG33	MIPI_CSI0_D0P	
P93	AG34	MIPI_CSI0_D0N	
P94		GND	
P95	AF33	GMAC0_TXER/I2C0_SDA_M1/UART7_CTSN_M0/PWM7_IR_M3/SPI3_CLK_M0/GPIO4_C6_d	
P96	AF34	GMAC0_MCLKINOUT/**I2S2_SDO_M0**/I2C7_SCL_M1/PWM4_M1/SPI3_CS1_M0/GPIO4_C3_d	
P97	AE33	GMAC0_TXCLK/**SDIO_CLK_M0**/FSPI_CLK_M1/I2C3_SDA_M3/GPIO2_B3_d	
P98	AE34	GMAC0_TXEN/**I2S2_LRCK_M0**/I2C2_SDA_M1/UART1_RTSN_M0/SPI1_CLK_M0/GPIO2_C0_d	
P99	AD33	GMAC0_TXD0/I2S2_MCLK_M0/I2C5_SCL_M4/UART1_RX_M0/GPIO2_B6_d	
P100	AD34	GMAC0_TXD1/**I2S2_SCLK_M0**/I2C5_SDA_M4/UART1_TX_M0/GPIO2_B7_d	
P101	AC33	GMAC0_TXD2/**SDIO_D3_M0**/FSPI_D3_M1/I2C8_SDA_M1/UART6_CTSN_M0/GPIO2_B1_u	
P102	AC34	GMAC0_TXD3/**SDIO_CMD_M0**/I2C3_SCL_M3/GPIO2_B2_u	
P103	AB33	GMAC0_MDIO/I2C0_SCL_M1/**UART9_CTSN_M0**/PWM6_M2/SPI3_MOSI_M0/GPIO4_C5_d	
P104	AB34	GMAC0_MDC/I2C7_SDA_M1/**UART9_RTSN_M0**/PWM5_M2/SPI3_MISO_M0/GPIO4_C4_d	
P105		GND	
P106	N34	PCIE20_0_RXN/SATA30_0_RXN	
P107	N33	PCIE20_0_RXP/SATA30_0_RXP	
P108	M34	PCIE20_0_TXP/SATA30_0_TXP	
P109	M33	PCIE20_0_TXN/SATA30_0_TXN	
P110	L33	PCIE20_0_REFCLKN	
P111	L32	PCIE20_0_REFCLKP	
P112		GND	
P113	K34	PCIE20_1_TXN/SATA30_1_TXN	
P114	K33	PCIE20_1_TXP/SATA30_1_TXP	
P115	J34	PCIE20_1_RXN/SATA30_1_RXN	
P116	J33	PCIE20_1_RXP/SATA30_1_RXP	
P117	H33	PCIE20_1_REFCLKN	
P118	H32	PCIE20_1_REFCLKP	
P119		GND	
P120	G34	PCIE30_PORT0_RX0N	
P121	G33	PCIE30_PORT0_RX0P	
P122	F33	PCIE30_PORT0_RX1N	
P123	F32	PCIE30_PORT0_RX1P	
P124	E34	PCIE30_PORT0_REF_CLKN	
P125	E33	PCIE30_PORT0_REF_CLKP	

P126	D33	PCIE30_PORT0_TX0N	
P127	D32	PCIE30_PORT0_TX0P	
P128	C34	PCIE30_PORT0_TX1N	
P129	C33	PCIE30_PORT0_TX1P	
P130		GND	
P131	B32	PCIE30_PORT1_RX0P	
P132	A32	PCIE30_PORT1_RX0N	
P133	C31	PCIE30_PORT1_RX1P	
P134	B31	PCIE30_PORT1_RX1N	
P135	B30	PCIE30_PORT1_TX0P	
P136	A30	PCIE30_PORT1_TX0N	
P137	C29	PCIE30_PORT1_TX1P	
P138	B29	PCIE30_PORT1_TX1N	
P139	B28	PCIE30_PORT1_REF_CLKN	
P140	A28	PCIE30_PORT1_REF_CLKP	
P141		GND	
P142	C24	**HDMI_TX1_HPD_M0**/SPI2_CLK_M0/GPIO1_A6_d	
P143	B26	**HDMI_TX0_HPD_M0**/SPI2_MOSI_M0/GPIO1_A5_d	
P144	B25	HDMI_TX1_SCL_M2/SPI2_MISO_M0/GPIO1_A4_d	
P145	A27	HDMI_TX1_SDA_M2/I2C4_SCL_M3/UART6_CTSN_M1/PWM1_M2/SPI4_CS0_M2/GPIO1_A3_d	
P146	A26	VOP_POST_EMPTY/I2C4_SDA_M3/UART6_RTSN_M1/PWM0_M2/SPI4_CLK_M2/GPIO1_A2_d	
P147	A25	PCIE30X1_1_WAKEN_M2/DP1_HPDIN_M2/SATA1_ACT_LED_M1/**I2C2_SCL_M4**/UART6_TX_M1/SPI4_MOSI_M2/GPIO1_A1_d	
P148	A24	PCIE30X1_1_CLKREQN_M2/DP0_HPDIN_M2/**I2C2_SDA_M4**/UART6_RX_M1/SPI4_MISO_M2/GPIO1_A0_d	
P149		**VCC_1V8_S3**	1.8V Output (Pin:P149/S151 Total Max:400mA)
P150		**VCC_3V3_S3**	3.3V Output (Pin:P150/S152 Total Max:800mA)
P151		GND	
P152		VCC4V0_SYS	核心板主供电
P153		VCC4V0_SYS	
P154		VCC4V0_SYS	
P155		VCC4V0_SYS	
P156		VCC4V0_SYS	
SMARC_314:(S1-S158)，未标注管脚为空			

序号	RK3588 管脚名	管脚功能描述	备注
S1		GND	
S2	AF5	HDMI_RX_CLKN	
S3	AF6	HDMI_RX_CLKP	
S4	AG4	HDMI_RX_D0N	
S5	AG5	HDMI_RX_D0P	
S6	AH5	HDMI_RX_D1N	
S7	AH6	HDMI_RX_D1P	
S8	AJ4	HDMI_RX_D2N	
S9	AJ5	HDMI_RX_D2P	
S10		GND	
S11	AK6	USB20_HOST0_DP	
S12	AL6	USB20_HOST0_DM	
S13	AL7	USB20_HOST1_DP	
S14	AM7	USB20_HOST1_DM	
S15	AK9	TYPEC1_USB20_OTG_DP	
S16	AL9	TYPEC1_USB20_OTG_DM	
S17	AL10	TYPEC1_SBU1/DP1_AUXP	
S18	AM10	TYPEC1_SBU2/DP1_AUXN	
S19	AL12	TYPEC0_USB20_OTG_DP	
S20	AM12	TYPEC0_USB20_OTG_DM	
S21	AL14	TYPEC0_USB20_OTG_ID	
S22	AM14	TYPEC0_USB20_VBUSDET	
S23		GND	
S24	AL15	TYPEC0_SBU1/DP0_AUXP	
S25	AM15	TYPEC0_SBU2/DP0_AUXN	
S26	AM16	SARADC_IN0_BOOT	
S27	AL16	SARADC_IN1	
S28	AK16	SARADC_IN2	
S29	AN17	SARADC_IN3	
S30	AM17	SARADC_IN4	
S31	AK15	SARADC_IN5	
S32	AL17	SARADC_IN6	
S33	AK17	SARADC_IN7	
S34		GND	
S35	AG23	CIF_D13/PCIE20X1_2_PERSTN_M0/**HDMI_RX_CEC_M1**/UART4_TX_M1/PWM9_M2/SPI0_MISO_M3/GPIO3_D1_d	
S36	AG25	CIF_D14/PCIE30X2_CLKREQN_M2/**HDMI_RX_SCL_M1**/I2C7_SCL_M2/UART9_RTSN_M2/SPI0_MOSI_M3/GPIO3_D2_d	
S37	AG24	CIF_D15/PCIE30X2_WAKEN_M2/**HDMI_RX_SDA_M1**/I2C7_SDA_M2/UART9_CTSN_M2/PWM10_M2/SPI0_CLK_M3/GPIO3_D3_d	
S38	AJ24	CIF_D11/PCIE20X1_2_CLKREQN_M0/HDMI_TX0_SCL_M2/**I2C5_SCL_M0**/SPI3_MOSI_M3/GPIO3_C7_u	

S39	AH24	CIF_D12/PCIE20X1_2_WAKEN_M0/HDMI_TX0_SDA_M2/**I2C5_SDA_M0**/UART4_RX_M1/PWM8_M2/SPI3_CLK_M3/GPIO3_D0_u	
S40	AH26	CIF_D8/FSPI_CS0N_M2/PCIE30X4_CLKREQN_M2/**HDMI_TX1_CEC_M2**/CAN2_RX_M0/UART5_TX_M1/SPI3_CS0_M3/GPIO3_C4_u	
S41	AH25	CIF_D9/FSPI_CS1N_M2/PCIE30X4_WAKEN_M2/**HDMI_TX1_SDA_M1**/CAN2_TX_M0/UART5_RX_M1/SPI3_CS1_M3/GPIO3_C5_u	
S42	AG26	CIF_D10/PCIE30X4_PERSTN_M2/**HDMI_TX1_SCL_M1**/SPI3_MISO_M3/GPIO3_C6_u	
S43	AM25	CIF_VSYNC/BT1120_D9/I2S1_SDO2_M0/**PCIE20X1_2_BUTTON_RSTN**/I2C7_SDA_M3/UART8_CTSN_M0/PWM15_IR_M1/CAN1_TX_M1/GPIO4_B3_u	
S44	AJ26	BT1120_D11/**PCIE30X4_WAKEN_M1**/HDMI_RX_CEC_M0/SATA1_ACT_LED_M0/UART9_RX_M1/PWM12_M1/SPI3_MISO_M1/GPIO4_B5_d	
S45	AL24	MIPI_CAMERA0_CLK_M0/SPDIF1_TX_M1/I2S1_SDO0_M0/PCIE30X1_0_BUTTON_RSTN/SATA2_ACT_LED_M0/I2C6_SCL_M3/UART8_RX_M0/SPI0_CS1_M1/GPIO4_B1_u	
S46	AK25	CIF_HREF/BT1120_D8/I2S1_SDO1_M0/PCIE30X1_1_BUTTON_RSTN/I2C7_SCL_M3/UART8_RTSN_M0/PWM14_M1/SPI0_CS0_M1/CAN1_RX_M1/GPIO4_B2_u	
S47	AK24	BT1120_D15/SPDIF1_TX_M2/PCIE20X1_2_PERSTN_M1/**HDMI_TX0_CEC_M0**/I2C8_SDA_M3/PWM6_M1/SPI3_CS1_M1/GPIO4_C1_d	
S48	AJ25	BT1120_D14/PCIE20X1_2_WAKEN_M1/**HDMI_TX0_SDA_M0**/I2C8_SCL_M3/SPI3_CS0_M1/GPIO4_C0_u	
S49	AJ28	BT1120_D13/PCIE20X1_2_CLKREQN_M1/**HDMI_TX0_SCL_M0**/I2C5_SDA_M1/SPI3_CLK_M1/GPIO4_B7_u	
S50	AL26	CIF_CLKOUT/BT1120_D10/I2S1_SDO3_M0/**PCIE30X4_CLKREQN_M1**/DP0_HPDIN_M0/SPDIF0_TX_M1/UART9_TX_M1/PWM11_IR_M1/GPIO4_B4_u	
S51	AJ27	BT1120_D12/**PCIE30X4_PERSTN_M1**/HDMI_RX_HPDIN_M0/SATA0_ACT_LED_M0/I2C5_SCL_M1/PWM13_M1/SPI3_MOSI_M1/GPIO4_B6_d	
S52	AK27	CIF_D5/BT1120_D5/I2S1_SDI0_M0/PCIE30X1_0_PERSTN_M1/I2C3_SDA_M2/UART3_TX_M2/SPI2_MOSI_M1/GPIO4_A5_d	
S53	AL27	CIF_D6/BT1120_D6/I2S1_SDI1_M0/PCIE30X2_CLKREQN_M1/I2C5_SCL_M2/UART3_RX_M2/SPI2_CLK_M1/GPIO4_A6_d	
S54	AM27	CIF_D7/BT1120_D7/I2S1_SDI2_M0/PCIE30X2_WAKEN_M1/I2C5_SDA_M2/SPI2_CS0_M1/GPIO4_A7_d	

S55	AK26	CIF_CLKIN/BT1120_CLKOUT/I2S1_SDI3_M0/PCIE30X2_PERSTN_M1/I2C6_SDA_M3/UART8_TX_M0/SPI2_CS1_M1/GPIO4_B0_d	
S56	AL28	CIF_D4/BT1120_D4/PCIE30X1_0_WAKEN_M1/I2C3_SCL_M2/UART0_RX_M2/SPI2_MISO_M1/GPIO4_A4_d	
S57	AL29	CIF_D3/BT1120_D3/PCIE30X1_0_CLKREQN_M1/UART0_TX_M2/GPIO4_A3_d	
S58	AM29	CIF_D2/BT1120_D2/I2S1_LRCK_M0/**PCIE30X1_1_PERSTN_M1**/SPI0_CLK_M1/GPIO4_A2_d	
S59	AL30	CIF_D1/BT1120_D1/I2S1_SCLK_M0/**PCIE30X1_1_WAKEN_M1**/UART9_CTSN_M1/SPI0_MOSI_M1/GPIO4_A1_d	
S60	AK30	CIF_D0/BT1120_D0/I2S1_MCLK_M0/**PCIE30X1_1_CLKREQN_M1**/UART9_RTSN_M1/SPI0_MISO_M1/GPIO4_A0_d	
S61	AA27	HDMI_TX0_HPD_M1/PCIE30X2_PERSTN_M2/**HDMI_RX_HPDIN_M1**/MCU_JTAG_TCK_M1/UART9_RX_M2/SPI0_CS0_M3/GPIO3_D4_d	
S62	AB28	PCIE30X4_BUTTON_RSTN/**DP1_HPDIN_M0**/MCU_JTAG_TMS_M1/UART9_TX_M2/PWM11_IR_M3/SPI0_CS1_M3/GPIO3_D5_d	
S63	Y29	GMAC1_PPSTRIG/I2C3_SDA_M1/UART7_TX_M1/SPI1_MISO_M1/GPIO3_C0_d	
S64	Y27	GMAC1_PPSCLK/PCIE30X2_BUTTON_RSTN/UART7_RX_M1/SPI1_CLK_M1/GPIO3_C1_d	
S65	C25	PDM1_SDI0_M1/PCIE30X1_1_PERSTN_M2/PWM3_IR_M3/SPI2_CS0_M0/GPIO1_A7_u	
S66	C27	PDM1_SDI1_M1/PCIE30X4_CLKREQN_M3/SPI2_CS1_M0/GPIO1_B0_u	
S67	D25	PDM1_SDI2_M1/PCIE30X4_WAKEN_M3/SPI0_MISO_M2/GPIO1_B1_d	
S68	D26	PDM1_SDI3_M1/PCIE30X4_PERSTN_M3/UART4_RX_M2/SPI0_MOSI_M2/GPIO1_B2_d	
S69		GND	
S70	E26	**MIPI_CAMERA1_CLK_M0**/SPDIF0_TX_M0/PCIE30X2_WAKEN_M3/HDMI_RX_HPDIN_M2/I2C5_SCL_M3/UART1_TX_M1/GPIO1_B6_d	
S71	E27	**MIPI_CAMERA2_CLK_M0**/SPDIF1_TX_M0/PCIE30X2_PERSTN_M3/HDMI_RX_CEC_M2/SATA2_ACT_LED_M1/I2C5_SDA_M3/UART1_RX_M1/PWM13_M2/GPIO1_B7_u	
S72	F24	**MIPI_CAMERA3_CLK_M0**/HDMI_RX_SCL_M2/I2C8_SCL_M2/UART1_RTSN_M1/PWM14_M2/GPIO1_D6_u	
S73	F25	**MIPI_CAMERA4_CLK_M0**/PCIE30X2_CLKREQN_M3/HDMI_RX_SDA_M2/I2C8_SDA_M2/UART1_CTSN_M1/PWM15_IR_M3/GPIO1_D7_u	

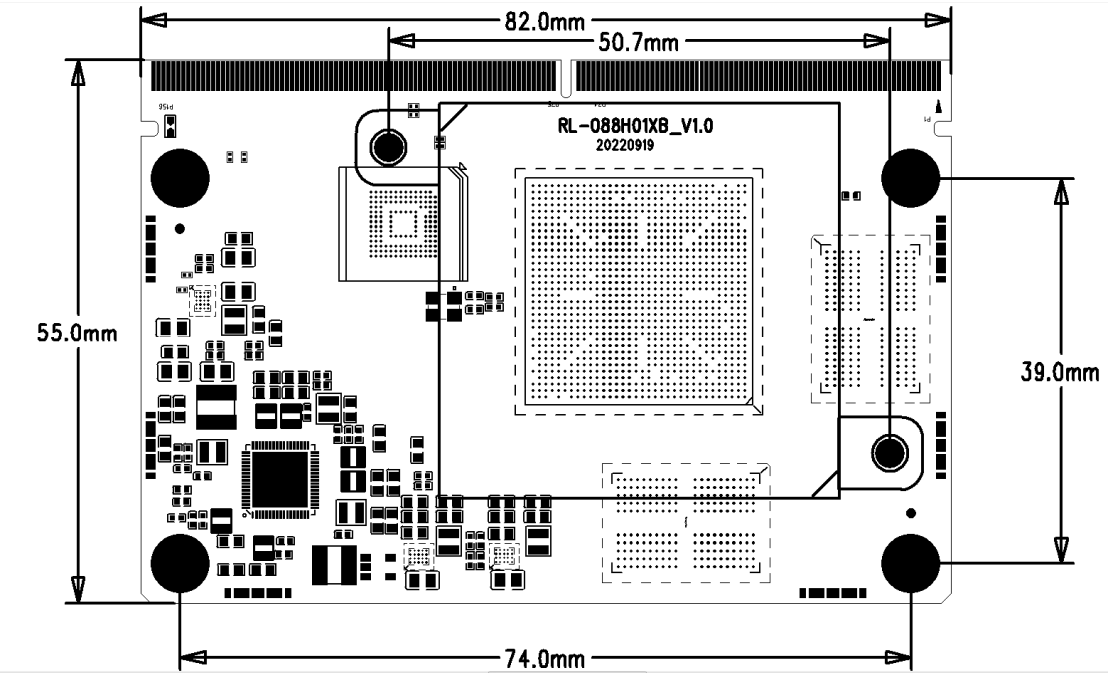
S74		GND	
S75		**VCC_VDCEN**	上电自动开机电压（选择预留，可不用）
S76	AH27	**ETH1_REFCLKO_25M**/MIPI_CAMERA1_CLK_M1/I2C4_SCL_M0/GPIO3_A6_d	
S77	AH30	**GMAC1_RXCLK**/SDIO_CLK_M1/MIPI_CAMERA0_CLK_M1/FSPI_CLK_M2/I2C4_SDA_M0/UART8_CTSN_M1/GPIO3_A5_d	
S78	AH29	**GMAC1_RXDV_CRS**/MIPI_CAMERA4_CLK_M1/UART2_TX_M2/PWM2_M1/GPIO3_B1_d	
S79	AG29	**GMAC1_RXD0**/MIPI_CAMERA2_CLK_M1/PWM8_M0/GPIO3_A7_u	
S80	AG28	**GMAC1_RXD1**/MIPI_CAMERA3_CLK_M1/PWM9_M0/GPIO3_B0_u	
S81	AD27	**GMAC1_RXD2**/SDIO_D2_M1/I2S3_LRCK/AUDDSM_LP/FSPI_D2_M2/UART8_TX_M1/SPI4_CLK_M1/GPIO3_A2_u	
S82	AE27	**GMAC1_RXD3**/SDIO_D3_M1/I2S3_SDO/AUDDSM_RN/FSPI_D3_M2/UART8_RX_M1/SPI4_CS0_M1/GPIO3_A3_u	
S83	AE29	**GMAC1_MCLKINOUT**/I2S2_LRCK_M1/CAN1_TX_M0/UART3_RX_M1/PWM13_M0/GPIO3_B6_d	
S84	AD28	**GMAC1_TXCLK**/SDIO_CMD_M1/I2S3_SDI/AUDDSM_RP/UART8_RTSN_M1/SPI4_CS1_M1/GPIO3_A4_d	
S85	AD29	**GMAC1_TXEN**/I2S2_SCLK_M1/CAN1_RX_M0/UART3_TX_M1/PWM12_M0/GPIO3_B5_u	
S86	AC28	**GMAC1_TXD0**/I2S2_SDO_M1/UART2_RTSN/GPIO3_B3_u	
S87	AC29	**GMAC1_TXD1**/I2S2_MCLK_M1/UART2_CTSN/GPIO3_B4_u	
S88	AA29	**GMAC1_TXD2**/SDIO_D0_M1/I2S3_MCLK/FSPI_D0_M2/I2C6_SDA_M4/PWM10_M0/SPI4_MISO_M1/GPIO3_A0_u	
S89	AA30	**GMAC1_TXD3**/SDIO_D1_M1/I2S3_SCLK/AUDDSM_LN/FSPI_D1_M2/I2C6_SCL_M4/PWM11_IR_M0/SPI4_MOSI_M1/GPIO3_A1 _u	
S90	AA28	GMAC1_PTP_REF_CLK/HDMI_TX1_HPD_M1/I2C3_SCL_M1/SPI1_MOSI_M1/GPIO3_B7_d	
S91	AE28	GMAC1_TXER/I2S2_SDI_M1/UART2_RX_M2/PWM3_IR_M1/GPIO3_B2_d	
S92	Y31	**GMAC1_MDC**/MIPI_TE0/I2C8_SCL_M4/UART7_RTSN_M1/PWM14_M0/SPI1_CS0_M1/GPIO3_C2_d	

S93	Y30	**GMAC1_MDIO**/MIPI_TE1/I2C8_SDA_M4/UART7_CTSN_M1/PWM15_IR_M0/SPI1_CS1_M1/GPIO3_C3_d	
S94	AE30	CLK32K_OUT1/GPIO2_C5_d	
S95	AE31	GMAC0_RXDV_CRS/UART7_RTSN_M0/PWM2_M2/SPI3_CS0_M0/GPIO4_C2_d	
S96	AE32	GMAC0_RXCLK/**SDIO_D2_M0**/FSPI_D2_M1/I2C8_SCL_M1/UART6_RTSN_M0/GPIO2_B0_u	
S97	AD32	GMAC0_RXD0/I2C2_SCL_M1/UART1_CTSN_M0/SPI1_MISO_M0/GPIO2_C1_d	
S98	AC30	GMAC0_PPSCLK/TEST_CLKOUT_M1/HDMI_TX1_CEC_M0/**UART9_RX_M0**/SPI1_CS1_M0/GPIO2_C4_d	
S99	AD31	GMAC0_RXD1/I2C6_SDA_M2/UART9_TX_M0/SPI1_MOSI_M0/GPIO2_C2_d	
S100	AD30	ETH0_REFCLKO_25M/**I2S2_SDI_M0**/I2C6_SCL_M2/SPI1_CS0_M0/GPIO2_C3_d	
S101	AC32	GMAC0_RXD2/**SDIO_D0_M0**/FSPI_D0_M1/UART6_RX_M0/GPIO2_A6_u	
S102	AC31	GMAC0_RXD3/**SDIO_D1_M0**/FSPI_D1_M1/UART6_TX_M0/GPIO2_A7_u	
S103	AB31	GMAC0_PTP_REFCLK/FSPI_CSON_M1/HDMI_TX1_SDA_M0/**I2C4_SDA_M1**/UART7_RX_M0/GPIO2_B4_u	
S104	AB30	GMAC0_PPSTRING/FSPI_CS1N_M1/HDMI_TX1_SCL_M0/**I2C4_SCL_M1**/UART7_TX_M0/GPIO2_B5_u	
S105	U33	LITCPU_AVS/SPI3_CLK_M2/GPIO0_D3_u	
S106	V31	I2S1_SDI2_M1/PDM0_SDI0_M1/**I2C6_SDA_M0**/UART1_RTSN_M2/PWM6_M0/SPI0_MISO_M0/PCIE30X4_WAKEN_M0/GPIO0_C7_d	
S107	W31	I2S1_SDI3_M1/PDM0_SDI1_M1/**I2C6_SCL_M0**/UART1_CTSN_M2/PWM7_IR_M0/SPI3_MISO_M2/PCIE30X4_PERSTN_M0/GPIO0_D0_d	
S108	T29	I2S1_SDI1_M1/NPU_AVS/UART0_RTSN/PWM5_M1/SPI0_CLK_M0/PCIE30X4_CLKREQN_M0/SATA_CP_POD/GPIO0_C6_u	
S109	P30	I2S1_SDI0_M1/GPU_AVS/UART0_TX_M0/I2C4_SCL_M2/DP1_HPDIN_M1/PWM4_M0/PCIE30X1_0_PERSTN_M0/GPIO0_C5_u	
S110	R30	PDM0_CLK1_M1/PWM2_M0/UART0_RX_M0/I2C4_SDA_M2/DP0_HPDIN_M1/PCIE30X1_0_WAKEN_M0/GPIO0_C4_d	
S111		GND	
S112	P29	I2S1_MCLK_M1/JTAG_TCK_M2/I2C1_SCL_M0/**UART2_TX_M0**/PCIE30X1_1_CLKREQN_M0/GPIO0_B5_d	
S113	R29	I2S1_SCLK_M1/JTAG_TMS_M2/I2C1_SDA_M0/**UART2_RX_M0**/PCIE30X1_1_WAKEN_M0/GPIO0_B6_d	

S114	T28	I2S1_LRCK_M1/PWM0_M0/I2C2_SCL_M0/CAN0_TX_M0/SPI0_CS1_M0/PCIE30X1_1_PERSTN_M0/GPIO0_B7_d	
S115	T31	PDM0_CLK0_M1/PWM1_M0/I2C2_SDA_M0/CAN0_RX_M0/SPI0_MOSI_M0/PCIE30X1_0_CLKREQN_M0/GPIO0_C0_d	
S116	P33	REFCLK_OUT/GPIO0_A0_d	
S117	P31	SDMMC_DET/GPIO0_A4_u	
S118	K29	CLK32K_IN/CLK32K_OUT0/GPIO0_B2_u	
S119	L30	SPI2_CS1_M2/I2C1_SCL_M1/UART0_RX_M1/GPIO0_B0_z	
S120		GND	
S121	J31	PCIE20_2_RXP/SATA30_2_RXP/USB30_SSRXP	
S122	J30	PCIE20_2_RXN/SATA30_2_RXN/USB30_SSRXN	
S123	H30	PCIE20_2_TXP/SATA30_2_TXP/USB30_SSTXP	
S124	H29	PCIE20_2_TXN/SATA30_2_TXN/USB30_SSTXN	
S125	G31	PCIE20_2_REFCLKP	
S126	G30	PCIE20_2_REFCLKN	
S127		GND	
S128	G29	**I2C3_SDA_M0**/UART3_RX_M0/SPI4_MISO_M0/GPIO1_C0_z	
S129	G27	**I2C3_SCL_M0**/UART3_TX_M0/SPI4_MOSI_M0/GPIO1_C1_z	
S130	F30	**I2S0_MCLK**/I2C6_SDA_M1/UART3_RTSN/PWM3_IR_M2/SPI4_CLK_M0/GPIO1_C2__d	
S131	E31	**I2S0_SCLK**/I2C6_SCL_M1/UART3_CTSN/PWM7_IR_M2/SPI4_CS0_M0/GPIO1_C3_d	
S132	E30	PDM0_CLK1_M0/I2C2_SDA_M3/PWM11_IR_M2/SPI4_CS1_M0/GPIO1_C4_d	
S133	D30	**I2S0_LRCK**/I2C2_SCL_M3/UART4_RTSN/GPIO1_C5_d	
S134	D29	PDM0_CLK0_M0/I2C4_SDA_M4/PWM15_IR_M2/GPIO1_C6_d	
S135	E29	**I2S0_SDO0**/I2C4_SCL_M4/UART4_CTSN/GPIO1_C7_d	
S136	F26	I2S0_SDO1/**I2C7_SCL_M0**/UART6_TX_M2/SPI1_MISO_M2/GPIO1_D0_d	
S137	F27	I2S0_SDO2/I2S0_SDI3/PDM0_SDI1_M0/**I2C7_SDA_M0**/UART6_RX_M2/SPI1_MOSI_M2/GPIO1_D1_d	
S138	F28	I2S0_SDO3/I2S0_SDI2/PDM0_SDI2_M0/I2C1_SCL_M4/UART4_TX_M0/PWM0_M1/SPI1_CLK_M2/GPIO1_D2_d	

S139	E28	I2S0_SDI1/PDM0_SDI3_M0/I2C1_SDA_M4/UART4_RX_M0/PWM1_M1/SPI1_CS0_M2/GPIO1_D3_d	
S140	D28	I2S0_SDI0/GPIO1_D4_d	
S141	G26	PDM0_SDI0_M0/SPI1_CS1_M2/GPIO1_D5_d	
S142	D27	PDM1_CLK1_M1/**PCIE30X1_0_WAKEN_M2**/SATA0_ACT_LED_M1/UART4_TX_M2/SPI0_CLK_M2/GPIO1_B3_d	
S143	E24	PDM1_CLK0_M1/**PCIE30X1_0_PERSTN_M2**/UART7_RX_M2/SPI0_CS0_M2/GPIO1_B4_u	
S144	E25	**PCIE30X1_0_CLKREQN_M2**/UART7_TX_M2/SPI0_CS1_M2/GPIO1_B5_u	
S145		PMIC_EXT_EN_OUT	底板 DC-DC 开关使能
S146		PWRON_L	开关机控制
S147	M31	NPOR_u	复位
S148		GND	
S149		**VCCA_3V3_S0**	3.3V Output Max:300mA
S150		**VCC_1V8_S0**	1.8V Output Max:200mA
S151		**VCC_1V8_S3**	1.8V Output (Pin:P149/S151 Total Max:400mA)
S152		**VCC_3V3_S3**	3.3V Output (Pin:P150/S152 Total Max:800mA)
S153		GND	
S154		VCC4V0_SYS	核心板主供电
S155		VCC4V0_SYS	
S156		VCC4V0_SYS	
S157		VCC4V0_SYS	
S158		VCC4V0_SYS	

五、结构图



图五（平面结构尺寸图）

六. 运输、存储、使用条件

1. 储存环境：防静电，防潮，防积压，防冲击

2. 输入电压：DC4V 电源纹波小于 50mv

3. 适宜工作环境温度：0 ~ 60℃

4. 极限工作环境温度：-20 ~ 70℃

5. 空气环境相对湿度：20% ~ 90%

6. 正常存储环境温度：-20~ 60℃

七、物理尺寸

82.00mm×55.00mm×5.00mm（长 L×宽 W×高 H）

八、温馨提示

使用注意事项：

1，注意装配过程中的静电保护措施；
2，底板设计严格按照连接器的规格及接口定义，不能有各接口之间的任何连接错误；
3，注意底板与核心板电源输入接口管脚定义对应，不能插反或电压不匹配；
4，4V 电源输入功率大于 6A,纹波需小于 50MV，根据具体使用环境灵活选择合适的电源 DC-DC 芯片；
5，注意核心板的几路电源输出注意不要超功率使用。

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