IDO-SOM3588S-V1 核心板规格书

IDO-SOM3588S-V1

核心板规格书

深圳触觉智能科技有限公司

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文档修订历史

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1. 产品介绍

1.1 产品概述

　　IDO-SOM3588S-V1采用瑞芯微最新旗舰SOC芯片RK3588S。RK3588S搭载八核64位CPU，主频高达2.4GHz；集成ARM Mali-G610 MP4四核GPU，内置AI加速器NPU，可提供6Tops算力，支持主流的深度学习框架；RK3588S内置多种功能强大的嵌入式硬件引擎，支持8K@60fps的H.265 和VP9解码器、8K@30fps的H.264 解码器和4K@60fps的AV1解码器；支持8K@30fps 的H.264和H.265编码器，高质量的JPEG编码器/解码器，专门的图像预处理器和后处理器。应用可覆盖边缘计算、人工智能、云计算、虚拟/增强现实、智能安防、智慧医疗、自助终端、智能零售等行业。RK3588S Soc框图，如下图所示：
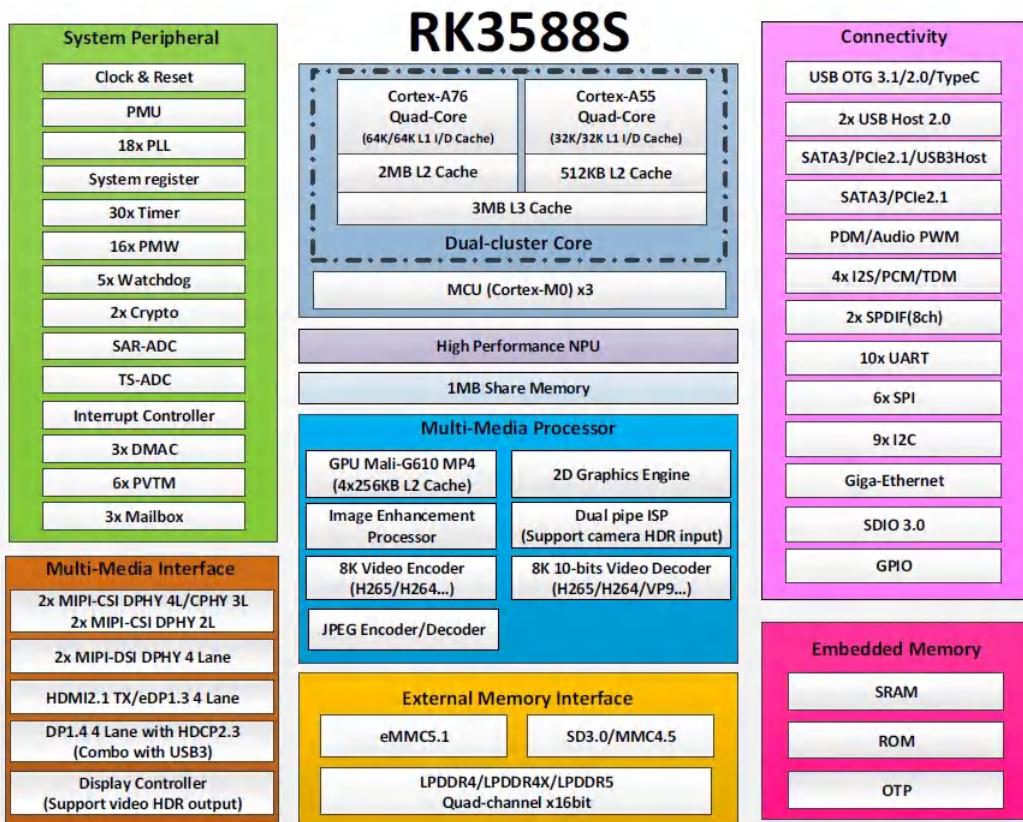
IDO-SOM3588S-V1核心板进行了严格的电源 完整性和信号完整性仿真设计，通过各项电磁兼容、温度冲击、高温高湿老化、长时间存储压力等测试， 稳定可靠，批量供货。用户仅需设计外围电路即可快速实现项目的稳定量产，IDO-SOM3588S-V1模块逻辑框图，如下图所示：

| TypeC OTG x1 /DP1.4 x1 | USB 3.0 x1 USB2.0 x2 | HDMI2.1TX x1 /eDP1.3 x1 | MIPI-DSI x2 | MIPI-RX x3 | PCIE2.1 x2 /SATA3.0 x2 | SDIO x1 | DVP x1 |

| RK806-1 | RK3588S Quad-A76 2.4G Quad-A55 1.8G | eMMC 32/64/128/256GB |
| ES8388 | | LPDDR4/4X 4/8/16/32GB |

| Audio in/out | SPI x4 | UART x10 | IIC x6 | IIS x3 | PWM x16 | ADC x4 | RGMII x1 | GPIO x93 |
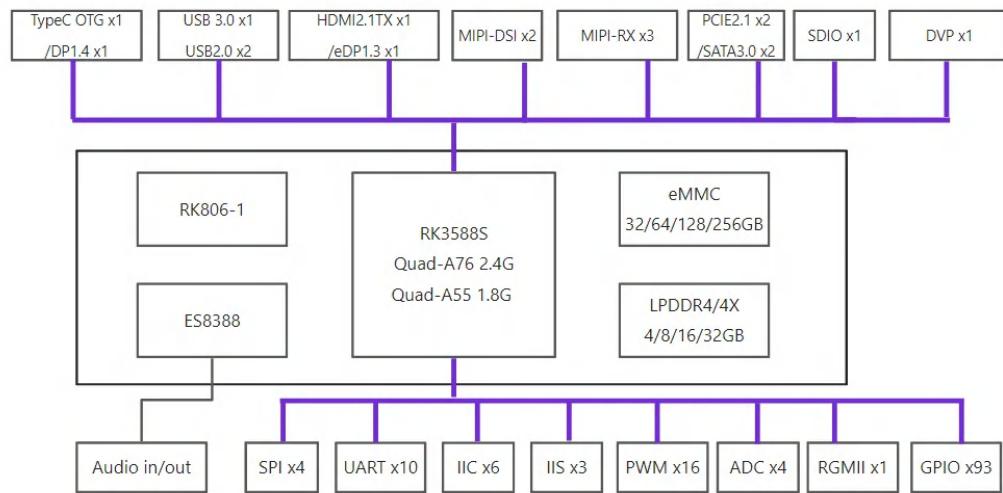
1.2 产品特点

1. 搭载RK3588S高性能SOC，集成了四核Cortex-A76和四核Cortex-A55 CPU，主频高达2.4G；
2. NPU算力高达6Tops，支持INT4/INT8/INT16/FP16混合运算，满足大多数人工智能模型的算力需求；
3. 强大的编解码能力，最高支持8K@60fps；
4. 4.5*5cm超小尺寸邮票孔+LGA封装，10层盲埋孔沉金工艺；
5. 丰富的系统支持， Android ， Ubuntu，Debian ， OpenHarmoney全面支持。

1.3 产品图片

IDO-SOM3588S-V1核心板正面，如下图所示：
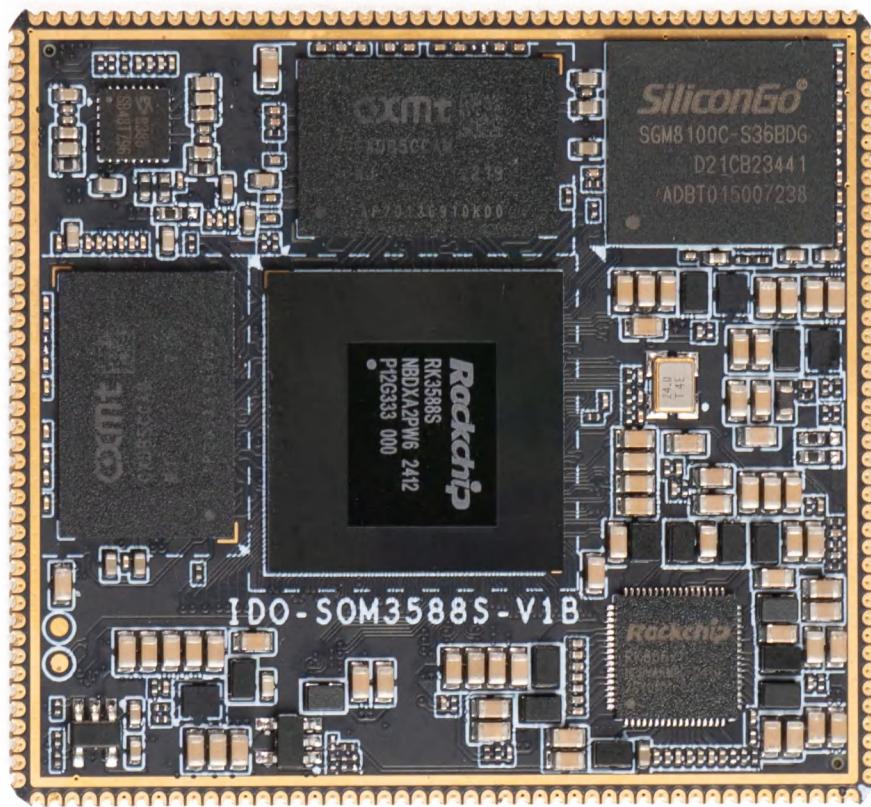
IDO-SOM3588S-V1核心板背面，如下图所示：
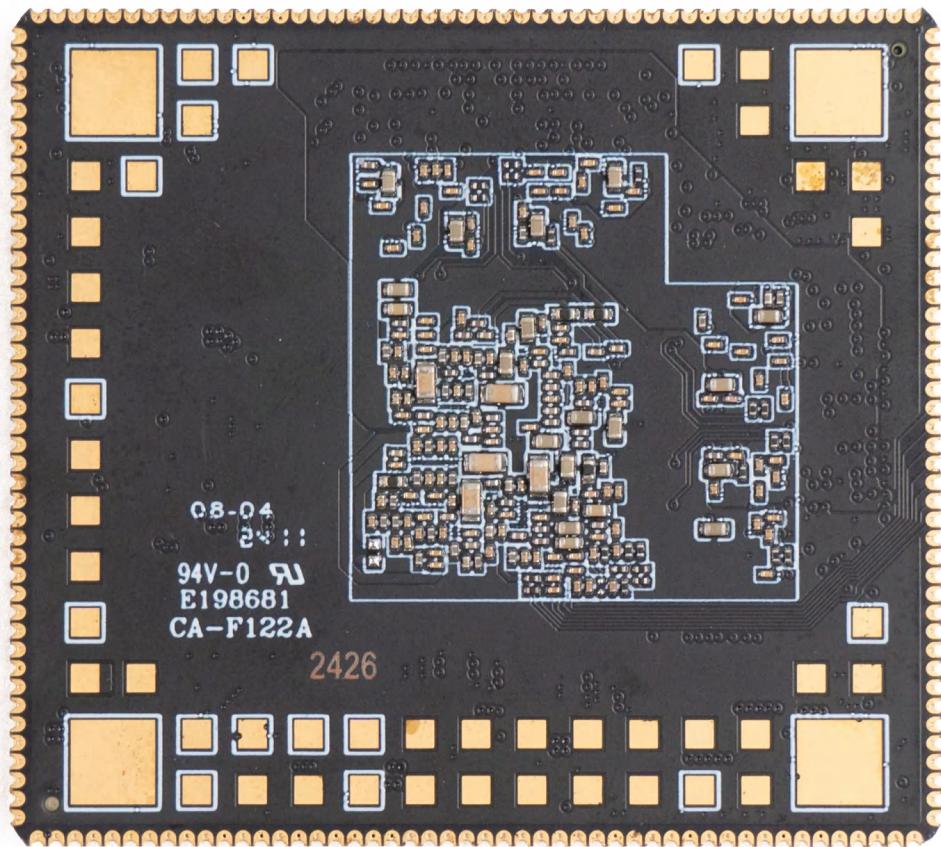
2. 硬件参数规格

2.1 基本参数

基本参数，如下表所示：

基本参数	
SOC系统芯片	RockChip RK3588S
CPU中央处理器	Quad-core Cortex-A76 and quad-core Cortex-A55，主频高达2.4GHz

GPU图形处理器	• Mali-G610 GPU
	• 支持OpenGL ES 3.2，OpenCL 2.2，Vulkan 1.1
	• 内嵌高性能2D、3D加速硬件
NPU嵌入式神经网络处理器	支持6.0T算力，支持INT4/INT8/INT16/FP16运算
VPU视频处理单元	视频解码 • H.265/AVS2/VP9, 8bits/10bits， 8K@60fps • H.264/AV1, 8bits/10bits， 8K@30fps • Multi-channel decoder in parallel for less resolution (4K/1080p/720p etc.) 视频编码 • H.265/H.264, 8K@30fps • Multi-channel encoder in parallel for less resolution (1080p/720p etc.) Muti-format 视频解码 • H.265/H.264, 8K@30fps • 1080P@60fps video decoder for VP8/AVS1/AVS1+/MPEG-4
内存	4GB/8GB/16GB 32GB LPDDR4/4x
存储	32GB/64GB/128GB/256GB eMMC
硬件参数	
网络	集成GMAC/SDIO3.0/USB3.0接口，可扩展1路千兆以太网、WiFi/蓝牙、5G/4G LTE

显示	视频输出： • 1 * HDMI2.1/eDP1.3，最高8K@60Hz 支持 HDCP2.3；支持eDP1.3，4K@60Hz，支持HDCP1.3; HDMI 和 eDP 不能同时工作 • 2 * MIPI DSI，支持 2 个 MIPI DPHY 2.0 或 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 视频输入： • 1 * MIPI CSI （4 Lane） 或者 2*MIPI CSI (2 Lane) • 2 * MIPI DPHY V2.0 (4lanes, 4.5Gbps/lane); MIPI CPHY V1.1（3lanes, 2.5Gsps/lane) • 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 最高可以实现四屏异显（1 * HDMI + 2 * MIPI DSI + 1 * DP）
音频	3 × I2S 2 × SPDIF 2 × PDM
USB	1 × USB2.0 OTG 1 × USB3.1 OTG 1 × USB3.1 HOST 2 × USB2.0 HOST
PCIe/SATA	2 × PCIe2.1或2 × SATA3.0
扩展接口	10 × UART 4 × SPI 3 × I2S 6 × I2C 1 × SDMMC 16 × PWM 4 × ADC 93 × GPIO
其他	
主板尺寸	4.5cm X 5cm
接口类型	邮票孔+LGA封装

PCB规格	板厚 1.1mm，10层板 高Tg材质，沉金工艺

2.2 工作环境

核心板工作环境，如下表所示：

工作环境	
工作温度	0~+70℃
存储温度	−40～+85℃
存储湿度	10%~80%

2.3 系统支持

核心板支持系统，如下表所示：

序号	操作系统	支持	说明
1	Android	✅	/
2	Debian	✅	/
3	Ubuntu	✅	/
4	Buildroot	✅	/
5	OpenHarmoney	✅	/

3. PCB 尺寸和电气参数

3.1 PCB尺寸

IDO−SOM3588S−V1核心板正面尺寸，如下图所示：
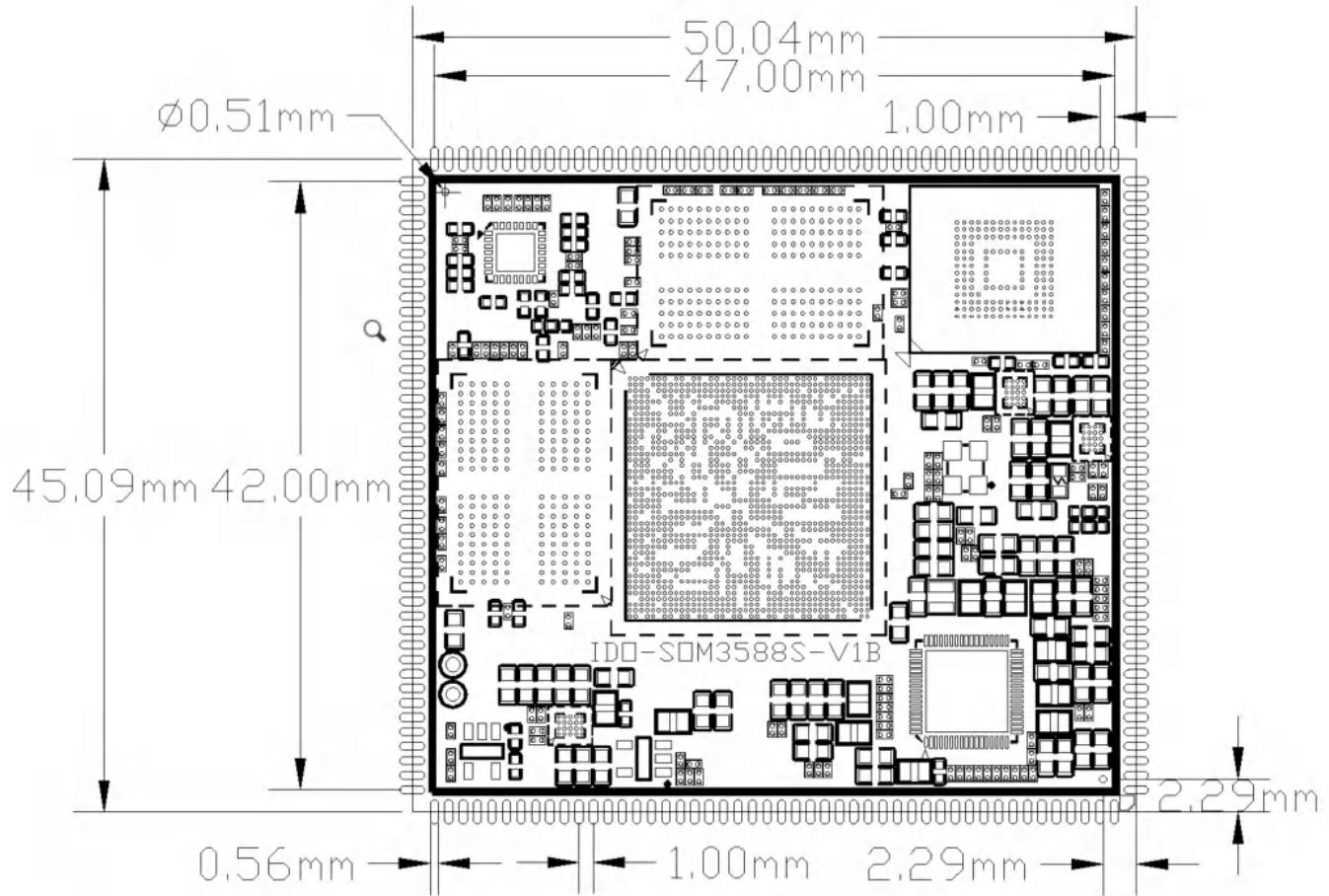
IDO-SOM3588S-V1核心板背面尺寸，如下图所示：
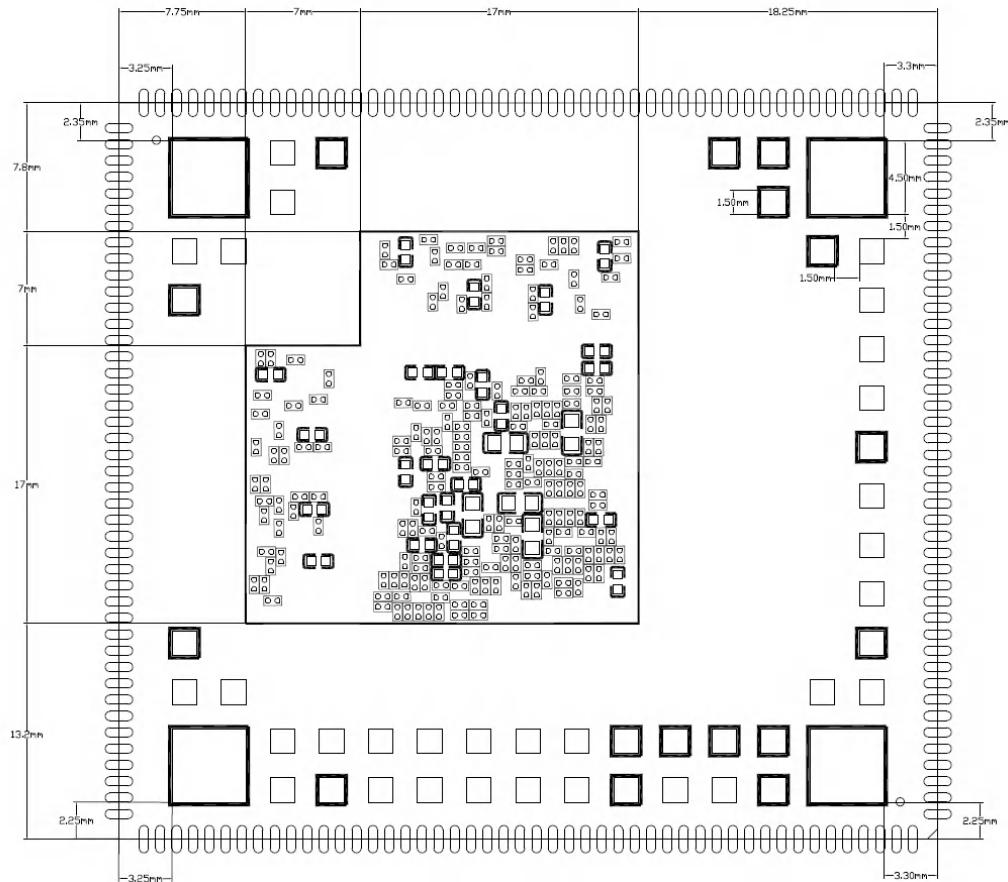
4 电气特性

4.1 主电源输入

主电源输入，如下表所示：

电源名称	最小电压	标称值	最大电压	峰值电流	待机电流	关机电流
VCC_SYS	4.0V	4.5V	5.5V	4.5V/3000mA	4.5V/5mA	<1mA

4.2 IO电源输入

IO电源输入，如下表所示：

电源名称	最小电压	最大电压	限制电流	备注
VCCIO4	1.75V	3.4V	100mA	VCCIO4电源域电压
VCCIO5	1.75V	3.4V	100mA	VCCIO5电源域电压

4.3 电源输出

电源输出，如下表所示：

电源名称	最小电压	标称值	最大电压	限制电流
VCC_1V8_S3	1.75V	1.8V	1.85V	100mA
VCC_1V8_S0	1.75V	1.8V	1.85V	100mA
VCC_3V3_S0	3.2V	3.3V	3.4V	100mA

5 采购型号

采购型号，如下表所示：

采购型号	LPDDR4/4x	eMMC	标称工作温度
IDO-SOM3588S-V1-D4E64	4GB	64GB	0~+70 ℃
IDO-SOM3588S-V1-D4E128	4GB	128GB	0~+70 ℃
IDO-SOM3588S-V1-D8E64	8GB	64GB	0~+70 ℃
IDO-SOM3588S-V1-D8E128	8GB	128GB	0~+70 ℃
IDO-SOM3588S-V1-D8E256	8GB	256GB	0~+70 ℃
IDO-SOM3588S-V1-D16E128	16GB	128GB	0~+70 ℃
IDO-SOM3588S-V1-D16E256	16GB	256GB	0~+70 ℃

6 引脚定义

IDO-SOM3588S-V1核心板引脚示意图，如下图所示：

```
som3588s
2   GMAC1_PTP_REF_CLK/I2C3_SCL_M1/SPI1_MOSI_M1/GPIO3_B7_d
3   GMAC1_MCLKINOUT/I2S2_LRCK_M1/CAN1_TX_M0/UART3_RX_M1/PWM13_M0/GPIO3_B6_d
4   GMAC1_TXEN/I2S2_SCLK_M1/CAN1_RX_M0/UART3_TX_M1/PWM12_M0/GPIO3_B5_u
5   GMAC1_TXD1/I2S2_MCLK_M1/UART2_CTSN/GPIO3_B4_u                          VCCIO5
6   GMAC1_TXD0/I2S2_SDO_M1/UART2_RTSN/GPIO3_B3_u                          1.8V/3.3V
7   GMAC1_TXER/I2S2_SDI_M1/UART2_RX_M2/PWM3_IR_M1/GPIO3_B2_d
8   GMAC1_RXDV_CRS/MIPI_CAMERA4_CLK_M1/UART2_TX_M2/PWM2_M1/GPIO3_B1_d
9   GMAC1_RXD1/MIPI_CAMERA3_CLK_M1/PWM9_M0/GPIO3_B0_u
10  GMAC1_RXD0/MIPI_CAMERA2_CLK_M1/PWM8_M0/GPIO3_A7_u
11  ETH1_REFCLKO_25M/MIPI_CAMERA1_CLK_M1/I2C4_SCL_M0/GPIO3_A6_d
12  GMAC1_RXCLK/SDIO_CLK_M1/MIPI_CAMERA0_CLK_M1/FSPI_CLK_M2/I2C4_SDA_M0/UART8_CTSN_M1/GPIO3_A5_d
13  GMAC1_TXCLK/SDIO_CMD_M1/I2S3_SDI/AUDDSM_RP/UART8_RTSN_M1/SPI4_CS1_M1/GPIO3_A4_d
14  GMAC1_RXD3/SDIO_D3_M1/I2S3_SDO/AUDDSM_RN/FSPI_D3_M2/UART8_RX_M1/SPI4_CS0_M1/GPIO3_A3_u
15  GMAC1_RXD2/SDIO_D2_M1/I2S3_LRCK/AUDDSM_LP/FSPI_D2_M2/UART8_TX_M1/SPI4_CLK_M1/GPIO3_A2_u
16  GMAC1_TXD3/SDIO_D1_M1/I2S3_SCLK/AUDDSM_LN/FSPI_D1_M2/I2C6_SCL_M4/PWM11_IR_M0/SPI4_MOSI_M1/GPIO3_A1_u
17  GMAC1_TXD2/SDIO_D0_M1/I2S3_MCLK/FSPI_D0_M2/I2C6_SDA_M4/PWM10_M0/SPI4_MISO_M1/GPIO3_A0_u
18  MCU_JTAG_TMS_M1/UART9_TX_M2/PWM11_IR_M3/SPI0_CS1_M3/GPIO3_D5_d
19  HDMI_TX0_HPD_M1/MCU_JTAG_TCK_M1/UART9_RX_M2/SPI0_CS0_M3/GPIO3_D4_d
20  CIF_D15/I2C7_SDA_M2/UART9_CTSN_M2/PWM10_M2/SPI0_CLK_M3/GPIO3_D3_d
21  CIF_D14/I2C7_SCL_M2/UART9_RTSN_M2/SPI0_MOSI_M3/GPIO3_D2_d
22  CIF_D13/PCIE20X1_2_PERSTN_M0/UART4_TX_M1/PWM7_M2/SPI0_MISO_M3/GPIO3_D1_d
23  CIF_D12/PCIE20X1_2_WAKEN_M0/HDMI_TX0_SDA_M2/I2C5_SDA_M0/UART4_RX_M1/PWM8_M2/SPI3_CLK_M3/GPIO3_D0_u
24  CIF_D11/PCIE20X1_2_CLKREQN_M0/HDMI_TX0_SCL_M2/I2C5_SCL_M0/SPI3_MOSI_M3/GPIO3_C7_u
25  CIF_D10/SPI3_MISO_M3/GPIO3_C6_u
26  CIF_D9/FSPI_CS1N_M2/CAN2_TX_M0/UART5_RX_M1/SPI3_CS1_M3/GPIO3_C5_u
27  CIF_D8/FSPI_CS0N_M2/CAN2_RX_M0/UART5_TX_M1/SPI3_CS0_M3/GPIO3_C4_u
28  GMAC1_MDIO/MIPI_TE1/I2C8_SDA_M4/UART7_CTSN_M1/PWM15_IR_M0/SPI1_CS1_M1/GPIO3_C3_d
29  GMAC1_MDC/MIPI_TE0/I2C8_SCL_M4/UART7_RTSN_M1/PWM14_M0/SPI1_CS0_M1/GPIO3_C2_d
30  GMAC1_PPSCLK/UART7_RX_M1/SPI1_CLK_M1/GPIO3_C1_d
31  GMAC1_PPSTRIG/I2C3_SDA_M1/UART7_TX_M1/SPI1_MISO_M1/GPIO3_C0_d
44  VCCIO5


32  MIPI_CSI0_CLK1P
33  MIPI_CSI0_CLK1N
34  MIPI_CSI0_D3P
35  MIPI_CSI0_D3N
36  MIPI_CSI0_D2P
37  MIPI_CSI0_D2N                                      MIPI_CSI_RX0
38  MIPI_CSI0_CLK0P
39  MIPI_CSI0_CLK0N
40  MIPI_CSI0_D1P
41  MIPI_CSI0_D1N
42  MIPI_CSI0_D0P
43  MIPI_CSI0_D0N


45  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
46  I2S1_SDO2_M1/PDM0_SDI2_M1/PWM3_IR_M0/I2C1_SCL_M2/CAN2_RX_M1/HDMI_TX0_SDA_M1/SPI3_CS0_M2/SATA_CPDET/GPIO0_D4_u
47  LITCPU_AVS/SPI3_CLK_M2/GPIO0_D3_u
48  I2S1_SDI3_M1/PDM0_SDI1_M1/I2C6_SCL_M0/UART1_CTSN_M2/PWM7_IR_M0/SPI3_MISO_M2/GPIO0_D0_d
49  I2S1_SDI2_M1/PDM0_SDI0_M1/I2C6_SDA_M0/UART1_RTSN_M2/PWM6_M0/SPI0_MISO_M0/GPIO0_C7_d
50  I2S1_SDI1_M1/NPU_AVS/UART0_RTSN/PWM5_M1/SPI0_CLK_M0/SATA_CP_POD/GPIO0_C6_u
51  I2S1_SDI0_M1/GPU_AVS/UART0_TX_M0/I2C4_SCL_M2/PWM4_M0/GPIO0_C5_u      PMUIO2
52  PDM0_CLK1_M1/PWM2_M0/UART0_RX_M0/I2C4_SDA_M2/DP0_HPDIN_M1/GPIO0_C4_d  VCC_1V8_S3
53  I2S1_SCLK_M1/JTAG_TMS_M2/I2C1_SDA_M0/UART2_RX_M0/PCIE20X1_1_WAKEN_M0/GPIO0_B6_d
54  I2S1_MCLK_M1/JTAG_TCK_M2/I2C1_SCL_M0/UART2_TX_M0/PCIE20X1_1_CLKREQN_M0/GPIO0_B5_d


55  SPI2_CS1_M2/I2C1_SCL_M1/UART0_RX_M1/GPIO0_B0_z
56  CLK32K_IN/CLK32K_OUT0/GPIO0_B2_u                   PMUIO1
57  SDMMC_DET/GPIO0_A4_u                               VCC_1V8_S3
58  REFCLK_OUT/GPIO0_A0_d


59  PCIE20_0_RXP/SATA30_0_RXP
60  PCIE20_0_RXN/SATA30_0_RXN
61  PCIE20_0_TXP/SATA30_0_TXP
62  PCIE20_0_TXN/SATA30_0_TXN
63  PCIE20_0_REFCLKP
64  PCIE20_0_REFCLKN                                   PCIE20
65  PCIE20_2_TXP/SATA30_2_TXP/USB30_2_SSTXP            SATA30
66  PCIE20_2_TXN/SATA30_2_TXN/USB30_2_SSTXN            USB30
67  PCIE20_2_RXP/SATA30_2_RXP/USB30_2_SSRXP
68  PCIE20_2_RXN/SATA30_2_RXN/USB30_2_SSRXN
69  PCIE20_2_REFCLKP
70  PCIE20_2_REFCLKN
```

```
71   VCCIO4
72   MIPI_CAMERA4_CLK_M0/I2C8_SDA_M2/UART1_CTSN_M1/PWM15_IR_M3/GPIO1_D7_u
73   MIPI_CAMERA3_CLK_M0/I2C8_SCL_M2/UART1_RTSN_M1/PWM14_M2/GPIO1_D6_u
74   MIPI_CAMERA2_CLK_M0/SPDIF1_TX_M0/SATA2_ACT_LED_M1/I2C5_SDA_M3/UART1_RX_M1/PWM13_M2/GPIO1_B7_u
75   MIPI_CAMERA1_CLK_M0/SPDIF0_TX_M0/I2C5_SCL_M3/UART1_TX_M1/PWM13_M2/GPIO1_B6_u
76   UART7_TX_M2/SPI0_CS1_M2/GPIO1_B5_u
77   PDM1_CLK0_M1/UART7_RX_M2/SPI0_CS0_M2/GPIO1_B4_u
78   PDM1_CLK1_M1/SATA0_ACT_LED_M1/UART4_TX_M2/SPI0_CLK_M2/GPIO1_B3_d
79   PDM1_SDI3_M1/UART4_RX_M2/SPI0_MOSI_M2/GPIO1_B2_d
80   PDM1_SDI2_M1/SPI0_MISO_M2/GPIO1_B1_d
81   PDM1_SDI1_M1/SPI2_CS1_M0/GPIO1_B0_u
82   PDM1_SDI0_M1/PCIE20X1_1_PERSTN_M2/PWM3_IR_M3/SPI2_CS0_M0/GPIO1_A7_u
83   SPI2_CLK_M0/GPIO1_A6_d
84   HDMI_TX0_HPD_M0/SPI2_MOSI_M0/GPIO1_A5_d
85   SPI2_MISO_M0/GPIO1_A4_d
86   I2C4_SCL_M3/UART6_CTSN_M1/PWM1_M2/SPI4_CS0_M2/GPIO1_A3_d
87   VOP_POST_EMPTY/I2C4_SDA_M3/UART6_RTSN_M1/PWM0_M2/SPI4_CLK_M2/GPIO1_A2_d
88   PCIE20X1_1_WAKEN_M2/I2C2_SCL_M4/UART6_TX_M1/SPI4_MOSI_M2/GPIO1_A1_d
89   PCIE20X1_1_CLKREQN_M2/DP0_HPDIN_M2/I2C2_SDA_M4/UART6_RX_M1/SPI4_MISO_M2/GPIO1_A0_d

94   SDMMC_D2/PDM1_SDI1_M0/JTAG_TCK_M0/I2C8_SCL_M0/UART5_CTSN_M0/GPIO4_D2_u
95   SDMMC_D3/PDM1_SDI0_M0/JTAG_TMS_M0/I2C8_SDA_M0/UART5_RTSN_M0/PWM10_M1/GPIO4_D3_u
96   SDMMC_CMD/PDM1_CLK1_M0/MCU_JTAG_TCK_M0/CAN0_TX_M1/UART5_TX_M0/GPIO4_D4_u
97   SDMMC_CLK/PDM1_CLK0_M0/TEST_CLKOUT_M0/MCU_JTAG_TMS_M0/CAN0_RX_M1/UART5_TX_M0/GPIO4_D5_d
98   SDMMC_D0/PDM1_SDI3_M0/JTAG_TCK_M1/I2C3_SCL_M4/UART2_TX_M1/PWM8_M1/GPIO4_D0_u
99   SDMMC_D1/PDM1_SDI2_M0/JTAG_TMS_M1/I2C3_SDA_M4/UART2_RX_M1/PWM9_M1/GPIO4_D1_u
```

VCCIO4
1.8V/3.3V

VCCIO2
VCCIO_SD_S0

```
100  BT1120_D15/SPDIF1_TX_M2/PCIE20X1_2_PERSTN_M1/HDMI_TX0_CEC_M0/I2C8_SDA_M3/PWM6_M1/SPI3_CS1_M1/GPIO4_C1_d
101  BT1120_D14/PCIE20X1_2_WAKEN_M1/HDMI_TX0_SDA_M0/I2C8_SCL_M3/SPI3_CS0_M1/GPIO4_C0_u
102  BT1120_D13/PCIE20X1_2_CLKREQN_M1/HDMI_TX0_SCL_M0/DDRPHY_CH3_DTB3/I2C5_SDA_M1/SPI3_CLK_M1/GPIO4_B7_u
103  BT1120_D12/SATA0_ACT_LED_M0/DDRPHY_CH3_DTB2/I2C5_SCL_M1/PWM13_M1/SPI3_MOSI_M1/GPIO4_B6_d
104  BT1120_D11/DDRPHY_CH3_DTB1/UART9_RX_M1/PWM12_M1/SPI3_MISO_M1/GPIO4_B5_d
105  CIF_CLKOUT/BT1120_D10/I2S1_SDO3_M0/DP0_HPDIN_M0/SPDIF0_TX_M1/DDRPHY_CH3_DTB0/UART9_TX_M1/PWM11_IR_M1/GPIO4_B4_u
106  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
107  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
108  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
109  CIF_CLKIN/BT1120_CLKOUT/I2S1_SDI3_M0/DDRPHY_CH2_DTB0/I2C6_SDA_M3/UART8_TX_M0/SPI2_CS1_M1/GPIO4_B0_u
110  CIF_D7/BT1120_D7/I2S1_SDI2_M0/DDRPHY_CH1_DTB3/I2C5_SDA_M2/SPI2_CS0_M1/GPIO4_A7_d
111  CIF_D6/BT1120_D6/I2S1_SDI1_M0/DDRPHY_CH1_DTB2/I2C5_SCL_M2/UART3_RX_M2/SPI2_CLK_M1/GPIO4_A6_d
112  CIF_D5/BT1120_D5/I2S1_SDI0_M0/DDRPHY_CH1_DTB_1/I2C3_SDA_M2/UART3_TX_M2/SPI2_MOSI_M1/GPIO4_A5_d
113  CIF_D4/BT1120_D4/DDRPHY_CH1_DTB_0/I2C3_SCL_M2/UART0_RX_M2/SPI2_MISO_M1/GPIO4_A4_d
114  CIF_D3/BT1120_D3/I2S1_SCLK_M0/DDRPHY_CH0_DTB_3/UART0_TX_M2/GPIO4_A3_d
115  CIF_D2/BT1120_D2/I2S1_LRCK_M0/PCIE20X1_1_PERSTN_M1/DDRPHY_CH0_DTB2/SPI0_CLK_M1/GPIO4_A2_d
116  CIF_D1/BT1120_D1/I2S1_SCLK_M0/PCIE20X1_1_WAKEN_M1/DDRPHY_CH0_DTB_1/UART9_CTSN_M1/SPI0_MOSI_M1/GPIO4_A1_d
117  CIF_D0/BT1120_D0/I2S1_MCLK_M0/PCIE20X1_1_CLKREQN_M1/DDRPHY_CH0_DTB0/UART9_RTSN_M1/SPI0_MISO_M1/GPIO4_A0_d
```

VCCIO6
VCC_3V3_S0

```
232 231 230 229 228 227 226 225 214 213 211 208 202 199 198 195 194 193 188 184  1
GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND GND
```

GND

POWER
```
                           VCCA_IN        180
                          VCC_SYSIN       181
                          VCC_SYSIN       182
                       VCC_1V8_S0_OUT     136
                       VCC_3V3_S0_OUT     135
                       VCC_1V8_S3_OUT     183
```

PMIC
```
                        PMIC_RESET_L      212
                            PWRON_L       179
                           PMIC_VDC       178
                       PMIC_EXT_EN_OUT    177
```

AUDIO
```
                             MIC1N        196
                             MIC1P        215
                             ROUT1        197
                             LOUT1        216
                             ROUT2        93
                             LOUT2        92
                             MIC2P        91
                             MIC2N        90
```

USB20
```
                  TYPEC0_USB20_VBUSDET    210
                   TYPEC0_USB20_OTG_ID    209
                       TYPEC0_OTG_DP      124
                       TYPEC0_OTG_DM      123
                       USB20_HOST1_DP     122
                       USB20_HOST1_DM     121
                       USB20_HOST0_DP     120
                       USB20_HOST0_DM     119
```

USB30/DP
```
                  TYPEC0_SSTX2N/DP0_TX3N  146
                  TYPEC0_SSTX2P/DP0_TX3P  145
                  TYPEC0_SSRX2P/DP0_TX2P  144
                  TYPEC0_SSRX2N/DP0_TX2N  143
                  TYPEC0_SSTX1N/DP0_TX1N  142
                  TYPEC0_SSTX1P/DP0_TX1P  141
                  TYPEC0_SSRX1P/DP0_TX0P  140
                  TYPEC0_SSRX1N/DP0_TX0N  139
                  TYPEC0_SBU1/DP0_AUXP    138
                  TYPEC0_SBU2/DP0_AUXN    137
```

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SARADC VCCA_1V8_s0	
SARADC_VIN5	201
SARADC_VIN4	218
SARADC_VIN3	219
SARADC_VIN2	217
SARADC_VIN1_KEY/RECOVERY	118
SARADC_VIN0_BOOT	200

VCCIO1 / VCC_1V8_S0

- PDM0_CLK0_M0/I2C4_SDA_M4/PWM15_IR_M2/GPIO1_C6_d — 192
- I2C3_SCL_M0/UART3_TX_M0/SPI4_MOSI_M0/GPIO1_C1_z — 191
- PDM0_SDI0_M0/SPI1_CS1_M2/GPIO1_D5_d — 190
- I2S0_SDO3/I2S0_SDI2/PDM0_SDI2_M0/I2C1_SCL_M4/UART4_TX_M0/PWM0_M1/SPI1_CLK_M2/GPIO1_D2_d — 189
- I2C3_SDA_M0/UART3_RX_M0/SPI4_MISO_M0/GPIO1_C0_z — 187
- I2S0_SDI1/PDM0_SDI3_M0/I2C1_SDA_M4/UART4_RX_M0/PWM1_M1/SPI1_CS0_M2/GPIO1_D3_d — 186
- PDM0_CLK1_M0/I2C2_SDA_M3/PWM11_IR_M2/SPI4_CS1_M0/GPIO1_C4_d — 185

MIPI_DPHY1_RX / MIPI_CPHY1_RX

- MIPI_DPHY1_RX_D3P — 207
- MIPI_DPHY1_RX_D3N/MIPI_CPHY1_RX_TRIO2_C — 224
- MIPI_DPHY1_RX_D2P/MIPI_CPHY1_RX_TRIO2_B — 206
- MIPI_DPHY1_RX_D2N/MIPI_CPHY1_RX_TRIO2_A — 223
- MIPI_DPHY1_RX_CLKP/MIPI_CPHY1_RX_TRIO1_C — 205
- MIPI_DPHY1_RX_CLKN/MIPI_CPHY1_RX_TRIO1_B — 222
- MIPI_DPHY1_RX_D1P/MIPI_CPHY1_RX_TRIO1_A — 204
- MIPI_DPHY1_RX_D1N/MIPI_CPHY1_RX_TRIO0_C — 221
- MIPI_DPHY1_RX_D0P/MIPI_CPHY1_RX_TRIO0_B — 203
- MIPI_DPHY1_RX_D0N/MIPI_CPHY1_RX_TRIO0_A — 220

MIPI_DPHY0_RX / MIPI_CPHY0_RX

- MIPI_DPHY0_RX_D3P — 176
- MIPI_DPHY0_RX_D3N/MIPI_CPHY0_RX_TRIO2_C — 175
- MIPI_DPHY0_RX_D2P/MIPI_CPHY0_RX_TRIO2_B — 174
- MIPI_DPHY0_RX_D2N/MIPI_CPHY0_RX_TRIO2_A — 173
- MIPI_DPHY0_RX_CLKP/MIPI_CPHY0_RX_TRIO1_C — 172
- MIPI_DPHY0_RX_CLKN/MIPI_CPHY0_RX_TRIO1_B — 171
- MIPI_DPHY0_RX_D1P/MIPI_CPHY0_RX_TRIO1_A — 170
- MIPI_DPHY0_RX_D1N/MIPI_CPHY0_RX_TRIO0_C — 169
- MIPI_DPHY0_RX_D0P/MIPI_CPHY0_RX_TRIO0_B — 168
- MIPI_DPHY0_RX_D0N/MIPI_CPHY0_RX_TRIO0_A — 167

MIPI_DPHY0_TX / MIPI_CPHY0_TX

- MIPI_DPHY0_TX_D3P — 166
- MIPI_DPHY0_TX_D3N/MIPI_CPHY0_TX_TRIO2_C — 165
- MIPI_DPHY0_TX_D2P/MIPI_CPHY0_TX_TRIO2_B — 164
- MIPI_DPHY0_TX_D2N/MIPI_CPHY0_TX_TRIO2_A — 163
- MIPI_DPHY0_TX_CLKP/MIPI_CPHY0_TX_TRIO1_C — 162
- MIPI_DPHY0_TX_CLKN/MIPI_CPHY0_TX_TRIO1_B — 161
- MIPI_DPHY0_TX_D1P/MIPI_CPHY0_TX_TRIO1_A — 160
- MIPI_DPHY0_TX_D1N/MIPI_CPHY0_TX_TRIO0_C — 159
- MIPI_DPHY0_TX_D0P/MIPI_CPHY0_TX_TRIO0_B — 158
- MIPI_DPHY0_TX_D0N/MIPI_CPHY0_TX_TRIO0_A — 157

MIPI_DPHY1_TX / MIPI_CPHY1_TX

- MIPI_DPHY1_TX_D3P — 156
- MIPI_DPHY1_TX_D3N/MIPI_CPHY1_TX_TRIO2_C — 155
- MIPI_DPHY1_TX_D2P/MIPI_CPHY1_TX_TRIO2_B — 154
- MIPI_DPHY1_TX_D2N/MIPI_CPHY1_TX_TRIO2_A — 153
- MIPI_DPHY1_TX_CLKP/MIPI_CPHY1_TX_TRIO1_C — 152
- MIPI_DPHY1_TX_CLKN/MIPI_CPHY1_TX_TRIO1_B — 151
- MIPI_DPHY1_TX_D1P/MIPI_CPHY1_TX_TRIO1_A — 150
- MIPI_DPHY1_TX_D1N/MIPI_CPHY1_TX_TRIO0_C — 149
- MIPI_DPHY1_TX_D0P/MIPI_CPHY1_TX_TRIO0_B — 148
- MIPI_DPHY1_TX_D0N/MIPI_CPHY1_TX_TRIO0_A — 147

HMDI_TX V2.1 / eDP_TX V1.3

- HDMI_TX0_D2P/EDP_TX0_D2P — 134
- HDMI_TX0_D2N/EDP_TX0_D2N — 133
- HDMI_TX0_D1P/EDP_TX0_D1P — 132
- HDMI_TX0_D1N/EDP_TX0_D1N — 131
- HDMI_TX0_D0P/EDP_TX0_D0P — 130
- HDMI_TX0_D0N/EDP_TX0_D0N — 129
- HDMI_TX0_D3P/EDP_TX0_D3P — 128
- HDMI_TX0_D3N/EDP_TX0_D3N — 127
- HDMI_TX0_SBDP/EDP_TX0_AUXP — 126
- HDMI_TX0_SBDN/EDP_TX0_AUXN — 125

附录：引脚列表

引脚列表，如下表所示：

Num	Pin Name	Signal Name	Power Rail

1	GND	GND	GND
2	HP_DET_L_GPIO3_B7	GMAC1_PTP_REF_CLK	1.8V
		I2C3_SCL_M1	
		SPI1_MOSI_M1	
		GPIO3_B7_d	
3	GMAC1_MCLKINOUT	GMAC1_MCLKINOUT	1.8V
		I2S2_LRCK_M1	
		UART3_RX_M1	
		PWM13_M0	
		GPIO3_B6_d	
4	GMAC1_TXEN	GMAC1_TXEN	1.8V
		I2S2_SCLK_M1	
		CAN1_RX_M0	
		UART3_TX_M1	
		PWM12_M0	
		GPIO3_B5_u	
5	GMAC1_TXD1	GMAC1_TXD1	1.8V
		I2S2_MCLK_M1	
		UART2_CTSN	
		GPIO3_B4_u	
6	GMAC1_TXD0	GMAC1_TXD0	1.8V
		I2S2_SDO_M1	
		UART2_RTSN	
		GPIO3_B3_u	
7	USB3_PWREN_H_GPI	GMAC1_TXER	1.8V

		O3_B2	I2S2_SDI_M1	
			UART2_RX_M2	
			PWM3_IR_M1	
			GPIO3_B2_d	
8	GMAC1_RXDV_CRS		GMAC1_RXDV_CRS	1.8V
			MIPI_CAMERA4_CLK_M1	
			UART2_TX_M2	
			PWM2_M1	
			GPIO3_B1_d	
9	GMAC1_RXD1		GMAC1_RXD1	1.8V
			MIPI_CAMERA3_CLK_M1	
			PWM9_M0	
			GPIO3_B0_u	
10	GMAC1_RXD0		GMAC1_RXD0	1.8V
			MIPI_CAMERA2_CLK_M1	
			PWM8_M0	
			GPIO3_A7_u	
11	MIPI–CAM1_CLK_M1		ETH1_REFCLKO_25M	1.8V
			MIPI_CAMERA1_CLK_M1	
			I2C4_SCL_M0	
			GPIO3_A6_d	
12	GMAC1_RXCLK		GMAC1_RXCLK	1.8V
			SDIO_CLK_M1	

		MIPI_CAMERA0_CLK_M1	
		FSPI_CLK_M2	
		I2C4_SDA_M0	
		UART8_CTSN_M1	
		GPIO3_A5_d	
13	GMAC1_TXCLK	GMAC1_TXCLK	1.8V
		SDIO_CMD_M1	
		I2S3_SDI	
		AUDDSM_RP	
		UART8_RTSN_M1	
		SPI4_CS1_M1	
		GPIO3_A4_d	
14	GMAC1_RXD3	GMAC1_RXD3	1.8V
		SDIO_D3_M1	
		I2S3_SDO	
		AUDDSM_RN	
		FSPI_D3_M2	
		UART8_RX_M1	
		SPI4_CS0_M1	
		GPIO3_A3_u	
15	GMAC1_RXD2	GMAC1_RXD2	1.8V
		SDIO_D2_M1	
		I2S3_LRCK	
		AUDDSM_LP	
		FSPI_D2_M2	

		UART8_TX_M1	
		SPI4_CLK_M1	
		GPIO3_A2_u	
16	GMAC1_TXD3	GMAC1_TXD3	1.8V
		SDIO_D1_M1	
		I2S3_SCLK	
		AUDDSM_LN	
		FSPI_D2_M2	
		I2C6_SCL_M4	
		PWM11_IR_M0	
		SPI4_MOSI_M1	
		GPIO3_A1_u	
17	GMAC1_TXD2	GMAC1_TXD2	1.8V
		SDIO_D0_M1	
		I2S3_MCLK	
		FSPI_D0_M2	
		I2C6_SDA_M4	
		PWM10_M0	
		SPI4_MISO_M1	
		GPIO3_A0_u	
18	UART9_TX_M2_BT	MCU_JTAG_TMS_M1	1.8V
		UART9_TX_M2	
		PWM11_IR_M3	
		SPI0_CS1_M3	
		GPIO3_D5_d	

		HDMI_TX0_HPD_M1	
19	UART9_RX_M2_BT	MCU_JTAG_TCK_M1	1.8V
		UART9_RX_M2	
		SPI0_CS0_M3	
		GPIO3_D4_d	
20	UART9_CTSN_M2_BT	CIF_D15	1.8V
		I2C7_SDA_M2	
		UART9_CTSN_M2	
		PWM10_M2	
		SPI0_CLK_M3	
		GPIO3_D3_d	
21	UART9_RTSN_M2_BT	CIF_D14	1.8V
		I2C7_SCL_M2	
		UART9_RTSN_M2	
		SPI0_MOSI_M3	
		GPIO3_D2_d	
22	MIPI_CAM0_PDN_L_GPIO3_D1	CIF_D13	1.8V
		PCIE20X1_2_PERSTN_M0	
		UART4_TX_M1	
		PWM9_M2	
		SPI0_MISO_M3	
		GPIO3_D1_d	
23	MIPI_CAM0_RESET_L_GPIO3_D0	CIF_D12	1.8V
		PCIE20X1_2_WAKEN_M0	

		HDMI_TX0_SDA_M2	
		I2C5_SDA_M0	
		UART4_RX_M1	
		PWM8_M2	
		SPI3_CLK_M3	
		GPIO3_D0_u	
24	MIPI_CAM1_RESET_L_GPIO3_C7	CIF_D11	1.8V
		PCIE20X1_2_CLKREQN_M0	
		HDMI_TX0_SCL_M2	
		I2C5_SCL_M0	
		SPI3_MOSI_M3	
		GPIO3_C7_u	
25	MIPI_CAM1_PDN_L_GPIO3_C6	CIF_D10	1.8V
		SPI3_MISO_M3	
		GPIO3_C6_u	
26	USB_HOST1_PWREN_H_GPIO3_C5	CIF_D9	1.8V
		FSPI_CS1N_M2	
		CAN2_TX_M0	
		UART5_RX_M1	
		SPI3_CS1_M3	
		GPIO3_C5_u	
27	MIPI_CAM2_PWDN_GPIO3_C4	CIF_D8	1.8V
		FSPI_CS0N_M2	
		CAN2_RX_M0	
		UART5_TX_M1	

		SPI3_CS0_M3	
		GPIO3_C4_u	
28	GMAC1_MDIO	GMAC1_MDIO	1.8V
		MIPI_TE1	
		I2C8_SDA_M4	
		UART7_CTSN_M1	
		PWM15_IR_M0	
		SPI1_CS1_M1	
		GPIO3_C3_d	
29	GMAC1_MDC	GMAC1_MDC	1.8V
		MIPI_TE0	
		I2C8_SCL_M4	
		UART7_RTSN_M1	
		PWM14_M0	
		SPI1_CS0_M1	
		GPIO3_C2_d	
30	USB4_PWREN_H_GPIO3_C1	GMAC1_PPSCLK	1.8V
		UART7_RX_M1	
		SPI1_CLK_M1	
		GPIO3_C1_d	
31	MIPI_CAM2_RST_GPIO3_C0	GMAC1_PPSTRIG	1.8V
		I2C3_SDA_M1	
		UART7_TX_M1	
		SPI1_MISO_M1	
		GPIO3_C0_d	

32	MIPI–CSI0_CLK1P	MIPI_CSI0_CLK1P	1.8V
33	MIPI–CSI0_CLK1N	MIPI_CSI0_CLK1N	1.8V
34	MIPI–CSI0_D3P	MIPI_CSI0_D3P	1.8V
35	MIPI–CSI0_D3N	MIPI_CSI0_D3N	1.8V
36	MIPI–CSI0_D2P	MIPI_CSI0_D2P	1.8V
37	MIPI–CSI0_D2N	MIPI_CSI0_D2N	1.8V
38	MIPI–CSI0_CLK0P	MIPI_CSI0_CLK0P	1.8V
39	MIPI–CSI0_CLK0N	MIPI_CSI0_CLK0N	1.8V
40	MIPI–CSI0_D1P	MIPI_CSI0_D1P	1.8V
41	MIPI–CSI0_D1N	MIPI_CSI0_D1N	1.8V
42	MIPI–CSI0_D0P	MIPI_CSI0_D0P	1.8V
43	MIPI–CSI0_D0N	MIPI_CSI0_D0N	1.8V
44	VCC1V8_S3	VCCIO5	1.8V/400mA OUTPUT
45	SYS_LED_GPIO0_D5	I2S1_SDO3_M1	1.8V
		CPU_BIG1_AVS	
		I2C1_SDA_M2	
		CAN2_TX_M1	
		HDMI_TX0_SCL_M1	
		SPI3_CS1_M2	
		SATA_MP_SWITCH	
		GPIO0_D5_u	
46	WIFI_REG_ON_H_GPIO0_D4	I2S1_SDO2_M1	1.8V
		PDM0_SDI2_M1	
		PWM3_IR_M0	
		I2C1_SCL_M2	

		CAN2_RX_M1	
		HDMI_TX0_SDA_M1	
		SPI3_CS0_M2	
		SATA_CPDET	
		GPIO0_D4_u	
47	WIFI_WAKE_HOST_H_GPIO0_D3	LITCPU_AVS	1.8V
		SPI3_CLK_M2	
		GPIO0_D3_u	
48	BT_WAKE_HOST_H_GPIO0_D0	I2S1_SDI3_M1	1.8V
		PDM0_SDI1_M1	
		I2C6_SCL_M0	
		UART1_CTSN_M2	
		PWM7_IR_M	
		SPI3_MISO_M2	
		GPIO0_D0_d	
49	HOST_WAKE_BT_H_GPIO0_C7	I2S1_SDI2_M1	1.8V
		PDM0_SDI0_M1	
		I2C6_SDA_M0	
		UART1_RTSN_M2	
		PWM6_M0	
		SPI0_MISO_M0	
		GPIO0_C7_d	
50	BT_REG_ON_H_GPIO0_C6	I2S1_SDI1_M1	1.8V
		NPU_AVS	
		UART0_RTSN	

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		PWM5_M1	
		SPI0_CLK_M0	
		SATA_CP_POD	
		GPIO0_C6_u	
51	TYPEC0_CC_INT_L_GPIO0_C5	I2S1_SDI0_M1	1.8V
		GPU_AVS	
		UART0_TX_M0	
		I2C4_SCL_M2	
		PWM4_M0	
		GPIO0_C5_u	
52	CAM–PWREN_GPIO0_C4	PDM0_CLK1_M1	1.8V
		PWM2_M0	
		UART0_RX_M0	
		I2C4_SDA_M2	
		DP0_HPDIN_M1	
		GPIO0_C4_d	
53	UART2_RX_M0_DEBUG	I2S1_SCLK_M1	1.8V
		JTAG_TMS_M2	
		I2C1_SDA_M0	
		UART2_RX_M0	
		PCIE20X1_1_WAKEN_M0	
		GPIO0_B6_d	
54	UART2_TX_M0_DEBUG	I2S1_MCLK_M1	1.8V
		JTAG_TCK_M2	
		I2C1_SCL_M0	

		UART2_TX_M0	
		PCIE20X1_1_CLKREQN_M0	
		GPIO0_B5_d	
55	TYPEC0_5V_PWREN_H_GPIO0_B0	SPI2_CS1_M2	1.8V
		I2C1_SCL_M1	
		UART0_RX_M1	
		GPIO0_B0_z	
56	4G_PERSTn_H_GPIO0_B2	CLK32K_IN	1.8V
		CLK32K_OUT0	
		GPIO0_B2_u	
57	USB7_PWREN_H_GPIO0_A4	SDMMC_DET	1.8V
		GPIO0_A4_u	
58	4G_POWER_H_GPIO0_A0	REFCLK_OUT	1.8V
		GPIO0_A0_d	
59	PCIE20_0_RXP/SATA30_0_RXP	PCIE20_0_RXP	3.3V
		SATA30_0_RXP	
60	PCIE20_0_RXN/SATA30_0_RXN	PCIE20_0_RXN	3.3V
		SATA30_0_RXN	
61	PCIE20_0_TXP/SATA30_0_TXP	PCIE20_0_TXP	3.3V
		SATA30_0_TXP	
62	PCIE20_0_TXN/SATA30_0_TXN	PCIE20_0_TXN	3.3V
		SATA30_0_TXN	
63	PCIE20_0_REFCLKP	PCIE20_0_REFCLKP	3.3V
64	PCIE20_0_REFCLKN	PCIE20_0_REFCLKN	3.3V
65	USB30_2_SSTXP	PCIE20_2_TXP	3.3V

		SATA30_2_TXP	
		USB30_2_SSTXP	
66	USB30_2_SSTXN	PCIE20_2_TXN	3.3V
		SATA30_2_TXN	
		USB30_2_SSTXN	
67	USB30_2_SSRXP	PCIE20_2_RXP	3.3V
		SATA30_2_RXP	
		USB30_2_SSRXP	
68	USB30_2_SSRXN	PCIE20_2_RXN	3.3V
		SATA30_2_RXN	
		USB30_2_SSRXN	
69	PCIE20_2_REFCLKP	PCIE20_2_REFCLKP	3.3V
70	PCIE20_2_REFCLKN	PCIE20_2_REFCLKN	3.3V
71	VCC3V3_S0	VCCIO4	3.3V/400mA OUTPUT
72	MIPI−CAM4_CLK_M0	MIPI_CAMERA4_CLK_M0	3.3V
		I2C8_SDA_M2	
		UART1_CTSN_M1	
		PWM15_IR_M3	
		GPIO1_D7_u	
73	MIPI−CAM3_CLK_M0	MIPI_CAMERA3_CLK_M0	3.3V
		I2C8_SCL_M2	
		UART1_RTSN_M1	
		PWM14_M2	
		GPIO1_D6_u	

		MIPI_CAMERA2_CLK_M0	
74	I2C5_SDA_M3	SPDIF1_TX_M0	3.3V
		SATA2_ACT_LED_M1	
		I2C5_SDA_M3	
		UART1_RX_M1	
		PWM13_M2	
		GPIO1_B7_u	
75	I2C5_SCL_M3	MIPI_CAMERA1_CLK_M0	3.3V
		SPDIF0_TX_M0	
		I2C5_SCL_M3	
		UART1_TX_M1	
		GPIO1_B6_u	
76	UART7_TX_M2	UART7_TX_M2	3.3V
		SPI0_CS1_M2	
		GPIO1_B5_u	
77	UART7_RX_M2	PDM1_CLK0_M1	3.3V
		UART7_RX_M2	
		SPI0_CS0_M2	
		GPIO1_B4_u	
78	UART4_TX_M2	PDM1_CLK1_M1	3.3V
		SATA0_ACT_LED_M1	
		UART4_TX_M2	
		SPI0_CLK_M2	
		GPIO1_B3_d	

		PDM1_SDI3_M1	
79	UART4_RX_M2	UART4_RX_M2	3.3V
		SPI0_MOSI_M2	
		GPIO1_B2_d	
80	MIPI_DPHY_TX1_RST_GPIO1_B1	PDM1_SDI2_M1	3.3V
		SPI0_MISO_M2	
		GPIO1_B1_d	
81	PHY1_RSTn_GPIO1_B0	PDM1_SDI1_M1	3.3V
		SPI2_CS1_M0	
		GPIO1_B0_u	
82	PWM3_M3_MIPI	PDM1_SDI0_M1	3.3V
		PCIE20X1_1_PERSTN_M2	
		PWM3_IR_M3	
		SPI2_CS0_M0	
		GPIO1_A7_u	
83	TP_RST_L_GPIO1_A6	SPI2_CLK_M0	3.3V
		GPIO1_A6_d	
84	HDMITX0_HPDIN_M0	HDMI_TX0_HPD_M0	3.3V
		SPI2_MOSI_M0	
		GPIO1_A5_d	
85	TP_INT_L_GPIO1_A4	SPI2_MISO_M0	3.3V
		GPIO1_A4_d	
86	I2C4_SDA_M3/SPI4_CS0_M2	I2C4_SCL_M3	3.3V
		UART6_CTSN_M1	
		PWM1_M2	

		SPI4_CS0_M2	
		GPIO1_A3_d	
87	I2C4_SDA_M3/SPI4_CLK_M2	VOP_POST_EMPTY	3.3V
		I2C4_SDA_M3	
		UART6_RTSN_M1	
		PWM0_M2	
		SPI4_CLK_M2	
		GPIO1_A2_d	
88	UART6_TX_M1/SPI4_MOSI_M2	PCIE20X1_1_WAKEN_M2	3.3V
		I2C2_SCL_M4	
		UART6_TX_M1	
		SPI4_MOSI_M2	
		GPIO1_A1_d	
89	UART6_RX_M1/SPI4_MISOI_M2	PCIE20X1_1_CLKREQN_M2	3.3V
		DP0_HPDIN_M2	
		I2C2_SDA_M4	
		UART6_RX_M1	
		SPI4_MISO_M2	
		GPIO1_A0_d	
90	MIC2_INN	MIC2_INN	3.3V
91	MIC2_INP	MIC2_INP	3.3V
92	LOUT2	LOUT2	3.3V
93	ROUT2	ROUT2	3.3V
94	SDMMC_D2	SDMMC_D2	3.3V

		PDM1_SDI1_M0		
		JTAG_TCK_M0		
		I2C8_SCL_M0		
		UART5_CTSN_M0		
		GPIO4_D2_u		
95	SDMMC_D3	SDMMC_D3	3.3V	
		PDM1_SDI0_M0		
		JTAG_TMS_M0		
		I2C8_SDA_M0		
		UART5_RTSN_M0		
		PWM10_M1		
		GPIO4_D3_u		
96	SDMMC_CMD	SDMMC_CMD	3.3V	
		PDM1_CLK1_M0		
		MCU_JTAG_TCK_M0		
		CAN0_TX_M1		
		UART5_RX_M0		
		PWM7_IR_M1		
		GPIO4_D4_u		
97	SDMMC_CLK	SDMMC_CLK	3.3V	
		PDM1_CLK0_M0		
		TEST_CLKOUT_M0		
		MCU_JTAG_TMS_M0		
		CAN0_RX_M1		
		UART5_TX_M0		

		GPIO4_D5_d	
98	SDMMC_D0	SDMMC_D0	3.3V
		PDM1_SDI3_M0	
		JTAG_TCK_M1	
		I2C3_SCL_M4	
		UART2_TX_M1	
		PWM8_M1	
		GPIO4_D0_u	
99	SDMMC_D1	SDMMC_D1	3.3V
		PDM1_SDI2_M0	
		JTAG_TMS_M1	
		I2C3_SDA_M4	
		UART2_RX_M1	
		PWM9_M1	
		GPIO4_D1_u	
100	HDMITX0_CEC_M0	BT1120_D15	3.3V
		SPDIF1_TX_M2	
		PCIE20X1_2_PERSTN_M1	
		HDMI_TX0_CEC_M0	
		I2C8_SDA_M3	
		PWM6_M1	
		SPI3_CS1_M1	
		GPIO4_C1_d	
101	HDMITX0_SDA_M0	BT1120_D14	3.3V

		PCIE20X1_2_WAKEN_M1	
		HDMI_TX0_SDA_M0	
		I2C8_SCL_M3	
		SPI3_CS0_M1	
		GPIO4_C0_u	
102	HDMITX0_SCL_M0	BT1120_D13	3.3V
		PCIE20X1_2_CLKREQN_M1	
		HDMI_TX0_SCL_M0	
		DDRPHY_CH3_DTB3	
		I2C5_SDA_M1	
		SPI3_CLK_M1	
		GPIO4_B7_u	
103	HDMI0_TX_ON_H_GPIO4_B6	BT1120_D12	3.3V
		SATA0_ACT_LED_M0	
		DDRPHY_CH3_DTB2	
		I2C5_SCL_M1	
		PWM13_M1	
		SPI3_MOSI_M1	
		GPIO4_B6_d	
104	PWM12_M1_LVDS	BT1120_D11	3.3V
		DDRPHY_CH3_DTB1	
		UART9_RX_M1	
		PWM12_M1	
		SPI3_MOSI_M1	

		GPIO4_B5_d	
		CIF_CLKOUT	
		BT1120_D10	
		I2S1_SDO3_M0	
		DP0_HPDIN_M0	
105	PWM11_IR_M1	SPDIF0_TX_M1	3.3V
		DDRPHY_CH3_DTB0	
		UART9_TX_M1	
		PWM11_IR_M1	
		GPIO4_B4_u	
		CIF_VSYNC	
		BT1120_D9	
		I2S1_SDO2_M0	
		PCIE20X1_2_BUTTON_RSTN	
106	TYPEC0_SBU1_DC	DDRPHY_CH2_DTB3	3.3V
		I2C7_SDA_M3	
		UART8_CTSN_M0	
		PWM15_IR_M1	
		CAN1_TX_M1	
		GPIO4_B3_u	
107	TYPEC0_SBU2_DC	CIF_HREF	3.3V
		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	
108	I2C6_SCL_M3	MIPI_CAMERA0_CLK_M0	3.3V
		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	
109	I2C6_SDA_M3	CIF_CLKIN	3.3V
		BT1120_CLKOUT	
		I2S1_SDI3_M0	
		DDRPHY_CH2_DTB0	
		I2C6_SDA_M3	
		UART8_TX_M0	
		SPI2_CS1_M1	
		GPIO4_B0_d	
110	LVDS_ON_H_GPIO4_A	CIF_D7	3.3V

	7	BT1120_D7	
		I2S1_SDI2_M0	
		DDRPHY_CH1_DTB3	
		I2C5_SDA_M2	
		SPI2_CS0_M1	
		GPIO4_A7_d	
111	UART3_RX_M2	CIF_D6	3.3V
		BT1120_D6	
		I2S1_SDI1_M0	
		DDRPHY_CH1_DTB2	
		I2C5_SCL_M2	
		UART3_RX_M2	
		SPI2_CLK_M1	
		GPIO4_A6_d	
112	UART3_TX_M2	CIF_D5	3.3V
		BT1120_D5	
		I2S1_SDI0_M0	
		DDRPHY_CH1_DTB_1	
		I2C3_SDA_M2	
		UART3_TX_M2	
		SPI2_MOSI_M1	
		GPIO4_A5_d	
113	UART0_RX_M2	CIF_D4	3.3V
		BT1120_D4	
		DDRPHY_CH1_DTB_0	

		I2C3_SCL_M2	
		UART0_RX_M2	
		SPI2_MISO_M1	
		GPIO4_A4_d	
114	UART0_TX_M2	CIF_D3	3.3V
		BT1120_D3	
		I2S1_SCLK_M0	
		DDRPHY_CH0_DTB_3	
		UART0_TX_M2	
		GPIO4_A3_d	
115	PCIE20_PERSTn_M1_3V3_L	CIF_D2	3.3V
		BT1120_D2	
		I2S1_LRCK_M0	
		PCIE20X1_1_PERSTN_M1	
		DDRPHY_CH0_DTB2	
		SPI0_CLK_M1	
		GPIO4_A2_d	
116	PCIE20_WAKEn_M1_3V3_L	CIF_D1	3.3V
		BT1120_D1	
		I2S1_SCLK_M0	
		PCIE20X1_1_WAKEN_M1	
		I2S2_SDI_M1	
		DDRPHY_CH0_DTB_1	
		UART9_CTSN_M1	

		SPI0_MOSI_M1	
		GPIO4_A1_d	
117	PCIE20_CLKREQn_M1_3V3_L	CIF_D0	3.3V
		BT1120_D0	
		I2S1_MCLK_M0	
		PCIE20X1_1_CLKREQN_M1	
		DDRPHY_CH0_DTB0	
		UART9_RTSN_M1	
		SPI0_MISO_M1	
		GPIO4_A0_d	
118	SARADC_VIN1_KEY/RECOVERY	SARADC_VIN1_KEY	1.8V
		RECOVERY	
119	USB_HOST0_DM	USB20_HOST0_DM	/
120	USB_HOST0_DP	USB20_HOST0_DP	/
121	USB_HOST1_DM	USB20_HOST1_DM	/
122	USB_HOST1_DP	USB20_HOST1_DP	/
123	TYPEC0_OTG_DM	TYPEC0_OTG_DM	/
124	TYPEC0_OTG_DP	TYPEC0_OTG_DP	/
125	HDMI0_TX_SBDN/eDP0_TX_AUXN	HDMI_TX0_SBDN	/
		EDP_TX0_AUXN	
126	HDMI0_TX_SBDP/eDP0_TX_AUXP	HDMI_TX0_SBDP	/
		EDP_TX0_AUXP	
127	HDMI0_TX3N_PORT/eDP0_TX_D3N	HDMI_TX0_D3N	/
		EDP_TX0_D3N	

128	HDMI0_TX3P_PORT/e DP0_TX_D3P	HDMI_TX0_D3P	/
		EDP_TX0_D3P	
129	HDMI0_TX0N_PORT/e DP0_TX_D0N	HDMI_TX0_D0N	/
		EDP_TX0_D0N	
130	HDMI0_TX0P_PORT/e DP0_TX_D0P	HDMI_TX0_D0P	/
		EDP_TX0_D0P	
131	HDMI0_TX1N_PORT/e DP0_TX_D1N	HDMI_TX0_D1N	/
		EDP_TX0_D1N	
132	HDMI0_TX1P_PORT/e DP0_TX_D1P	HDMI_TX0_D1P	/
		EDP_TX0_D1P	
133	HDMI0_TX2N_PORT/e DP0_TX_D2N	HDMI_TX0_D2N	/
		EDP_TX0_D2N	
134	HDMI0_TX2P_PORT/e DP0_TX_D2P	HDMI_TX0_D2P	/
		EDP_TX0_D2P	
135	VCC3V3_S0	VCC_3V3_S0_OUT	3.3V/400mA OUTPUT
136	VCC1V8_S0	VCC_1V8_S0_OUT	1.8V/400mA OUTPUT
137	TYPEC0_SBU2/DP0_A UXN	TYPEC0_SBU2	/
		DP0_AUXN	
138	TYPEC0_SBU1/DP0_A UXP	TYPEC0_SBU1	/
		DP0_AUXP	
139	TYPEC0_SSRX1N/DP0 _TX0N	TYPEC0_SSRX1N	/
		DP0_TX0N	
140	TYPEC0_SSRX1P/DP0 _TX0P	TYPEC0_SSRX1P	/
		DP0_TX0P	
141	TYPEC0_SSTX1P/DP0 _TX1P	TYPEC0_SSTX1P	/

		DP0_TX1P	
142	TYPEC0_SSTX1N/DP0_TX1N	TYPEC0_SSTX1N	/
		DP0_TX1N	
143	TYPEC0_SSRX2N/DP0_TX2N	TYPEC0_SSRX2N	/
		DP0_TX2N	
144	TYPEC0_SSRX2P/DP0_TX2P	TYPEC0_SSRX2P	/
		DP0_TX2P	
145	TYPEC0_SSTX2P/DP0_TX3P	TYPEC0_SSTX2P	/
		DP0_TX3P	
146	TYPEC0_SSTX2N/DP0_TX3N	TYPEC0_SSTX2N	/
		DP0_TX3N	
147	MIPI_DPHY1_TX_D0N	MIPI_DPHY1_TX_D0N	/
		MIPI_CPHY1_TX_TRIO0_A	
148	MIPI_DPHY1_TX_D0P	MIPI_DPHY1_TX_D0P	/
		MIPI_CPHY1_TX_TRIO0_B	
149	MIPI_DPHY1_TX_D1N	MIPI_DPHY1_TX_D1N	/
		MIPI_CPHY1_TX_TRIO0_C	
150	MIPI_DPHY1_TX_D1P	MIPI_DPHY1_TX_D1P	/
		MIPI_CPHY1_TX_TRIO1_A	
151	MIPI_DPHY1_TX_CLKN	MIPI_DPHY1_TX_CLKN	/
		MIPI_CPHY1_TX_TRIO1_B	
152	MIPI_DPHY1_TX_CLKP	MIPI_DPHY1_TX_CLKP	/

		MIPI_CPHY1_TX_TRIO1_C	
153	MIPI_DPHY1_TX_D2N	MIPI_DPHY1_TX_D2N	/
		MIPI_CPHY1_TX_TRIO2_A	
154	MIPI_DPHY1_TX_D2P	MIPI_DPHY1_TX_D2P	/
		MIPI_CPHY1_TX_TRIO2_B	
155	MIPI_DPHY1_TX_D3N	MIPI_DPHY1_TX_D3N	/
		MIPI_CPHY1_TX_TRIO2_C	
156	MIPI_DPHY1_TX_D3P	MIPI_DPHY1_TX_D3P	/
157	MIPI_DPHY0_TX_D0N	MIPI_DPHY0_TX_D0N	/
		MIPI_CPHY0_TX_TRIO0_A	
158	MIPI_DPHY0_TX_D0P	MIPI_DPHY0_TX_D0P	/
		MIPI_CPHY0_TX_TRIO0_B	
159	MIPI_DPHY0_TX_D1N	MIPI_DPHY0_TX_D1N	/
		MIPI_CPHY0_TX_TRIO0_C	
160	MIPI_DPHY0_TX_D1P	MIPI_DPHY0_TX_D1P	/
		MIPI_CPHY0_TX_TRIO1_A	
161	MIPI_DPHY0_TX_CLKN	MIPI_DPHY0_TX_CLKN	/
		MIPI_CPHY0_TX_TRIO1_B	

162	MIPI_DPHY0_TX_CLKP	MIPI_DPHY0_TX_CLKP	/
		MIPI_CPHY0_TX_TRIO 1_C	
163	MIPI_DPHY0_TX_D2N	MIPI_DPHY0_TX_D2N	/
		MIPI_CPHY0_TX_TRIO 2_A	
164	MIPI_DPHY0_TX_D2P	MIPI_DPHY0_TX_D2P	/
		MIPI_CPHY0_TX_TRIO 2_B	
165	MIPI_DPHY0_TX_D3N	MIPI_DPHY0_TX_D3N	/
		MIPI_CPHY0_TX_TRIO 2_C	
166	MIPI_DPHY0_TX_D3P	MIPI_DPHY0_TX_D3P	/
167	MIPI_DPHY0_RX_D0N	MIPI_DPHY0_RX_D0N	/
		MIPI_CPHY0_RX_TRIO 0_A	
168	MIPI_DPHY0_RX_D0P	MIPI_DPHY0_RX_D0P	/
		MIPI_CPHY0_RX_TRIO 0_B	
169	MIPI_DPHY0_RX_D1N	MIPI_DPHY0_RX_D1N	/
		MIPI_CPHY0_RX_TRIO 0_C	
170	MIPI_DPHY0_RX_D1P	MIPI_DPHY0_RX_D1P	/
		MIPI_CPHY0_RX_TRIO 1_A	
171	MIPI_DPHY0_RX_CLK N	MIPI_DPHY0_RX_CLK N	/

		MIPI_CPHY0_RX_TRIO1_B	
172	MIPI_DPHY0_RX_CLKP	MIPI_DPHY0_RX_CLKP	/
		MIPI_CPHY0_RX_TRIO1_C	
173	MIPI_DPHY0_RX_D2N	MIPI_DPHY0_RX_D2N MIPI_CPHY0_RX_TRIO2_A	/
174	MIPI_DPHY0_RX_D2P	GMAC1_TXCLK_M1 MIPI_CPHY0_RX_TRIO2_B	/
175	MIPI_DPHY0_RX_D3N	MIPI_DPHY0_RX_D3N	/
		MIPI_CPHY0_RX_TRIO2_C	
176	MIPI_DPHY0_RX_D3P	MIPI_DPHY0_RX_D3P	/
177	PMIC_EXT	PMIC_EXT_EN_OUT	/
178	PMIC_VDC	PMIC_VDC	/
179	PWRON_L	PWRON_L	/
180	VCC4V5_SYS	VCCA_IN	/
181	VCC4V5_SOM	VCC_SYSIN	/
182	VCC4V5_SOM	VCC_SYSIN	/
183	VCC1V8_S3	VCC_1V8_S3_OUT	/
184	GND	GND	/
185	USB6_PWREN_H_GPIO1_C4	PDM0_CLK1_M0	1.8V
		I2C2_SDA_M3	
		PWM11_IR_M2	
		SPI4_CS1_M0	

		GPIO1_C4_d	
		I2S0_SDI1	
		PDM0_SDI3_M0	
		I2C1_SDA_M4	
186	I2C1_SDA_M4	UART4_RX_M0	1.8V
		PWM1_M1	
		SPI1_CS0_M2	
		GPIO1_D3_d	
		I2C3_SDA_M0	
187	I2C3_SDA_M0	UART3_RX_M0	1.8V
		SPI4_MISO_M0	
		GPIO1_C0_z	
188	GND	GND	/
		I2S0_SDO3	
		I2S0_SDI2	
		PDM0_SDI2_M0	
189	I2C1_SCL_M4	I2C1_SCL_M4	1.8V
		UART4_TX_M0	
		PWM0_M1	
		SPI1_CLK_M2	
		GPIO1_D2_d	
		PDM0_SDI0_M0	
190	USB5_PWREN_H_GPIO1_D5	SPI1_CS1_M2	1.8V
		GPIO1_D5_d	
191	I2C3_SCL_M0	I2C3_SCL_M0	1.8V

		UART3_TX_M0	
		SPI4_MOSI_M0	
		GPIO1_C1_z	
192	SPK_CTL_H_GPIO1_C6	PDM0_CLK0_M0	1.8V
		I2C4_SDA_M4	
		PWM15_IR_M2	
		GPIO1_C6_d	
193	GND	GND	/
194	GND	GND	/
195	GND	GND	/
196	MIC1_INN	MIC1N	/
197	ROUT1	ROUT1	/
198	GND	GND	/
199	GND	GND	/
200	SARADC_VIN0_BOOT	SARADC_VIN0_BOOT	/
201		SARADC_VIN5	/
202	GND	GND	/
203	MIPI_DPHY1_RX_D0P	MIPI_DPHY1_RX_D0P	/
		MIPI_CPHY1_RX_TRIO0_B	
204	MIPI_DPHY1_RX_D1P	MIPI_DPHY1_RX_D1P	/
		MIPI_CPHY1_RX_TRIO1_A	
205	MIPI_DPHY1_RX_CLKP	MIPI_DPHY1_RX_CLKP	/
		MIPI_CPHY1_RX_TRIO1_C	

206	MIPI_DPHY1_RX_D2P	MIPI_DPHY1_RX_D2P	/
		MIPI_CPHY1_RX_TRIO2_B	
207	MIPI_DPHY1_RX_D3P	MIPI_DPHY1_RX_D3P	/
208	GND	GND	/
209	TYPEC0_OTG_ID	TYPEC0_USB20_OTG_ID	/
210	TYPEC0_USB20_VBUSDET	TYPEC0_USB20_VBUSDET	/
211	GND	GND	/
212	RESET_L	PMIC_RESET_L	/
213	GND	GND	/
214	GND	GND	/
215	MIC1_INP	MIC1P	/
216	LOUT1	LOUT1	/
217	SARADC_VIN2	SARADC_VIN2	/
218	SARADC_VIN4	SARADC_VIN4	/
219	SARADC_VIN3_HP_HOOK	SARADC_VIN3	/
220	MIPI_DPHY1_RX_D0N	MIPI_DPHY1_RX_D0N	/
		MIPI_CPHY1_RX_TRIO0_A	
221	MIPI_DPHY1_RX_D1N	MIPI_DPHY1_RX_D1N	/
		MIPI_CPHY1_RX_TRIO0_C	
222	MIPI_DPHY1_RX_CLKN	MIPI_DPHY1_RX_CLKN	/
		MIPI_CPHY1_RX_TRIO1_B	

223	MIPI_DPHY1_RX_D2N	MIPI_DPHY1_RX_D2N	/
		MIPI_CPHY1_RX_TRIO 2_A	
224	MIPI_DPHY1_RX_D3N	MIPI_DPHY1_RX_D3N	/
		MIPI_CPHY1_RX_TRIO 2_C	
225	GND	GND	GND
226	GND	GND	GND
227	GND	GND	GND
228	GND	GND	GND
229	GND	GND	GND
230	GND	GND	GND
231	GND	GND	GND
232	GND	GND	GND