

# 浩聚 PX30 核心板产品规格书

## V1.1



目录

一、 产品简介..... 3

二、 规格参数..... 5

三、 规格尺寸..... 6

四、 接口定义..... 7

## 一、产品简介

### 1、工业级四核处理器

采用 PX30 工业级 64 位低功耗处理器，拥有四核 Cortex-A35，双核 Mail-G31 GPU。提供多种存储配置选择，用户仅需扩展功能底板即可快速实现项目研产。

### 2、丰富的扩展接口

I2C、UART、SPI、SDIO3.0、USB2.0、PWM、RMII、I2S（支持 8 路数字麦克风阵列输入）

### 3、沉金接口，稳固可靠、布局紧凑美观

采用 SODIMM 260P 接口，数据传输和扩展性能得到很好的发挥，沉金工艺引脚，耐腐蚀，2 螺柱固定，牢固可靠。设计尺寸仅有 70mm x 50mm，节约更多宝贵空间。工作温度 0°C-80°C，可选温度-20°C-80°C。长时间运行性能稳定。

### 4、强大的硬件解码能力

多格式 1080P 60fps 视频解码 (H.265, H.264, VC-1, MPEG-1/2/4, VP8)

1080P 视频编码，支持 H.264, VP8

### 5、支持多种显示接口

支持 RGB/LVDS/MIPI-DSI 接口，支持双 VOP（双屏显示）

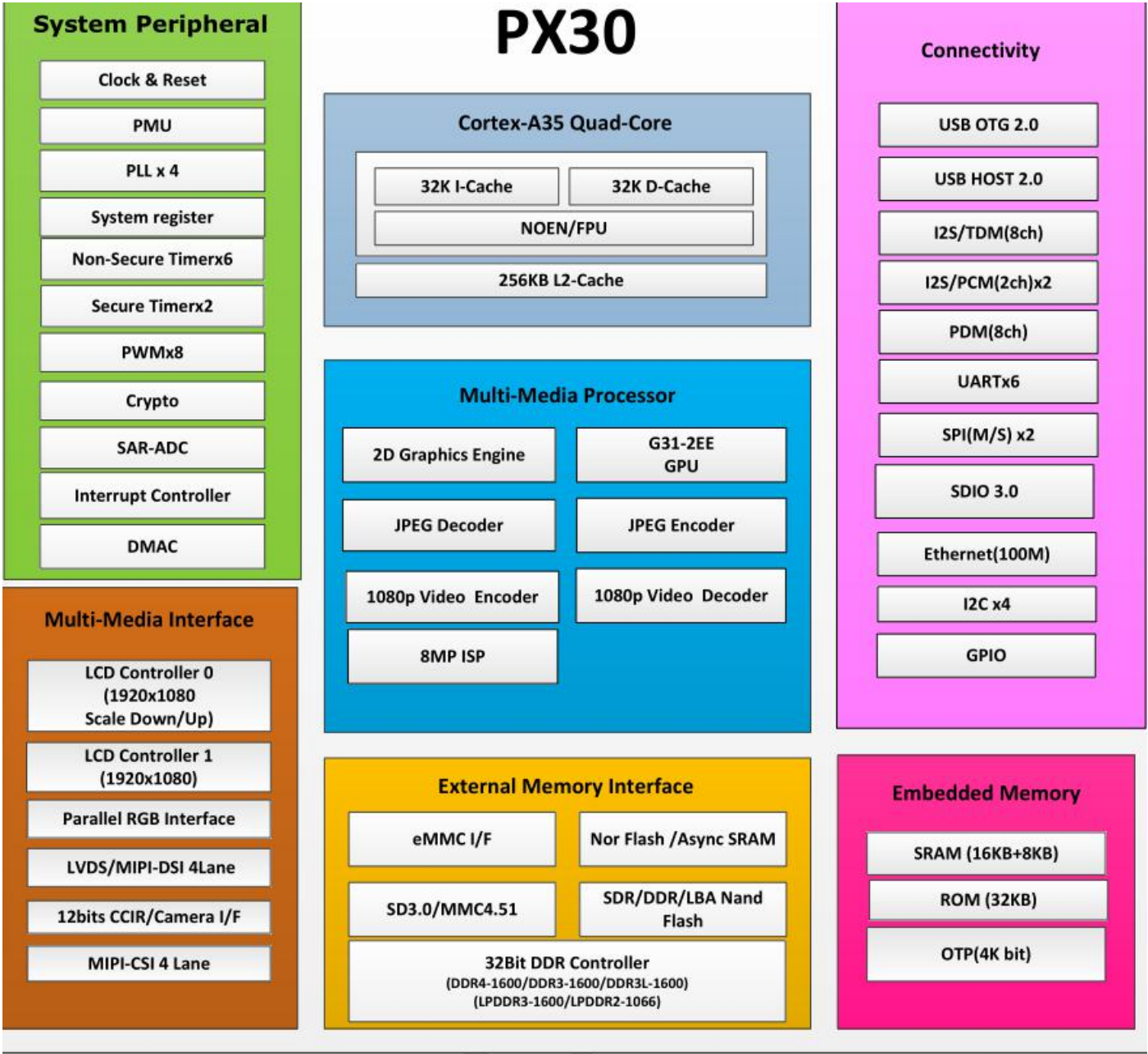
### 6、支持多操作系统：Android、Linux+QT、Debian、Ubuntu 系统

### 7、开放资料

提供配套的源代码、教程、技术资料 and 开发工具，让开发变得更加简单方便

### 8、应用广泛，可应用到各行业的产品中

AIOT 物联网设备、车载中控、游艺/游戏设备、商显一体设备、医疗健康设备、自动售货机、工业电脑。

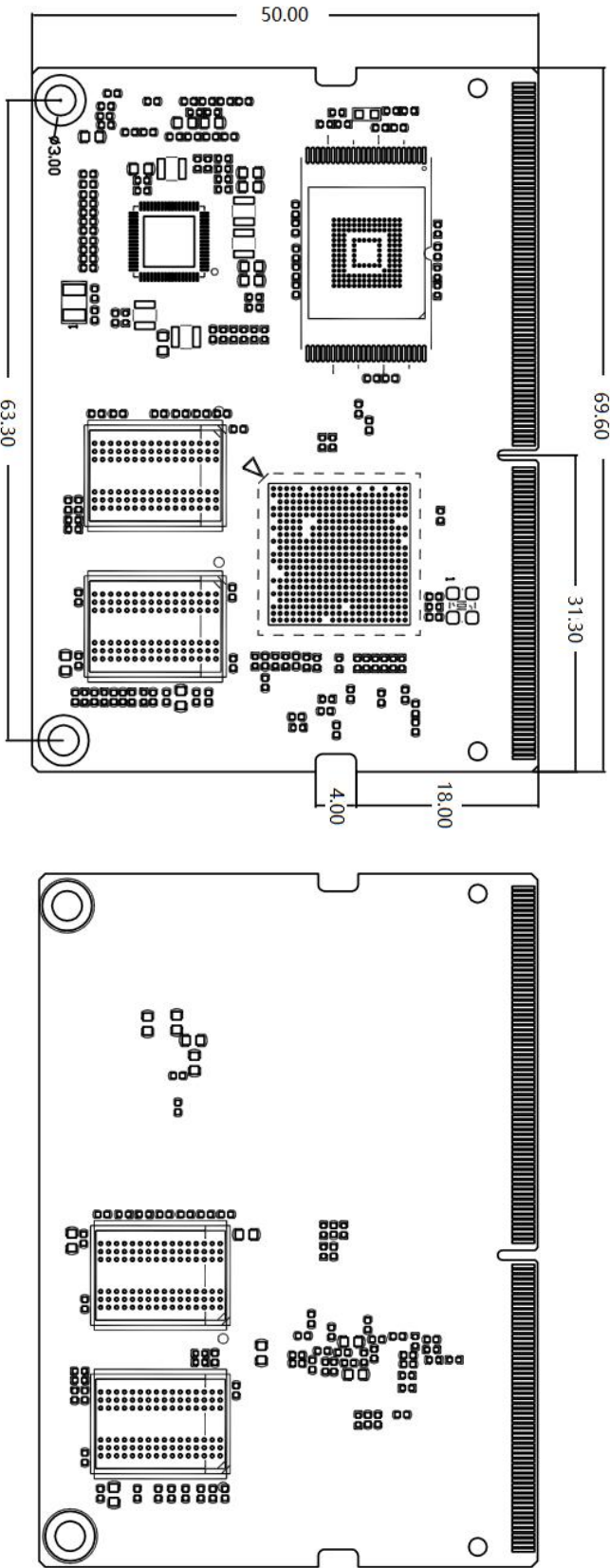


## 二、规格参数

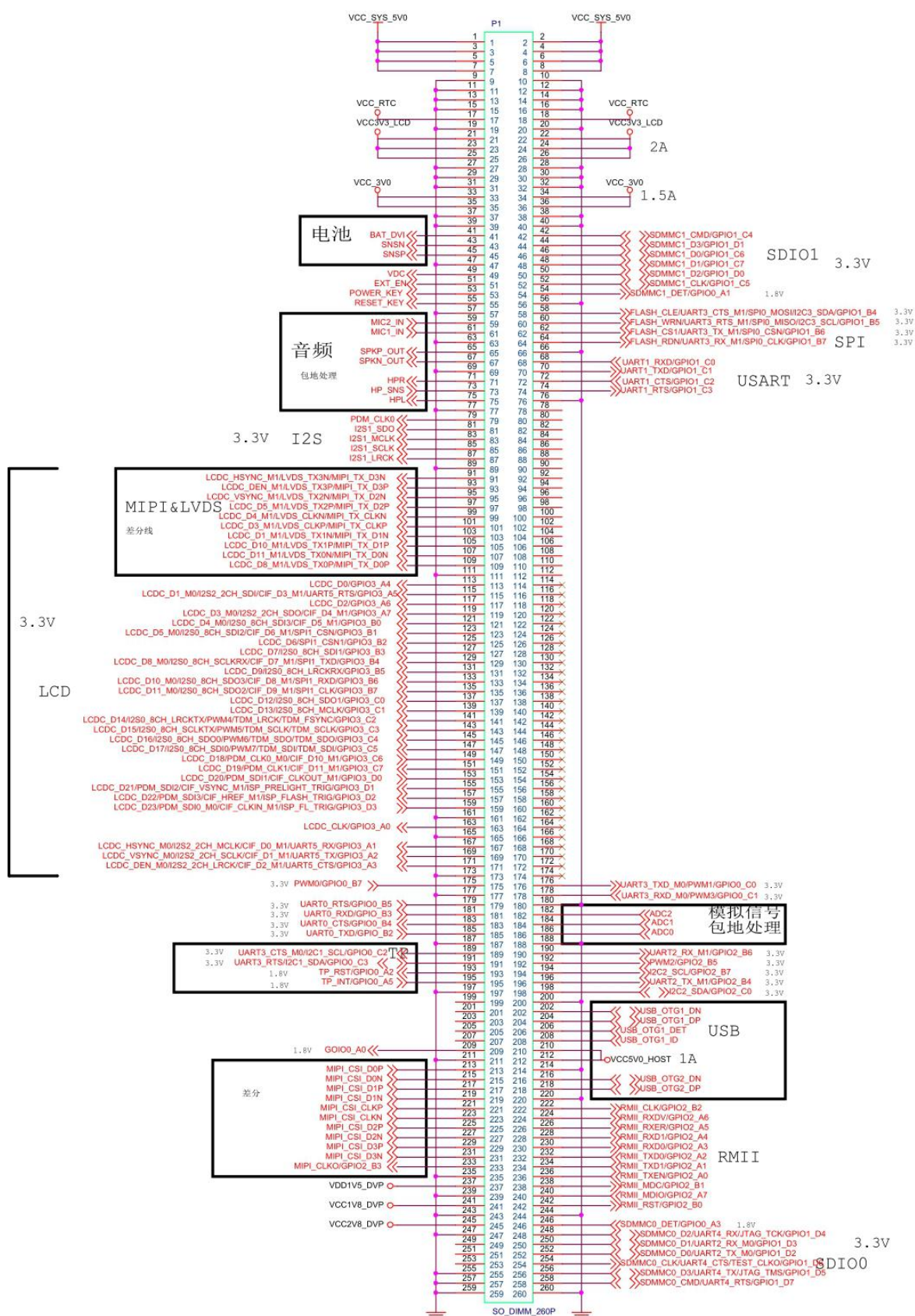
| 基本参数   |                                                                                                                        |
|--------|------------------------------------------------------------------------------------------------------------------------|
| 主控芯片   | Rockchip PX30                                                                                                          |
| 处理器    | 4 核 ARM Cortex-A35 处理器                                                                                                 |
| 图形处理器  | Mali-G31 GPU, 支持 OpenGL ES3.2, Vulkan 1.0, OpenCL 2.0<br>内嵌高性能 2D 加速硬件                                                 |
| 视频处理器  | 多格式 1080P 60fps 视频解码 (H.265、H.264、VC-1、MPEG-1/2/4、VP8)<br>1080P 视频解码, 支持 H.264、VP8                                     |
| 内存     | DDR3 (512MB/1GB/2GB 可选)                                                                                                |
| 存储器    | EMMC5.1 (4GB/8GB/16GB/32GB/64GB/128GB 可选)、支持 NAND Flash、支持 TF 卡扩展                                                      |
| 硬件特性   |                                                                                                                        |
| 以太网    | 100M bps 以太网接口                                                                                                         |
| WiFi   | 提供 SDIO 3.0 信号, 可扩展支持 2.4GHz/5GHz 双频 WiFi, 802.11a/b/g/n/ac 协议                                                         |
| 显示     | 支持 RGB/LVDS/MIPI-DSI 接口<br>支持双 VOP (双屏显示), 分辨率最高 1920x1080                                                             |
| 音频     | 支持 1x8ch I <sup>2</sup> S/TDM、1x8ch PDM、1x2ch I <sup>2</sup> S/PCM<br>1xSpeaker 喇叭 (8Ω, 1.3W)<br>1x 耳机输出<br>1xMic 音频输入 |
| USB    | 1xOTG, 1xUSB2.0 HOST                                                                                                   |
| 红外     | 支持红外遥控功能                                                                                                               |
| 扩展接口   | 4xI2C、6xUART、2xSPI、8xPWM、支持 SDIO3.0                                                                                    |
| 电源     | DC 输入电压 5V                                                                                                             |
| 系统软件   |                                                                                                                        |
| 系统支持   | Android、Linux+QT、Debian、Ubuntu                                                                                         |
| 外观规格   |                                                                                                                        |
| 核心板尺寸  | 70mm x 50mm                                                                                                            |
| 接口类型   | 金手指 (SODIMM 标准 260P 接口, 0.5mm 间距)                                                                                      |
| PCB 规格 | 6 层板设计                                                                                                                 |

### 三、规格尺寸

单位：mm



(请放大查看详图)



| 功能分类 | 主功能         | 引脚号                                                                                                                                                                          | 引脚名称        | 工作电平/电流 | 备注                   |
|------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|---------|----------------------|
| 电源类  | VCC_SYS_5V0 | 1-8                                                                                                                                                                          | VCC_SYS_5V0 |         | 主电源输入                |
|      | VCC_RTC     | 17/18                                                                                                                                                                        | VCC_RTC     |         | PMIC 电源              |
|      | VCC3V3_LCD  | 21-26                                                                                                                                                                        | VCC3V3_LCD  | 2A      |                      |
|      | VCC_3V0     | 33-36                                                                                                                                                                        | VCC_3V0     | 1.5A    | 1.5A，用于外围 SD/RMII/.. |
|      | VCC5V0_HOST | 210/212                                                                                                                                                                      | VCC5V0_HOST | 1A      | 内部短路保护，USB 对外供电      |
|      | VCC1V8_DVP  | 241                                                                                                                                                                          | VCC1V8_DVP  |         | 摄像头电源                |
|      | VCC2V8_DVP  | 245                                                                                                                                                                          | VCC2V8_DVP  |         | 摄像头电源                |
|      | VDD1V5_DVP  | 237                                                                                                                                                                          | VDD1V5_DVP  |         | 摄像头电源                |
|      | GND         | 9-16, 19, 20, 27-32, 37-40, 47, 56, 57, 63, 66, 69, 76, 77, 89, 111, 161, 165, 173, 177, 180, 187, 188, 197, 200, 211, 214, 220, 235, 239, 243, 244, 247, 255, 257, 259, 260 | GND         |         |                      |
|      |             |                                                                                                                                                                              |             |         |                      |
|      |             |                                                                                                                                                                              |             |         |                      |
|      |             |                                                                                                                                                                              |             |         |                      |
|      |             |                                                                                                                                                                              |             |         |                      |
|      |             |                                                                                                                                                                              |             |         |                      |
|      |             |                                                                                                                                                                              |             |         |                      |
|      |             |                                                                                                                                                                              |             |         |                      |
|      |             |                                                                                                                                                                              |             |         |                      |
|      |             |                                                                                                                                                                              |             |         |                      |

|     |            |     |                     |      |                                         |
|-----|------------|-----|---------------------|------|-----------------------------------------|
| 电池  | BAT_DVI    | 41  | BAT_DVI             |      | 电池电源检测                                  |
|     | SNSN       | 43  | SNSN                |      | 电流检测负                                   |
|     | SNSP       | 45  | SNSP                |      | 电流检测正                                   |
|     | BAT_DVI    | 41  | BAT_DVI             |      |                                         |
| 系统  | POWER_KEY  | 53  | POWER_KEY           |      | 复位 RK809/PX30 复位信号                      |
|     | RESET_KEY  | 55  | RESET_KEY           |      |                                         |
|     | ADC2       | 182 | ADC2                |      | ADC2 按键<br>Vol (recovery)/home/menu/esc |
|     | VDC        | 49  | VDC                 |      | 上电自启动                                   |
|     | EXT_EN     | 51  | EXT_EN              |      | 电源使能，可以控制外部电源关闭                         |
| I2C | I2C2_SCL   | 194 | I2C2_SCL/GPI02_B7   | 3.3V |                                         |
|     | I2C2_SDA   | 198 | I2C2_SDA/GPI02_C0   | 3.3V |                                         |
| 网口  | RMII_CLK   | 222 | RMII_CLK/GPI02_B2   |      |                                         |
|     | RMII_RXDV  | 224 | RMII_RXDV/GPI02_A6  |      |                                         |
|     | RMII_RXER  | 226 | RMII_RXER/GPI02_A5  |      |                                         |
|     | RMII_RXD1  | 228 | RMII_RXD1/GPI02_A4  |      |                                         |
|     | RMII_RXD0  | 230 | RMII_RXD0/GPI02_A3  |      |                                         |
|     | RMII_TXD0  | 232 | RMII_TXD0/GPI02_A2  |      |                                         |
|     | RMII_TXD1  | 234 | RMII_TXD1/GPI02_A1  |      |                                         |
|     | RMII_TXEN  | 236 | RMII_TXEN/GPI02_A0  |      |                                         |
|     | RMII_MDC   | 238 | RMII_MDC/GPI02_B1   |      |                                         |
|     | RMII_MDIO  | 240 | RMII_MDIO/GPI02_A7  |      |                                         |
|     | RMII_RST   | 242 | RMII_RST/GPI02_B0   |      |                                         |
| SD  | SDMMC1_CMD | 42  | SDMMC1_CMD/GPI01_C4 | 3.3V |                                         |
|     | SDMMC1_D3  | 44  | SDMMC1_D3/GPI01_D1  | 3.3V |                                         |
|     | SDMMC1_D0  | 46  | SDMMC1_D0/GPI01_C6  | 3.3V |                                         |
|     | SDMMC1_D1  | 48  | SDMMC1_D1/GPI01_C7  | 3.3V |                                         |

|     |                      |     |                                         |      |  |
|-----|----------------------|-----|-----------------------------------------|------|--|
|     | SDMMC1_D2            | 50  | SDMMC1_D2/GPI01_D0                      | 3.3V |  |
|     | SDMMC1_CLK           | 52  | SDMMC1_CLK/GPI01_C5                     | 3.3V |  |
|     | SDMMC1_DET           | 54  | SDMMC1_DET/GPI00_A1                     | 1.8V |  |
|     | SDMMC0_DET           | 246 | SDMMC0_DET/GPI00_A3                     | 1.8V |  |
|     | SDMMC0_D2/RX4        | 248 | SDMMC0_D2/UART4_RX/JTAG_TCK/GPI01_D4    | 3.3V |  |
|     | SDMMC0_D1/GPI01_D3   | 250 | SDMMC0_D1/UART2_RX_M0/GPI01_D3          | 3.3V |  |
|     | SDMMC0_D0/GPI01_D2   | 252 | SDMMC0_D0/UART2_TX_M0/GPI01_D2          | 3.3V |  |
|     | SDMMC0_CLK/UART4_CTS | 254 | SDMMC0_CLK/UART4_CTS/TEST_CLK0/GPI01_D6 | 3.3V |  |
|     | SDMMC0_D3/TX4        | 256 | SDMMC0_D3/UART4_TX/JTAG_TMS/GPI01_D5    | 3.3V |  |
|     | SDMMC0_CMD/UART4_RTS | 258 | SDMMC0_CMD/UART4_RTS/GPI01_D7           | 3.3V |  |
| 串口  | UART0_RTS            | 179 | UART0_RTS/GPI00_B5                      | 3.3V |  |
|     | UART0_CTS            | 183 | UART0_CTS/GPI00_B4                      | 3.3V |  |
|     | UART0_RXD            | 181 | UART0_RXD/GPI0_B3                       | 3.3V |  |
|     | UART0_TXD            | 185 | UART0_TXD/GPI0_B2                       | 3.3V |  |
|     | UART1_CTS            | 72  | UART1_CTS/GPI01_C2                      | 3.3V |  |
|     | UART1_RTS            | 74  | UART1_RTS/GPI01_C3                      | 3.3V |  |
|     | UART1_RXD            | 68  | UART1_RXD/GPI01_C0                      | 3.3V |  |
|     | UART1_TXD            | 70  | UART1_TXD/GPI01_C1                      | 3.3V |  |
|     | RX2_dug              | 190 | UART2_RX_M1/GPI02_B6                    | 3.3V |  |
|     | TX2_dug              | 196 | UART2_TX_M1/GPI02_B4                    | 3.3V |  |
|     | UART3_PWM1           | 176 | UART3_TXD_M0/PWM1/GPI00_C0              | 3.3V |  |
|     | UART3_PWM3           | 178 | UART3_RXD_M0/PWM3/GPI00_C1              | 3.3V |  |
| USB | USB_OTG_DN           | 202 | USB_OTG1_DN                             |      |  |

|               |                      |     |                                                      |      |  |
|---------------|----------------------|-----|------------------------------------------------------|------|--|
|               | USB_OTG_DP           | 204 | USB_OTG1_DP                                          |      |  |
|               | USB_DET              | 206 | USB_OTG1_DET                                         |      |  |
|               | USB_ID               | 208 | USB_OTG1_ID                                          |      |  |
|               | USB_HOST_DN          | 216 | USB_OTG2_DN                                          |      |  |
|               | USB_HOST_DP          | 218 | USB_OTG2_DP                                          | 3.3V |  |
| SPI           | SPI0_MOSI            | 58  | FLASH_CLE/UART3_CTS_M1/SPI0_MOSI/I2C3_SDA/GPI01_B4   | 3.3V |  |
|               | SPI0_MISO            | 60  | FLASH_WRN/UART3_RTS_M1/SPI0_MISO/I2C3_SCL/GPI01_B5   | 3.3V |  |
|               | UART3_TX_M1/SPI0_CSN | 62  | FLASH_CS1/UART3_TX_M1/SPI0_CSN/GPI01_B6              | 3.3V |  |
|               | UART3_RX_M1/SPI0_CLK | 64  | FLASH_RDN/UART3_RX_M1/SPI0_CLK/GPI01_B7              |      |  |
| LCDS/<br>mipi | LVDS_TX3N            | 91  | LCDC_HSYNC_M1/LVDS_TX3N/MIPI_TX_D3N                  | 3.3V |  |
|               | LVDS_TX3P            | 93  | LCDC_DEN_M1/LVDS_TX3P/MIPI_TX_D3P                    | 3.3V |  |
|               | LVDS_TX2N            | 95  | LCDC_VSYNC_M1/LVDS_TX2N/MIPI_TX_D2N                  | 3.3V |  |
|               | LVDS_TX2P            | 97  | LCDC_D5_M1/LVDS_TX2P/MIPI_TX_D2P                     | 3.3V |  |
|               | LVDS_CLKN            | 99  | LCDC_D4_M1/LVDS_CLKN/MIPI_TX_CLKN                    | 3.3V |  |
|               | LVDS_CLKP            | 101 | LCDC_D3_M1/LVDS_CLKP/MIPI_TX_CLKP                    | 3.3V |  |
|               | LVDS_TX1N            | 103 | LCDC_D1_M1/LVDS_TX1N/MIPI_TX_D1N                     | 3.3V |  |
|               | LVDS_TX1P            | 105 | LCDC_D10_M1/LVDS_TX1P/MIPI_TX_D1P                    | 3.3V |  |
|               | LVDS_TX0N            | 107 | LCDC_D11_M1/LVDS_TX0N/MIPI_TX_D0N                    | 3.3V |  |
|               | LVDS_TX0P            | 109 | LCDC_D8_M1/LVDS_TX0P/MIPI_TX_D0P                     | 3.3V |  |
| LCD           | LCD_D0               | 113 | LCDC_D0/GPI03_A4                                     | 3.3V |  |
|               | LCD_D1/UART5_RT<br>X | 115 | LCDC_D1_M0/I2S2_2CH_SD1/CIF_D3_M1/UART5_RTS/GPI03_A5 | 3.3V |  |
|               | LCD_D2               | 117 | LCDC_D2/GPI03_A6                                     | 3.3V |  |
|               | LCD_D3               | 119 | LCDC_D3_M0/I2S2_2CH_SD0/CIF_D4_M1/GPI03_A7           | 3.3V |  |
|               | LCD_D4               | 121 | LCDC_D4_M0/I2S0_8CH_SD13/CIF_D5_M1/GPI03_B0          | 3.3V |  |

|                   |     |                                                           |      |  |
|-------------------|-----|-----------------------------------------------------------|------|--|
| LCD_D5/SPI1_CSN   | 123 | LCDC_D5_M0/I2S0_8CH_SD12/CIF_D6_M1/SPI1_CSN/GPI03_B1      | 3.3V |  |
| LCD_D6            | 125 | LCDC_D6/SPI1_CSN1/GPI03_B2                                | 3.3V |  |
| LCD_D7            | 127 | LCDC_D7/I2S0_8CH_SD11/GPI03_B3                            | 3.3V |  |
| LCD_D8/SPI1_MOSI  | 129 | LCDC_D8_M0/I2S0_8CH_SCLKRX/CIF_D7_M1/SPI1_MOSI/GPI03_B4   | 3.3V |  |
| LCD_D9            | 131 | LCDC_D9/I2S0_8CH_LRCKRX/GPI03_B5                          | 3.3V |  |
| LCD_D10/SPI1_MISO | 133 | LCDC_D10_M0/I2S0_8CH_SD03/CIF_D8_M1/SPI1_MISO/GPI03_B6    | 3.3V |  |
| LCD_D11/SPI1_CLK  | 135 | LCDC_D11_M0/I2S0_8CH_SD02/CIF_D9_M1/SPI1_CLK/GPI03_B7     | 3.3V |  |
| LCD_D12           | 137 | LCDC_D12/I2S0_8CH_SD01/GPI03_C0                           | 3.3V |  |
| LCD_D13           | 139 | LCDC_D13/I2S0_8CH_MCLK/GPI03_C1                           | 3.3V |  |
| LCD_D14/PWM4      | 141 | LCDC_D14/I2S0_8CH_LRCKTX/PWM4/TDM_LRCK/TDM_FSYNC/GPI03_C2 | 3.3V |  |
| LCD_D15/PWM5      | 143 | LCDC_D15/I2S0_8CH_SCLKTX/PWM5/TDM_SCLK/TDM_SCLK/GPI03_C3  | 3.3V |  |
| LCD_D16/PWM6      | 145 | LCDC_D16/I2S0_8CH_SD00/PWM6/TDM_SD0/TDM_SD0/GPI03_C4      | 3.3V |  |
| LCD_D17/PWM7      | 147 | LCDC_D17/I2S0_8CH_SD10/PWM7/TDM_SD1/TDM_SD1/GPI03_C5      | 3.3V |  |
| LCD_D18/PDMCLK0   | 149 | LCDC_D18/PDM_CLK0_M0/CIF_D10_M1/GPI03_C6                  | 3.3V |  |
| LCD_D19/PDMCLK1   | 151 | LCDC_D19/PDM_CLK1/CIF_D11_M1/GPI03_C7                     | 3.3V |  |
| LCD_D20/PDMSDI1   | 153 | LCDC_D20/PDM_SDI1/CIF_CLKOUT_M1/GPI03_D0                  | 3.3V |  |
| LCD_D21/PDMSDI2   | 155 | LCDC_D21/PDM_SDI2/CIF_VSYNC_M1/ISP_PRELIGHT_TRIG/GPI03_D1 | 3.3V |  |
| LCD_D22/PDMSDI3   | 157 | LCDC_D22/PDM_SDI3/CIF_HREF_M1/ISP_FLASH_TRIG/GPI03_D2     | 3.3V |  |
| LCD_D23/PDMSDI0   | 159 | LCDC_D23/PDM_SDI0_M0/CIF_CLKIN_M1/ISP_FL_TRIG/GPI03_D3    | 3.3V |  |
| LCD_CLK           | 163 | LCDC_CLK/GPI03_A0                                         | 3.3V |  |
| LCD_HSYNC/RX5     | 167 | LCDC_HSYNC_M0/I2S2_2CH_MCLK/CIF_DO_M1/UART5_RX/GPI03_A1   | 3.3V |  |
| LCD_VSYNC/TX5     | 169 | LCDC_VSYNC_M0/I2S2_2CH_SCLK/CIF_D1_M1/UART5_TX/GPI03_A2   | 3.3V |  |
| LCD_DEN/UART5_CTS | 171 | LCDC_DEN_M0/I2S2_2CH_LRCK/CIF_D2_M1/UART5_CTS/GPI03_A3    | 3.3V |  |

|       |               |     |                    |      |          |
|-------|---------------|-----|--------------------|------|----------|
|       | LCD_BL_EN     |     | 待定                 |      |          |
|       | LCD_RST       |     | 待定                 |      |          |
| I2S   | I2S_SDO       | 81  | I2S1_SDO           | 3.3V |          |
|       | I2S_MCLK      | 83  | I2S1_MCLK          | 3.3V |          |
|       | I2S_SCLK      | 85  | I2S1_SCLK          | 3.3V |          |
|       | I2S_LRCK      | 87  | I2S1_LRCK          | 3.3V |          |
| audio | SPKP_OUT      | 65  | SPKP_OUT           |      |          |
|       | SPKN_OUT      | 67  | SPKN_OUT           |      |          |
|       | HPR           | 71  | HPR                |      |          |
|       | HP_SNS        | 73  | HP_SNS             |      |          |
|       | HPL           | 75  | HPL                |      |          |
|       | MIC2_IN       | 59  | MIC2_IN            |      |          |
|       | MIC1_IN       | 61  | MIC1_IN            |      |          |
| 摄像头   | PDM_CLK0      | 79  | PDM_CLK0           | 3.3V |          |
|       | MIPI_CSI_D0P  | 213 | MIPI_CSI_D0P       |      |          |
|       | MIPI_CSI_D0N  | 215 | MIPI_CSI_D0N       |      |          |
|       | MIPI_CSI_D1P  | 217 | MIPI_CSI_D1P       |      |          |
|       | MIPI_CSI_D1N  | 219 | MIPI_CSI_D1N       |      |          |
|       | MIPI_CSI_CLKP | 221 | MIPI_CSI_CLKP      |      |          |
|       | MIPI_CSI_CLKN | 223 | MIPI_CSI_CLKN      |      |          |
|       | MIPI_CSI_D2P  | 225 | MIPI_CSI_D2P       |      |          |
|       | MIPI_CSI_D2N  | 227 | MIPI_CSI_D2N       |      |          |
|       | MIPI_CSI_D3P  | 229 | MIPI_CSI_D3P       |      |          |
|       | MIPI_CSI_D3N  | 231 | MIPI_CSI_D3N       |      |          |
|       | MIPI_CLK0     | 233 | MIPI_CLK0/GPIO2_B3 |      | MCLK 主时钟 |
|       | CIF_PDNO      |     | 待定                 |      |          |
| PWM   | PWM0          | 175 | PWM0/GPIO0_B7      | 3.3V |          |

|      |         |     |                                |      |  |
|------|---------|-----|--------------------------------|------|--|
|      | PWM2    | 192 | PWM2/GPI02_B5                  | 3.3V |  |
| 触摸屏  | TP_RST  | 193 | TP_RST/GPI00_A2                | 1.8V |  |
|      | TP_INT  | 195 | TP_INT/GPI00_A5                | 1.8V |  |
|      | TP_SCL  | 189 | UART3_CTS_M0/I2C1_SCL/GPI00_C2 | 3.3V |  |
|      | TP_SDA  | 191 | UART3_RTS/I2C1_SDA/GPI00_C3    | 3.3V |  |
| ADC  | ADC1    | 184 | ADC1                           |      |  |
|      | ADC0    | 186 | ADC0                           |      |  |
| GPIO | 剩余 GPIO | 209 | GPIO0_A0                       | 1.8V |  |