

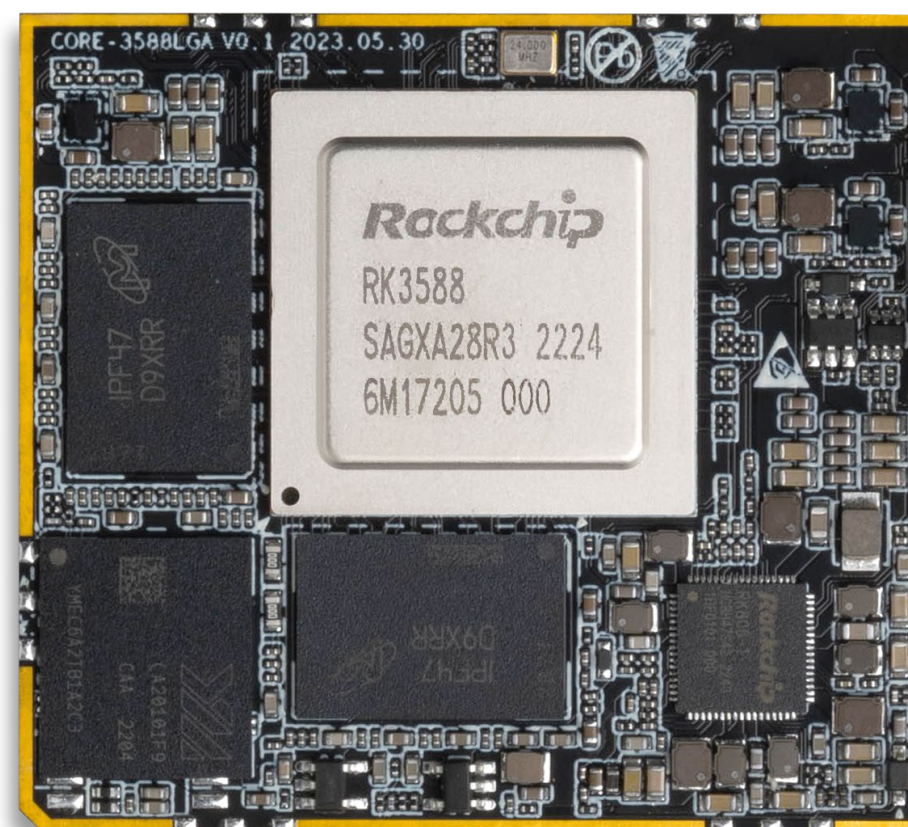


8K人工智能核心板

- | Core-3588L(商规级)
- | Core-3588JL(工规级)
- | Core-3588ML(车规级)

V0.1 2024-4-1

天启智能科技

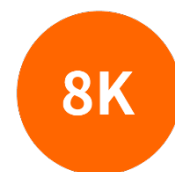


产品特点 Product features



全新一代 AIoT 芯片

采用RK3588全新一代旗舰AIoT产品，采用了8nm LP制程
搭载八核64位CPU，主频高达2.4GHz



8K 高清视频解码

支持8K@60fps H.265/VP9视频解码和8K@30fps H.265/H.264视频编码，支持同编同解



国产化 / 商用 / 工规 / 车规

提供商用级、工规级、车规级三种规格
可实现国产化硬件方案，技术完全自主可控，满足各种行业需求



506 Pin LGA 封装

核心板采用了LGA封装，506个引脚引出了芯片全部接口，尺寸小巧，传输能力和稳定性更强



6TOPS 强劲算力 NPU

算力可达6TOPS，支持INT4/INT8/INT16混合运算，可实现基于TensorFlow / MXNet / PyTorch / Caffe 等系列框架的网络模型转换，具备强大兼容性



支持 7 屏异显

拥有HDMI 2.1/eDP1.3、MIPI-DSI、DP1.4、BT.1120多路视频输出，支持多路8K视频输出，最高可以实现7屏异显



支持多种操作系统

支持Android 和Linux OS，支持国产操作系统，为产品研发提供安全稳定的系统环境，满足不同用户的需求



广泛的应用场景

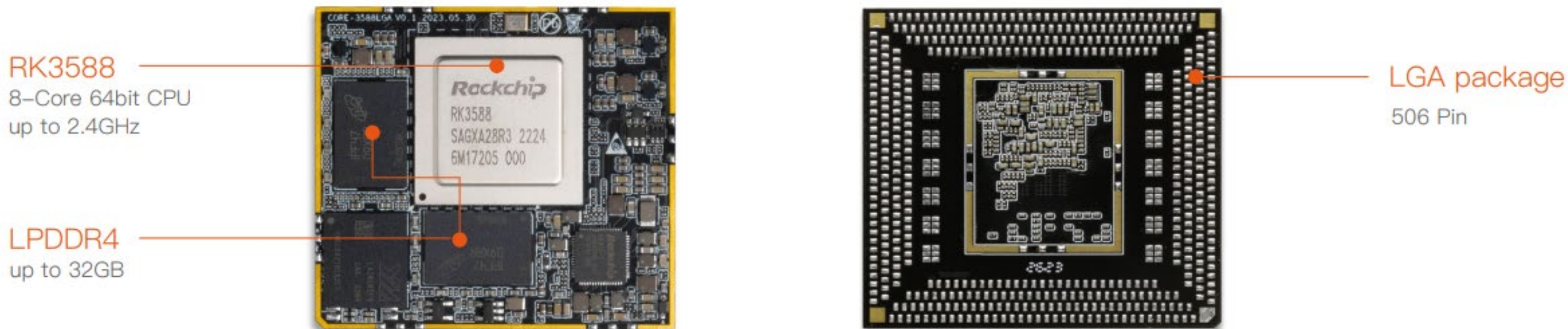
广泛适用于ARM PC、边缘计算、云终端、云服务器、工业控制、智能汽车等领域

规格参数 Specifications



| | | Core-3588L (商用级) | Core-3588JL (工规级) | Core-3588ML (车规级) |
|------|--|--|--|--|
| 基本参数 | CPU | RK3588 八核64位 (4*Cortex-A76+4*Cortex-A55) 主频高达2.4GHz | RK3588J 八核64位 (4*Cortex-A76+4*Cortex-A55) 主频高达1.6GHz | RK3588M 八核64位 (4*Cortex-A76+4*Cortex-A55) 主频高达2.2GHz |
| | GPU | ARM Mali-G610 MP4四核GPU, 支持 OpenGL ES3.2 / OpenCL 2.2 / Vulkan1.1, 450 GFLOPS | | |
| | NPU | 算力高达6TOPs (INT8), 支持INT4/INT8/INT16混合运算, 可实现基于TensorFlow / MXNet / PyTorch / Caffe 等系列框架的网络模型转换 | | |
| | ISP | 集成48MP ISP with HDR&3DNR | | |
| | VPU/编解码 | 硬解码: 8K@60fps H.265/VP9/AVS2、8K@30fps H.264 AVC/MVC、4K@60fps AV1、1080P@60fps MPEG-2/-1/VC-1/VP8 硬编码: 8K@30fps H.265 / H.264 | | |
| | 内存 | LPDDR4/LPDDR4x (4GB/8GB/16GB 可选, 最高可配 32GB) | LPDDR4/LPDDR4x (工规级) (4GB/8GB/16GB 可选, 最高可配 32GB) | LPDDR4/LPDDR4x (工规级) (4GB/8GB/16GB 可选, 最高可配 32GB) |
| | 存储 | eMMC (32GB/64GB/128GB/256GB 可选) | | |
| | 电源 | 4V (电压误差 ± 5%) | | |
| | 系统 | Android、Linux OS、国产操作系统 | | |
| | 接口 | LGA封装, 总引脚数 506Pin, 12 层 PCB 板设计 | | |
| | 尺寸 | 45 mm * 50 mm | | |
| | 重量 | 约 20 克 | | |
| | 环境 | 工作温度: -20°C ~ 60°C 工作湿度: 10% ~ 90%RH (无凝露) | 工作温度: -40°C ~ 85°C 工作湿度: 10% ~ 90%RH (无凝露) | 工作温度: -40°C ~ 85°C 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, 可扩展千兆以太网、WiFi6/蓝牙, 5G/4G LTE | | |
| | 视频输入 | 4 * MIPI CSI DPHY (DPHY V1.2 (2lanes, 2.5Gbps /lane); 2 个 2 lanes DPHY 可合并为 1 个 4 lanes DPHY) 2 * MIPI D/CPHY (MIPI DPHY V1.2 (4lanes, 2.5Gbps/lane); MIPI CPHY V1.1 (3lanes, 2.5Gbps/lane)) 1 * HDMI RX (支持 HDMI 2.0 (3.4Gbps~6Gbps); 支持 HDMI 1.4b (250Mbps~3.4Gbps); 支持 HDCP2.3 及 HDCP1.4) 1 * DVP 接口 (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 | 2 * HDMI2.1 TX/eDP1.3 TX (1路8K@60Hz HDMI 支持 HDCP2.3; 支持eDP1.3, 4K@60Hz, 支持HDCP1.3; HDMI 和 eDP 不能同时工作) 2 * DP1.4a (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) 2 * MIPI DSI (支持MIPI DPHY 2.0 或 CPHY 1.1, 4K@60Hz; 支持-左右双 MIPI 显示, 支持 RGB/YUV 格式(最高 10bit)) 1 * BT.1120 输出 (支持 RGB 格式(最高 8bit), 数据速率可达 150MHz, 分辨率可达 1920 * 1080@60Hz) 七屏异显 (最高可以实现七屏异显 (2 * HDMI + 2 * MIPI DSI + 2 * DP (一路DP可转VGA) + 1 * BT.1120)) | | |
| | 音频 | 2 * I2S (8 通道), 支持 TX 和 RX, 音频分辨率 16~32 位, 采样率达 192KHz) 2 * I2S (2 通道), 支持 TX 和 RX, 音频分辨率 16~32 位, 采样率达 192KHz) 2 * SPDIF, 支持2x16bit 音频数据存储支持双相立体声输出 2 * PDM (8 通道), 最高 8 channels, 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 | 3 * SATA3.0 与PCIe2.1共用 | | |
| | PCIe | 3 * PCIe2.1(1Lanes), 与SATA3共用, 仅支持 RC(Root Comple), 最高支持 5Gbps 数据速率 1 * PCIe3.0 (2x2,1x4,4x1)4 种组合: 1*4Lane / 2*2Lane / 4*1Lane / (1*2Lane + 2*1Lane); 每通道支持 8Gbps 速率; 支持 RC 和 EP | | |
| | USB | 2 * USB3.1 OTG (与 DP (USB3OTG_0 和 USB3OTG_1)复用)、1 * USB3.1 HOST (与 PIPE-PHY2 (USB3OTG_2) 复用) 2 * USB2.0 HOST、2 * USB2.0 OTG | | |
| | SDIO | 1 * SDIO3.0, 支持 SDIO3.0 (4-bit data bus widths) | | |
| | 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 | | |
| | 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; 10路 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 | | |
| | PWM | 16 * PWM, 最高支持 16 个片上 PWM, 支持捕获模式 | | |
| ADC | 8 * ADC, 12bit 单端输入 SAR-ADC, 采样率高达 1MS/s | | | |
| GPIO | GPIOs, 所有的GPIOs都可以用来产生中断 | | | |

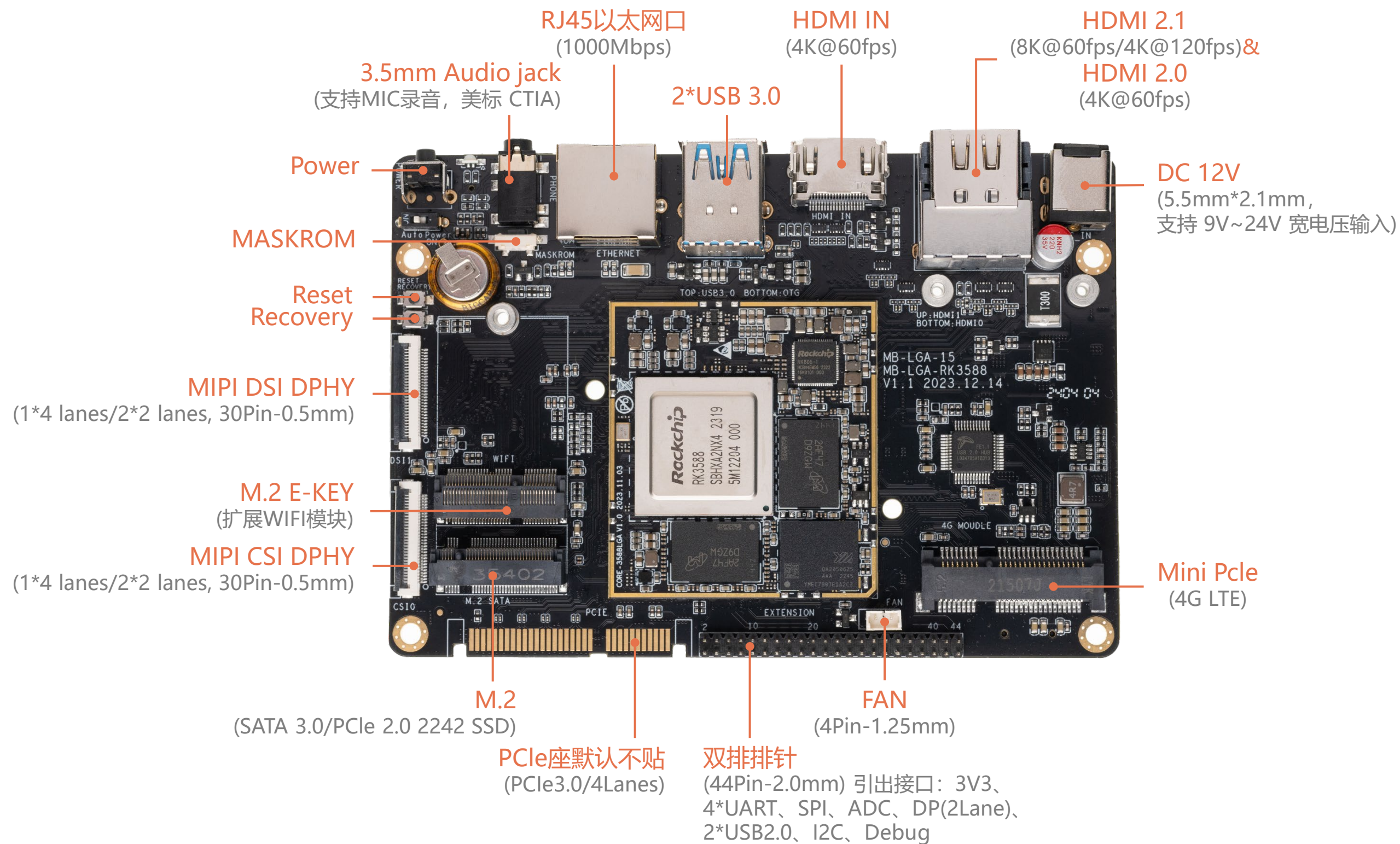
核心板接口描述 Core Board Interface description



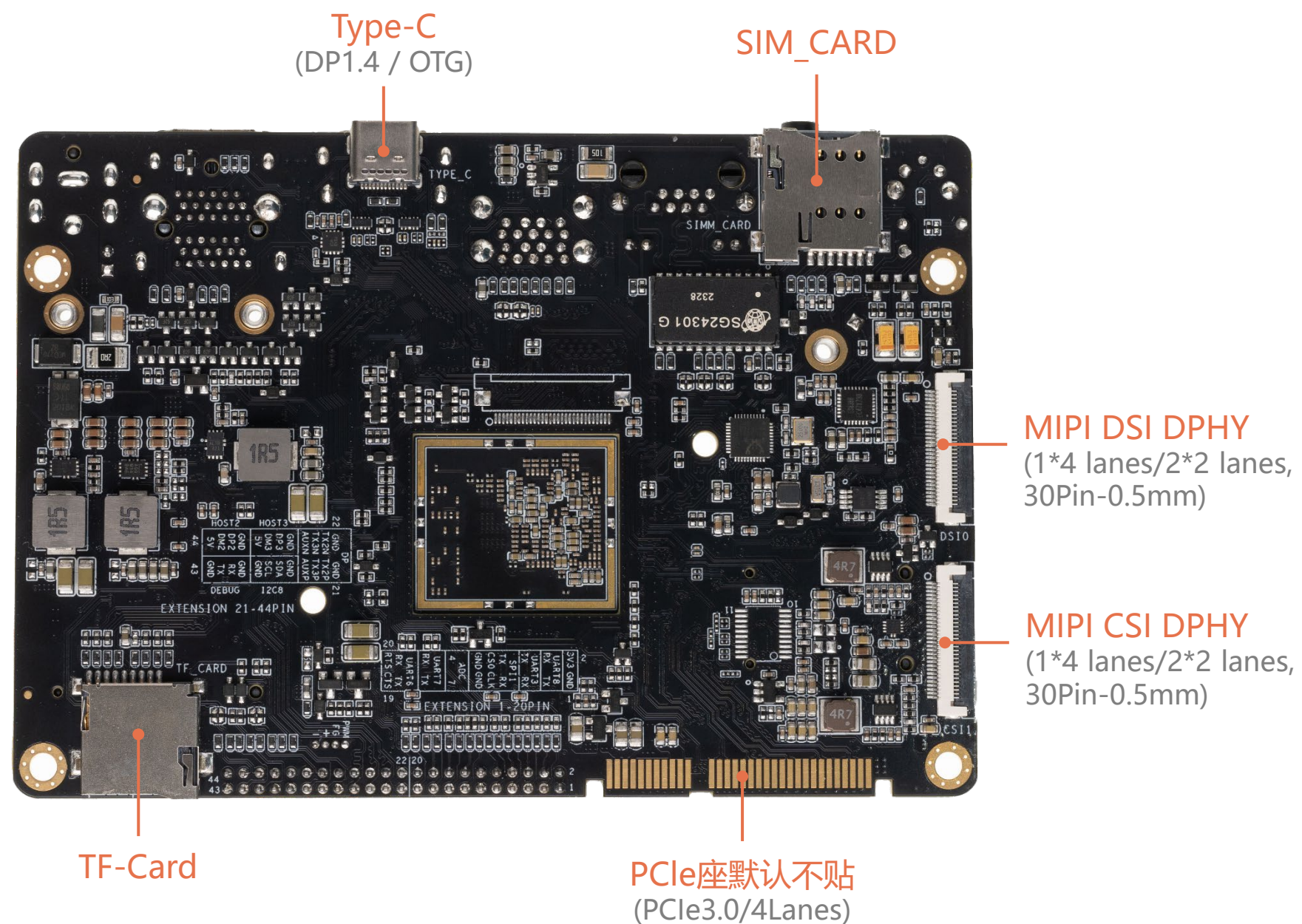
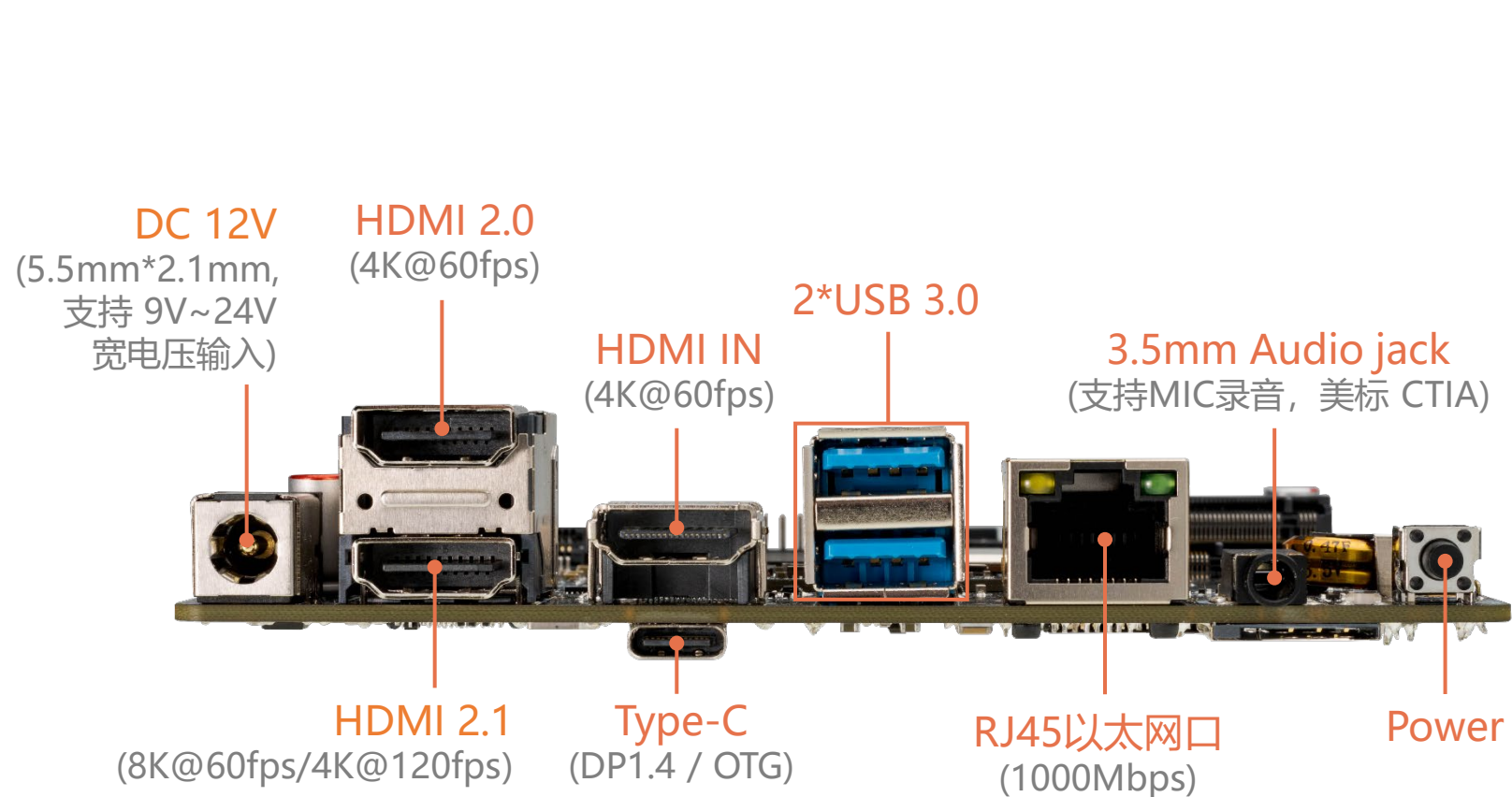
Main Interface

| Network | Video input | Video output | Audio | PCIe/SATA/USB | Others |
|---|--|---|--|---|--|
| 2 * GMAC(RGMII/RMII) WIFI 6/5 (PCIe/SDIO) 5G/4G (PCIe/USB3.0) | 4 * MIPI CSI DPHY 2 * MIPI D/CPHY 1 * HDMI RX 1 * DVP | 2 * HDMI2.1 TX/eDP 2 * DP1.4a 2 * MIPI DSI 1 * BT.1120 | 2 * I2S (8-channel) 2 * I2S (2-channel) 2 * PDM (8-channel) 2 * SPDIF | 3 * SATA3.0 3 * PCIe2.1(1Lanes) 1 * PCIe3.0(2x2/1x4/4x1) 3 * USB3.1(2*OTG+1*Host) 2 * USB2.0 Host 2 * USB2.0 OTG | 1 * SDIO3.0 9 * I2C 5 * SPI 3 * CAN 2.0B 10 * UART 16 * PWM |

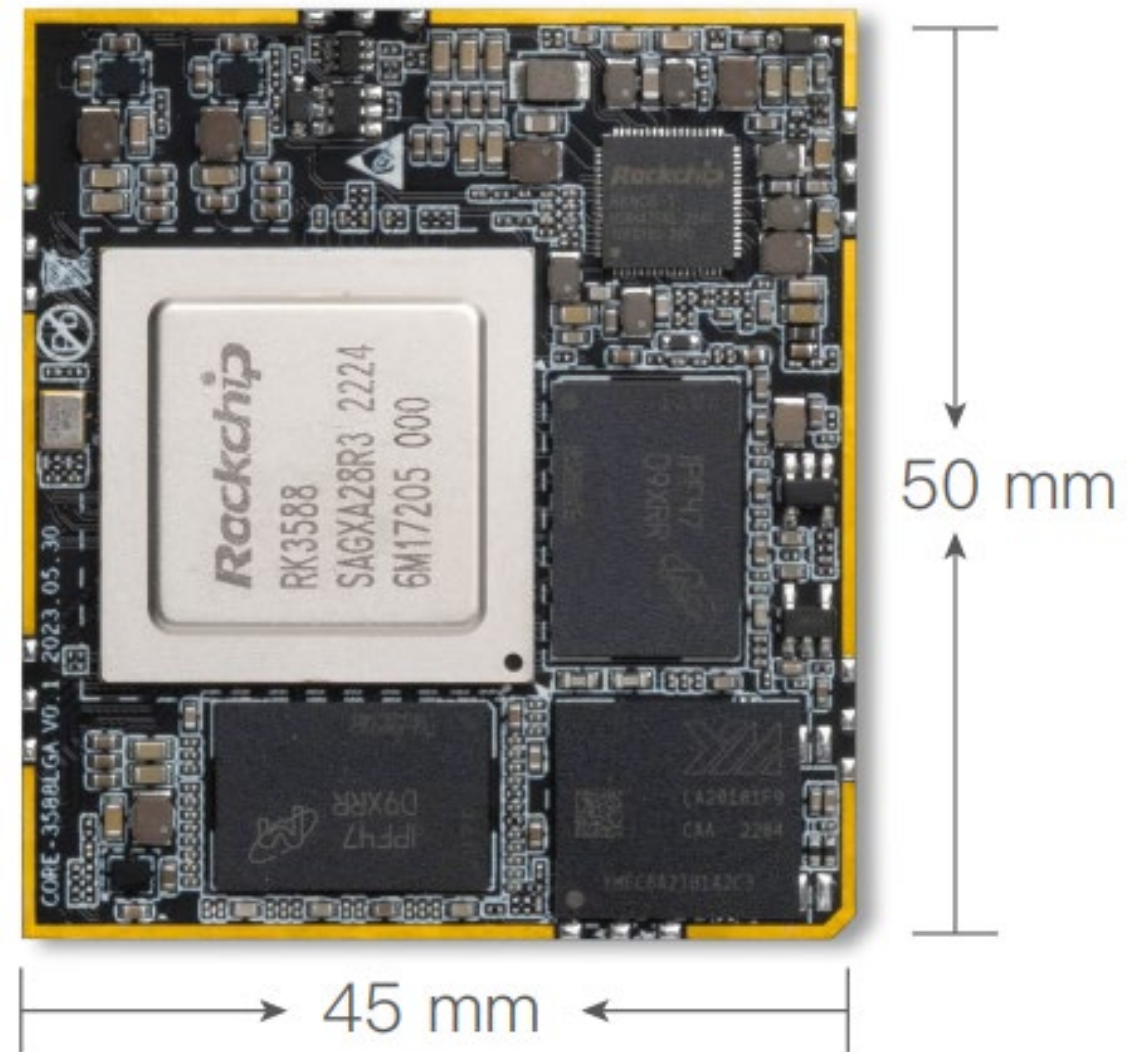
主板接口描述 Mainboard Interface description



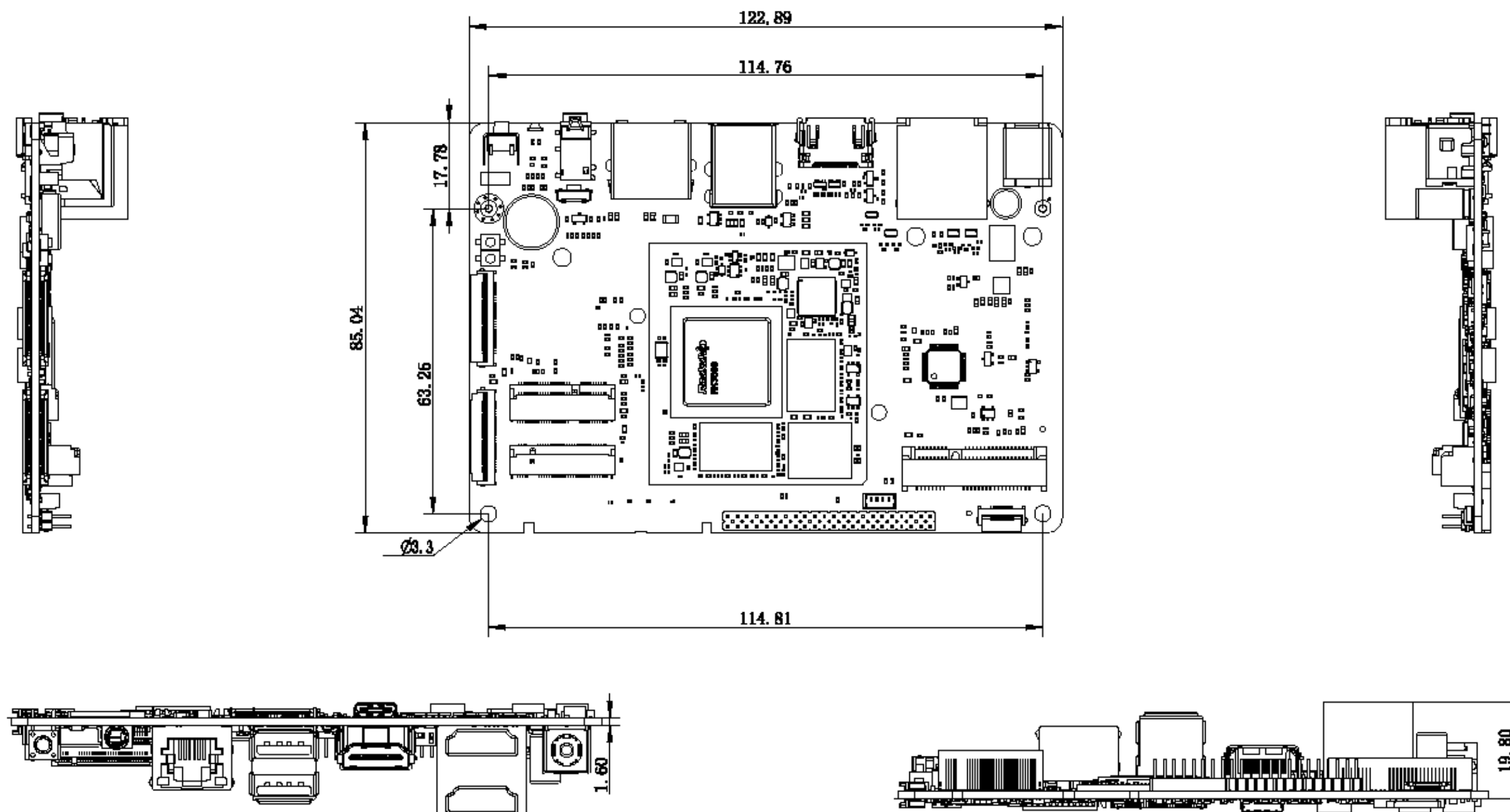
主板接口描述 Mainboard Interface description



核心板尺寸 Core Board Dimension



主板尺寸 Mainboard Dimension





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-3588LGA pin definition | RK3588 Pin NO. | Pad type | IO Pull | Function for Main BOARD | Default function description | IO Power domain |
|------|---|----------------|----------|-----------|-------------------------|--------------------------------|-----------------|
| BD15 | RESET_L | M31 | I | UP | RESET_L | System reset input, Active L | 1.8V |
| BD8 | REFCLK_OUT/GPIO0_A0_d | P33 | I/O | DOWN | HUB20_PWR_EN | USB HUB Power_EN, Active H | 1.8V |
| DC30 | SDMMC_DET/GPIO0_A4_u | P31 | I/O | UP | SDMMC_DET_L | SDMMC0_DET Input, Active L | 1.8V |
| BD5 | SPI2_CS1_M2/I2C1_SCL_M1/UART0_RX_M1/GPIO0_B0_z | L30 | I/O | Tri-State | RTC_INT_L | RTC_INT_Input ,Active L | 1.8V |
| BD6 | CLK32K_IN/CLK32K_OUT0/GPIO0_B2__u | K29 | I/O | UP | WIFI_PWR_EN | WIFI Power_ENT Active H | 1.8V |
| AB10 | I2S1_MCLK_M1/JTAG_TCK_M2/I2C1_SCL_M0/UART2_TX_M0/PCIE30X1_1_CLKREQN_M0/GPIO0_B5_d | P29 | I/O | DOWN | UART2_TX_M0_DEBUG | UART2_TX_M0_DEBUG | 3.3V |
| AC8 | I2S1_SCLK_M1/JTAG_TMS_M2/I2C1_SDA_M0/UART2_RX_M0/PCIE30X1_1_WAKEN_M0/GPIO0_B6_d | R29 | I/O | DOWN | UART2_RX_M0_DEBUG | UART2_RX_M0_DEBUG | 3.3V |
| AB11 | I2S1_LRCK_M1/PWM0_M0/I2C2_SCL_M0/CAN0_TX_M0/SPI0_CS1_M0/PCIE30X1_1_PERSTN_M0/GPIO0_B7_d | T28 | I/O | DOWN | GMAC0_INT/PMEB | GMAC0_INT/PMEB Input ,Active L | 3.3V |
| AA12 | PDM0_CLK0_M1/PWM1_M0/I2C2_SDA_M0/CAN0_RX_M0/SPI0_MOSI_M0/PCIE30X1_0_CLKREQN_M0/GPIO0_C0_d | T31 | I/O | DOWN | BT_WAKE_HOST | BT_WAKE_HOST | 3.3V |
| AA11 | PMIC_SLEEP4/GPIO0_C2_d | T31 | I/O | DOWN | SYS4V0_MODE_L | MP8759_MODE: H--PWM;L--PFM | 3.3V |
| AA10 | PDM0_CLK1_M1/PWM2_M0/UART0_RX_M0/I2C4_SDA_M2/DP0_HPDIN_M1/PCIE30X1_0_WAKEN_M0/GPIO0_C4_d | R30 | I/O | DOWN | WIFI_REG_ON | WIFI_EN, Active H | 3.3V |
| AC12 | I2S1_SDI0_M1/GPU_AVS/UART0_TX_M0/I2C4_SCL_M2/DP1_HPDIN_M1/PWM4_M0/PCIE30X1_0_PERSTN_M0/GPIO0_C5_u | P30 | I/O | UP | HOST_WAKE_BT_H | HOST WAKE BT, Active H | 3.3V |
| AC9 | I2S1_SDI1_M1/NPU_AVS/UART0_RTSN/PWM5_M1/SPI0_CLK_M0/PCIE30X4_CLKREQN_M0/SATA_CP_POD/GPIO0_C6_u | T29 | I/O | UP | BT_REG_ON | BT_EN ,Active H | 3.3V |
| AA13 | I2S1_SDI2_M1/PDM0_SDI0_M1/I2C6_SDA_M0/UART1_RTSN_M2/PWM6_M0/SPI0_MISO_M0/PCIE30X4_WAKEN_M0/GPIO0_C7_d | V31 | I/O | DOWN | I2C6_SDA_M0 | I2C6_SDA_M0 | 3.3V |
| AB12 | I2S1_SDI3_M1/PDM0_SDI1_M1/I2C6_SCL_M0/UART1_CTSN_M2/PWM7_IR_M0/SPI3_MISO_M2/PCIE30X4_PERSTN_M0/GPIO0_D0_d | W31 | I/O | DOWN | I2C6_SCL_M0 | I2C6_SCL_M0 | 3.3V |



| | | | | | | | |
|------|---|------|-----|-----------|--------------------------------------|--------------------------------------|------------|
| AA16 | LITCPU_AV5/SPI3_CLK_M2/GPIO0_D3_u | U33 | I/O | UP | CC_INT_L | TYPEC CC_INT, Active L | 3.3V |
| AC26 | I2C3_SDA_M0/UART3_RX_M0/SPI4_MISO_M0/GPIO1_C0_z | G29 | I/O | Tri-State | I2C3_SDA_M0_MIPI | I2C3_SDA_M0_MIPI | VCCIO1_1V8 |
| AC25 | I2C3_SCL_M0/UART3_TX_M0/SPI4_MOSI_M0/GPIO1_C1_z | G27 | I/O | Tri-State | I2C3_SCL_M0_MIPI | I2C3_SCL_M0_MIPI | VCCIO1_1V8 |
| AA30 | I2S0_MCLK/I2C6_SDA_M1/UART3_RTSN/PWM3_IR_M2/SPI4_CLK_M0/GPIO1_C2_d | F30 | I/O | DOWN | I2S0_MCLK | I2S0_MCLK Output | VCCIO1_1V8 |
| AB29 | I2S0_SCLK/I2C6_SCL_M1/UART3_CTSN/PWM7_IR_M2/SPI4_CS0_M0/GPIO1_C3_d | E31 | I/O | DOWN | I2S0_SCLK_TX | I2S0_SCLK Output | VCCIO1_1V8 |
| AA28 | PDM0_CLK1_M0/I2C2_SDA_M3/PWM11_IR_M2/SPI4_CS1_M0/GPIO1_C4_d | E30 | I/O | DOWN | HP_DET_L | HP_DET_Input, Active L | VCCIO1_1V8 |
| AB30 | I2S0_LRCK/I2C2_SCL_M3/UART4_RTSN/GPIO1_C5_d | D30 | I/O | DOWN | I2S0_LRCK_TX | I2S0_LR CLK_Output | VCCIO1_1V8 |
| AA27 | PDM0_CLK0_M0/I2C4_SDA_M4/PWM15_IR_M2/GPIO1_C6_d | D29 | I/O | DOWN | PWM15_M2 | PWM15_M2 Output | VCCIO1_1V8 |
| AA31 | I2S0_SDO0/I2C4_SCL_M4/UART4_CTSN/GPIO1_C7_d | E29 | I/O | DOWN | I2S0_SDO0 | I2S0_SDO0 Output | VCCIO1_1V8 |
| AC27 | I2S0_SDO1/I2C7_SCL_M0/UART6_TX_M2/SPI1_MISO_M2/GPIO1_D0_d | F26 | I/O | DOWN | SPI1_MISO_M2/UART6_TX_M2/I2C7_SCL_M0 | SPI1_MISO_M2/UART6_TX_M2/I2C7_SCL_M0 | VCCIO1_1V8 |
| AB28 | I2S0_SDO2/I2S0_SDI3/PDM0_SDI1_M0/I2C7_SDA_M0/UART6_RX_M2/SPI1_MOSI_M2/GPIO1_D1_d | F27 | I/O | DOWN | SPI1_MOSI_M2/UART6_RX_M2/I2C7_SDA_M0 | SPI1_MOSI_M2/UART6_RX_M2/I2C7_SDA_M0 | VCCIO1_1V8 |
| AB26 | I2S0_SDO3/I2S0_SDI2/PDM0_SDI2_M0/I2C1_SCL_M4/UART4_TX_M0/PWM0_M1/SPI1_CLK_M2/GPIO1_D2_d | F28 | I/O | DOWN | SPI1_CLK_M2/UART4_TX_M0/I2C1_SCL_M4 | SPI1_CLK_M2/UART4_TX_M0/I2C1_SCL_M4 | VCCIO1_1V8 |
| AC24 | I2S0_SDI1/PDM0_SDI3_M0/I2C1_SDA_M4/UART4_RX_M0/PWM1_M1/SPI1_CS0_M2/GPIO1_D3_d | E28 | | DOWN | SPI1_CS0_M2/UART4_RX_M0/I2C1_SDA_M4 | SPI1_CS0_M2/UART4_RX_M0/I2C1_SDA_M4 | VCCIO1_1V8 |
| AA32 | I2S0_SDI0/GPIO1_D4_d | D28 | I/O | DOWN | I2S0_SDI0 | I2S0_SDI0 Input | VCCIO1_1V8 |
| AC23 | PDM0_SDI0_M0/SPI1_CS1_M2/GPIO1_D5_d | G26 | I/O | DOWN | HDMIIRX_DET_L | HDMIIRX DET Input,Active L | VCCIO1_1V8 |
| AB5 | VCCIO1_1V8 | | P | | VCC_1V8_S0 | VCCIO1_1.8V Input (Max:300mA) | 1.8V/3.3V |
| BC19 | GMAC0_RXD2/SDIO_D0_M0/FSPI_D0_M1/UART6_RX_M0/GPIO2_A6_u | AC32 | I/O | UP | GMAC0_RXD2 | GMAC0_RXD2 | VCCIO3_1V8 |
| BA21 | GMAC0_RXD3/SDIO_D1_M0/FSPI_D1_M1/UART6_TX_M0/GPIO2_A7_u | AC31 | I/O | UP | GMAC0_RXD3 | GMAC0_RXD3 | VCCIO3_1V8 |
| BB20 | GMAC0_RXCLK/SDIO_D2_M0/FSPI_D2_M1/I2C8_SCL_M1/UART6_RTSN_M0/GPIO2_B0_u | AE32 | I/O | UP | GMAC0_RXCLK | GMAC0_RXCLK | VCCIO3_1V8 |
| BA20 | GMAC0_TXD2/SDIO_D3_M0/FSPI_D3_M1/I2C8_SDA_M1/UART6_CTSN_M0/GPIO2_B1_u | AC33 | I/O | UP | GMAC0_TXD2 | GMAC0_TXD2 | VCCIO3_1V8 |



| | | | | | | | |
|------|--|------|-----|------|-----------------|---|------------|
| BB19 | GMAC0_TXD3/SDIO_CMD_M0/I2C3_SCL_M3/GPIO2_B2_u | AC34 | I/O | UP | GMAC0_TXD3 | GMAC0_TXD3 | VCCIO3_1V8 |
| BC18 | GMAC0_TXCLK/SDIO_CLK_M0/FSPI_CLK_M1/I2C3_SDA_M3/GPIO2_B3_d | AE33 | I/O | DOWN | GMAC0_TXCLK | GMAC0_TXCLK | VCCIO3_1V8 |
| BD17 | GMAC0_PTP_REFCLK/FSPI_CS0N_M1/HDMI_TX1_SDA_M0/I2C4_SDA_M1/UART7_RX_M0/GPIO2_B4_u | AB31 | I/O | UP | MIPI_PDN0 | MIPI_PDN0 | VCCIO3_1V8 |
| BD18 | GMAC0_PPSTRIG/FSPI_CS1N_M1/HDMI_TX1_SCL_M0/I2C4_SCL_M1/UART7_TX_M0/GPIO2_B5_u | AB30 | I/O | UP | MIPI_RESET0 | MIPI_Reset0, Active L | VCCIO3_1V8 |
| BC23 | GMAC0_TXD0/I2S2_MCLK_M0/I2C5_SCL_M4/UART1_RX_M0/GPIO2_B6_d | AD33 | I/O | DOWN | GMAC0_TXD0 | GMAC0_TXD0 | VCCIO3_1V8 |
| BB22 | GMAC0_TXD1/I2S2_SCLK_M0/I2C5_SDA_M4/UART1_TX_M0/GPIO2_B7_d | AD34 | I/O | DOWN | GMAC0_TXD1 | GMAC0_TXD1 | VCCIO3_1V8 |
| BB21 | GMAC0_TXEN/I2S2_LRCK_M0/I2C2_SDA_M1/UART1_RTSN_M0/SPI1_CLK_M0/GPIO2_C0_d | AE34 | I/O | DOWN | GMAC0_TXEN | GMAC0_TXEN | VCCIO3_1V8 |
| BA24 | GMAC0_RXD0/I2C2_SCL_M1/UART1_CTSN_M0/SPI1_MISO_M0/GPIO2_C1_d | AD32 | I/O | DOWN | GMAC0_RXD0 | GMAC0_RXD0 | VCCIO3_1V8 |
| BA23 | GMAC0_RXD1/I2C6_SDA_M2/UART9_TX_M0/SPI1_MOSI_M0/GPIO2_C2_d | AD31 | I/O | DOWN | GMAC0_RXD1 | GMAC0_RXD1 | VCCIO3_1V8 |
| BA22 | ETH0_REFCLKO_25M/I2S2_SDI_M0/I2C6_SCL_M2/SPI1_CS0_M0/GPIO2_C3_d | AD30 | I/O | DOWN | DIY_LED | DIY_LED Output, Active H | VCCIO3_1V8 |
| BC21 | GMAC0_PPSCLK/TEST_CLKOUT_M1/HDMI_TX1_CEC_M0/UART9_RX_M0/SPI1_CS1_M0/GPIO2_C4_d | AC30 | I/O | DOWN | MIPI_PDN1 | MIPI_PDN1 | VCCIO3_1V8 |
| BD21 | CLK32K_OUT1/GPIO2_C5_d | AE30 | I/O | DOWN | MIPI_RESET1 | MIPI_Reset1 Output Active L | VCCIO3_1V8 |
| BB24 | GMAC0_RXDV_CRS/UART7_RTSN_M0/PWM2_M2/SPI3_CS0_M0/GPIO4_C2_d | AE31 | I/O | DOWN | GMAC0_RXDV_CRS | GMAC0_RXDV_CRS | VCCIO3_1V8 |
| BD19 | GMAC0_MCLKINOUT/I2S2_SDO_M0/I2C7_SCL_M1/PWM4_M1/SPI3_CS1_M0/GPIO4_C3_d | AF34 | I/O | DOWN | GMAC0_MCLKINOUT | GMAC0_MCLK INPUT/OUTPUT, | VCCIO3_1V8 |
| BC22 | GMAC0_MDC/I2C7_SDA_M1/UART9_RTSN_M0/PWM5_M2/SPI3_MISO_M0/GPIO4_C4_d | AB34 | I/O | DOWN | GMAC0_MDC | GMAC0_MDC | VCCIO3_1V8 |
| BB23 | GMAC0_MDIO/I2C0_SCL_M1/UART9_CTSN_M0/PWM6_M2/SPI3_MOSI_M0/GPIO4_C5_d | AB33 | I/O | DOWN | GMAC0_MDIO | GMAC0_MDIO | VCCIO3_1V8 |
| BD20 | GMAC0_TXER/I2C0_SDA_M1/UART7_CTSN_M0/PWM7_IR_M3/SPI3_CLK_M0/GPIO4_C6_d | AF33 | I/O | DOWN | SATA_PWREN_H | SATA Power_EN, Active H | VCCIO3_1V8 |
| BD25 | VCCIO3_1V8 | | P | | VCC_1V8_S3 | VCCIO3_1.8V Input (Max:300mA) | 1.8V/3.3V |
| CD12 | BOOT_SARADC_IN0 | AM16 | I | | BOOT_SARADC_IN0 | BOOT_ADC0 Input core board pull up resistance 100K BOOT MODE: FSPI_M2-FSPI_M1-FSPI_M0 | 1.8V |



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|------|--|------|-----|------|---------------------------|--|-------------------|-------------------|
| | | | | | | | -EMMC-SD Card-USB | |
| CD11 | SARADC_IN1/Recovery | AL16 | I | | SARADC_VIN1_KEY/RECOVERY | ADC1/RECOVERY_KEY Input core board pull up resistance 10K | | 1.8V |
| CD13 | SARADC_IN2 | AK16 | I | | SARADC_IN2 | ADC2 Input | | 1.8V |
| CC12 | SARADC_IN3 | AN17 | I | | SARADC_VIN3_HP_HOOK | ADC3_HP_HOOK Input | | 1.8V |
| CC11 | SARADC_IN4 | AM17 | I | | SARADC_IN4 | ADC4 Input | | 1.8V |
| CC14 | SARADC_IN5 | AK15 | I | | NC | NC | | 1.8V |
| CD10 | SARADC_IN6 | AL17 | I | | SARADC_IN6 | ADC6 Input | | 1.8V |
| CD9 | SARADC_IN7 | AK17 | I | | SARADC_IN7 | ADC7 Input | | 1.8V |
| DD4 | VDC_EXT | | I | | VDC_EXT | RK806-1 VDC Input, (DC IN Auto Power ON),Active H | | 3~5V |
| DD3 | VCCA_RK806 | | I | | LDO_5V | PMIC system Power Input, (PMIC ON:5mA; PMIC Off:8uA) | | 4V/5V |
| DB1 | PMIC_EXT_EN_OUT | | O | | PMIC_EXT_EN_OUT | PMIC_EXT_EN_OUTPUT, Active H | | VCCA_RK806 |
| DC29 | PWRON_L | | I | | PWRON_L | RK806-1 POWER_KEY Input, Active L | | VCCA_RK806 |
| DC5 | BT1120_D14/PCIE20X1_2_WAKEN_M1/HDMI_TX0_SDA_M0/I2C8_SCL_M3/SPI3_CS0_M1/GPIO4_C0_u | AJ25 | I/O | UP | HDMITX0_SDA_M0 | HDMITX0_SDA_M0 | | VCCIO6 |
| DC7 | BT1120_D15/SPDIF1_TX_M2/PCIE20X1_2_PERSTN_M1/HDMI_TX0_CEC_M0/I2C8_SDA_M3/PWM6_M1/SPI3_CS1_M1/GPIO4_C1_d | AK24 | I/O | DOWN | HDMITX0_CEC_M0 | HDMITX0_CEC_M0 | | VCCIO6 |
| DB23 | CIF_CLKIN/BT1120_CLKOUT/I2S1_SDI3_M0/PCIE30X2_PERSTN_M1/I2C6_SDA_M3/UART8_TX_M0/SPI2_CS1_M1/GPIO4_B0_d | AK26 | I/O | DOWN | SDMMC_PWREN | SD Power_EN, Active H | | VCCIO6 |
| AC18 | 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 | AL24 | I/O | UP | HDMI0_TX_ON_H | HDMI0_TX_ON_H H: HDMI 2.0 ; L: HDMI 2.1 | | VCCIO6 |
| DC4 | CIF_HREF/BT1120_D8/I2S1_SDO1_M0/PCIE30X1_1_BUTTON_RSTN/I2C7_SCL_M3/UART8_R | AK25 | I/O | UP | TYPEC0_SBU1_DC/GPIO4_A6_d | TYPEC0_SBU1_DC | | VCCIO6 |



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|------|---|------|-----|------|---------------------------|--|-----------|--|
| | TSN_M0/PWM14_M1/SPI0_CS0_M1/CAN1_RX_M1/GPIO4_B2_u | | | | | | | |
| BC17 | 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 | AM25 | I/O | UP | TYPEC0_SBU2_DC/GPIO4_A7_d | TYPEC0_SBU2_DC | VCCIO6 | |
| DB22 | CIF_CLKOUT/BT1120_D10/I2S1_SDO3_M0/PCIE30X4_CLKREQN_M1/DP0_HPDI0_M0/SPDIF0_TX_M1/UART9_TX_M1/PWM11_IR_M1/GPIO4_B4_u | AL26 | I/O | UP | PCIE30X4_CLKREQn_M1_L | PCIE30X4_CLKREQN_Input,Active L | VCCIO6 | |
| DB24 | BT1120_D11/PCIE30X4_WAKEN_M1/HDMI_RX_CEC_M0/SATA1_ACT_LED_M0/UART9_RX_M1/PWM12_M1/SPI3_MISO_M1/GPIO4_B5_d | AJ26 | I/O | DOWN | PCIE30X4_WAKEN_M1_L | PCIE30X4_WAKEN_M1_L | VCCIO6 | |
| DC25 | BT1120_D12/PCIE30X4_PERSTN_M1/HDMI_RX_HPDI0_M0/SATA0_ACT_LED_M0/I2C5_SCL_M1/PWM13_M1/SPI3_MOSI_M1/GPIO4_B6_d | AJ27 | I/O | DOWN | PCIE30X4_PERSTN_M1_L | PCIE30X4_PERSTN_Output,Active L | VCCIO6 | |
| DC6 | BT1120_D13/PCIE20X1_2_CLKREQN_M1/HDMI_TX0_SCL_M0/I2C5_SDA_M1/SPI3_CLK_M1/GPIO4_B7_u | AJ28 | I/O | UP | HDMITX0_SCL_M0 | HDMITX0_SCL_M0 | VCCIO6 | |
| AA26 | CIF_D0/BT1120_D0/I2S1_MCLK_M0/PCIE30X1_1_CLKREQN_M1/UART9_RTSN_M1/SPI0_MISO_M1/GPIO4_A0_d | AK30 | I/O | DOWN | PCIE30X1_1_CLKREQn_M1_L | PCIE30X1_1_CLKREQn_M1_L | VCCIO6 | |
| AC19 | CIF_D1/BT1120_D1/I2S1_SCLK_M0/PCIE30X1_1_WAKEN_M1/UART9_CTSN_M1/SPI0_MOSI_M1/GPIO4_A1_d | AL30 | I/O | DOWN | PCIE30X1_1_WAKEn_M1_L | PCIE30X1_1_WAKEn_M1_L | VCCIO6 | |
| AA20 | CIF_D2/BT1120_D2/I2S1_LRCK_M0/PCIE30X1_1_PERSTN_M1/SPI0_CLK_M1/GPIO4_A2_d | AM29 | I/O | DOWN | PCIE30X1_1_PERSTn_M1_L | PCIE30X1_1_PERSTn_M1_L | VCCIO6 | |
| DA24 | CIF_D3/BT1120_D3/PCIE30X1_0_CLKREQN_M1/UART0_TX_M2/GPIO4_A3_d | AL29 | I/O | DOWN | TYPEC5V_PWREN_H | TYPEC 5V Output Active H | VCCIO6 | |
| DA25 | CIF_D4/BT1120_D4/PCIE30X1_0_WAKEN_M1/I2C3_SCL_M2/UART0_RX_M2/SPI2_MISO_M1/GPIO4_A4_d | AL28 | I/O | DOWN | PCIEx1_0_WAKEn_M1_L | PCIEx1_0_WAKEn_M1_L | VCCIO6 | |
| AC17 | CIF_D5/BT1120_D5/I2S1_SDI0_M0/PCIE30X1_0_PERSTN_M1/I2C3_SDA_M2/UART3_TX_M2/SPI2_MOSI_M1/GPIO4_A5_d | AK27 | I/O | DOWN | PCIEx1_0_PERSTn_M1_L | PCIEx1_0_PERSTn_M1_L | VCCIO6 | |
| DB25 | CIF_D6/BT1120_D6/I2S1_SDI1_M0/PCIE30X2_CLKREQN_M1/I2C5_SCL_M2/UART3_RX_M2/SPI2_CLK_M1/GPIO4_A6_d | AL27 | I/O | DOWN | PCIEx1_0_CLKREQn_M1_L | PCIEx1_0_CLKREQn_M1_L | VCCIO6 | |
| DA26 | CIF_D7/BT1120_D7/I2S1_SDI2_M0/PCIE30X2_WAKEN_M1/I2C5_SDA_M2/SPI2_CS0_M1/GPIO4_A7_d | AM27 | I/O | DOWN | PHONE_CTL | PHONE_CTL, Active H | VCCIO6 | |
| BD26 | VCCIO6 | | P | | VCC_3V3_S0 | GPIO power 1.8V/3.3V Input (Max:300mA) | 1.8V/3.3V | |
| BD27 | VCCIO6_1V8 | | P | | VCC_1V8_S0 | VCCIO6_1.8V Input (Max:300mA) | 1.8V | |
| AA19 | PCIE30X1_1_CLKREQN_M2/DP0_HPDI0_M2/I2C2_SDA_M4/UART6_RX_M1/SPI4_MISO_M2/GPIO1_A0_d | A24 | I/O | DOWN | UART6_RX_M1_BT | UART6_RX_M1 for BT | VCCIO4 | |



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|------|---|-----|-----|------|------------------|--|-----------|
| AB19 | PCIE30X1_1_WAKEN_M2/DP1_HPDIN_M2/SATA1_ACT_LED_M1/I2C2_SCL_M4/UART6_TX_M1/SPI4_MOSI_M2/GPIO1_A1_d | A25 | I/O | DOWN | UART6_TX_M1_BT | UART6_TX_M1 for BT | VCCIO4 |
| AB18 | VOP_POST_EMPTY/I2C4_SDA_M3/UART6_RTSN_M1/PWM0_M2/SPI4_CLK_M2/GPIO1_A2_d | A26 | I/O | DOWN | UART6_RTSn_M1_BT | UART6_RTSn_M1_BT | VCCIO4 |
| AC15 | HDMI_TX1_SDA_M2/I2C4_SCL_M3/UART6_CTSN_M1/PWM1_M2/SPI4_CS0_M2/GPIO1_A3_d | A27 | I/O | DOWN | UART6_CTSN_M1_BT | UART6_CTSN_M1 for BT | VCCIO4 |
| AA15 | HDMI_TX1_SCL_M2/SPI2_MISO_M0/GPIO1_A4_d | B25 | I/O | DOWN | LCD1_BL_EN | LCD1_BL_EN, Active H | VCCIO4 |
| AB22 | HDMI_TX0_HPD_M0/SPI2_MOSI_M0/GPIO1_A5_d | B26 | I/O | DOWN | HDMITX0_HPDIN_M0 | HDMITX0_HPD Input, Active H | VCCIO4 |
| AB21 | HDMI_TX1_HPD_M0/SPI2_CLK_M0/GPIO1_A6_d | C24 | I/O | DOWN | HDMITX1_HPDIN_M0 | HDMI_TX1_HPD Input, Active H | VCCIO4 |
| AC20 | PDM1_SDI0_M1/PCIE30X1_1_PERSTN_M2/PWM3_IR_M3/SPI2_CS0_M0/GPIO1_A7_u | C25 | I/O | UP | SATA_DEVSLP | SATA_DEVSLP | VCCIO4 |
| AB24 | PDM1_SDI1_M1/PCIE30X4_CLKREQN_M3/SPI2_CS1_M0/GPIO1_B0_u | C27 | I/O | UP | PCIE30X4_PRSNL_L | PCIE30X4_PRSNL_L | VCCIO4 |
| AB20 | PDM1_SDI2_M1/PCIE30X4_WAKEN_M3/SPI0_MISO_M2/GPIO1_B1_d | D25 | I/O | DOWN | LCD0_BL_EN | LCD0_BL_EN, Active H | VCCIO4 |
| AC21 | PDM1_SDI3_M1/PCIE30X4_PERSTN_M3/UART4_RX_M2/SPI0_MOSI_M2/GPIO1_B2_d | D26 | I/O | DOWN | EDP_BL_EN | EDP_Power_EN, Active H | VCCIO4 |
| AA22 | PDM1_CLK1_M1/PCIE30X1_0_WAKEN_M2/SATA0_ACT_LED_M1/UART4_TX_M2/SPI0_CLK_M2/GPIO1_B3_d | D27 | I/O | DOWN | PCIE_PWREN_H | PCIE_Power_EN, Active H | VCCIO4 |
| AB15 | PDM1_CLK0_M1/PCIE30X1_0_PERSTN_M2/UART7_RX_M2/SPI0_CS0_M2/GPIO1_B4_u | E24 | I/O | UP | EDP_TP_RST | EDP_TP_Reset, Active L | VCCIO4 |
| AA21 | PCIE30X1_0_CLKREQN_M2/UART7_TX_M2/SPI0_CS1_M2/GPIO1_B5_u | E25 | I/O | UP | EDP_TP_INT | EDP_TP_INT Input Active L | VCCIO4 |
| AA23 | MIPI_CAMERA1_CLK_M0/SPDIF0_TX_M0/PCIE30X2_WAKEN_M3/HDMI_RX_HPDOOUT_M2/I2C5_SCL_M3/UART1_TX_M1/GPIO1_B6_u | E26 | I/O | UP | MIPI_CAM0_CLKOUT | MIPI_CAM0_CLK OUTPUT | VCCIO4 |
| AA25 | 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 | E27 | I/O | UP | MIPI_CAM1_CLKOUT | MIPI_CAM1_CLK OUTPUT | VCCIO4 |
| AC14 | MIPI_CAMERA3_CLK_M0/HDMI_RX_SCL_M2/I2C8_SCL_M2/UART1_RTSN_M1/PWM14_M2/GPIO1_D6_u | F24 | I/O | UP | EDP_BL_PWM14_M2 | EDP_BL_PWM14_M2 OUTPUT | VCCIO4 |
| AA24 | MIPI_CAMERA4_CLK_M0/PCIE30X2_CLKREQN_M3/HDMI_RX_SDA_M2/I2C8_SDA_M2/UART1_CTSN_M1/PWM15_IR_M3/GPIO1_D7_u | F25 | I/O | UP | EDP_EN | EDP_EN, Active H | VCCIO4 |
| AA18 | VCCIO4 | | P | | VCC_3V3_S0 | GPIO power 1.8V/3.3V Input (Max:300mA) | 1.8V/3.3V |
| AB13 | VCCIO4_1V8 | | P | | VCC_1V8_S0 | VCCIO4_1.8V Input (Max:300mA) | 1.8V |



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| DB17 | GMAC1_TXD2/SDIO_D0_M1/I2S3_MCLK/FSPI_D0_M2/I2C6_SDA_M4/PWM10_M0/SPI4_MISO_M1/GPIO3_A0_u | AA29 | I/O | UP | LCD1_PWR_EN | LCD1_Power_EN, Active H | VCCIO5 |
| DC13 | GMAC1_TXD3/SDIO_D1_M1/I2S3_SCLK/AUDDSM_LN/FSPI_D1_M2/I2C6_SCL_M4/PWM11_IR_M0/SPI4_MOSI_M1/GPIO3_A1_u | AA30 | I/O | UP | TP1_INT | TP1_INT Input, Active L | VCCIO5 |
| DB20 | GMAC1_RXD2/SDIO_D2_M1/I2S3_LRCK/AUDDSM_LP/FSPI_D2_M2/UART8_TX_M1/SPI4_CLK_M1/GPIO3_A2_u | AD27 | I/O | UP | UART8_TX_M1 | UART8_TX_M1 | VCCIO5 |
| DA20 | GMAC1_RXD3/SDIO_D3_M1/I2S3_SDO/AUDDSM_RN/FSPI_D3_M2/UART8_RX_M1/SPI4_CS0_M1/GPIO3_A3_u | AE27 | I/O | UP | UART8_RX_M1 | UART8_RX_M1 | VCCIO5 |
| DA17 | GMAC1_TXCLK/SDIO_CMD_M1/I2S3_SDI/AUDDSM_RP/UART8_RTSN_M1/SPI4_CS1_M1/GPIO3_A4_d | AD28 | I/O | DOWN | LCD1_RESET | LCD1_RESET Output, Active L | VCCIO5 |
| DA18 | GMAC1_RXCLK/SDIO_CLK_M1/MIPI_CAMERA0_CLK_M1/FSPI_CLK_M2/I2C4_SDA_M0/UART8_CTSN_M1/GPIO3_A5_d | AH30 | I/O | DOWN | TP1_RESET | TP1_RESET Output, Active L | VCCIO5 |
| DC20 | ETH1_REFCLKO_25M/MIPI_CAMERA1_CLK_M1/I2C4_SCL_M0/GPIO3_A6_d | AH27 | I/O | DOWN | USB30_VCC5V0_EN | USB3.0 5V Output Active H | 3.3V |
| DC18 | GMAC1_RXD0/MIPI_CAMERA2_CLK_M1/PWM8_M0/GPIO3_A7_u | AG29 | I/O | UP | PWM8_M0 | PWM8_M0 Output | VCCIO5 |
| DB19 | GMAC1_RXD1/MIPI_CAMERA3_CLK_M1/PWM9_M0/GPIO3_B0_u | AG28 | I/O | UP | PWM9_M0 | PWM9_M0 Output | VCCIO5 |
| DC19 | GMAC1_RXDV_CRS/MIPI_CAMERA4_CLK_M1/UART2_TX_M2/PWM2_M1/GPIO3_B1_d | AH29 | I/O | DOWN | TP0_INT | TP0_INT Input, Active L | VCCIO5 |
| BD22 | GMAC1_TXER/I2S2_SDI_M1/UART2_RX_M2/PWM3_IR_M1/GPIO3_B2_d | AE28 | I/O | DOWN | WORK_LED | WORK_LED,Active H | VCCIO5 |
| DB18 | GMAC1_TXD0/I2S2_SDO_M1/UART2_RTSN/GPIO3_B3_u | AC28 | I/O | UP | LCD_RESET | MIPI_DSI0_RESET Output, Active L | VCCIO5 |
| DC15 | GMAC1_TXD1/I2S2_MCLK_M1/UART2_CTSN/GPIO3_B4_u | AC29 | I/O | UP | TP0_RESET | TP0_RESET Output, Active L | VCCIO5 |
| DA16 | GMAC1_TXEN/I2S2_SCLK_M1/CAN1_RX_M0/UART3_TX_M1/PWM12_M0/GPIO3_B5_u | AD29 | I/O | UP | UART3_TX_M1/CAN1_RX_M0 | CAN1_RX_M0 | VCCIO5 |
| DC17 | GMAC1_MCLKINOUT/I2S2_LRCK_M1/CAN1_TX_M0/UART3_RX_M1/PWM13_M0/GPIO3_B6_d | AE29 | I/O | DOWN | UART3_RX_M1/CAN1_TX_M0 | CAN1_TX_M0 | VCCIO5 |
| DC14 | GMAC1_PTP_REF_CLK/HDMI_TX1_HPD_M1/I2C3_SCL_M1/SPI1_MOSI_M1/GPIO3_B7_d | AA28 | I/O | DOWN | LCD0_PWR_EN | LCD0_Power_EN Output, Active H | VCCIO5 |
| DC22 | GMAC1_PPSTRIG/I2C3_SDA_M1/UART7_TX_M1/SPI1_MISO_M1/GPIO3_C0_d | Y29 | I/O | DOWN | UART7_TX_M1 | UART7_TX_M1 | VCCIO5 |
| DA23 | GMAC1_PPSCLK/PCIE30X2_BUTTON_RSTN/UART7_RX_M1/SPI1_CLK_M1/GPIO3_C1_d | Y27 | I/O | DOWN | UART7_RX_M1 | UART7_RX_M1 | VCCIO5 |
| DB16 | GMAC1_MDC/MIPI_TE0/I2C8_SCL_M4/UART7_RTSN_M1/PWM14_M0/SPI1_CS0_M1/GPIO3_C2_d | Y31 | I/O | DOWN | I2C8_SCL_M4 | I2C8_SCL_M4 | VCCIO5 |



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| DC11 | GMAC1_MDIO/MIPI_TE1/I2C8_SDA_M4/UART7_CTSN_M1/PWM15_IR_M0/SPI1_CS1_M1/GPIO3_C3_d | Y30 | I/O | DOWN | I2C8_SDA_M4 | I2C8_SDA_M4 | VCCIO5 |
| DC1 | CIF_D8/FSPI_CS0N_M2/PCIE30X4_CLKREQN_M2/HDMI_TX1_CEC_M2/CAN2_RX_M0/UART5_TX_M1/SPI3_CS0_M3/GPIO3_C4_u | AH26 | I/O | UP | HDMITX1_CEC_M2 | HDMITX1_CEC_M2 | VCCIO5 |
| DC3 | CIF_D9/FSPI_CS1N_M2/PCIE30X4_WAKEN_M2/HDMI_TX1_SDA_M1/CAN2_TX_M0/UART5_RX_M1/SPI3_CS1_M3/GPIO3_C5_u | AH25 | I/O | UP | HDMITX1_SDA_M1 | HDMITX1_SDA_M1 | VCCIO5 |
| DC2 | CIF_D10/PCIE30X4_PERSTN_M2/HDMI_TX1_SCL_M1/SPI3_MISO_M3/GPIO3_C6_u | AG26 | I/O | UP | HDMITX1_SCL_M1 | HDMITX1_SCL_M1 | VCCIO5 |
| BD16 | CIF_D11/PCIE20X1_2_CLKREQN_M0/HDMI_TX0_SCL_M2/I2C5_SCL_M0/SPI3_MOSI_M3/GPIO3_C7_u | AJ24 | I/O | UP | GMAC0_RSTN_L | GMAC0_Reset Output, Active L | VCCIO5 |
| DC24 | CIF_D12/PCIE20X1_2_WAKEN_M0/HDMI_TX0_SDA_M2/I2C5_SDA_M0/UART4_RX_M1/PWM8_M2/SPI3_CLK_M3/GPIO3_D0_u | AH24 | I/O | UP | HDMI1_TX_ON_H | HDMI1_TX_ON_H H: HDMI 2.0 ; L: HDMI 2.1 | VCCIO5 |
| DD7 | CIF_D13/PCIE20X1_2_PERSTN_M0/HDMI_RX_CEC_M1/UART4_TX_M1/PWM9_M2/SPI0_MISO_M3/GPIO3_D1_d | AG23 | I/O | DOWN | HDMI_RX_CEC | HDMI_RX_CEC | VCCIO5 |
| DD6 | CIF_D14/PCIE30X2_CLKREQN_M2/HDMI_RX_SCL_M1/I2C7_SCL_M2/UART9_RTSN_M2/SPI0_MOSI_M3/GPIO3_D2_d | AG25 | I/O | DOWN | HDMI_RX_SCL_M1 | HDMI_RX_SCL_M1 | VCCIO5 |
| DD5 | CIF_D15/PCIE30X2_WAKEN_M2/HDMI_RX_SDA_M1/I2C7_SDA_M2/UART9_CTSN_M2/PWM10_M2/SPI0_CLK_M3/GPIO3_D3_d | AG24 | I/O | DOWN | HDMI_RX_SDA_M1 | HDMI_RX_SDA_M1 | VCCIO5 |
| DC23 | HDMI_TX0_HPD_M1/PCIE30X2_PERSTN_M2/HDMI_RX_HPDOUT_M1/MCU_JTAG_TCK_M1/UART9_RX_M2/SPI0_CS0_M3/GPIO3_D4_d | AA27 | I/O | DOWN | HDMIIRX_HPDOUT_H | HDMIIRX_HPD OUTPUT, Active H | VCCIO5 |
| DA22 | PCIE30X4_BUTTON_RSTN/DP1_HPDIN_M0/MCU_JTAG_TMS_M1/UART9_TX_M2/PWM11_IR_M3/SPI0_CS1_M3/GPIO3_D5_d | AB28 | I/O | DOWN | EDP_HPDIN_M1 | EDP_HPD_IN_M1, , Active H | VCCIO5 |
| BD23 | VCCIO5 | | P | | VCC_3V3_S0 | GPIO power 1.8V/3.3V Input (Max:300mA) | 1.8V/3.3V |
| BD24 | VCCIO5_1V8 | | P | | VCC_1V8_S0 | VCCIO5_1.8V Input (Max:300mA) | 1.8V |
| DC28 | SDMMC_D0/PDM1_SDI3_M0/JTAG_TCK_M1/I2C3_SCL_M4/UART2_TX_M1/PWM8_M1/GPIO4_D0_u | AD2 | I/O | UP | SDMMC0_D0/UART2_TX_M1 | SDMMC0_D0/UART2_TX_M1 | VCCIO_SD_S0 1.8V/3.3V Auto |
| DA30 | SDMMC_D1/PDM1_SDI2_M0/JTAG_TMS_M1/I2C3_SDA_M4/UART2_RX_M1/PWM9_M1/GPIO4_D1_u | AD1 | I/O | UP | SDMMC0_D1/UART2_RX_M1 | SDMMC0_D1/UART2_RX_M1 | VCCIO_SD_S0 1.8V/3.3V Auto |
| DA28 | SDMMC_D2/PDM1_SDI1_M0/JTAG_TCK_M0/I2C8_SCL_M0/UART5_CTSN_M0/GPIO4_D2_u | AF2 | I/O | UP | SDMMC_D2 | SDMMC_D2 | VCCIO_SD_S0 1.8V/3.3V Auto |



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|------|---|-----|-----|------|-----------------------------|-----------------------------|-------------------------------|
| DB28 | SDMMC_D3/PDM1_SDI0_M0/JTAG_TMS_M0/I2C8_SDA_M0/UART5_RTSN_M0/PWM10_M1/GPIO4_D3_u | AF1 | I/O | UP | SDMMC_D3 | SDMMC_D3 | VCCIO_SD_S0 1.8V/3.3V Auto |
| DC27 | SDMMC_CMD/PDM1_CLK1_M0/MCU_JTAG_TCK_M0/CAN0_TX_M1/UART5_RX_M0/PWM7_IR_M1/GPIO4_D4_u | AE2 | I/O | UP | SDMMC_CMD | SDMMC_CMD | VCCIO_SD_S0 1.8V/3.3V Auto |
| DA29 | SDMMC_CLK/PDM1_CLK0_M0/TEST_CLKOUT_M0/MCU_JTAG_TMS_M0/CAN0_RX_M1/UART5_TX_M0/GPIO4_D5_d | AE1 | I/O | DOWN | SDMMC_CLK | SDMMC_CLK | VCCIO_SD_S0 1.8V/3.3V Auto |
| DA9 | HDMI_TX0_SBDP/EDP_TX0_AUXP | AG2 | | | HDMI0_TX_SBDP/EDP0_TX_AUXP | HDMI0_TX_SBDP/EDP0_TX_AUXP | |
| DB9 | HDMI_TX0_SBDN/EDP_TX0_AUXN | AG1 | | | HDMI0_TX_SBDN/EDP0_TX_AUXN | HDMI0_TX_SBDN/EDP0_TX_AUXN | |
| DA6 | HDMI_TX0_D0P/EDP_TX0_D0P | AJ2 | O | | HDMI0_TX0P_PORT/EDP0_TX_D0P | HDMI0_TX0P_PORT/EDP0_TX_D0P | |
| DB6 | HDMI_TX0_D0N/EDP_TX0_D0N | AJ1 | O | | HDMI0_TX0N_PORT/EDP0_TX_D0N | HDMI0_TX0N_PORT/EDP0_TX_D0N | |
| DB4 | HDMI_TX0_D1P/EDP_TX0_D1P | AK3 | O | | HDMI0_TX1P_PORT/EDP0_TX_D1P | HDMI0_TX1P_PORT/EDP0_TX_D1P | |
| DA5 | HDMI_TX0_D1N/EDP_TX0_D1N | AK2 | O | | HDMI0_TX1N_PORT/EDP0_TX_D1N | HDMI0_TX1N_PORT/EDP0_TX_D1N | |
| DA3 | HDMI_TX0_D2P/EDP_TX0_D2P | AL2 | O | | HDMI0_TX2P_PORT/EDP0_TX_D2P | HDMI0_TX2P_PORT/EDP0_TX_D2P | |
| DB3 | HDMI_TX0_D2N/EDP_TX0_D2N | AL1 | O | | HDMI0_TX2N_PORT/EDP0_TX_D2N | HDMI0_TX2N_PORT/EDP0_TX_D2N | |
| DB7 | HDMI_TX0_D3P/EDP_TX0_D3P | AH3 | O | | HDMI0_TX3P_PORT/EDP0_TX_D3P | HDMI0_TX3P_PORT/EDP0_TX_D3P | |
| DA8 | HDMI_TX0_D3N/EDP_TX0_D3N | AH2 | O | | HDMI0_TX3N_PORT/EDP0_TX_D3N | HDMI0_TX3N_PORT/EDP0_TX_D3N | |
| DA1 | HDMI_TX1_SBDP/EDP_TX1_AUXP | AN2 | | | HDMI1_TX_SBDP/EDP1_TX_AUXP | HDMI1_TX_SBDP/EDP1_TX_AUXP | |
| DA2 | HDMI_TX1_SBDN/EDP_TX1_AUXN | AP2 | | | HDMI1_TX_SBDN/EDP1_TX_AUXN | HDMI1_TX_SBDN/EDP1_TX_AUXN | |
| CA30 | HDMI_TX1_D0P/EDP_TX1_D0P | AN4 | O | | HDMI1_TX0P_PORT/EDP1_TX_D0P | HDMI1_TX0P_PORT/EDP1_TX_D0P | |



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|------|--|------|---|--|-----------------------------|-----------------------------|--|
| CB30 | HDMI_TX1_D0N/EDP_TX1_D0N | AP4 | O | | HDMI1_TX0N_PORT/EDP1_TX_D0N | HDMI1_TX0N_PORT/EDP1_TX_D0N | |
| CB28 | HDMI_TX1_D1P/EDP_TX1_D1P | AM5 | O | | HDMI1_TX1P_PORT/EDP1_TX_D1P | HDMI1_TX1P_PORT/EDP1_TX_D1P | |
| CA29 | HDMI_TX1_D1N/EDP_TX1_D1N | AN5 | O | | HDMI1_TX1N_PORT/EDP1_TX_D1N | HDMI1_TX1N_PORT/EDP1_TX_D1N | |
| CA27 | HDMI_TX1_D2P/EDP_TX1_D2P | AN6 | O | | HDMI1_TX2P_PORT/EDP1_TX_D2P | HDMI1_TX2P_PORT/EDP1_TX_D2P | |
| CB27 | HDMI_TX1_D2N/EDP_TX1_D2N | AP6 | O | | HDMI1_TX2N_PORT/EDP1_TX_D2N | HDMI1_TX2N_PORT/EDP1_TX_D2N | |
| CB31 | HDMI_TX1_D3P/EDP_TX1_D3P | AM3 | O | | HDMI1_TX3P_PORT/EDP1_TX_D3P | HDMI1_TX3P_PORT/EDP1_TX_D3P | |
| CA32 | HDMI_TX1_D3N/EDP_TX1_D3N | AN3 | O | | HDMI1_TX3N_PORT/EDP1_TX_D3N | HDMI1_TX3N_PORT/EDP1_TX_D3N | |
| DA15 | HDMI_RX_CLKP | AF6 | I | | HDMI_RX_CLKP | HDMI_RX_CLKP Input | |
| DB15 | HDMI_RX_CLKN | AF5 | I | | HDMI_RX_CLKN | HDMI_RX_CLKN Input | |
| DA14 | HDMI_RX_D0P | AG5 | I | | HDMI_RX_D0P | HDMI_RX_D0P Input | |
| DB14 | HDMI_RX_D0N | AG4 | I | | HDMI_RX_D0N | HDMI_RX_D0N Input | |
| DA12 | HDMI_RX_D1P | AH6 | I | | HDMI_RX_D1P | HDMI_RX_D1P Input | |
| DB12 | HDMI_RX_D1N | AH5 | I | | HDMI_RX_D1N | HDMI_RX_D1N Input | |
| DA11 | HDMI_RX_D2P | AJ5 | I | | HDMI_RX_D2P | HDMI_RX_D2P Input | |
| DB11 | HDMI_RX_D2N | AJ4 | I | | HDMI_RX_D2N | HDMI_RX_D2N Input | |
| CB8 | MIPI_DPHY0_TX_CLKP/MIPI_CPHY0_TX_TRIO1_C | AN26 | O | | MIPI_DPHY0_TX_CLKP | MIPI_DPHY0_TX_CLKP | |
| CA9 | MIPI_DPHY0_TX_CLKN/MIPI_CPHY0_TX_TRIO1_B | AP26 | O | | MIPI_DPHY0_TX_CLKN | MIPI_DPHY0_TX_CLKN | |
| CB10 | MIPI_DPHY0_TX_D0P/MIPI_CPHY0_TX_TRIO0_B | AN24 | O | | MIPI_DPHY0_TX_D0P | MIPI_DPHY0_TX_D0P | |
| CA11 | MIPI_DPHY0_TX_D0N/MIPI_CPHY0_TX_TRIO0_A | AP24 | O | | MIPI_DPHY0_TX_D0N | NC | |



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|------|--|------|---|--|--------------------|--------------------|--|
| CB9 | MIPI_DPHY0_TX_D1P/MIPI_CPHY0_TX_TRIO1_A | AN25 | O | | MIPI_DPHY0_TX_D1P | MIPI_DPHY0_TX_D1P | |
| CA10 | MIPI_DPHY0_TX_D1N/MIPI_CPHY0_TX_TRIO0_C | AP25 | O | | MIPI_DPHY0_TX_D1N | MIPI_DPHY0_TX_D1N | |
| CB7 | MIPI_DPHY0_TX_D2P/MIPI_CPHY0_TX_TRIO2_B | AN27 | O | | MIPI_DPHY0_TX_D2P | MIPI_DPHY0_TX_D2P | |
| CA8 | MIPI_DPHY0_TX_D2N/MIPI_CPHY0_TX_TRIO2_A | AP27 | O | | MIPI_DPHY0_TX_D2N | MIPI_DPHY0_TX_D2N | |
| CB6 | MIPI_DPHY0_TX_D3P/NO_USE | AN28 | O | | MIPI_DPHY0_TX_D3P | MIPI_DPHY0_TX_D3P | |
| CA7 | MIPI_DPHY0_TX_D3N/MIPI_CPHY0_TX_TRIO2_C | AP28 | O | | MIPI_DPHY0_TX_D3N | MIPI_DPHY0_TX_D3N | |
| CA3 | MIPI_DPHY0_RX_CLKP/MIPI_CPHY0_RX_TRIO1_C | AN32 | I | | MIPI_DPHY0_RX_CLKP | MIPI_DPHY0_RX_CLKP | |
| CB3 | MIPI_DPHY0_RX_CLKN/MIPI_CPHY0_RX_TRIO1_B | AP31 | I | | MIPI_DPHY0_RX_CLKN | MIPI_DPHY0_RX_CLKN | |
| CA5 | MIPI_DPHY0_RX_D0P/MIPI_CPHY0_RX_TRIO0_B | AN29 | I | | MIPI_DPHY0_RX_D0P | MIPI_DPHY0_RX_D0P | |
| CB5 | MIPI_DPHY0_RX_D0N/MIPI_CPHY0_RX_TRIO0_A | AP29 | I | | MIPI_DPHY0_RX_D0N | MIPI_DPHY0_RX_D0N | |
| CA4 | MIPI_DPHY0_RX_D1P/MIPI_CPHY0_RX_TRIO1_A | AN30 | I | | MIPI_DPHY0_RX_D1P | MIPI_DPHY0_RX_D1P | |
| CB4 | MIPI_DPHY0_RX_D1N/MIPI_CPHY0_RX_TRIO0_C | AP30 | I | | MIPI_DPHY0_RX_D1N | MIPI_DPHY0_RX_D1N | |
| CA2 | MIPI_DPHY0_RX_D2P/MIPI_CPHY0_RX_TRIO2_B | AN33 | I | | MIPI_DPHY0_RX_D2P | MIPI_DPHY0_RX_D2P | |
| CB2 | MIPI_DPHY0_RX_D2N/MIPI_CPHY0_RX_Trio2_A | AP32 | I | | MIPI_DPHY0_RX_D2N | MIPI_DPHY0_RX_D2N | |
| CA1 | MIPI_DPHY0_RX_D3P/NO_USE | AN34 | I | | MIPI_DPHY0_RX_D3P | MIPI_DPHY0_RX_D3P | |
| CB1 | MIPI_DPHY0_RX_D3N/MIPI_CPHY0_RX_TRIO2_C | AP33 | I | | MIPI_DPHY0_RX_D3N | MIPI_DPHY0_RX_D3N | |
| BB27 | MIPI_CSI0_CLK0P | AJ33 | I | | MIPI_CSI0_RX_CLK0P | MIPI_CSI0_RX_CLK0P | |
| BA27 | MIPI_CSI0_CLK0N | AJ34 | I | | MIPI_CSI0_RX_CLK0N | MIPI_CSI0_RX_CLK0N | |
| BB25 | MIPI_CSI0_D0P | AG33 | I | | MIPI_CSI0_RX_D0P | MIPI_CSI0_RX_D0P | |
| BA25 | MIPI_CSI0_D0N | AG34 | I | | MIPI_CSI0_RX_D0N | MIPI_CSI0_RX_D0N | |
| BB26 | MIPI_CSI0_D1P | AH33 | I | | MIPI_CSI0_RX_D1P | MIPI_CSI0_RX_D1P | |
| BA26 | MIPI_CSI0_D1N | AH34 | I | | MIPI_CSI0_RX_D1N | MIPI_CSI0_RX_D1N | |



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|------|--|------|---|--|--------------------|--------------------|--|
| BB30 | MIPI_CSI0_CLK1P | AM33 | I | | MIPI_CSI0_RX_CLK1P | MIPI_CSI0_RX_CLK1P | |
| BA30 | MIPI_CSI0_CLK1N | AM34 | I | | MIPI_CSI0_RX_CLK1N | MIPI_CSI0_RX_CLK1N | |
| BB28 | MIPI_CSI0_D2P | AK33 | I | | MIPI_CSI0_RX_D2P | MIPI_CSI0_RX_D2P | |
| BA28 | MIPI_CSI0_D2N | AK34 | I | | MIPI_CSI0_RX_D2N | MIPI_CSI0_RX_D2N | |
| BB29 | MIPI_CSI0_D3P | AL33 | I | | MIPI_CSI0_RX_D3P | MIPI_CSI0_RX_D3P | |
| BA29 | MIPI_CSI0_D3N | AL34 | I | | MIPI_CSI0_RX_D3N | MIPI_CSI0_RX_D3N | |
| BB33 | MIPI_CSI1_CLK0P | AJ31 | I | | MIPI_CSI1_RX_CLK0P | MIPI_CSI1_RX_CLK0P | |
| BA33 | MIPI_CSI1_CLK0N | AJ32 | I | | MIPI_CSI1_RX_CLK0N | MIPI_CSI1_RX_CLK0N | |
| BB31 | MIPI_CSI1_D0P | AG31 | I | | MIPI_CSI1_RX_D0P | MIPI_CSI1_RX_D0P | |
| BA31 | MIPI_CSI1_D0N | AG32 | I | | MIPI_CSI1_RX_D0N | MIPI_CSI1_RX_D0N | |
| BB32 | MIPI_CSI1_D1P | AH31 | I | | MIPI_CSI1_RX_D1P | MIPI_CSI1_RX_D1P | |
| BA32 | MIPI_CSI1_D1N | AH32 | I | | MIPI_CSI1_RX_D1N | MIPI_CSI1_RX_D1N | |
| BC30 | MIPI_CSI1_CLK1P | AM31 | I | | MIPI_CSI1_RX_CLK1P | MIPI_CSI1_RX_CLK1P | |
| BC31 | MIPI_CSI1_CLK1N | AM32 | I | | MIPI_CSI1_RX_CLK1N | MIPI_CSI1_RX_CLK1N | |
| BB34 | MIPI_CSI1_D2P | AK31 | I | | MIPI_CSI1_RX_D2P | MIPI_CSI1_RX_D2P | |
| BA34 | MIPI_CSI1_D2N | AK32 | I | | MIPI_CSI1_RX_D2N | MIPI_CSI1_RX_D2N | |
| BA36 | MIPI_CSI1_D3P | AL31 | I | | MIPI_CSI1_RX_D3P | MIPI_CSI1_RX_D3P | |
| BA35 | MIPI_CSI1_D3N | AL32 | I | | MIPI_CSI1_RX_D3N | MIPI_CSI1_RX_D3N | |
| CB13 | MIPI_DPHY1_TX_CLKP/MIPI_CPHY1_TX_TRIO1_C | AN20 | O | | MIPI_DPHY1_TX_CLKP | NC | |
| CA14 | MIPI_DPHY1_TX_CLKN/MIPI_CPHY1_TX_TRIO1_B | AP20 | O | | MIPI_DPHY1_TX_CLKN | NC | |
| CB15 | MIPI_DPHY1_TX_D0P/MIPI_CPHY1_TX_TRIO0_B | AN18 | O | | MIPI_DPHY1_TX_D0P | NC | |
| CA16 | MIPI_DPHY1_TX_D0N/MIPI_CPHY1_TX_TRIO0_A | AP18 | O | | MIPI_DPHY1_TX_D0N | NC | |



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|------|--|------|---|--|--------------------|-------------------|------|
| CB14 | MIPI_DPHY1_TX_D1P/MIPI_CPHY1_TX_TRIO1_A | AN19 | O | | MIPI_DPHY1_TX_D1P | NC | |
| CA15 | MIPI_DPHY1_TX_D1N/MIPI_CPHY1_TX_TRIO0_C | AP19 | O | | MIPI_DPHY1_TX_D1N | NC | |
| CB12 | MIPI_DPHY1_TX_D2P/MIPI_CPHY1_TX_TRIO2_B | AN21 | O | | MIPI_DPHY1_TX_D2P | NC | |
| CA13 | MIPI_DPHY1_TX_D2N/MIPI_CPHY1_TX_TRIO2_A | AP21 | O | | MIPI_DPHY1_TX_D2N | NC | |
| CB11 | MIPI_DPHY1_TX_D3P/NO_USE | AN22 | O | | MIPI_DPHY1_TX_D3P | MIPI_DPHY0_TX_D0N | |
| CA12 | MIPI_DPHY1_TX_D3N/MIPI_CPHY1_TX_TRIO2_C | AP22 | O | | MIPI_DPHY1_TX_D3N | NC | |
| CD4 | MIPI_DPHY1_RX_CLKP/MIPI_CPHY1_RX_TRIO1_C | AK20 | I | | MIPI_DPHY1_RX_CLKP | NC | |
| CC6 | MIPI_DPHY1_RX_CLKN/MIPI_CPHY1_RX_TRIO1_B | AL20 | I | | MIPI_DPHY1_RX_CLKN | NC | |
| CD7 | MIPI_DPHY1_RX_D0P/MIPI_CPHY1_RX_TRIO0_B | AK18 | I | | MIPI_DPHY1_RX_D0P | NC | |
| CC9 | MIPI_DPHY1_RX_D0N/MIPI_CPHY1_RX_TRIO0_A | AL18 | I | | MIPI_DPHY1_RX_D0N | NC | |
| CC7 | MIPI_DPHY1_RX_D1P/MIPI_CPHY1_RX_TRIO1_A | AK19 | I | | MIPI_DPHY1_RX_D1P | NC | |
| CD6 | MIPI_DPHY1_RX_D1N/MIPI_CPHY1_RX_TRIO0_C | AL19 | I | | MIPI_DPHY1_RX_D1N | NC | |
| CC4 | MIPI_DPHY1_RX_D2P/MIPI_CPHY1_RX_TRIO2_B | AK21 | I | | MIPI_DPHY1_RX_D2P | NC | |
| CD3 | MIPI_DPHY1_RX_D2N/MIPI_CPHY1_RX_TRIO2_A | AL21 | I | | MIPI_DPHY1_RX_D2N | NC | |
| CC2 | MIPI_DPHY1_RX_D3P/NO_USE | AK22 | I | | MIPI_DPHY1_RX_D3P | NC | |
| CC3 | MIPI_DPHY1_RX_D3N/MIPI_CPHY1_RX_TRIO2_C | AL22 | I | | MIPI_DPHY1_RX_D3N | NC | |
| CC16 | TYPECO_SBU1/DP0_AUXP | AL15 | | | TYPECO_SBU1 | TYPECO_SBU1 | 1.8V |
| CD15 | TYPECO_SBU2/DP0_AUXN | AM15 | | | TYPECO_SBU2 | TYPECO_SBU2 | 1.8V |
| CB20 | TYPECO_SSRX1P/DP0_TX0P | AN13 | | | TYPECO_SSRX1P | TYPECO_SSRX1P | |
| CA21 | TYPECO_SSRX1N/DP0_TX0N | AP13 | | | TYPECO_SSRX1N | TYPECO_SSRX1N | |
| CA20 | TYPECO_SSTX1P/DP0_TX1P | AP14 | | | TYPECO_SSTX1P | TYPECO_SSTX1P | |
| CB19 | TYPECO_SSTX1N/DP0_TX1N | AN14 | | | TYPECO_SSTX1N | TYPECO_SSTX1N | |



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|------|------------------------|------|---|--|----------------------|-----------------------------------|------|
| CA18 | TYPEC0_SSRX2P/DP0_TX2P | AN15 | | | TYPEC0_SSRX2P | TYPEC0_SSRX2P | |
| CB18 | TYPEC0_SSRX2N/DP0_TX2N | AP15 | | | TYPEC0_SSRX2N | TYPEC0_SSRX2N | |
| CB17 | TYPEC0_SSTX2P/DP0_TX3P | AP16 | | | TYPEC0_SSTX2P | TYPEC0_SSTX2P | |
| CA17 | TYPEC0_SSTX2N/DP0_TX3N | AN16 | | | TYPEC0_SSTX2N | TYPEC0_SSTX2N | |
| CC20 | TYPEC1_SBU1/DP1_AUXP | AL10 | | | DP1_AUXP | DP1_AUXP | |
| CD19 | TYPEC1_SBU2/DP1_AUXN | AM10 | | | DP1_AUXN | DP1_AUXN | |
| CB25 | TYPEC1_SSRX1P/DP1_TX0P | AN8 | I | | TYPEC1_SSRX1P | TYPEC1_SSRX1P | |
| CA26 | TYPEC1_SSRX1N/DP1_TX0N | AP8 | I | | TYPEC1_SSRX1N | TYPEC1_SSRX1N | |
| CA25 | TYPEC1_SSTX1P/DP1_TX1P | AP9 | O | | TYPEC1_SSTX1P | TYPEC1_SSTX1P | |
| CB24 | TYPEC1_SSTX1N/DP1_TX1N | AN9 | O | | TYPEC1_SSTX1N | TYPEC1_SSTX1N | |
| CA23 | TYPEC1_SSRX2P/DP1_TX2P | AN10 | | | DP1_TX2P | DP1_TX2P | |
| CB23 | TYPEC1_SSRX2N/DP1_TX2N | AP10 | | | DP1_TX2N | DP1_TX2N | |
| CB22 | TYPEC1_SSTX2P/DP1_TX3P | AP11 | | | DP1_TX3P | DP1_TX3P | |
| CA22 | TYPEC1_SSTX2N/DP1_TX3N | AN11 | | | DP1_TX3N | DP1_TX3N | |
| CD17 | TYPEC0_USB20_OTG_DP | AL12 | | | TYPEC0_OTG_DP | TYPEC0_OTG_DP | |
| CD18 | TYPEC0_USB20_OTG_DM | AM12 | | | TYPEC0_OTG_DM | TYPEC0_OTG_DM | |
| CD16 | TYPEC0_USB20_OTG_ID | AL14 | I | | NC | TYPEC0_USB20_OTG_ID | 1.8V |
| CC18 | TYPEC0_USB20_VBUSDET | AM14 | I | | TYPEC0_USB20_VBUSDET | TYPEC0_USB20_VBUSDET, Active H | 3.3V |
| CD20 | TYPEC1_USB20_OTG_DP | AK9 | | | TYPEC1_OTG_DP | TYPEC1_OTG_DP | |
| CC22 | TYPEC1_USB20_OTG_DM | AL9 | | | TYPEC1_OTG_DM | TYPEC1_OTG_DM | |
| CD21 | TYPEC1_USB20_OTG_ID | AK8 | I | | NC | TYPEC1_USB20_OTG_ID | 1.8V |
| CD22 | TYPEC1_USB20_VBUSDET | AL8 | I | | NC | TYPEC1_USB20_VBUSDET, | 3.3V |



| | | | | | | Active H | |
|------|---|-----|---|--|---------------------------|---------------------------|--|
| CC26 | USB20_HOST0_DP | AK6 | | | USB20_HOST0_DP | USB20_HOST0_DP | |
| CD24 | USB20_HOST0_DM | AL6 | | | USB20_HOST0_DM | USB20_HOST0_DM | |
| CD23 | USB20_HOST1_DP | AL7 | | | USB20_HOST1_DP | USB20_HOST1_DP | |
| CC24 | USB20_HOST1_DM | AM7 | | | USB20_HOST1_DM | USB20_HOST1_DM | |
| BB16 | PCIE20_0_REFCLKP | L32 | O | | PCIE20_0_REFCLKP | PCIE20_0_REFCLKP Output | |
| BA16 | PCIE20_0_REFCLKN | L33 | O | | PCIE20_0_REFCLKN | PCIE20_0_REFCLKN Output | |
| BA17 | PCIE20_0_TXP/SATA30_0_TXP | M34 | O | | PCIE20_0_TXP/SATA30_0_TXP | PCIE20_0_TXP/SATA30_0_TXP | |
| BB17 | PCIE20_0_TXN/SATA30_0_TXN | M33 | O | | PCIE20_0_TXN/SATA30_0_TXN | PCIE20_0_TXN/SATA30_0_TXN | |
| BB18 | PCIE20_0_RXP/SATA30_0_RXP | N33 | I | | PCIE20_0_RXP/SATA30_0_RXP | PCIE20_0_RXP/SATA30_0_RXP | |
| BA18 | PCIE20_0_RXN/SATA30_0_RXN | N34 | I | | PCIE20_0_RXN/SATA30_0_RXN | PCIE20_0_RXN/SATA30_0_RXN | |
| BD10 | PCIE20_1_REFCLKP | H32 | O | | PCIE20_1_REFCLKP | PCIE20_1_REFCLKP Output | |
| BC11 | PCIE20_1_REFCLKN | H33 | O | | PCIE20_1_REFCLKN | PCIE20_1_REFCLKN Output | |
| BD14 | PCIE20_1_TXP/SATA30_1_TXP | K33 | O | | PCIE20_1_TXP | PCIE20_1_TXP | |
| BC15 | PCIE20_1_TXN/SATA30_1_TXN | K34 | O | | PCIE20_1_TXN | PCIE20_1_TXN | |
| BD11 | PCIE20_1_RXP/SATA30_1_RXP | J33 | I | | PCIE20_1_RXP | PCIE20_1_RXP | |
| BC13 | PCIE20_1_RXN/SATA30_1_RXN | J34 | I | | PCIE20_1_RXN | PCIE20_1_RXN | |
| BB13 | PCIE20_2_REFCLKP | G31 | O | | NC | NC | |
| BA13 | PCIE20_2_REFCLKN | G30 | O | | NC | NC | |
| BB15 | PCIE20_2_TXP/SATA30_2_TXP/USB30_2_SSTXP | H30 | O | | USB30_2_SSTXP | USB30_2_SSTXP | |
| BA15 | PCIE20_2_TXN/SATA30_2_TXN/USB30_2_SSTXN | H29 | O | | USB30_2_SSTXN | USB30_2_SSTXN | |



| | | | | | | | |
|------|---|-----|---|--|-------------------------|--------------------------------|--|
| BB14 | PCIE20_2_RXP/SATA30_2_RXP/USB30_2_SSRXP | J31 | I | | USB30_2_SSRXP | USB30_2_SSRXP | |
| BA14 | PCIE20_2_RXN/SATA30_2_RXN/USB30_2_SSRXN | J30 | I | | USB30_2_SSRXN | USB30_2_SSRXN | |
| BA12 | PCIE30_PORT0_REFCLKP | E33 | I | | PCIE30_PORT0_REFCLKP_IN | PCIE30_PORT0_REFCLKP_I NPUT | |
| BB11 | PCIE30_PORT0_REFCLKN | E34 | I | | PCIE30_PORT0_REFCLKN_IN | PCIE30_PORT0_REFCLKN_I NPUT | |
| BA9 | PCIE30_PORT0_TX0P | D32 | O | | PCIE30_PORT0_TX0P | PCIE30_PORT0_TX0P | |
| BB8 | PCIE30_PORT0_TX0N | D33 | O | | PCIE30_PORT0_TX0N | PCIE30_PORT0_TX0N | |
| BA11 | PCIE30_PORT0_RX0P | G33 | I | | PCIE30_PORT0_RX0P | PCIE30_PORT0_RX0P | |
| BB10 | PCIE30_PORT0_RX0N | G34 | I | | PCIE30_PORT0_RX0N | PCIE30_PORT0_RX0N | |
| BA8 | PCIE30_PORT0_TX1P | C33 | O | | PCIE30_PORT0_TX1P | PCIE30_PORT0_TX1P | |
| BB7 | PCIE30_PORT0_TX1N | C34 | O | | PCIE30_PORT0_TX1N | PCIE30_PORT0_TX1N | |
| BA10 | PCIE30_PORT0_RX1P | F32 | I | | PCIE30_PORT0_RX1P | PCIE30_PORT0_RX1P | |
| BB9 | PCIE30_PORT0_RX1N | F33 | I | | PCIE30_PORT0_RX1N | PCIE30_PORT0_RX1N | |
| BB6 | PCIE30_PORT1_REF_CLKP | A28 | I | | PCIE30_PORT1_REFCLKP_IN | PCIE30_PORT1_REFCLKP_I N | |
| BA6 | PCIE30_PORT1_REF_CLKN | B28 | I | | PCIE30_PORT1_REFCLKN_IN | PCIE30_PORT1_REFCLKN_I N | |
| BB3 | PCIE30_PORT1_TX0P | B30 | O | | PCIE30_PORT1_TX2P | PCIE30_PORT1_TX2P | |
| BA3 | PCIE30_PORT1_TX0N | A30 | O | | PCIE30_PORT1_TX2N | PCIE30_PORT1_TX2N | |
| BB5 | PCIE30_PORT1_RX0P | B32 | I | | PCIE30_PORT1_RX2P | PCIE30_PORT1_RX2P | |
| BA5 | PCIE30_PORT1_RX0N | A32 | I | | PCIE30_PORT1_RX2N | PCIE30_PORT1_RX2N | |
| BB2 | PCIE30_PORT1_TX1P | C29 | O | | PCIE30_PORT1_TX3P | PCIE30_PORT1_TX3P | |
| BA2 | PCIE30_PORT1_TX1N | B29 | O | | PCIE30_PORT1_TX3N | PCIE30_PORT1_TX3N | |
| BB4 | PCIE30_PORT1_RX1P | C31 | I | | PCIE30_PORT1_RX3P | PCIE30_PORT1_RX3P | |



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|------|-------------------|------------|-----|--|-------------------|-----------------------------------|------|
| BA4 | PCIE30_PORT1_RX1N | B31 | I | | PCIE30_PORT1_RX3N | PCIE30_PORT1_RX3N | |
| DA31 | VCC4V0_SYS | | P | | VCC4V0_CORE | Power supply Input: 4.0V +/-5% | 4.0V |
| DA32 | | | | | | | 4.0V |
| DA33 | | | | | | | 4.0V |
| DB31 | | | | | | | 4.0V |
| DB32 | | | | | | | 4.0V |
| AA1 | | VCC_3V3_S0 | | | | | P |
| AA3 | VCC_3V3_S3 | | P | | VCC_3V3_S3 | 3.3V Output Max:300mA | 3.3V |
| AA6 | VCC_1V8_S0 | | P | | VCC_1V8_S0 | 1.8V Output Max:200mA | 1.8V |
| AA8 | VCCA_1V8_S0 | | P | | NC | 1.8V Output Max:200mA | 1.8V |
| AA5 | VCC_1V8_S3 | | P | | VCC_1V8_S3 | 1.8V Output Max:200mA | 1.8V |
| A1 | GND | | G | | GND | GND | GND |
| AA2 | | | | | | | GND |
| DC16 | | | | | | | GND |
| AA7 | | | | | | | GND |
| AA9 | | | | | | | GND |
| DA21 | | | | | | | G |
| DC21 | | | GND | | | | |
| AA17 | | | GND | | | | |
| DA27 | | | GND | | | | |
| AA29 | | | GND | | | | |
| AB1 | GND | | G | | GND | GND | |



| | | | | | | |
|------|-----|--|---|--|-----|-----|
| AB2 | | | | | | GND |
| DC10 | | | | | | GND |
| DA19 | | | | | | GND |
| AB6 | | | | | | GND |
| AB7 | | | | | | GND |
| AB8 | | | | | | GND |
| AB9 | GND | | G | | GND | GND |
| AB14 | | | | | | GND |
| AA14 | | | | | | GND |
| AB25 | | | | | | GND |
| AB27 | | | | | | GND |
| AB31 | GND | | G | | GND | GND |
| DB10 | | | | | | GND |
| BD7 | | | | | | GND |
| AC13 | | | | | | GND |
| AC4 | | | | | | GND |
| AC5 | GND | | G | | GND | GND |
| AC6 | | | | | | GND |
| AC7 | | | | | | GND |
| AC10 | | | | | | GND |
| AC11 | GND | | G | | GND | GND |
| AC16 | | | | | | GND |



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|------|-----|--|---|--|-----|-----|
| AB16 | | | | | | GND |
| AC28 | | | | | | GND |
| AD2 | GND | | G | | GND | GND |
| AD3 | | | | | | GND |
| AD4 | | | | | | GND |
| AD5 | | | | | | GND |
| AD6 | | | | | | GND |
| AD7 | GND | | G | | GND | GND |
| AD8 | | | | | | GND |
| AD9 | | | | | | GND |
| AD10 | | | | | | GND |
| AD11 | | | | | | GND |
| AD12 | GND | | G | | GND | GND |
| AD13 | | | | | | GND |
| AD14 | | | | | | GND |
| AD15 | | | | | | GND |
| AD16 | | | | | | GND |
| AD17 | GND | | G | | GND | GND |
| AD18 | | | | | | GND |
| AD19 | | | | | | GND |
| AD20 | | | | | | GND |
| AD21 | | | | | | GND |



| | | | | | | | |
|------|-----|--|---|--|-----|-----|-----|
| AD22 | | | | | | GND | GND |
| AD23 | | | | | | | GND |
| AD24 | GND | | G | | GND | | GND |
| B1 | | | | | | | GND |
| BA1 | | | | | | | GND |
| BA7 | | | | | | GND | GND |
| BA19 | | | | | | | GND |
| BB1 | GND | | G | | GND | | GND |
| BB12 | | | | | | | GND |
| BB35 | | | | | | | GND |
| BC1 | | | | | | GND | GND |
| BC2 | | | | | | | GND |
| BC3 | GND | | G | | GND | | GND |
| BC4 | | | | | | | GND |
| BC5 | | | | | | | GND |
| BC6 | | | | | | GND | GND |
| BC7 | | | | | | | GND |
| BC8 | GND | | G | | GND | | GND |
| BC9 | | | | | | | GND |
| BC10 | | | | | | | GND |
| BC12 | | | | | | GND | GND |
| BC14 | GND | | G | | GND | | GND |



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|------|-----|--|---|--|-----|-----|
| BC16 | | | | | | GND |
| DB26 | | | | | | GND |
| BC20 | | | | | | GND |
| BC24 | | | | | GND | GND |
| BC25 | | | | | | GND |
| BC26 | GND | | G | | GND | GND |
| BC27 | | | | | | GND |
| BC28 | | | | | | GND |
| BC29 | | | | | GND | GND |
| BC32 | | | | | | GND |
| BD2 | GND | | G | | GND | GND |
| BD3 | | | | | | GND |
| BD4 | | | | | | GND |
| BD9 | | | | | GND | GND |
| BD12 | | | | | | GND |
| BD13 | GND | | G | | GND | GND |
| AB17 | | | | | | GND |
| AC22 | | | | | | GND |
| BD28 | | | | | GND | GND |
| C1 | GND | | G | | GND | GND |
| CA6 | | | | | | GND |
| CA19 | | | | | | GND |



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|------|-----|--|---|--|-----|-----|-----|
| CA24 | | | | | | | GND |
| CA28 | | | | | | GND | GND |
| CA31 | | | | | | | GND |
| CB16 | GND | | G | | GND | | GND |
| CB21 | | | | | | | GND |
| CB26 | | | | | | | GND |
| CB29 | | | | | | GND | GND |
| CC1 | | | | | | | GND |
| CC5 | GND | | G | | GND | | GND |
| CC8 | | | | | | | GND |
| CC10 | | | | | | | GND |
| CC13 | | | | | | GND | GND |
| CC15 | | | | | | | GND |
| CC17 | GND | | G | | GND | | GND |
| CC19 | | | | | | | GND |
| CC21 | | | | | | | GND |
| CC23 | | | | | | GND | GND |
| CC25 | | | | | | | GND |
| CC27 | GND | | G | | GND | | GND |
| CC28 | | | | | | | GND |
| CD2 | | | | | | | GND |
| CD5 | GND | | G | | GND | GND | GND |



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|------|-----|--|---|--|-----|-----|
| CD8 | | | | | | GND |
| CD14 | | | | | | GND |
| D1 | | | | | | GND |
| DA4 | | | | | | GND |
| DA7 | | | | | GND | GND |
| DA10 | | | | | | GND |
| AB23 | GND | | G | | GND | GND |
| DA34 | | | | | | GND |
| DA35 | | | | | | GND |
| DA36 | | | | | GND | GND |
| DB2 | | | | | | GND |
| DB5 | GND | | G | | GND | GND |
| DB8 | | | | | | GND |
| DB13 | | | | | | GND |
| DB21 | | | | | GND | GND |
| DB27 | | | | | | GND |
| DB29 | GND | | G | | GND | GND |
| DB30 | | | | | | GND |
| DB33 | | | | | | GND |
| DB34 | | | | | GND | GND |
| DB35 | GND | | G | | GND | GND |
| DA13 | | | | | | GND |



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|------|-----|--|---|--|-----|-----|-----|
| DC9 | | | | | | GND | |
| DC8 | | | | | | GND | |
| DC26 | GND | | G | | GND | GND | |
| DC12 | | | | | | | GND |
| DC31 | | | | | | | GND |
| DC32 | | | | | | | GND |
| DD2 | | | | | | | GND |
| DD8 | GND | | G | | GND | GND | |
| DD9 | | | | | | | GND |
| DD10 | | | | | | | GND |
| DD11 | | | | | | | GND |
| DD12 | | | | | | | GND |
| DD13 | GND | | G | | GND | GND | |
| DD14 | | | | | | | GND |
| DD15 | | | | | | | GND |
| DD16 | | | | | | | GND |
| DD17 | | | | | | | GND |
| DD18 | GND | | G | | GND | GND | |
| DD19 | | | | | | | GND |
| DD20 | | | | | | | GND |
| DD21 | | | | | | | GND |
| DD22 | | | | | | | GND |



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|------|-----|--|---|--|-----|-----|-----|
| DD23 | GND | | G | | GND | GND | GND |
| DD24 | | | | | | GND | |
| DD25 | | | | | | GND | |
| DD26 | | | | | | GND | |
| DD27 | | | | | | GND | |
| DD28 | GND | | G | | GND | GND | GND |
| H1 | | | | | | GND | |
| H2 | | | | | | GND | |
| H3 | | | | | | GND | |
| H4 | | | | | | GND | |
| H5 | GND | | G | | GND | GND | GND |
| H6 | | | | | | GND | |
| H7 | | | | | | GND | |
| H8 | | | | | | GND | |
| H9 | | | | | | GND | |
| H10 | GND | | G | | GND | GND | GND |
| H11 | | | | | | GND | |
| H12 | | | | | | GND | |
| H13 | | | | | | GND | |
| H14 | | | | | | GND | |
| AC1 | GND | | G | | GND | GND | GND |
| AC2 | | | | | | GND | |




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|-----|-----|--|---|--|-----|-----|-----|
| AC3 | | | | | | | GND |
| AA4 | | | | | | | GND |
| AB3 | | | | | | | GND |
| AB4 | GND | | G | | GND | GND | GND |



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