

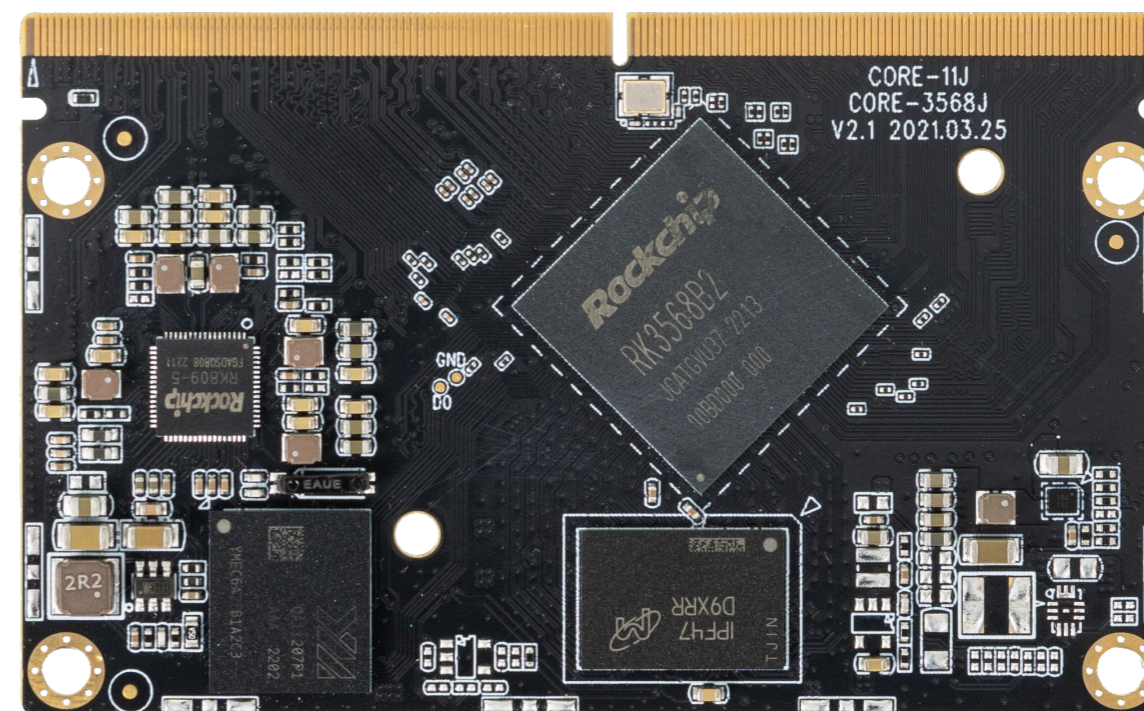


# Core-3568J

四核高性能 AI 核心板

V2.1 2024-9-27

天启智能科技

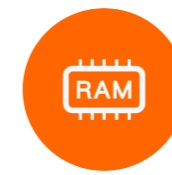


# 产品特点 Product features



## 四核64位处理器

四核64位Cortex-A55处理器RK3568B2  
采用22nm先进工艺  
主频高达2.0GHz，低功耗高性能



## 8GB LPDDR4大内存

最高可配8GB LPDDR4内存  
响应速度更快，可满足对内存要求高存储容量大的产品应用需求



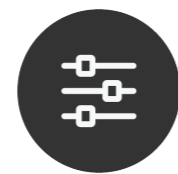
## 4K HDR H.265视频解码

支持4K@60fps H.265/VP9视频解码、  
1080P@100fps H.265视频编码，NPU  
算力可达1TOPS



## 支持多种操作系统

支持Android、Ubuntu等操作系统，  
运行稳定可靠，为产品研发提供安全稳定的系统环境



## 高效二次开发自主定制

314P MXM3.0 标准接口，提供完整技术资料  
和参考设计，用户能高效进行二次开发，  
快速打造自主可控产品



## 广泛的应用领域

广泛适用于智能NVR、云终端、物联网网关、  
工业控制、边缘计算、人脸闸机、NAS、  
车载中控等场景

# 规格参数 Specifications

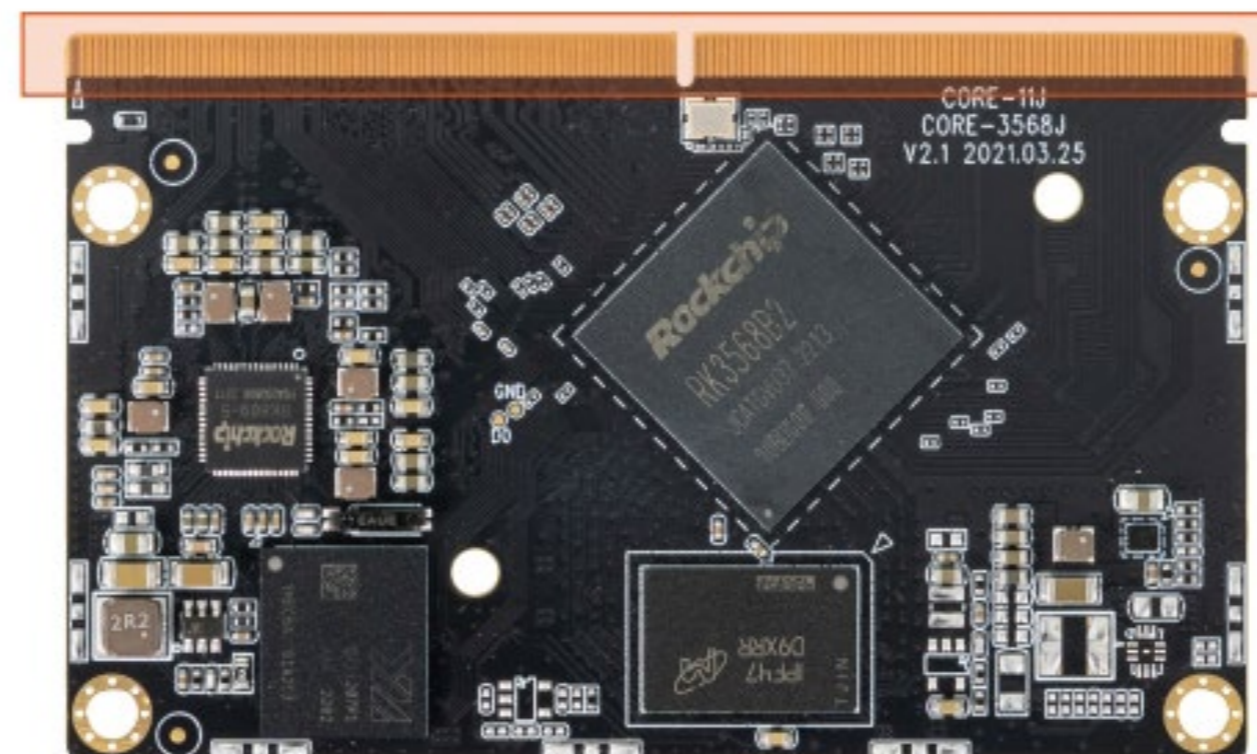


| 主要参数 |   |   |
|------|---|---|
| 基本参数 | SOC   | RK3568B2  |
|      | CPU   | 四核64位Cortex-A55处理器, 22nm先进工艺, 主频最高2.0GHz  |
|      | GPU   | ARM G52 2EE图形处理器, 支持OpenGL ES 1.1/2.0/3.2, OpenCL 2.0, Vulkan 1.1, 内嵌高性能2D加速硬件  |
|      | NPU   | 1Tops@INT8 RKNN NPU AI 加速器, 支持 Caffe/TensorFlow/TFLite/ONNX/PyTorch/Keras/Darknet架构模型一键转换   |
|      | 编解码   | 4K@60fps H.265/H.264/VP9视频解码, 1080P@60fps H.265/H.264视频编码   |
|      | 运行内存  | 2GB/4GB/8GB LPDDR4  |
|      | 机身存储  | 16GB/32GB/64GB/128GB eMMC   |
|      | 电源  | 5V (电压误差 ±5%)   |
|      | 功耗  | 待机功耗: 0.015W (5V/3mA), 典型功耗: 2.75W (5V/550mA), 最大功耗: 5.55W (5V/1110mA)  |
|      | 系统  | Android、Ubuntu  |
|      | 散热  | 散热片安装孔距: 45mm, 推荐配套散热片 (D型散热片) ( <a href="#">点击查看</a> )   |
|      | 尺寸  | 82.0mm × 50.5mm   |
|      | 环境  | 工作温度: -20°C ~ 60°C, 存储温度: -20°C ~ 70°C, 存储湿度: 10% ~ 90%RH (无凝露)   |
| 接口参数 | 以太网   | 集成 GMAC 以太网控制器, 可实现 2 × 1000Mbps 以太网  |
|      | 无线网   | 通过 SDIO 接口可扩展 “WiFi+蓝牙” 模块 (2.4GHz/5GHz 双频 WiFi6, Bluetooth 5.0), 支持扩展 5G/4G LTE 无线通讯   |
|      | 视频输出  | 1 × HDMI2.0 (4K@60fps)、2 × MIPI DSI (1920×1080@60fps 输出) 或 1 × MIPI DSI (双通道 2560×1440@60fps)、1 × eDP1.3 (2560x1600@60fps)<br>* 最多可支持三屏异显输出 |
|      | 摄像头   | 1 × MIPI CSI (4 Lanes) 或 2 × MIPI CSI (2 Lanes)   |
|      | PCIe  | 1 × PCIe3.0 (2 Lanes)、1 × PCIe2.1 (1 Lane)  |
|      | SATA  | 3 × SATA3.0   |
|      | USB   | 2 × USB3.0、2 × USB2.0 HOST  |
| 其他接口 | 3 × SDMMC、3 × SPI、10 × UART、6 × I2C、2 × I2S/PCM(2ch)/TDM(8ch)、16 × PWM、7 × ADC、3 × CAN、130 × GPIO |   |

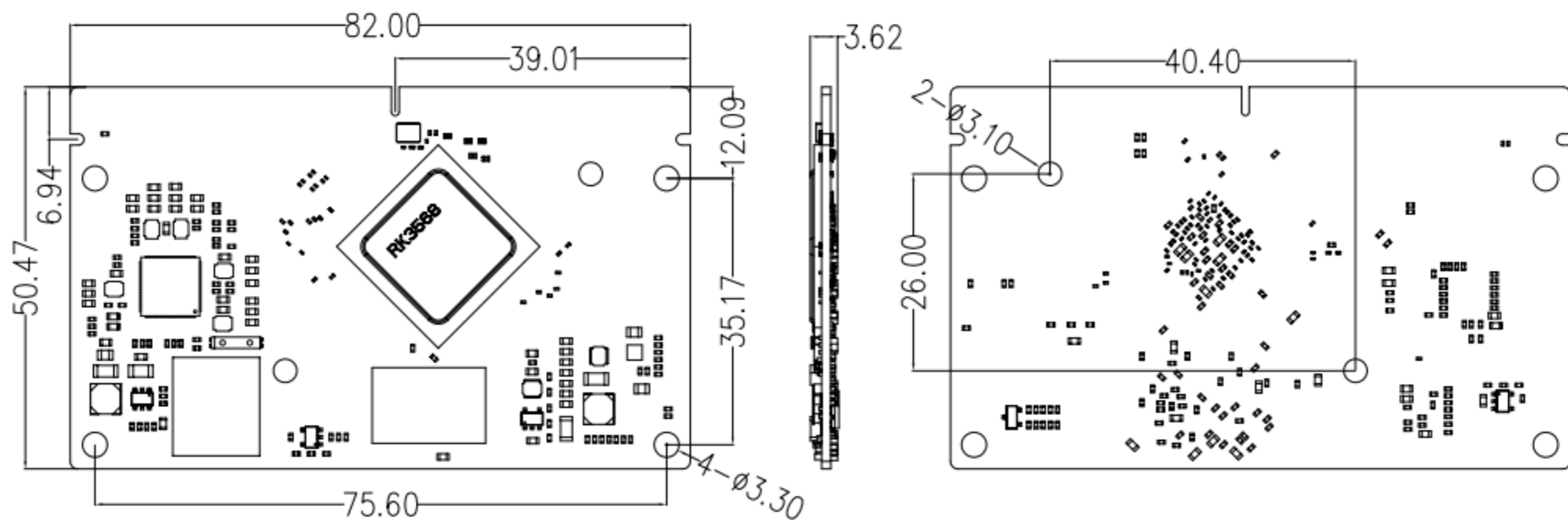
# 接口描述 Interface description



314Pin MXM3.0标准接口



# 产品尺寸 Dimension



# 接口定义 Interface definition



| ① : Pad types: I = input, O = output, I/O = input/output (bidirectional) , G= Ground ,<br>P = power supply , DOWN = Internal pull down , UP = Internal pull UP<br>L = Low Level H = High level |   |             |         |   |  |                 |                      |
|--|---|-------------|---------|---|--|-----------------|----------------------|
| PIN  | CORE-RK3568J<br>Core board pin definition                     | Pad<br>type | IO Pull | Function for Mainboard<br>(MB-JM3-RK3568) | Defual function description  | IO Power domain | RK3568 Pin<br>Number |
| 1  | VCC5V0_SYS  | P           |         | VCC_SYS                                   | <b>Input Voltage 5.0V +/-5%</b><br>Normal:1.25W (5.0V/250mA)<br>Max: 6W (5.0V/1200mA)<br>Min: (not done deep sleep)<br>power supply suggest: 5.0V/1.5A | 5.0V            |                      |
| 3  | VCC5V0_SYS  | P           |         | VCC_SYS                                   |  | 5.0V            |                      |
| 5  | VCC5V0_SYS  | P           |         | VCC_SYS                                   |  | 5.0V            |                      |
| 7  | GND   | G           |         | GND                                       |  | GND             | GND                  |
| 9  | GND   | G           |         | GND                                       | GND  |                 |                      |
| 11   | GND   | G           |         | GND                                       | GND  |                 |                      |
| 13   | VCC_1V8   | P           |         | VCC_1V8                                   | 1.8V Output ,<br>Pin13/14 Total Max:500mA  | 1.8V            |                      |
| 15   | VCC3V3_SD   | P           |         | VCC3V3_SD                                 | 3.3V Output TF Card Power ,<br>Pin15/16 Total Max:100mA  | 3.3V            |                      |
| 17   | VCCIO_ACODEC  | P           |         | VCCIO_ACODEC                              | 3.3V Output For codec,<br>Pin17/18 Total Max:200mA   | 3.3V            |                      |
| 19   | NC  |             |         | NC  |  | NC              |                      |
| 21   | NC  |             |         | NC  |  | NC              |                      |
| 23   | VCC_3V3   | P           |         | VCC_3V3                                   | 3.3V Output ,<br>Pin23/24 Total Max:800mA  | 3.3V            |                      |
| 25   | VCCIO_WL (M board must input 1.8V or 3.3V )                   | P           |         | VCCIO_WL                                  | <b>WIFI/GMAC1 VCCIO Input to RK3568_VCCIO6,</b><br>1.8V or 3.3V option(Pin25/26 same net)<br>Default:1.8V Input  | 1.8V/3.3V       |                      |
| 27   | GND   | G           |         | GND                                       |  | GND             |                      |
| 29   | I2C3_SDA_M0/UART3_RX_M0/CAN1_RX_M0/AUDIOPWM_LOUT_P/GPIO1_A0_U | I/O         | UP      | I2C3_SDA_M0                               | I2C3_SDA_M0<br>Core board Pull up resistance 2.2K to VCCIO_ACODEC  | 3.3V            | D18                  |
| 31   | I2C3_SCL_M0/UART3_TX_M0/CAN1_TX_M0/AUDIOPWM_LOUT_N/GPIO1_A1_U | I/O         | UP      | I2C3_SCL_M0                               | I2C3_SCL_M0<br>Core board Pull up resistance 2.2K to VCCIO_ACODEC  | 3.3V            | E18                  |
| 33   | EMMC_RSTN/FSPI_D2/FLASH_WPN/GPIO1_C7_D                        | I/O         | DOWN    | EMMC_RSTN/FSPI_D2/FLASH_WPN               | FSPI_D2/FLASH_WPN  | 1.8V            | F20                  |
| 35   | I2S1_SCLK_RX_M0/PDM_CLK1_M0_CON/SPDIF_TX_M0/GPIO1_A4_D        | I/O         | DOWN    | EDP_BL_EN                                 | EDP Backlight EN, Active H   | 3.3V            | F18                  |
| 37   | I2S1_SDO2_M0/I2S1_SDI2_M0/PDM_SDI2_M0_CON/GPIO1_B1_D          | I/O         | DOWN    | EDP_VCC_EN                                | EDP Power EN, Active H   | 3.3V            | E20                  |



|    |   |     |      |                       |   |      |      |
|----|---|-----|------|-----------------------|---|------|------|
| 39 | I2S1_SDO1_M0/I2S1_SDI3_M0/PDM_SDI3_M0_CON/GPIO1_B0_D                  | I/O | DOWN | EAR_CTL               | Headphone output control, Active H  | 3.3V | D20  |
| 41 | I2S1_SDO3_M0/I2S1_SDI1_M0/PDM_SDI1_M0_CON/GPIO1_B2_D                  | I/O | DOWN | GPIO1_B2_D            | MIPI DSI1 BL_EN,Active H  | 3.3V | A21  |
| 43 | PWRON_KEY   | I   | DOWN | PWRON_KEY             | PMIC PWRON_KEY Input, Active L<br>Core board series resistance 100R                                 | 3.3V |      |
| 45 | NC  |     |      | NC                    |   |      |      |
| 47 | EXT_EN  | O   |      | EXT_EN                | PMIC POWER_EN Output, Active H  | 3.3V |      |
| 49 | nPOR_u  | I   | UP   | RESET_KEY             | System reset input Reset key , Active L<br>Core board Pull up resistance 10K ,series resistance 22R | 3.3V | AH27 |
| 51 | FSPI_CLK/FLASH_ALE/GPIO1_D0_D   | I/O | DOWN | FSPI_CLK/FLASH_ALE    | FSPI_CLK<br>Core board series resistance 22R  | 1.8V | A22  |
| 53 | FSPI_CS0N/FLASH_CS0N/GPIO1_D3_U                                       | I/O | UP   | FSPI_CS0N/FLASH_CS0N  | FSPI_CS0N   | 1.8V | C23  |
| 55 | FSPI_D1/FLASH_RDN/GPIO1_D2_U  | I/O | UP   | FSPI_D1/FLASH_RDN     | FSPI_D1   | 1.8V | D23  |
| 57 | FSPI_D0/FLASH_RDY/GPIO1_D1_u  | I/O | UP   | FSPI_D0/FLASH_RDY     | FSPI_D0   | 1.8V | C24  |
| 59 | GND   | I/O |      |                       |   |      |      |
| 61 | SARADC_VIN2   | I/O | UP   | SARADC_VIN2           | ADC2 Input; M board need add Pull up resistance   | 1.8V | D24  |
| 63 | SARADC_VIN3   | I/O | UP   | SARADC_VIN3_EVB_HW_ID | ADC3 Input; M board need add Pull up resistance   | 1.8V | E23  |
| 65 | GND   | G   |      | GND                   | GND   |      |      |
| 67 | SDMMC1_DET/I2C4_SCL_M1/UART8_CTSn_M0/CAN2_TX_M1/GPIO2_B2_u            | I/O | UP   | UART8_CTSN_M0         | UART8_CTSN_M0 For BT  | 1.8V | E25  |
| 69 | CLK32K_OUT1/UART8_RX_M0/SPI1_CS1_M0/GPIO2_C6_d                        | I/O | DOWN | UART8_RX_M0           | UART8_RX_M0 For BT  | 1.8V | E26  |
| 71 | SDMMC1_PWREN/I2C4_SDA_M1/UART8_RTSn_M0/CAN2_RX_M1/GPIO2_B1_d          | I/O | DOWN | UART8_RTSN_M0         | UART8_RTSN_M0 For BT  | 1.8V | D26  |
| 73 | I2S2_SDI_M0/GMAC0_RXER/UART8_TX_M0/SPI2_CS1_M0/GPIO2_C5_d             | I/O | DOWN | UART8_TX_M0           | UART8_TX_M0 For BT  | 1.8V | F26  |
| 75 | GND   | G   |      | GND                   | GND   |      |      |
| 77 | ETH0_REFCLK_25M/I2S2_MCLK_M0/UART7_RTSn_M0/SPI2_CLK_M0/GPIO2_C1_d     | I/O | DOWN | ETH0_REFCLKO_25M      | ETH0_REF CLOCK OUTPUT_25MHz, CPU to PHY,<br>Default NC ;series resistance 22R                       | 1.8V | G23  |
| 79 | GND   | G   |      | GND                   | GND   |      |      |
| 81 | GMAC0_MCLKINOUT/I2S2_SCLK_TX_M0/UART7_CTSn_M0/SPI2_MISO_M0/GPIO2_C2_d | I/O | DOWN | GMAC0_MCLKINOUT       | GMAC0_MCLK_IN/OUT PUT<br>Default: Input--(PHY use external crystal )                                | 1.8V | F25  |
| 83 | GND   | G   |      | GND                   | GND   |      |      |
| 85 | GMAC0_RXDV_CRS/I2S2_LRCK_RX_M0/UART6_CTSn_M0/SPI1_CS0_M0/GPIO2_C0_d   | I/O | DOWN | GMAC0_RXDV_CRS        | GMAC RX data valid signal   | 1.8V | F24  |
| 87 | GMAC0_MDIO/I2S2_SDO_M0/UART9_CTSn_M0/SPI2_CS0_M0/GPIO2_C4_d           | I/O | DOWN | GMAC0_MDIO            | GMAC management interface data  | 1.8V | H23  |
| 89 | GMAC0_MDC/I2S2_LRCK_TX_M0/UART9_RTSn_M0/SPI2_MOSI_M0/GPIO2_C3_d       | I/O | DOWN | GMAC0_MDC             | GMAC management interface clock   | 1.8V | H24  |
| 91 | GMAC0_RXD1/I2S2_SCLK_RX_M0/UART6_RTSn_M0/SPI1_MOSI_M0/GPIO2_B7_d      | I/O | DOWN | GMAC0_RXD1            | GMAC RX data  | 1.8V | H25  |



|     |  |     |      |                     |   |                                  |      |
|-----|--|-----|------|---------------------|---|----------------------------------|------|
| 93  | GND  | G   |      | GND                 | GND                                     |                                  |      |
| 95  | SDMMC0_D2/ARMJTAG_TCK/UART5_CTSn_M0/GPIO1_D7_u                                       | I/O | UP   | SDMMC0_D2           | SDMMC0_D2 for TF Card                   | <b>VCCIO_SD</b><br><b>*Note2</b> | H26  |
| 97  | SDMMC0_D1/UART2_RX_M1/UART6_RX_M1/PWM9_M1/GPIO1_D6_u                                 | I/O | UP   | SDMMC0_D1           | SDMMC0_D1 for TF Card                   |                                  | J24  |
| 99  | SDMMC0_D0/UART2_TX_M1/UART6_TX_M1/PWM8_M1/GPIO1_D5_u                                 | I/O | UP   | SDMMC0_D0           | SDMMC0_D0 for TF Card                   |                                  | J25  |
| 101 | SDMMC0_D3/ARMJTAG_TMS/UART5_RTsn_M0/GPIO2_A0_u                                       | I/O | UP   | SDMMC0_D3           | SDMMC0_D3 for TF Card                   |                                  | J23  |
| 103 | SDMMC0_DET_L/SATA_CP_DET/PCIE30X1_CLKREQn_M0/GPIO0_A4_u                              | I/O | UP   | SDMMC0_DET_L        | SDMMC0_DET Input, Active L              | 3.3V                             | Y22  |
| 105 | GND  | G   |      | GND                 | GND                                     |                                  |      |
| 107 | EDP_TX_AUXN  | O   |      | EDP_TX_AUXN         | eDP CH-AUX negative differential output |                                  | M25  |
| 109 | EDP_TX_AUXP  | O   |      | EDP_TX_AUXP         | eDP CH-AUX positive differential output |                                  | L25  |
| 111 | GND  | G   |      | GND                 | GND                                     |                                  |      |
| 113 | USB3_HOST1_DP  | I/O |      | USB3_HOST1_DP       | USB3_HOST1_DP                           |                                  | P24  |
| 115 | USB3_HOST1_DM  | I/O |      | USB3_HOST1_DM       | USB3_HOST1_DM                           |                                  | P25  |
| 117 | GND  | G   |      | GND                 | GND                                     |                                  |      |
| 119 | MULTI_PHY0_REFCLKP   | O   |      | NC                  | NC                                      |                                  | R24  |
| 121 | MULTI_PHY0_REFCLKN   | O   |      | NC                  | NC                                      |                                  | R25  |
| 123 | MULTI_PHY1_REFCLKN   | O   |      | NC                  | NC                                      |                                  | U24  |
| 125 | MULTI_PHY1_REFCLKP   | O   |      | NC                  | NC                                      |                                  | U25  |
| 127 | GND  | G   |      | GND                 | GND                                     |                                  |      |
| 129 | USB3_OTG0_ID   | I   |      | USB3_OTG0_ID        | OTG0 DET,Active L Default NC            | 1.8V                             | L23  |
| 131 | USB3_OTG0_VBUSDET  | I   |      | USB3_OTG0_VBUSDET   | USB plug-in DET,Active H                | 3.3V                             | M24  |
| 133 | EDP_HPDI_M0/SPDIF_TX_M2/SATA2_ACT_LED/PCIE30X2_PERSTn_M2/I2S3_LRC<br>K_M1/GPIO4_C4_d | I/O | DOWN | SATA2_ACT_LED       | SATA2_ACT_LED EN,Active H               | 3.3V                             | AH7  |
| 135 | LCDC_D4/VOP_BT656_D4_M0/SPI2_CS1_M1/PCIE30X2_CLKREQn_M1/I2S1_SDI1_M<br>2/GPIO2_D4_d  | I/O | DOWN | PCIE30X2_CLKREQN_M1 | PCIE30X2_CLKREQN                        | 3.3V                             | AF5  |
| 137 | LCDC_D5/VOP_BT656_D5_M0/SPI2_CS0_M1/PCIE30X2_WAKEn_M1/I2S1_SDI2_M2/<br>GPIO2_D5_d    | I/O | DOWN | PCIE30X2_WAKEN_M1   | PCIE30X2_WAKEN                          | 3.3V                             | AF6  |
| 139 | GND  | G   |      | GND                 | GND                                     |                                  |      |
| 141 | PCIE20_REFCLKP   | O   |      | PCIE20_REFCLKP      | PCIE20_REF CLKP OUTPUT                  |                                  | V24  |
| 143 | PCIE20_REFCLKN   | O   |      | PCIE20_REFCLKN      | PCIE20_REF CLKN OUTPUT                  |                                  | V25  |
| 145 | PCIE30_REFCLKP_IN  | I   |      | PCIE30_REFCLKP_IN   | PCIE30_REF CLKP_INPUT                   |                                  | Y25  |
| 147 | PCIE30_REFCLKN_IN  | I   |      | PCIE30_REFCLKN_IN   | PCIE30_REF CLKN_INPUT                   |                                  | AA25 |





|     |  |     |      |                       |   |         |      |
|-----|--|-----|------|-----------------------|---|---------|------|
| 149 | GND  | G   |      | GND                   | GND   |         |      |
| 151 | GPIO0_D4_d   | I/O | DOWN | PCIE_PWREN_H_GPIO0_D4 | PCIE Power enable ,Active H                                   | 1.8V    | AB23 |
| 153 | GPIO0_D6_d   | I/O | DOWN | USB30_HOST_PWREN_H    | USB30_HOST Power enable ,Active H                             | 1.8V    | AC24 |
| 155 | I2C0_SDA (I2C for PMIC)  | I/O | UP   | NC                    | NC, Core board Pull up resistance 2.2K                        | 3.3V    | AB21 |
| 157 | I2C0_SCL (I2C for PMIC)  | I/O | UP   | NC                    | NC, Core board Pull up resistance 2.2K                        | 3.3V    | AF24 |
| 159 | I2C2_SDA_M0/SPI0_MOSI_M0/PCIE20_PERSTn_M0/PWM2_M1/GPIO0_B6_U         | I/O | UP   | TP_RST_L_GPIO0_B6     | MIPI DSI0 TP_Reset ,Active L                                  | 3.3V    | AA20 |
| 161 | GPIO0_D5_d   | I/O | DOWN | USB20_HOST0_PWREN     | USB20_HOST0_PWR_EN ,Active H                                  | 1.8V    | AD25 |
| 163 | GPIO0_D3_d   | I/O | DOWN | RTCIC_INT_L_GPIO0_D3  | RTC IC_INT ,Active L  | 1.8V    | AE26 |
| 165 | GND  | G   |      | GND                   | GND   |         |      |
| 167 | GND  | G   |      | GND                   | GND   |         |      |
| 169 | USB_HOST_PWREN_H/GPU_PWREN/SATA_CP_POD/PCIE30X2_CLKREQn_M/GPIO0_A6_d | I/O | DOWN | WK2124_INT            | WK2124 interrupt input ,Active L                              | 3.3V    | AE24 |
| 171 | PWM4/VOP_PWM_M0/PCIE30X1_PERSTn_M0/MCU_JTAG_TRSTn/GPIO0_C3_d         | I/O | DOWN | LCD0_BL_PWM4          | PWM4 Output   | 3.3V    | AE23 |
| 173 | PWM2_M0/NPUAVS/UART0_TX/MCU_JTAG_TDI/GPIO0_C1_d                      | I/O | DOWN | LCD1_TP_INT_GPIO0_C1  | MIPI DSI1 TP interrupt input ,Active L                        | 3.3V    | AF23 |
| 175 | I2C2_SCL_M0/SPI0_CLK_M0/PCIE20_WAKEn_M0/PWM1_M1/GPIO0_B5_u           | I/O | UP   | TP_INT_L_GPIO0_B5     | MIPI DSI0 TP interrupt input ,Active L                        | 3.3V    | AC22 |
| 177 | PWM1_M0/GPUAVS/UART0_RX/GPIO0_C0_d                                   | I/O | DOWN | WORK_LED              | LED EN, active H  | 3.3V    | AD22 |
| 179 | I2C1_SDA/CAN0_RX_M0/PCIE20_BUTTONRSTn/MCU_JTAG_TCK/GPIO0_B4_u        | I/O | UP   | I2C1_SDA_TP           | I2C1 SDA for TP<br>Core board Pull up resistance 2.2K         | 3.3V    | AB20 |
| 181 | I2C1_SCL/CAN0_TX_M0/PCIE30X1_BUTTONRSTn/MCU_JTAG_TDO/GPIO0_B3_u      | I/O | UP   | I2C1_SCL_TP           | I2C1 SCL for TP<br>Core board Pull up resistance 2.2K         | 3.3V    | AG24 |
| 183 | PWM5/SPI0_CS1_M0/UART0_RTSn/GPIO0_C4_d                               | I/O | DOWN | LCD1_BL_PWM5          | LCD1_BL_PWM5  | 3.3V    | AD21 |
| 185 | PWM7_IR/SPI0_CS0_M0/PCIE30X2_PERSTn_M0/GPIO0_C6_d                    | I/O | DOWN | PWM7_IR               | PWM7_IR Input   | 3.3V    | AD20 |
| 187 | PWM6/SPI0_MISO_M0/PCIE30X2_WAKEn_M0/GPIO0_C5_d                       | I/O | DOWN | LCD0_RST_L_GPIO0_C5   | MIPI DS0_Reset Active L                                       | 3.3V    | AC21 |
| 189 | HDMITX_SDA/I2C5_SDA_M1/GPIO4_D0_u                                    | I/O | UP   | HDMITX_SDA            | I2C SDA for HDMI  | 3.3V    | AG7  |
| 191 | HDMITX_SCL/I2C5_SCL_M1/GPIO4_C7_u                                    | I/O | UP   | HDMITX_SCL            | I2C SCL for HDMI  | 3.3V    | AG8  |
| 193 | HDMITX_CEC_M0/SPI3_CS1_M1/GPIO4_D1_u                                 | I/O | UP   | HDMITX_CEC_M0         | HDMITX_CEC_M0   | 3.3V    | AH6  |
| 195 | HDMI_TX_HPDIN  | I   |      | HDMI_TX_HPDIN         | HDMI Hot Plug Detection interrupt with 5V tolerance ,Active H | 1.8V~5V | AB18 |
| 197 | GND  | G   |      | GND                   | GND   |         |      |
| 199 | MIPI_DSI_TX1_D0N   | O   |      | MIPI_DSI_TX1_D0N      | MIPI_DSI_TX1_D0N  |         | AE18 |
| 201 | MIPI_DSI_TX1_D0P   | O   |      | MIPI_DSI_TX1_D0P      | MIPI_DSI_TX1_D0P  |         | AD18 |



|     |  |     |      |                         |                                       |      |      |
|-----|--|-----|------|-------------------------|---------------------------------------|------|------|
| 203 | MIPI_DSI_TX1_D1N   | O   |      | MIPI_DSI_TX1_D1N        | MIPI_DSI_TX1_D1N                      |      | AC17 |
| 205 | MIPI_DSI_TX1_D1P   | O   |      | MIPI_DSI_TX1_D1P        | MIPI_DSI_TX1_D1P                      |      | AD17 |
| 207 | GND  | G   |      | GND                     | GND                                   |      |      |
| 209 | MIPI_DSI_TX1_CLKN  | O   |      | MIPI_DSI_TX1_CLKN       | MIPI_DSI_TX1_CLKN                     |      | AE15 |
| 211 | MIPI_DSI_TX1_CLKP  | O   |      | MIPI_DSI_TX1_CLKP       | MIPI_DSI_TX1_CLKP                     |      | AD15 |
| 213 | MIPI_DSI_TX1_D2N   | O   |      | MIPI_DSI_TX1_D2N        | MIPI_DSI_TX1_D2N                      |      | AC14 |
| 215 | MIPI_DSI_TX1_D2P   | O   |      | MIPI_DSI_TX1_D2P        | MIPI_DSI_TX1_D2P                      |      | AD14 |
| 217 | MIPI_DSI_TX1_D3N   | O   |      | MIPI_DSI_TX1_D3N        | MIPI_DSI_TX1_D3N                      |      | AE12 |
| 219 | MIPI_DSI_TX1_D3P   | O   |      | MIPI_DSI_TX1_D3P        | MIPI_DSI_TX1_D3P                      |      | AD12 |
| 221 | MIPI_CSI_RX_D2N  | I   |      | MIPI_CSI_RX_D2N         | MIPI_CSI_RX_D2N                       |      | AD11 |
| 223 | MIPI_CSI_RX_D2P  | I   |      | MIPI_CSI_RX_D2P         | MIPI_CSI_RX_D2P                       |      | AE11 |
| 225 | MIPI_CSI_RX_D3N  | I   |      | MIPI_CSI_RX_D3N         | MIPI_CSI_RX_D3N                       |      | AE9  |
| 227 | MIPI_CSI_RX_D3P  | I   |      | MIPI_CSI_RX_D3P         | MIPI_CSI_RX_D3P                       |      | AD9  |
| 229 | GND  | G   |      | GND                     | GND                                   |      |      |
| 231 | PWM12_M1/SPI3_MISO_M1/SATA1_ACT_LED/UART9_TX_M1/I2S3_SDO_M1/GPIO4_C5_d             | I/O | DOWN | BL_EN0                  | MIPI DSI0 BL_EN, Active H             | 3.3V | AD8  |
| 233 | PWM13_M1/SPI3_CS0_M1/SATA0_ACT_LED/UART9_RX_M1/I2S3_SDI_M1/GPIO4_C6_d              | I/O | DOWN | LCD1_RST_L              | MIPI DSI1 Reset, Active L             | 3.3V | AE8  |
| 235 | PWM14_M1/SPI3_CLK_M1/CAN1_RX_M1/PCIE30X2_CLKREQn_M2/I2S3_MCLK_M1/GPIO4_C2_d        | I/O | DOWN | CAN1_RX_M1              | CAN1_RX_M1                            | 3.3V | AF8  |
| 237 | PWM15_IR_M1/SPI3_MOSI_M1/CAN1_TX_M1/PCIE30X2_WAKEn_M2/I2S3_SCLK_M1/GPIO4_C3_d      | I/O | DOWN | CAN1_TX_M1              | CAN1_TX_M1                            | 3.3V | AA11 |
| 239 | LCDC_D2/VOP_BT656_D2_M0/SPI0_CS0_M1/PCIE30X1_CLKREQn_M1/I2S1_LRCK_TX_M2/GPIO2_D2_d | I/O | DOWN | GMAC0_INT/PMEB_GPIO2_D2 | GMAC0_INT/PMEB                        | 3.3V | AC8  |
| 241 | LCDC_D8/VOP_BT1120_D0/SPI1_CS0_M1/PCIE30X1_PERSTn_M1/SDMMC2_D0_M1/GPIO3_A1_d       | I/O | DOWN | SPI1_CS0_M1             | SPI1_CS0_M1                           | 3.3V | AB8  |
| 243 | LCDC_D1/VOP_BT656_D1_M0/SPI0_MOSI_M1/PCIE20_WAKEn_M1/I2S1_SCLK_TX_M2/GPIO2_D1_d    | I/O | DOWN | GMAC1_RSTN_GPIO2_D1     | GMAC1_Reset, Active L                 | 3.3V | AD7  |
| 245 | LCDC_D6/VOP_BT656_D6_M0/SPI2_MOSI_M1/PCIE30X2_PERSTn_M1/I2S1_SDI3_M2/GPIO2_D6_d    | I/O | DOWN | PCIE30X2_PERSTN_M1      | PCIE Reset, Active L                  | 3.3V | AD6  |
| 247 | LCDC_D9/VOP_BT1120_D1/GMAC1_TXD2_M0/I2S3_MCLK_M0/SDMMC2_D1_M1/GPIO3_A2_d           | I/O | DOWN | HUB_USB1_PWREN_H        | HOST_USB2.0 POWER Output EN, Active H | 3.3V | AE5  |



|     |   |     |      |                         |  |                    |      |
|-----|---|-----|------|-------------------------|--|--------------------|------|
| 249 | LCDC_D22/PWM12_M0/GMAC1_TXEN_M0/UART3_TX_M1/PDM_SDI2_M2/GPIO3_B7_d            | I/O | DOWN | UART3_TX_M1             | UART3_TX_M1  | 3.3V               | AD4  |
| 251 | LCDC_D23/PWM13_M0/GMAC1_MCLKINOUT_M0/UART3_RX_M1/PDM_SDI3_M2/GPIO3_C0_d       | I/O | DOWN | UART3_RX_M1             | UART3_RX_M1  | 3.3V               | AD2  |
| 253 | LCDC_D11/VOP_BT1120_D3/GMAC1_RXD2_M0/I2S3_LRCK_M0/SDMMC2_D3_M1/GPIO3_A4_d     | I/O | DOWN | I2S3_LRCK_M0            | I2S3_LRCK_M0   | 3.3V               | AF4  |
| 255 | LCDC_D3/VOP_BT656_D3_M0/SPI0_CLK_M1/PCIE30X1_WAKEn_M1/I2S1_SDI0_M2/GPIO2_D3_d | I/O | DOWN | GMAC0_RSTN_GPIO2_D3     | GMAC0_Reset, Active L  | 3.3V               | AC7  |
| 257 | LCDC_DEN/VOP_BT1120_D15/SPI1_CLK_M1/UART5_RX_M1/I2S1_SCLK_RX_M2/GPIO3_C3_d    | I/O | DOWN | SPI1_CLK_M1             | SPI1_CLK_M1 out  | 3.3V               | AC4  |
| 259 | PWM14_M0/VOP_PWM_M1/GMAC1_MDC_M0/UART7_TX_M1/PDM_CLK1_M2/GPIO3_C4_d           | I/O | DOWN | EDP_BL_PWM14_M0         | EDP_BL_PWM14_M0  | 3.3V               | AC3  |
| 261 | GPIO4_D2_d  | I/O | DOWN | GSENSOR_INT_L_GPIO4_D2  | GSENSOR_INT Input, Active L  | 3.3V               | AB9  |
| 263 | LCDC_VSYNC/VOP_BT1120_D14/SPI1_MISO_M1/UART5_TX_M1/I2S1_SDO3_M2/GPIO3_C2_d    | I/O | DOWN | SPI1_MISO_M1            | SPI1_MISO_M1   | 3.3V               | AA7  |
| 265 | I2C2_SDA_M1/EBC_GDSP/CAN2_RX_M0/ISP_FLASH_TRIGIN/VOP_BT656_CLK_M1/GPIO4_B4_d  | I/O | DOWN | CAN2_RX_M0              | CAN2_RX_M0   | VCCIO_WL<br>*Note1 | V6   |
| 267 | I2C2_SCL_M1/EBC_SDSHR/CAN2_TX_M0/I2S1_SDO3_M1/GPIO4_B5_d                      | I/O | DOWN | CAN2_TX_M0              | CAN2_TX_M0   |                    | V5   |
| 269 | LCDC_D20/VOP_BT1120_D11/GMAC1_TXD0_M0/I2C3_SCL_M1/PWM10_M0/GPIO3_B5_d         | I/O | DOWN | HOST_WAKE_BT_H_GPIO3_B5 | HOST WAKE BT, Active H   | 3.3V               | AE2  |
| 271 | GND   | G   |      | GND                     | GND  |                    |      |
| 273 | CLK32K_IN/CLK32K_OUT/GPIO0_B0_u   | I/O | UP   | 4G_PWR_EN               | 4G/5G Power_EN , Active H  | 3.3V               | AD23 |
| 275 | RK809_32KOUT_WIFI   | O   |      | RK809_32KOUT_WIFI       | PMIC RK809 32.768KHz clock output for WIFI Core board Pull up resistance 10K | VCCIO_WL<br>*Note1 |      |
| 277 | GND   | G   |      | GND                     | GND  |                    |      |
| 279 | CIF_D0/EBC_SDDO0/SDMMC2_D0_M0/I2S1_MCLK_M1/VOP_BT656_D0_M1/GPIO3_C6_d         | I/O | DOWN | SDMMC2_D0_M0            | SDMMC2_D0_M0 To WIFI   | VCCIO_WL<br>*Note1 | AC5  |
| 281 | CIF_D1/EBC_SDDO1/SDMMC2_D1_M0/I2S1_SCLK_TX_M1/VOP_BT656_D1_M1/GPIO3_C7_d      | I/O | DOWN | SDMMC2_D1_M0            | SDMMC2_D1_M0 To WIFI   |                    | AA6  |
| 283 | CIF_D4/EBC_SDDO4/SDMMC2_CMD_M0/I2S1_SDI0_M1/VOP_BT656_D4_M1/GPIO3_D2_d        | I/O | DOWN | SDMMC2_CMD_M0           | SDMMC2_CMD_M To WIFI   |                    | Y7   |
| 285 | CIF_D7/EBC_SDDO7/SDMMC2_PWREN_M0/I2S1_SDI3_M1/VOP_BT656_D7_M1/GPIO3_          | I/O | DOWN | WIFI_REG_ON_H           | WIFI EN , Active H   |                    | AA5  |
| 287 | GND   | G   |      | GND                     | GND  |                    |      |



|     |   |     |      |                |   |                    |     |
|-----|---|-----|------|----------------|---|--------------------|-----|
| 289 | CIF_D10/EBC_SDDO10/GMAC1_TXCLK_M1/PDM_CLK1_M1/GPIO4_A0_d                    | I/O | DOWN | GMAC1_TXCLK_M1 | GMAC1_TXCLK_M1,<br>core board series resistance 22R   | VCCIO_WL<br>*Note1 | AA3 |
| 291 | CIF_D13/EBC_SDDO13/GMAC1_RXCLK_M1/UART7_RX_M2/PDM_SDI3_M1/GPIO4_A3_d        | I/O | DOWN | GMAC1_RXCLK_M1 | GMAC1_RXCLK_M1  |                    | Y3  |
| 293 | CIF_D12/EBC_SDDO12/GMAC1_RXD3_M1/UART7_TX_M2/PDM_SDI2_M1/GPIO4_A2_d         | I/O | DOWN | GMAC1_RXD3_M1  | GMAC1_RXD3_M1   |                    | Y4  |
| 295 | CIF_D9/EBC_SDDO9/GMAC1_TXD3_M1/UART1_RX_M1/PDM_SDI0_M1/GPIO3_D7_d           | I/O | DOWN | GMAC1_TXD3_M1  | GMAC1_TXD3_M1,<br>core board series resistance 22R  |                    | Y5  |
| 297 | CIF_D8/EBC_SDDO8/GMAC1_TXD2_M1/UART1_TX_M1/PDM_CLK0_M1/GPIO3_D6_d           | I/O | DOWN | GMAC1_TXD2_M1  | GMAC1_TXD2_M1,<br>core board series resistance 22R  |                    | Y6  |
| 299 | CAM_CLKOUT1/EBC_SDCE2/GMAC1_RXD1_M1/SPI3_MISO_M0/I2S1_SDO1_M1/GPIO4_B0_d    | I/O | DOWN | GMAC1_RXD1_M1  | GMAC1_RXD1_M1   |                    | V7  |
| 301 | GND   | G   |      | GND            | GND   |                    |     |
| 303 | CIF_CLKOUT/EBC_GDCLK/PWM11_IR_M1/GPIO4_C0_d                                 | I/O | DOWN | CIF_CLKOUT     | CIF_CLK OUT For MIPI Camera   | VCCIO_WL<br>*Note1 | U3  |
| 305 | GND   | G   |      | GND            | GND   |                    |     |
| 307 | CIF_VSYNC/EBC_SDOE/GMAC1_MDIO_M1/I2S2_SCLK_TX_M1/GPIO4_B7_d                 | I/O | DOWN | GMAC1_MDIO_M1  | GMAC1_MDIO_M1   | VCCIO_WL<br>*Note1 | U4  |
| 309 | CIF_HREF/EBC_SDLE/GMAC1_MDC_M1/UART1_RTsn_M1/I2S2_MCLK_M1/GPIO4_B6_d        | I/O | DOWN | GMAC1_MDC_M1   | GMAC1_MDC_M1  |                    | U5  |
| 311 | GND   | G   |      | GND            | GND   |                    |     |
| 313 | I2C4_SCL_M0/EBC_GDOE/ETH1_REFCLKO_25M_M1/SPI3_CLK_M0/I2S2_SDO_M1/GPIO4_B3_d | I/O | DOWN | I2C4_SCL_M0    | I2C4_SCL_M0<br>core board series resistance 22R<br>Core board Pull up resistance 2.2K to VCCIO_WL | VCCIO_WL<br>*Note1 | V1  |
| 314 | I2C4_SDA_M0/EBC_VCOM/GMAC1_RXER_M1/SPI3_MOSI_M0/I2S2_SDI_M1/GPIO4_B2_d      | I/O | DOWN | I2C4_SDA_M0    | I2C4_SDA_M0<br>Core board Pull up resistance 2.2K to VCCIO_WL                                     |                    | V4  |

**Note1: VCCIO\_WL =1.8V or 3.3V INPUT Option (Default: 1.8V), 注意: 改成3.3V的话, 软件需要改该电源域电压配置, 否则有烧IO口的风险**

| PIN | CORE-RK3568J<br>Core board pin definition | Pad type | IO Pull | Function for Mainboard<br>(MB-JM3-RK3568) | Defual function description  | IO Power domain | RK3568 Pin Number |
|-----|---|----------|---------|---|--|-----------------|-------------------|
| 2   | VCC5V0_SYS                                | P        |         | VCC_SYS                                   | <b>Input Voltage 5.0V +/-5%</b> , Normal:1.25W (5.0V/250mA) , Max: 6W (5.0V/1200mA) , Min: (not done deep sleep) power supply suggest: 5.0V/1.5A | 5.0V            |                   |
| 4   | VCC5V0_SYS                                | P        |         | VCC_SYS                                   |  | 5.0V            |                   |
| 6   | VCC5V0_SYS                                | P        |         | VCC_SYS                                   |  | 5.0V            |                   |
| 8   | GND                                       | G        |         | GND                                       | GND  |                 |                   |
| 10  | GND                                       | G        |         | GND                                       |  |                 |                   |



|    |              |   |  |              |   |           |  |
|----|--------------|---|--|--------------|---|-----------|--|
| 12 | GND          | G |  | GND          |   |           |  |
| 14 | VCC_1V8      | P |  | VCC_1V8      | 1.8V Output ,<br>Pin13/14 Total Max:500mA   | 1.8V      |  |
| 16 | VCC3V3_SD    | P |  | VCC3V3_SD    | 3.3V Output TF Card Power ,<br>Pin15/16 Total Max:100mA   | 3.3V      |  |
| 18 | VCCIO_ACODEC | P |  | VCCIO_ACODEC | 3.3V Output For codec,<br>Pin17/18 Total Max:200mA  | 3.3V      |  |
| 20 | NC           |   |  | NC           |   |           |  |
| 22 | NC           |   |  | NC           |   |           |  |
| 24 | VCC_3V3      | P |  | VCC_3V3      | 3.3V Output ,<br>Pin23/24 Total Max:800mA   | 3.3V      |  |
| 26 | VCCIO_WL     | P |  | VCCIO_WL     | <b>WiFi/GMAC1 VCCIO Input,</b><br><b>1.8V or 3.3V option(Pin25/26 same net)</b><br><b>Defalt:1.8V Input</b> | 1.8V/3.3V |  |
| 28 | VCCA_1V8     | P |  | VCCA_1V8     | Output: 1.8V , Max:200mA  | 1.8V      |  |
| 30 | GND          | G |  | GND          | GND   |           |  |
| 32 | SPKP_OUT     | O |  | SPKP_OUT     | PMIC RK809 Speaker Out+<br>(1.3W @ 8Ω, BTL)   | 5.0V      |  |
| 34 | SPKN_OUT     | O |  | SPKN_OUT     | PMIC RK809 Speaker Out-<br>(1.3W @ 8Ω, BTL)   | 5.0V      |  |
| 36 | GND          | G |  | GND          | GND   |           |  |
| 38 | MIC1_INN     | I |  | MIC1_INN     | (RK809)MIC1_INPUT-<br>core board series capacitance 0.1uF   | 3.3V      |  |
| 40 | MIC1_INP     | I |  | MIC1_INP     | (RK809)MIC1_INPUT+<br>core board series capacitance 0.1uF   | 3.3V      |  |
| 42 | GND          | G |  | GND          | GND   |           |  |
| 44 | HPL_OUT      | O |  | HPL_OUT      | (RK809)HeadPhone_OUT L<br>(0.5Vrms/32Ω; 0.8Vrms/300Ω)   | 3.3V      |  |
| 46 | HP_SNS       | G |  | HP_SNS       | (RK809)HeadPhone_GND  |           |  |



|    |  |     |      |                          |   |      |     |
|----|--|-----|------|--------------------------|---|------|-----|
| 48 | HPR_OUT  | O   |      | HPR_OUT                  | (RK809)HeadPhone_OUT R<br>(0.5Vrms/32Ω; 0.8Vrms/300Ω) | 3.3V |     |
| 50 | GND  | G   |      | GND                      | GND   |      |     |
| 52 | FSPI_D3/FLASH_CS1N/GPIO1_D4_u                    | I/O | UP   | FSPI_D3/FLASH_CS1N       | FSPI_D3/FLASH_CS1N                                    | 1.8V | A27 |
| 54 | SARADC_VIN6                                      | I   |      | SARADC_VIN6              | ADC6 Input;<br>M board need add Pull up resistance    | 1.8V | G20 |
| 56 | SARADC_VIN7                                      | I   |      | SARADC_VIN7              | ADC7 Input;<br>M board need add Pull up resistance    | 1.8V | F21 |
| 58 | SARADC_VIN4                                      | I   |      | SARADC_VIN4              | ADC4 Input;<br>M board need add Pull up resistance    | 1.8V | G21 |
| 60 | SARADC_VIN5                                      | I   |      | SARADC_VIN5              | ADC5 Input;<br>M board need add Pull up resistance    | 1.8V | F22 |
| 62 | SARADC_VIN0                                      | I   |      | SARADC_VIN0_KEY/RECOVERY | ADC0_RECOVERY Input<br>(M Board must pullup to 1.8V ) | 1.8V | B27 |
| 64 | GND  | G   |      | GND                      | GND   |      |     |
| 66 | GMAC0_RXCLK/SDMMC1_D2/UART7_RX_M0/GPIO2_A5_u     | I/O | UP   | GMAC0_RXCLK              | GMAC0_RXCLK   | 1.8V | B28 |
| 68 | GMAC0_TXD2/SDMMC1_D3/UART7_TX_M0/GPIO2_A6_u      | I/O | UP   | GMAC0_TXD2               | GMAC0_TXD2<br>core board series resistance 22R        | 1.8V | C27 |
| 70 | GMAC0_TXD3/SDMMC1_CMD/UART9_RX_M0/GPIO2_A7_u     | I/O | UP   | GMAC0_TXD3               | GMAC0_TXD3<br>core board series resistance 22R        | 1.8V | C28 |
| 72 | GMAC0_TXCLK/SDMMC1_CLK/UART9_TX_M0/GPIO2_B0_d    | I/O | DOWN | GMAC0_TXCLK              | GMAC0_TXCLK<br>core board series resistance 22R       | 1.8V | D27 |
| 74 | GND  | G   |      | GND                      | GND   |      |     |
| 76 | GMAC0_RXD2/SDMMC1_D0/UART6_RX_M0/GPIO2_A3_u      | I/O | UP   | GMAC0_RXD2               | GMAC0_RXD2  | 1.8V | E27 |
| 78 | GMAC0_RXD3/SDMMC1_D1/UART6_TX_M0/GPIO2_A4_u      | I/O | UP   | GMAC0_RXD3               | GMAC0_RXD3  | 1.8V | E28 |
| 80 | GMAC0_RXD0/UART1_CTSn_M0/SPI1_MISO_M0/GPIO2_B6_u | I/O | UP   | GMAC0_RXD0               | GMAC0_RXD0  | 1.8V | F27 |
| 82 | GMAC0_TXD0/UART1_RX_M0/GPIO2_B3_u                | I/O | UP   | GMAC0_TXD0               | GMAC0_TXD0<br>core board series resistance 22R        | 1.8V | F28 |
| 84 | GMAC0_TXD1/UART1_TX_M0/GPIO2_B4_u                | I/O | UP   | GMAC0_TXD1               | GMAC0_TXD1<br>core board series resistance 22R        | 1.8V | G27 |
| 86 | GMAC0_TXEN/UART1_RTsn_M0/SPI1_CLK_M0/GPIO2_B5_u  | I/O | UP   | GMAC0_TXEN               | GMAC0_TXEN<br>core board series resistance 22R        | 1.8V | G28 |
| 88 | GND  | G   |      | GND                      | GND   |      |     |



|   |  |     |      |                  |   |                    |     |
|---|--|-----|------|------------------|---|--------------------|-----|
| 90  | SDMMC0_CMD/PWM10_M1/UART5_RX_M0/CAN0_TX_M1/GPIO2_A1_u    | I/O | UP   | SDMMC0_CMD       | SDMMC0_CMD to TF Card                                     | VCCIO_SD<br>*Note2 | H27 |
| 92  | SDMMC0_CLK/TEST_CLKOUT/UART5_TX_M0/CAN0_RX_M1/GPIO2_A2_d | I/O | DOWN | SDMMC0_CLK       | SDMMC0_CLK to TF Card<br>core board series resistance 22R |                    | H28 |
| 94  | GND  | G   |      | GND              | GND   |                    |     |
| <b>Note 2: VCCIO_SD=1.8V(SDIO 3.0) or 3.3V(SDIO 2.0) ;Default: 3.3V</b> |  |     |      |                  |   |                    |     |
| 96  | EDP_TX_D0P   | O   |      | EDP_TX_D0P       | EDP_TX_D0+<br>core board series capacitance 0.1uF         |                    | J28 |
| 98  | EDP_TX_D0N   | O   |      | EDP_TX_D0N       | EDP_TX_D0-<br>core board series capacitance 0.1uF         |                    | K27 |
| 100   | EDP_TX_D1P   | O   |      | EDP_TX_D1P       | EDP_TX_D1+<br>core board series capacitance 0.1uF         |                    | K28 |
| 102   | EDP_TX_D1N   | O   |      | EDP_TX_D1N       | EDP_TX_D1-<br>core board series capacitance 0.1uF         |                    | L27 |
| 104   | EDP_TX_D2P   | O   |      | EDP_TX_D2P       | EDP_TX_D2+<br>core board series capacitance 0.1uF         |                    | L28 |
| 106   | EDP_TX_D2N   | O   |      | EDP_TX_D2N       | EDP_TX_D2-<br>core board series capacitance 0.1uF         |                    | M27 |
| 108   | EDP_TX_D3P   | O   |      | EDP_TX_D3P       | EDP_TX_D3+<br>core board series capacitance 0.1uF         |                    | M28 |
| 110   | EDP_TX_D3N   | O   |      | EDP_TX_D3N       | EDP_TX_D3-<br>core board series capacitance 0.1uF         |                    | N27 |
| 112   | GND  | G   |      | GND              | GND   |                    |     |
| 114   | USB3_OTG0_DP   | I/O |      | USB3_OTG0_DP     | USB3_OTG0_DP  |                    | P27 |
| 116   | USB3_OTG0_DM   | I/O |      | USB3_OTG0_DM     | USB3_OTG0_DM  |                    | P28 |
| 118   | GND  | G   |      | GND              | GND   |                    |     |
| 120   | USB3_OTG0_SSRXN/SATA0_RXN                                | I/O |      | USB3_OTG0_SSRXN  | USB3_OTG0_SSRXN   |                    | R27 |
| 122   | USB3_OTG0_SSRXP/SATA0_RXP                                | I/O |      | USB3_OTG0_SSRXP  | USB3_OTG0_SSRXP   |                    | R28 |
| 124   | USB3_OTG0_SSTXN/SATA0_TXN                                | I/O |      | USB3_OTG0_SSTXN  | USB3_OTG0_SSTXN   |                    | T27 |
| 126   | USB3_OTG0_SSTXP/SATA0_TXP                                | I/O |      | USB3_OTG0_SSTXP  | USB3_OTG0_SSTXP   |                    | T28 |
| 128   | GND  | G   |      | GND              | GND   |                    |     |
| 130   | USB3_HOST1_SSRXN/SATA1_RXN/QSGMII_RXN_M0                 | I/O |      | USB3_HOST1_SSRXN | USB3_HOST1_SSRXN  |                    | U27 |
| 132   | USB3_HOST1_SSRXP/SATA1_RXP/QSGMII_RXP_M0                 | I/O |      | USB3_HOST1_SSRXP | USB3_HOST1_SSRXP  |                    | U28 |



|     |  |     |      |                   |  |      |      |
|-----|--|-----|------|-------------------|--|------|------|
| 134 | USB3_HOST1_SSTXN/SATA1_TXN/QSGMII_TXN_M0                       | I/O |      | USB3_HOST1_SSTXN  | USB3_HOST1_SSTXN   |      | V27  |
| 136 | USB3_HOST1_SSTXP/SATA1_TXP/QSGMII_TXP_M0                       | I/O |      | USB3_HOST1_SSTXP  | USB3_HOST1_SSTXP   |      | V28  |
| 138 | GND  | G   |      | GND               | GND  |      |      |
| 140 | PCIE20_TXP/SATA2_TXP/QSGMII_TXP_M1                             | O   |      | SATA2_TXP         | SATA2_TXP  |      | W27  |
| 142 | PCIE20_TXN/SATA2_TXN/QSGMII_TXN_M1                             | O   |      | SATA2_TXN         | SATA2_TXN  |      | W28  |
| 144 | PCIE20_RXP/SATA2_RXP/QSGMII_RXP_M1                             | I   |      | SATA2_RXP         | SATA2_RXP  |      | Y27  |
| 146 | PCIE20_RXN/SATA2_RXN/QSGMII_RXN_M1                             | I   |      | SATA2_RXN         | SATA2_RXN  |      | Y28  |
| 148 | GND  | G   |      | GND               | GND  |      |      |
| 150 | PCIE30_TX0P  | O   |      | PCIE30_TX0P       | PCIE30_TX0P  |      | AA28 |
| 152 | PCIE30_TX0N  | O   |      | PCIE30_TX0N       | PCIE30_TX0N  |      | AA27 |
| 154 | PCIE30_TX1P  | O   |      | PCIE30_TX1P       | PCIE30_TX1P  |      | AB28 |
| 156 | PCIE30_TX1N  | O   |      | PCIE30_TX1N       | PCIE30_TX1N  |      | AB27 |
| 158 | PCIE30_RX0P  | I   |      | PCIE30_RX0P       | PCIE30_RX0P  |      | AC28 |
| 160 | PCIE30_RX0N  | I   |      | PCIE30_RX0N       | PCIE30_RX0N  |      | AC27 |
| 162 | PCIE30_RX1P  | I   |      | PCIE30_RX1P       | PCIE30_RX1P  |      | AD28 |
| 164 | PCIE30_RX1N  | I   |      | PCIE30_RX1N       | PCIE30_RX1N  |      | AD27 |
| 166 | GND  | G   |      | GND               | GND  |      |      |
| 168 | GND  | G   |      | GND               | GND  |      |      |
| 170 | REFCLK_OUT_CAM/GPIO0_A0_d                                      | I/O | DOWN | REFCLK_OUT_CAM    | Clock output for camera core board series resistance 22R | 3.3V | AG27 |
| 172 | GND  | G   |      | GND               | GND  |      |      |
| 174 | SDMMC0_PWREN/SATA_MP_SWITCH/PCIE20_CLKREQn_M0/GPIO0_A5_d       | I/O | DOWN | USB_OTG_PWREN_H   | USB_OTG Power EN ,Active H                               | 3.3V | AF25 |
| 176 | PWM0_M0/CPUAVS/GPIO0_B7_d                                      | I/O | DOWN | NC                | NC   | 3.3V | AH26 |
| 178 | HDMITX_CEC_M1/PWM0_M1/UART0_CTSn/GPIO0_C7_d                    | I/O | DOWN | LCD0_PWR_EN       | MIPI DSI0 Power EN ,Active H                             | 3.3V | AH25 |
| 180 | UART2_TX_M0/GPIO0_D1_u   | I/O | UP   | UART2_TX_M0_DEBUG | UART2_TX_M0 for DEBUG                                    | 3.3V | AH24 |
| 182 | UART2_RX_M0/GPIO0_D0_u   | I/O | UP   | UART2_RX_M0_DEBUG | UART2_RX_M0 for DEBUG                                    | 3.3V | AC20 |
| 184 | PWM3_IR/EDP_HPDIN_M1/PCIE30X1_WAKEn_M0/MCU_JTAG_TMS/GPIO0_C2_d | I   | DOWN | EDP_HPD           | EDP_HPD det Input,Active H                               | 3.3V | AG23 |
| 186 | GND  | G   |      | GND               | GND  |      |      |
| 188 | HDMI_TX2P  | O   |      | HDMI_TX2P_PORT    | HDMI_TX2P_Output, core board series resistance 2.2R      |      | AG22 |





|     |                                 |   |  |                                 |  |  |      |
|-----|---------------------------------|---|--|---------------------------------|--|--|------|
| 190 | HDMI_TX2N                       | O |  | HDMI_TX2N_PORT                  | HDMI_TX2N_Output,<br>core board series resistance 2.2R   |  | AH22 |
| 192 | HDMI_TX1P                       | O |  | HDMI_TX1P_PORT                  | HDMI_TX1P_Output,core<br>board series resistance 2.2R    |  | AG21 |
| 194 | HDMI_TX1N                       | O |  | HDMI_TX1N_PORT                  | HDMI_TX1N_Output,<br>core board series resistance 2.2R   |  | AH21 |
| 196 | HDMI_TX0P                       | O |  | HDMI_TX0P_PORT                  | HDMI_TX0P_Output,<br>core board series resistance 2.2R   |  | AG20 |
| 198 | HDMI_TX0N                       | O |  | HDMI_TX0N_PORT                  | HDMI_TX0N_Output,<br>core board series resistance 2.2R   |  | AH20 |
| 200 | HDMI_TXCLKP                     | O |  | HDMI_TXCLKP_PORT                | HDMI_TXCLKP_Output,<br>core board series resistance 2.2R |  | AH19 |
| 202 | HDMI_TXCLKN                     | O |  | HDMI_TXCLKN_PORT                | HDMI_TXCLKN_Output,<br>core board series resistance 2.2R |  | AG19 |
| 204 | GND                             | G |  | GND                             | GND  |  |      |
| 206 | MIPI_DSI_TX0_D0N/LVDS_TX0_D0N   | O |  | MIPI_DSI_TX0_D0N/LVDS_TX0_D0N   | MIPI_DSI_TX0_D0N/LVDS_TX0_D0N_Output                     |  | AG17 |
| 208 | MIPI_DSI_TX0_D0P/LVDS_TX0_D0P   | O |  | MIPI_DSI_TX0_D0P/LVDS_TX0_D0P   | MIPI_DSI_TX0_D0P/LVDS_TX0_D0P_Output                     |  | AH17 |
| 210 | MIPI_DSI_TX0_D1N/LVDS_TX0_D1N   | O |  | MIPI_DSI_TX0_D1N/LVDS_TX0_D1N   | MIPI_DSI_TX0_D1N/LVDS_TX0_D1N_Output                     |  | AG16 |
| 212 | MIPI_DSI_TX0_D1P/LVDS_TX0_D1P   | O |  | MIPI_DSI_TX0_D1P/LVDS_TX0_D1P   | MIPI_DSI_TX0_D1P/LVDS_TX0_D1P_Output                     |  | AH16 |
| 214 | GND                             | G |  | GND                             | GND  |  |      |
| 216 | MIPI_DSI_TX0_CLKN/LVDS_TX0_CLKN | O |  | MIPI_DSI_TX0_CLKN/LVDS_TX0_CLKN | MIPI_DSI_TX0_CLKN/LVDS_TX0_CLKN_Output                   |  | AG15 |
| 218 | MIPI_DSI_TX0_CLKP/LVDS_TX0_CLKP | O |  | MIPI_DSI_TX0_CLKP/LVDS_TX0_CLKP | MIPI_DSI_TX0_CLKP/LVDS_TX0_CLKP_Output                   |  | AH15 |
| 220 | MIPI_DSI_TX0_D2N/LVDS_TX0_D2N   | O |  | MIPI_DSI_TX0_D2N/LVDS_TX0_D2N   | MIPI_DSI_TX0_D2N/LVDS_TX0_D2N_Output                     |  | AG14 |
| 222 | MIPI_DSI_TX0_D2P/LVDS_TX0_D2P   | O |  | MIPI_DSI_TX0_D2P/LVDS_TX0_D2P   | MIPI_DSI_TX0_D2P/LVDS_TX0_D2P_Output                     |  | AH14 |
| 224 | MIPI_DSI_TX0_D3N/LVDS_TX0_D3N   | O |  | MIPI_DSI_TX0_D3N/LVDS_TX0_D3N   | MIPI_DSI_TX0_D3N/LVDS_TX0_D3N_Output                     |  | AG13 |



|     |  |     |      |                               |  |      |      |
|-----|--|-----|------|-------------------------------|--|------|------|
| 226 | MIPI_DSI_TX0_D3P/LVDS_TX0_D3P  | O   |      | MIPI_DSI_TX0_D3P/LVDS_TX0_D3P | MIPI_DSI_TX0_D3P/LVDS_TX0_D3P_Output                 |      | AH13 |
| 228 | MIPI_CSI_RX_D0N  | I   |      | MIPI_CSI_RX_D0N               | MIPI_CSI_RX_D0N_Intput                               |      | AH12 |
| 230 | MIPI_CSI_RX_D0P  | I   |      | MIPI_CSI_RX_D0P               | MIPI_CSI_RX_D0P_Intput                               |      | AG12 |
| 232 | MIPI_CSI_RX_D1N  | I   |      | MIPI_CSI_RX_D1N               | MIPI_CSI_RX_D1N_Intput                               |      | AH11 |
| 234 | MIPI_CSI_RX_D1P  | I   |      | MIPI_CSI_RX_D1P               | MIPI_CSI_RX_D1P_Intput                               |      | AG11 |
| 236 | MIPI_CSI_RX_CLK0N  | I   |      | MIPI_CSI_RX_CLK0N             | MIPI_CSI_RX_CLK0N_Intput                             |      | AH10 |
| 238 | MIPI_CSI_RX_CLK0P  | I   |      | MIPI_CSI_RX_CLK0P             | MIPI_CSI_RX_CLK0P_Intput                             |      | AG10 |
| 240 | MIPI_CSI_RX_CLK1N  | I   |      | MIPI_CSI_RX_CLK1N             | MIPI_CSI_RX_CLK1N_Intput                             |      | AH9  |
| 242 | MIPI_CSI_RX_CLK1P  | I   |      | MIPI_CSI_RX_CLK1P             | MIPI_CSI_RX_CLK1P_Intput                             |      | AG9  |
| 244 | GND  | G   |      | GND                           | GND  |      |      |
| 246 | LCDC_D0/VOP_BT656_D0_M0/SPI0_MISO_M1/PCIE20_CLKREqn_M1/I2S1_MCLK_M2/GPIO2_D0_d | I/O | DOWN | GMAC1_INT/PMEB                | GMAC1_INT/PMEB                                       | 3.3V | AG6  |
| 248 | LCDC_D7/VOP_BT656_D7_M0/SPI2_MISO_M1/UART8_TX_M1/I2S1_SDO0_M2/GPIO2_D7_d       | I/O | DOWN | BT_WAKE_HOST_H                | BT_WAKE_HOST,Active H                                | 3.3V | AH5  |
| 250 | LCDC_CLK/VOP_BT656_CLK_M0/SPI2_CLK_M1/UART8_RX_M1/I2S1_SDO1_M2/GPIO3_A0_d      | I/O | DOWN | BT_REG_ON_H                   | BT_EN ,Active H                                      | 3.3V | AH4  |
| 252 | LCDC_D10/VOP_BT1120_D2/GMAC1_TXD3_M0/I2S3_SCLK_M0/SDMMC2_D2_M1/GPIO3_A3_d      | I/O | DOWN | I2S3_SCLK_M0                  | I2S3_SCLK_M0   | 3.3V | AG4  |
| 254 | LCDC_D12/VOP_BT1120_D4/GMAC1_RXD3_M0/I2S3_SDO_M0/SDMMC2_CMD_M1/GPIO3_A5_d      | I/O | DOWN | I2S3_SDO_M0                   | I2S3_SDO_M0  | 3.3V | AH3  |
| 256 | LCDC_D13/VOP_BT1120_CLK/GMAC1_TXCLK_M0/I2S3_SDI_M0/SDMMC2_CLK_M1/GPIO3_A6_d    | I/O | DOWN | I2S3_SDI_M0                   | I2S3_SDI_M0  | 3.3V | AG3  |
| 258 | LCDC_D14/VOP_BT1120_D5/GMAC1_RXCLK_M0/SDMMC2_DET_M1/GPIO3_A7_d                 | I/O | DOWN | PCIECLKIC_OE_H                | PCIE CLOCK IC_EN ,Active H                           | 3.3V | AH2  |
| 260 | GND  | G   |      | GND                           | GND  |      |      |
| 262 | LCDC_D15/VOP_BT1120_D6/ETH1_REFCLKO_25M_M0/SDMMC2_PWREN_M1/GPIO3_B0_d          | I/O | DOWN | ETH1_REFCLKO_25M_M0           | ETH1_REF CLOCK OUTPUT_25MHz (CPU to PHY,Default NC ) | 3.3V | AG2  |
| 264 | LCDC_D17/VOP_BT1120_D8/GMAC1_RXD1_M0/UART4_TX_M1/PWM9_M0/GPIO3_B2_d            | I/O | DOWN | UART4_TX_M1                   | UART4_TX_M1  | 3.3V | AF2  |
| 266 | LCDC_D16/VOP_BT1120_D7/GMAC1_RXD0_M0/UART4_RX_M1/PWM8_M0/GPIO3_B1_d            | I/O | DOWN | UART4_RX_M1                   | UART4_RX_M1  | 3.3V | AG1  |



|     |   |     |      |                           |   |                    |     |
|-----|---|-----|------|---------------------------|---|--------------------|-----|
| 268 | LCDC_D21/VOP_BT1120_D12/GMAC1_TXD1_M0/I2C3_SDA_M1/PWM11_IR_M0/GPIO3_B6_d        | I/O | DOWN | BAT_ALERT                 | BAT_ALERT, Default NC   | 3.3V               | AE3 |
| 270 | LCDC_D18/VOP_BT1120_D9/GMAC1_RXDV_CRS_M0/I2C5_SCL_M0/PDM_SDI0_M2/GPIO3_B3_d     | I/O | DOWN | I2C5_SCL_M0               | I2C5_SCL_M0<br>Core board Pull up resistance 2.2K                   | 3.3V               | AF1 |
| 272 | LCDC_D19/VOP_BT1120_D10/GMAC1_RXER_M0/I2C5_SDA_M0/PDM_SDI1_M2/GPIO3_B4_d        | I/O | DOWN | I2C5_SDA_M0               | I2C5_SDA_M0<br>Core board Pull up resistance 2.2K                   | 3.3V               | AE1 |
| 274 | LCDC_HSYNC/VOP_BT1120_D13/SPI1_MOSI_M1/PCIE20_PERSTn_M1/I2S1_SDO2_M2/GPIO3_C1_d | I/O | DOWN | SPI1_MOSI_M1              | SPI1_MOSI_M1  | 3.3V               | AD1 |
| 276 | PWM15_IR_M0/SPDIF_TX_M1/GMAC1_MDIO_M0/UART7_RX_M1/I2S1_LRCK_RX_M2/GPIO3_C5_d    | I/O | DOWN | SPK_CTL_H                 | SPK_EN ,Active H  | 3.3V               | AC2 |
| 278 | GND   | G   |      | GND                       | GND   |                    |     |
| 280 | CIF_D5/EBC_SDDO5/SDMMC2_CLK_M0/I2S1_SDI1_M1/VOP_BT656_D5_M1/GPIO3_D3_d          | I/O | DOWN | SDMMC2_CLK_M0             | SDMMC2_CLK_M0 To WIFI<br>core board series resistance 22R           | VCCIO_WL<br>*Note1 | AC1 |
| 282 | CIF_D2/EBC_SDDO2/SDMMC2_D2_M0/I2S1_LRCK_TX_M1/VOP_BT656_D2_M1/GPIO3_D0_d        | I/O | DOWN | SDMMC2_D2_M0              | SDMMC2_D2_M0 To WIFI  |                    | AB5 |
| 284 | CIF_D3/EBC_SDDO3/SDMMC2_D3_M0/I2S1_SDO0_M1/VOP_BT656_D3_M1/GPIO3_D1_d           | I/O | DOWN | SDMMC2_D3_M0              | SDMMC2_D3_M0 To WIFI  |                    | AB1 |
| 286 | GND   | G   |      | GND                       | GND   |                    |     |
| 288 | CIF_D11/EBC_SDDO11/GMAC1_RXD2_M1/PDM_SDI1_M1/GPIO4_A1_d                         | I/O | DOWN | GMAC1_RXD2_M1             | GMAC1_RXD2_M1   | VCCIO_WL<br>*Note1 | AA2 |
| 290 | CIF_D6/EBC_SDDO6/SDMMC2_DET_M0/I2S1_SDI2_M1/VOP_BT656_D6_M1/GPIO3_D4_d          | I/O | DOWN | WIFI_WAKE_HOST_H_GPIO3_D4 | WIFI_WAKE_HOST Active H   |                    | AA1 |
| 292 | CIF_D14/EBC_SDDO14/GMAC1_TXD0_M1/UART9_TX_M2/I2S2_LRCK_TX_M1/GPIO4_A4_d         | I/O | DOWN | GMAC1_TXD0_M1             | GMAC1_TXD0_M1<br>core board series resistance 22R                   |                    | Y2  |
| 294 | CIF_D15/EBC_SDDO15/GMAC1_TXD1_M1/UART9_RX_M2/I2S2_LRCK_RX_M1/GPIO4_A5_d         | I/O | DOWN | GMAC1_TXD1_M1             | GMAC1_TXD1_M1<br>core board series resistance 22R                   |                    | Y1  |
| 296 | ISP_FLASHTRIGOUT/EBC_SDCE0/GMAC1_TXEN_M1/SPI3_CS0_M0/I2S1_SCLK_RX_M1/GPIO4_A6_d | I/O | DOWN | GMAC1_TXEN_M1             | GMAC1_TXEN_M1<br>core board series resistance 22R                   |                    | W2  |
| 298 | CAM_CLKOUT0/EBC_SDCE1/GMAC1_RXD0_M1/SPI3_CS1_M0/I2S1_LRCK_RX_M1/GPIO4_A7_d      | I/O | DOWN | GMAC1_RXD0_M1             | GMAC1_RXD0_M1   |                    | W1  |
| 300 | ISP_PRELIGHT_TRIG/EBC_SDCE3/GMAC1_RXDV_CRS_M1/I2S1_SDO2_M1/GPIO4_B1_d           | I/O | DOWN | GMAC1_RXDV_CRS_M1         | GMAC1_RXDV_CRS_M1   |                    | V2  |
| 302 | CIF_CLKIN/EBC_SDCLK/GMAC1_MCLKINOUT_M1/UART1_CTSn_M1/I2S2_SCLK_RX_M1/GPIO4_C1_d | I/O | DOWN | GMAC1_MCLKINOUT_M1        | GMAC1_MCLK_IN/OUT PUT<br>default:not use MCLK---Internal Clock Mode |                    | U2  |



|     |               |     |  |               |               |  |    |
|-----|---------------|-----|--|---------------|---------------|--|----|
| 304 | GND           | G   |  | GND           | GND           |  |    |
| 306 | USB2_HOST3_DP | I/O |  | USB2_HOST3_DP | USB2_HOST3_DP |  | T2 |
| 308 | USB2_HOST3_DM | I/O |  | USB2_HOST3_DM | USB2_HOST3_DM |  | T1 |
| 310 | USB2_HOST2_DM | I/O |  | USB2_HOST2_DM | USB2_HOST2_DM |  | R2 |
| 312 | USB2_HOST2_DM | I/O |  | USB2_HOST2_DM | USB2_HOST2_DM |  | R1 |



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