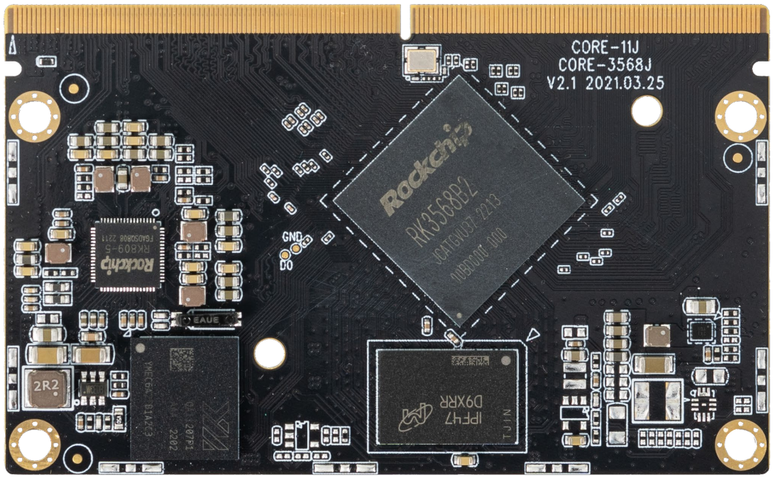
# Core-3568J

## Quad-Core AI Core board

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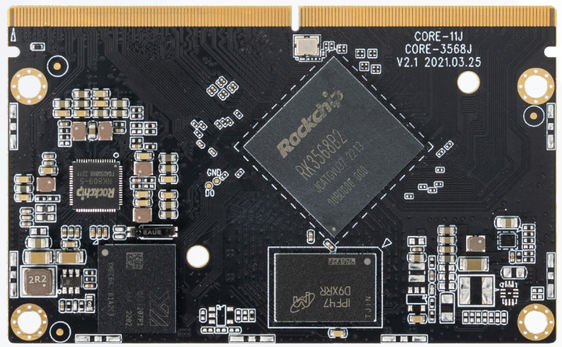
# Product features




## Quad-core 64-bit processor

Quad-core 64bit Cortex-A55
up to 2.0GHz
22nm lithography process

## 8 G B l a r g e R A M

Up to 8GB RAM
meeting the requirements of running large-memory products

## 4K H.265 Video Decoder

OpenGL ES3.2/2.0, Vulkan1.1
4K@60fps H.265/VP9 video decoding
1080P@100fps H.265 video encoding
1TOPS NPU

## Multiple video output

With MIPI-CSI×2, MIPI-DSI×2, HDMI2.0, EDP video interfaces, it can support up to three screen output with different display

## O p e r a t i n g s y s t e m s

Support Android, Ubuntu, Buildroot. It enables stable operation and customization for industries

## Wide range of applications

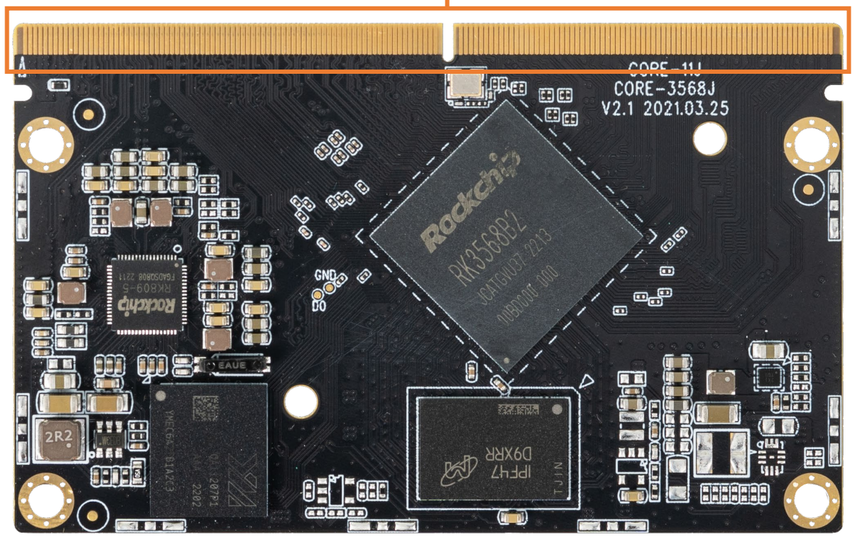
Smart NVRs, cloud terminals, IoT gateways, industrial control, edge computing, NASs, etc.

# Specifications

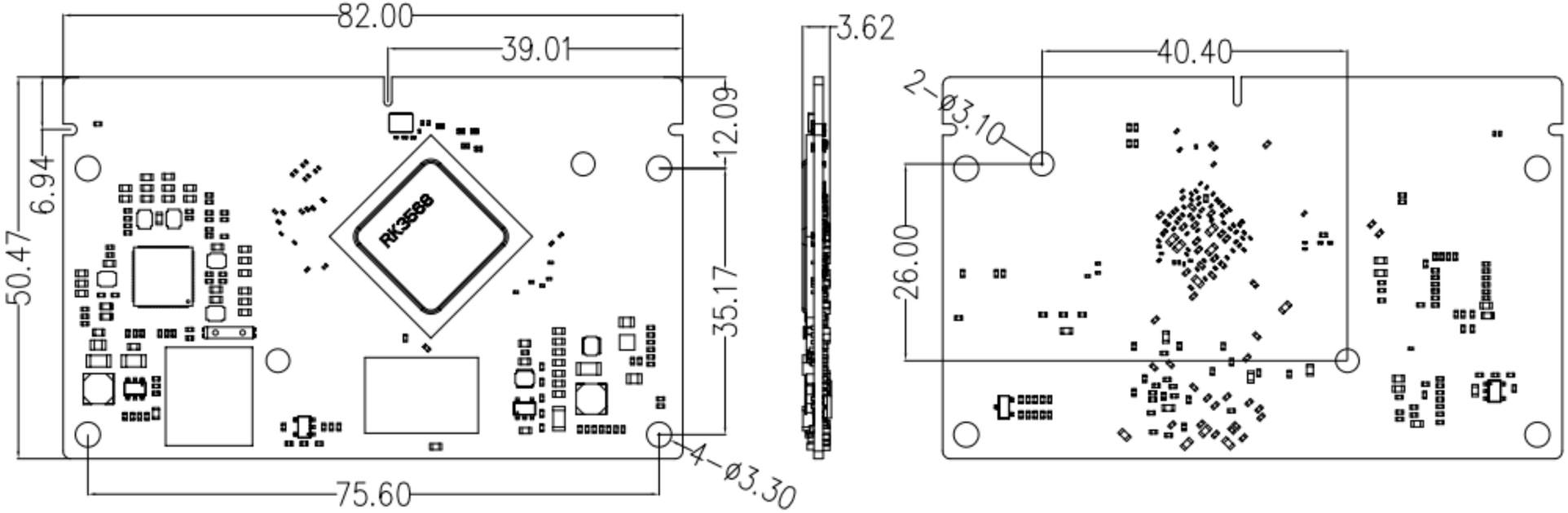
| Specifications | | |
|---|---|---|
| Basic Specifications | SOC | RK3568B2 |
| | CPU | Quad-core 64-bit Cortex-A55 processor, 22nm lithography process, frequency up to 2.0GHz |
| | GPU | ARM G52 2EE, Support OpenGL ES 1.1/2.0/3.2, OpenCL 2.0 and Vulkan 1.1, built-in high-performance 2D acceleration hardware |
| | NPU | 1Tops@INT8 RKNN NPU AI accelerator, support one-click switching of Caffe/TensorFlow/TFLite/ONNX/PyTorch/Keras/Darknet |
| | VPU | 4K@60fps H.265/H.264/VP9 video decoding, 1080P@60fps H.265/H.264 video encoding |
| | RAM | 2GB/4GB/8GB LPDDR4 |
| | Storage | 16GB/32GB/64GB/128GB eMMC |
| | Power | 5V (voltage tolerance ±5%) |
| | Power Consumption | Min: 0.015W (5V/3mA), Normal: 2.75W (5V/550mA), Max: 5.55W (5V/1110mA) |
| | OS | Android, Linux OS |
| | Dimension | 82.0mm × 50.5mm |
| | Environment | Operating Temperature: -20℃ ~ 60℃, Storage Temperature: -20℃ ~ 70℃, Storage humidity: 10% ~ 90%RH (non-condensing) |
| Interface Specifications | Ethernet | Supports dual Gigabit Ethernet ports (1000Mbps/RJ45)<br>Among them, LAN (PoE) port supports POE+ (802.3 AT, output power 30W) power supply |
| | WiFi | Supports M.2 to connect 5G, Mini PCIe to connect 4G LTE<br>Supports WiFi6 (802.11 AX) and BT5.0 |
| | Video output | 1 × HDMI2.0 (4K@60fps), 2 × MIPI DSI (1920×1080@60fps) or 1 × MIPI DSI (Dual channel 2560×1440@60fps), 1 × eDP1.3 (2560×1600@60fps)<br>Support up to three-screen output with different displays |
| | Audio | 2 × 12S/PCM(2ch)/TDM(8ch) |
| | Camera | 1 × MIPI CSI (4 Lanes) or 2 × MIPI CSI (2 Lanes) |
| | PCIe | 1 × PCIe 3.0 (2 Lanes), 1 × PCIe 2.1 (1 Lane) |
| | SATA | 3 × SATA3.0 |
| | USB | 2 × USB3.0, 2 × USB2.0 HOST |
| | Extended interface | 3 × SDMMC, 3 × SPI, 10 × UART, 6 × I2C, 2 × I2S/PCM(2ch)/TDM(8ch), 16 × PWM, 7 × ADC, 3 × CAN, 130 × GPIO |

# Interface description

314Pin MXM3.0 Standard Interface



# Dimension


82.00
39.01
6.94
50.47
12.09
35.17
75.60
4-Ø3.30
RK3568
3.62
40.40
2-Ø3.10
26.00

# 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-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 |
|---|---|---|---|---|---|---|---|
| 1 | VCC5V0_SYS | P | | VCC_SYS | **Input Voltage 5.0V +/-5%**<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 | **WIFI/GMAC1 VCCIO Input to RK3568_VCCIO6**,<br>1.8V or 3.3V option(Pin25/26 same net)<br>Defalt: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 |

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|---|---|---|---|---|---|---|---|
| 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 |

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|---|---|---|---|---|---|---|---|
| 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 | VCCIO_SD *Note2 | 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_HPDIN_M0/SPDIF_TX_M2/SATA2_ACT_LED/PCIE30X2_PERSTn_M2/I2S3_LRCK_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_M2/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/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 |

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|---|---|---|---|---|---|---|---|
| 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 |

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|---|---|---|---|---|---|---|---|
| 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 *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<br>Core board Pull up resistance 10K | VCCIO_WL *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 *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 | | |

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|---|---|---|---|---|---|---|---|
| 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), Note: If changed to 3.3V, the software needs to modify the voltage configuration of the power domain, otherwise there is a risk of burning the IO port**

| 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 | **Input Voltage 5.0V +/-5%,** 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 | **WIFI/GMAC1 VCCIO Input,**<br>**1.8V or 3.3V option(Pin25/26 same net)**<br>**Defalt:1.8V Input** | 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 | | |

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|---|---|---|---|---|---|---|---|
| 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 | | |

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|---|---|---|---|---|---|---|---|
| 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 *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 | | |
| **Note 2: VCCIO_SD=1.8V(SDIO 3.0) or 3.3V(SDIO 2.0) ;Default: 3.3V** | | | | | | | |
| 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 |

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|---|---|---|---|---|---|---|---|
| 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<br>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,<br>core board series resistance 2.2R | | AG22 |

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|---|---|---|---|---|---|---|---|
| 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 |

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|---|---|---|---|---|---|---|---|
| 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<br>(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 |

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|---|---|---|---|---|---|---|---|
| 268 | LCDC_D21/VOP_BT1120_D12/GMAC1_TXD1_M0/I2C3_SDA_M1/PWM11_IR_M0/GPIO3_B6_d | I/O | DOWN | BAT_ALRT | BAT_ALRT, 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 |

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|---|---|---|---|---|---|---|---|
| 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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