

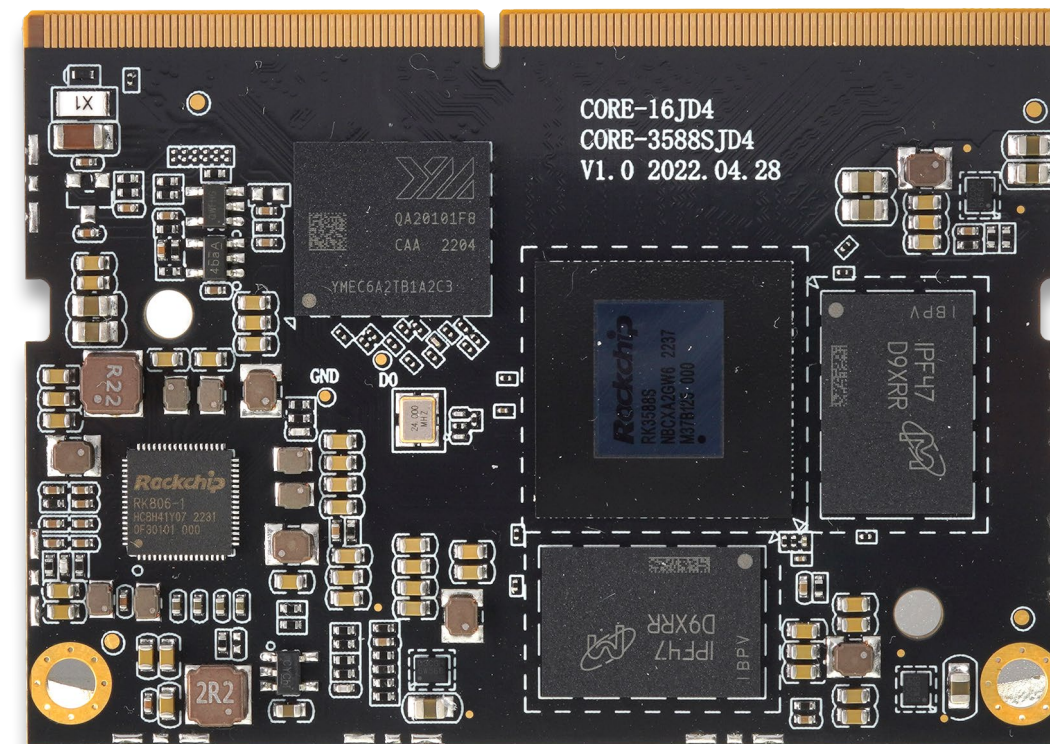


Core-3588SJD4

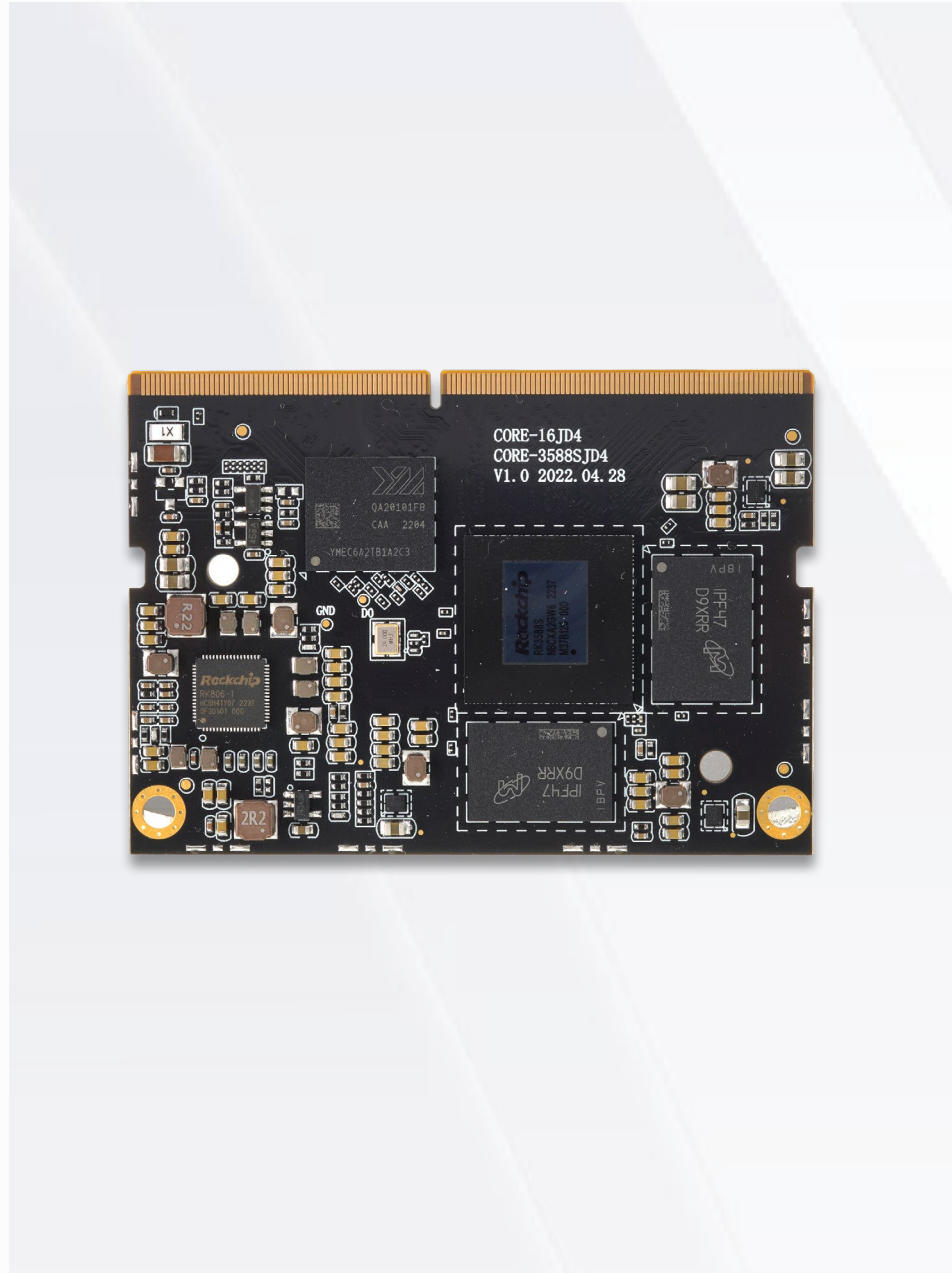
Octa-Core 8K AI Core board

V1.0 2024-3-8

T-CHIP INTELLIGENCE TECHNOLOGY



Product features



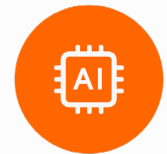
8-Core 64bit processor

8-Core 64bit processor RK3588S
8nm lithography process.
up to 2.4GHz



Super-large 32GB RAM

Up to 32GB RAM
Support LPDDR4/LPDDR4x/LPDDR5



8K H.265 / 6TOPS NPU

OpenGL ES 3.2/2.0, Vulkan1.1
8K@60fps H.265/VP9 Decoding
8K@30fps H.265/H.264 Encoding
6TOPS NPU computing power



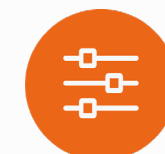
Multi-channel input/output

HDMI 2.1 (8K), DP1.4 (8K), and dual
MIPI-DSI video output – up to four-
screen output with different displa
ys can be achieved.



Various operating systems

Android, Linux OS. The reliable op
eration provides a safe and stable
system environment for product re
search and production.



260Pin standard SODIMM

It can be combined with a backpla
ne to form a complete high-perfor
mance mainboard with richer expa
nsion interfaces.

Specifications



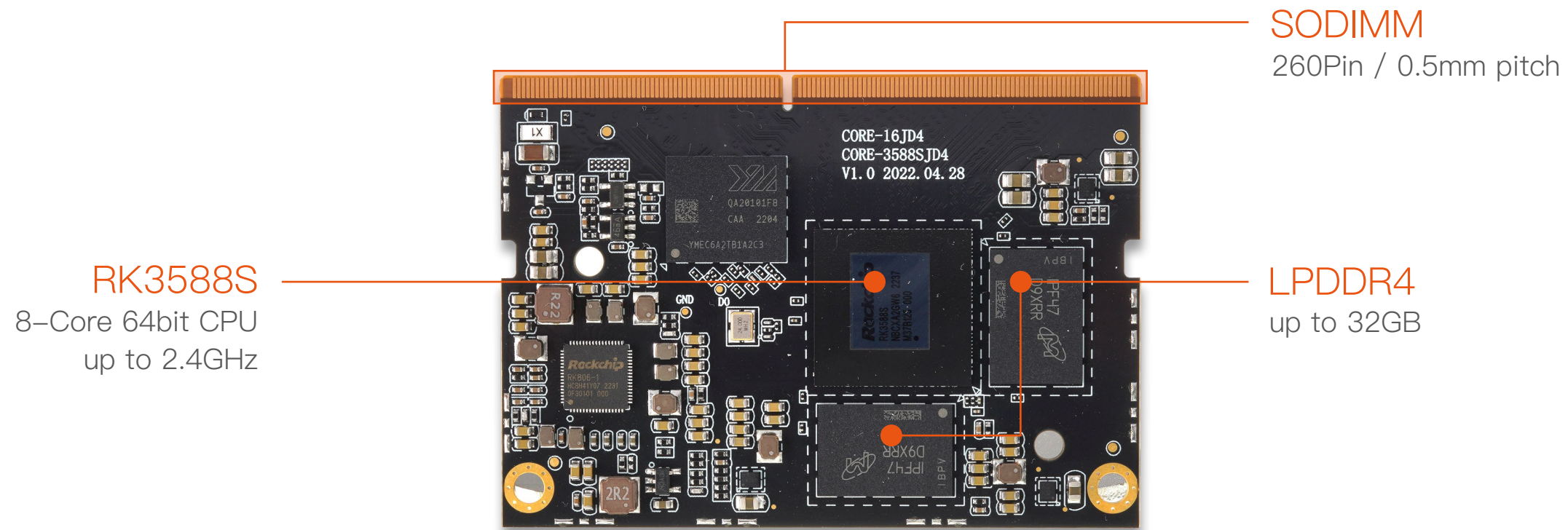
| Type | Specifications |
|-------------------|---|
| SOC | RK3588S |
| CPU | Octa-core 64-bit(4*Cortex-A76+4*Cortex-A55), 8nm lithography process, frequency up to 2.4GHz |
| GPU | ARM Mali-G610 MP4 quad-core GPU, support OpenGL ES3.2 / OpenCL 2.2 / Vulkan1.1, 450 GFLOPS |
| NPU | 6 TOPS, support INT4/INT8/INT16 mixed operation, support framework switching of TensorFlow / MXNet / PyTorch / Caffe |
| VPU | Video decoding: 8K@60fps H.265/VP9/AVS2, 8K@30fps H.264 AVC/MVC, 4K@60fps AV1, 1080P@60fps MPEG-2/-1/VC-1/VP8 Video encoding: 8K@30fps encoding, support H.265 / H.264 |
| RAM | 4GB/8GB/16GB(Up to 32GB optional) 64bit LPDDR4/LPDDR4x/LPDDR5 |
| Storage | 16GB/32GB/64GB/128GB/256GB eMMC |
| Power | 4V(voltage deviation±5%) |
| OS | Android, Linux OS |
| Dimension | 69.6mm * 49.3mm |
| Interface | SODIMM(260 PIN, 0.5mm pitch) |
| Weight | ≈50g |
| Power Consumption | Normal: 1.6W(4.0V/400mA), Max: 12W(4.0V/3A) |
| Environment | Operating Temperature: -20°C ~ 60°C, Storage Temperature: -20°C ~ 70°C, Storage humidity: 10% ~ 90%RH (non-condensing) |

Specifications



| Interface parameters | | |
|----------------------|----------------------|---|
| Network | Ethernet/Wireless | Integrated GMAC/SDIO3.0/USB3.0 interface, can be expanded with GbE, WiFi6/Bluetooth and 5G/4G LTE |
| Video Input | 2 * MIPI DC PHY | MIPI DPHY V2.0 (4lanes, 4.5Gbps/lane); MIPI CPHY V1.1(3lanes, 2.5Gbps/lane) |
| | 1 * MIPI CSI | 1*MIPI CSI (4 Lane)or 2*MIPI CSI (2 Lane) |
| | 1 * DVP | 8/10/12/16-bit standard DVP interface, up to 150MHz input data, BT.601/BT.656 and BT.1120 VI interface |
| Video Output | 1 * HDMI2.1/ eDP1.3 | HDMI2.1 (8K@60Hz , HDCP2.3), eDP1.3 (4K@60Hz, HDCP1.3), HDMI and eDP can not work at the same time |
| | 2 * MIPI-DSI | Support 2 MIPI DPHY 2.0 or CPHY 1.1 interface, support max resolution 4K@60Hz; |
| | 1 * DP1.4 | Support one DP TX 1.4a interface which combo with USB3.1 Gen1, support 1/2/4lanes for each interface, up to 7680x4320@30Hz; Support HDCP2.3, HDCP 1.3 |
| | 1 * BT.1120 | Up to 1920x1080@60Hz, support RGB(up to 8bit) format, up to 150MHz data rate |
| | Multi screen display | Up to four-screen output with different displays can be achieved (1 * HDMI + 2 * MIPI DSI + 1 * DP) |
| Audio | 2 * I2S (8ch) | Up to 8 channels TX and 8 channels RX path, audio resolution from 16bits to 32bits, Sample rate up to 192KHz |
| | 2 * I2S (2ch) | Up to 2 channels TX and 2 channels RX path, audio resolution from 16bits to 32bits, Sample rate up to 192KHz |
| | 2 * SPDIF | Two 16-bit audio data store together in one 32-bit wide location, support biphase format stereo audio data output |
| | 2 * PDM (8ch) | Up to 8 channels, audio resolution from 16bits to 24bits, sample rate up to 192KHz |
| SATA | 2 * SATA3.0 | 2 * SATA3.0 |
| PCIe | 2 * PCIe2.1 | 2 * PCIe2.1 |
| USB | 3 * USB3.0 | 3 * USB3.0 |
| | 2 * USB2.0 Host | 2 * USB2.0 Host |
| | 1 * USB2.0 OTG | 1 * USB2.0 OTG |
| I2C | 9 * I2C | Support 7bits and 10bits address mode, data on the I2C-bus can be transferred at rates of up to 100k bits/s in the Standard-mode, up to 400k bits/s in the Fast-mode |
| SPI | 5 * SPI | Support two chip-select output, support serial-master and serial-slave mode, software-configurable |
| UART | 10 * UART | Embedded two 64-byte FIFO for TX and RX operation respectively, support 5bit, 6bit, 7bit, 8bit serial data transmit or receive, support different input clock for UART operation to get up to 4Mbps baud rate |
| CAN | 3 * CAN 2.0B | Support transmit or receive CAN standard frame |
| PWM | 16 * PWM | Embedded 32-bit timer/counter facility, support capture mode |
| ADC | 12* ADC | 12-bit resolution, up to 1MS/s sampling rate |
| GPIO | GPIOs | All of GPIOs can be used to generate interrupt |

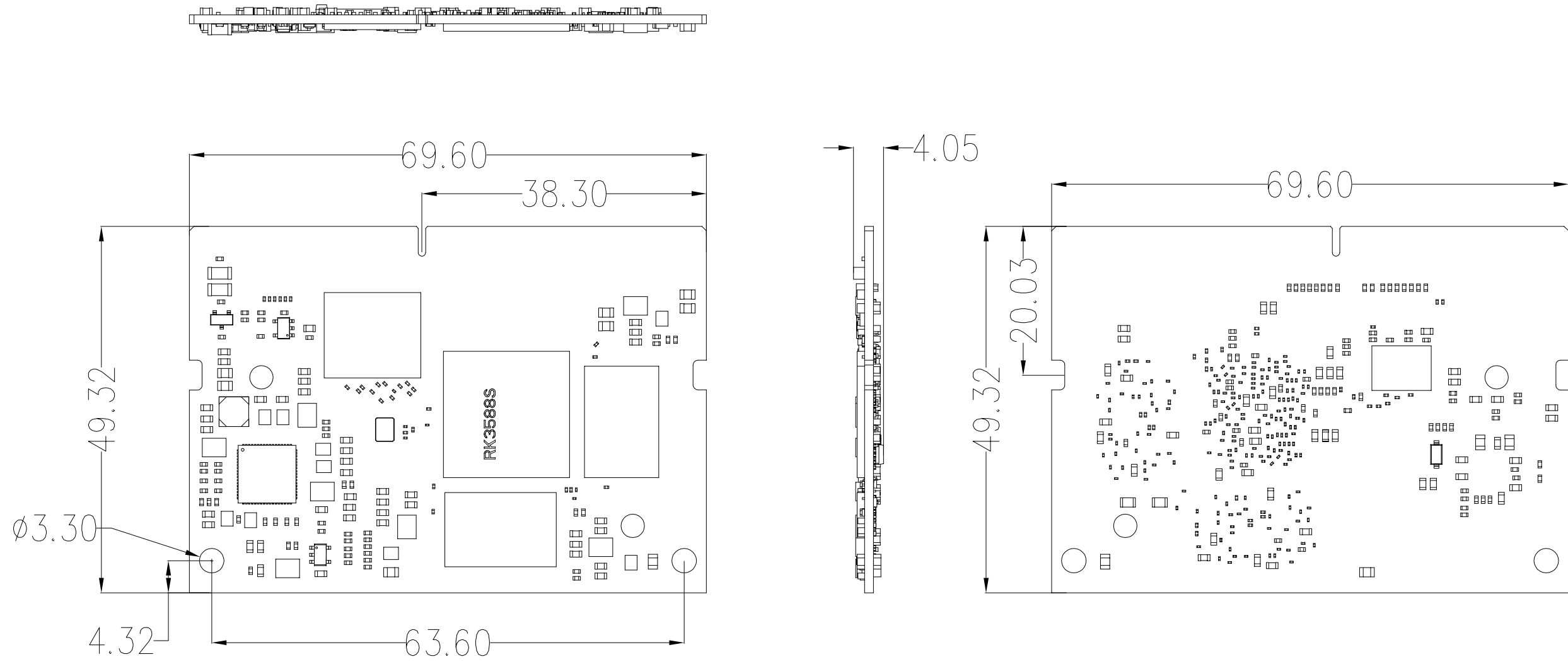
Core board Interface description



Main Interface

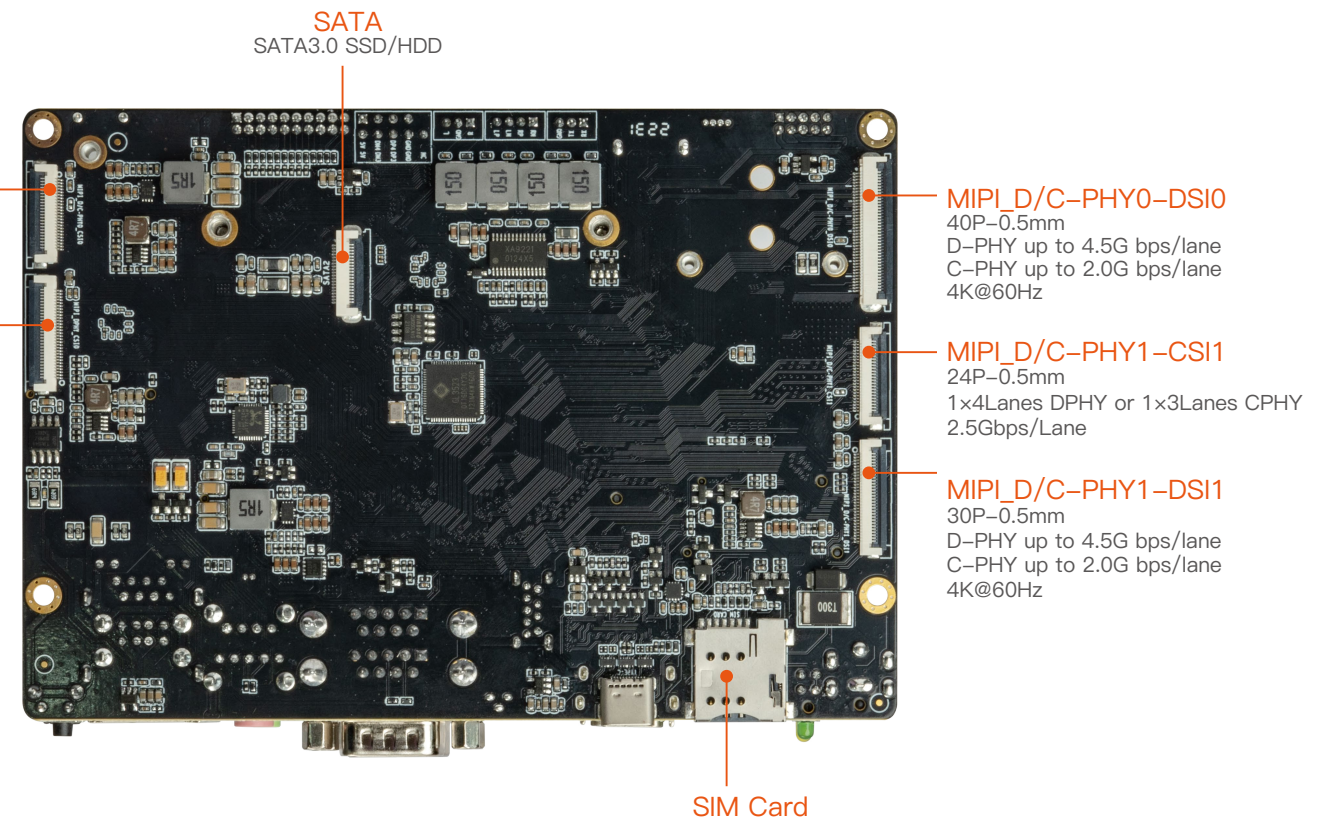
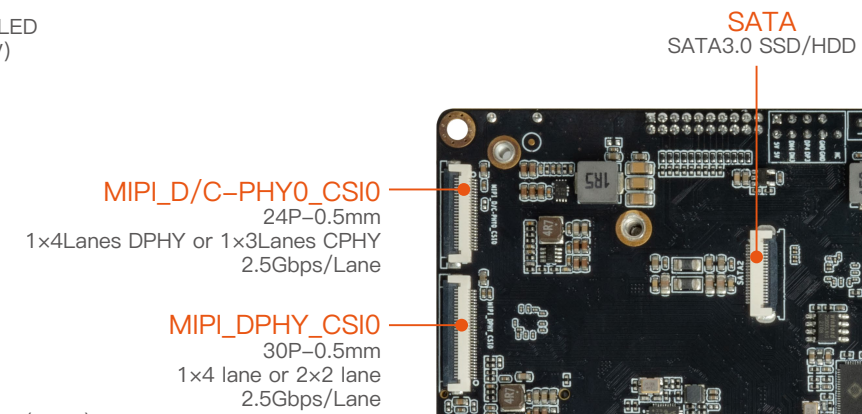
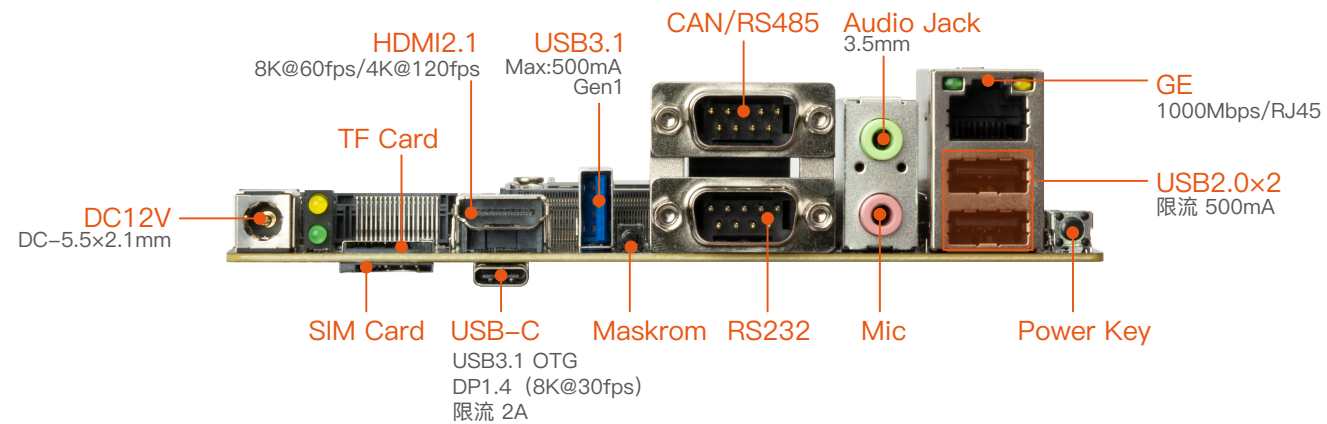
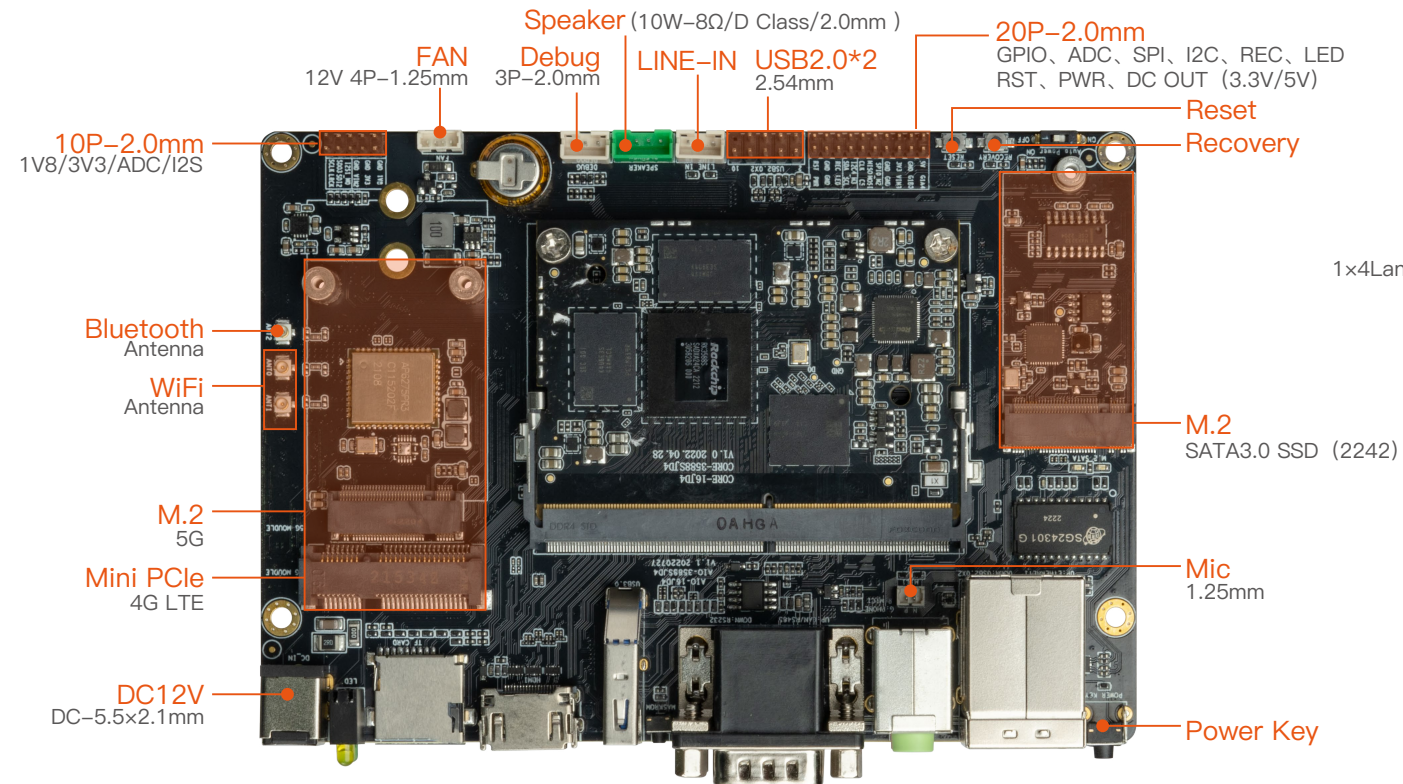
| Network | Video input | Video output | Audio | PCIe/SATA/USB | Others |
|---|--|--|--|---|--|
| GMAC(RGMII/RMII) WIFI 6/5 (PCIe/SDIO) 5G/4G (PCIe/USB3.0) | 1 * MIPI CSI (4 Lane) 2 * MIPI D/C PHY 1 * DVP | 1 * HDMI2.1 TX/eDP 1.3 1 * DP 1.4a 2 * MIPI DSI 1 * BT.1120 | 2 * I2S (8-channel) 2 * I2S (2-channel) 2 * PDM (8-channel) 2 * SPDIF | 2 * SATA3.0 2 * PCIe2.1 3 * USB3.0 2 * USB2.0 Host 1 * USB2.0 OTG | 1 * SDIO3.0 9 * I2C 5 * SPI 3 * CAN 2.0B 10 * UART 16 * PWM |

Core board Dimension

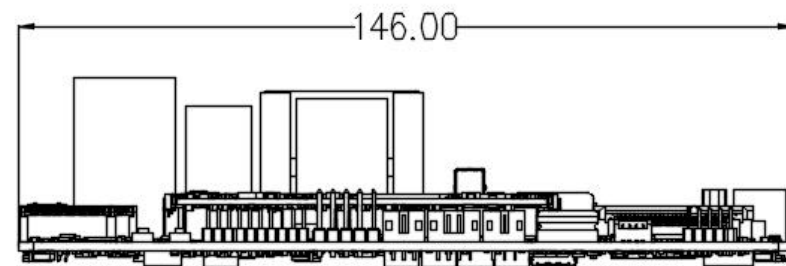
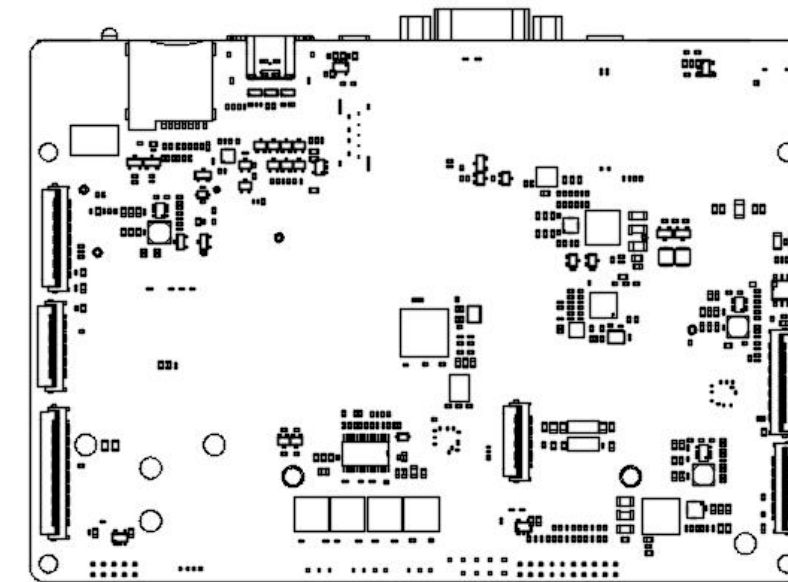
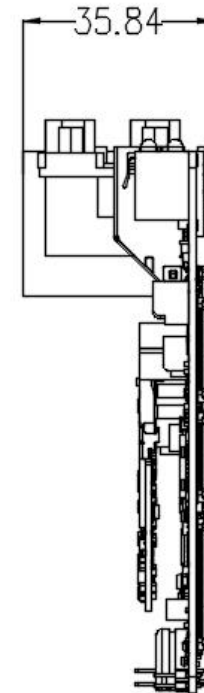
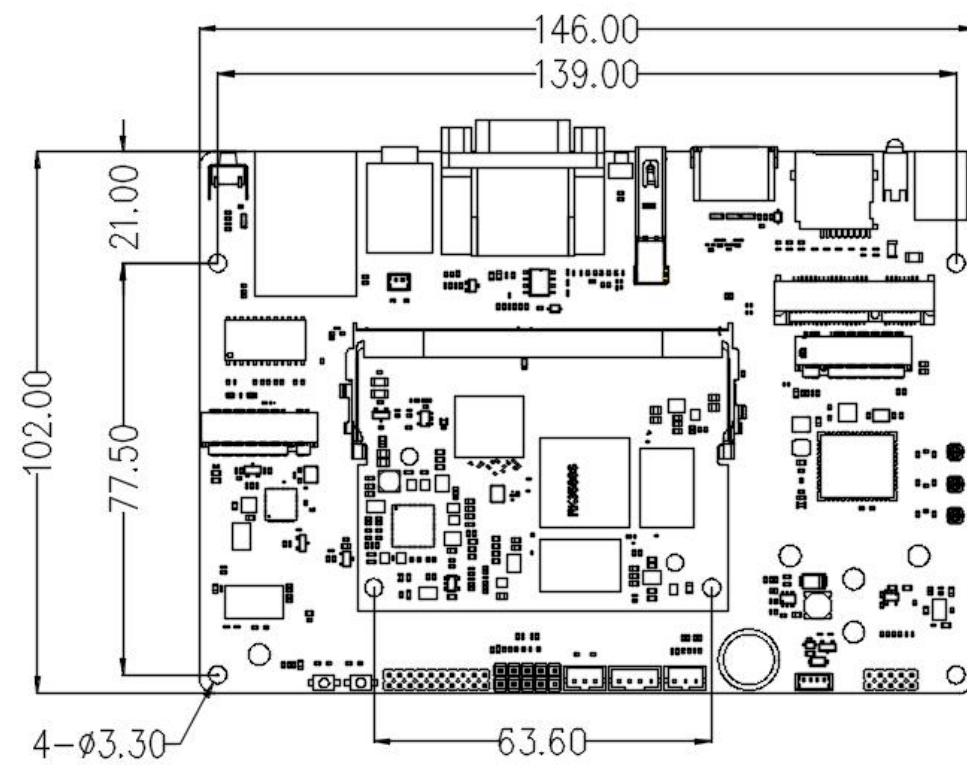




Mainboard Interface description



Mainboard Dimension





Interface definition

Pad types: I = input, O = output, I/O = input/output (bidirectional); AI/O=Analog Input/Output; G= Ground , P = power supply , DOWN = Internal pull down , UP = Internal pull UP L = Lowe Level H = High level"

| PIN | CORE-3588SJD4 pin definition | RK3588S Pin NO. | Pad type | IO Pull | Function for Main BOARD(MB-JD4-RK3588S) | Defual function description | IO Power domain |
|-----|---|-----------------|----------|---------|---|-------------------------------|-----------------|
| 1 | GND | | | G | GND | GND | GND |
| 3 | CIF_D3/BT1120_D3/I2S1_SCLK_M0/DDRPHY_CH0_DTB_3/UART0_TX_M2/GPIO4_A3_d | AY19 | DWON | I/O | UART0_TX_M2 | UART0_TX_M2 | 3.3V |
| 5 | CIF_CLKOUT/BT1120_D10/I2S1_SDO3_M0/DPO_HPDIN_M0/SPDIF0_TX_M1/DDRPHY_CH3_DTB0/UART9_TX_M1/PWM11_IR_M1/GPIO4_B4_u | AV27 | UP | I/O | I2S1_SDO3_M0 | I2S1_SDO3_M0 | 3.3V |
| 7 | GND | | | G | GND | GND | GND |
| 9 | USB20_HOST0_DM | AV6 | | AI/O | USB20_HOST0_DM | USB20_HOST0_DM | - |
| 11 | USB20_HOST0_DP | AW6 | | AI/O | USB20_HOST0_DP | USB20_HOST0_DP | - |
| 13 | USB20_HOST1_DM | AW7 | | AI/O | USB20_HOST1_DM | USB20_HOST1_DM | - |
| 15 | USB20_HOST1_DP | AV7 | | AI/O | USB20_HOST1_DP | USB20_HOST1_DP | - |
| 17 | TYPEC1_USB20_OTG_DM | AY10 | | AI/O | TYPEC0_OTG_DM | TYPEC0_OTG_DM (System update) | - |
| 19 | TYPEC0_USB20_OTG_DP | AY11 | | AI/O | TYPEC0_OTG_DP | TYPEC0_OTG_DP (System update) | - |
| 21 | GND | | | G | GND | GND | GND |
| 23 | HDMI_TX0_SBDN/EDP_TX0_AUXN | AY1 | | I | HDMI0_TX_SBDN | HDMI0_TX_SBDN | - |
| 25 | HDMI_TX0_SBDP/EDP_TX0_AUXP | BA1 | | I | HDMI0_TX_SBDP | HDMI0_TX_SBDP | - |
| 27 | HDMI_TX0_D3N/EDP_TX0_D3N | BB2 | | O | HDMI0_TX3N | HDMI0_TX3N | - |
| 29 | HDMI_TX0_D3P/EDP_TX0_D3P | BA2 | | O | HDMI0_TX3P | HDMI0_TX3P | - |
| 31 | HDMI_TX0_D0N/EDP_TX0_D0N | BA4 | | O | HDMI0_TX0N | HDMI0_TX0N | - |
| 33 | HDMI_TX0_D0P/EDP_TX0_D0P | BB4 | | O | HDMI0_TX0P | HDMI0_TX0P | - |
| 35 | HDMI_TX0_D1N/EDP_TX0_D1N | BB5 | | O | HDMI0_TX1N | HDMI0_TX1N | - |
| 37 | HDMI_TX0_D1P/EDP_TX0_D1P | BA5 | | O | HDMI0_TX1P | HDMI0_TX1P | - |
| 39 | HDMI_TX0_D2N/EDP_TX0_D2N | BA7 | | O | HDMI0_TX2N | HDMI0_TX2N | - |
| 41 | HDMI_TX0_D2P/EDP_TX0_D2P | BB7 | | O | HDMI0_TX2P | HDMI0_TX2P | - |
| 43 | GND | | | G | GND | GND | GND |
| 45 | TYPEC0_SSRX1N/DPO_TX0N | BA10 | | AI/O | TYPEC0_SSRX1N | TYPEC0_SSRX1N | - |
| 47 | TYPEC0_SSRX1P/DPO_TX0P | BB10 | | AI/O | TYPEC0_SSRX1P | TYPEC0_SSRX1P | - |



Interface definition

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|----|--|------|--|------|--|--|-----|
| 49 | TYPECO_SSTX1P/DP0_TX1P | BB11 | | AI/O | TYPECO_SSTX1P | TYPECO_SSTX1P | - |
| 51 | TYPECO_SSTX1N/DP0_TX1N | BA11 | | AI/O | TYPECO_SSTX1N | TYPECO_SSTX1N | - |
| 53 | TYPECO_SSRX2N/DP0_TX2N | BA13 | | AI/O | TYPECO_SSRX2N | TYPECO_SSRX2N | - |
| 55 | TYPECO_SSRX2P/DP0_TX2P | BB13 | | AI/O | TYPECO_SSRX2P | TYPECO_SSRX2P | - |
| 57 | TYPECO_SSTX2P/DP0_TX3P | BB14 | | AI/O | TYPECO_SSTX2P | TYPECO_SSTX2P | - |
| 59 | TYPECO_SSTX2N/DP0_TX3N | BA14 | | AI/O | TYPECO_SSTX2N | TYPECO_SSTX2N | - |
| 61 | GND | | | G | GND | GND | GND |
| 63 | MIPI_DPHY1_TX_D0N/MIPI_CPHY1_TX_TRIO0_A | BA16 | | O | MIPI_DPHY1_TX_D0N | MIPI_DPHY1_TX_D0N | - |
| 65 | MIPI_DPHY1_TX_D0P/MIPI_CPHY1_TX_TRIO0_B | BB16 | | O | MIPI_DPHY1_TX_D0P | MIPI_DPHY1_TX_D0P | - |
| 67 | MIPI_DPHY1_TX_D1N/MIPI_CPHY1_TX_TRIO0_C | BB17 | | O | MIPI_DPHY1_TX_D1N | MIPI_DPHY1_TX_D1N | - |
| 69 | MIPI_DPHY1_TX_D1P/MIPI_CPHY1_TX_TRIO1_A | BA17 | | O | MIPI_DPHY1_TX_D1P | MIPI_DPHY1_TX_D1P | - |
| 71 | MIPI_DPHY1_TX_CLKN/MIPI_CPHY1_TX_TRIO1_B | BA19 | | O | MIPI_DPHY1_TX_CLKN | MIPI_DPHY1_TX_CLKN | - |
| 73 | MIPI_DPHY1_TX_CLKP/MIPI_CPHY1_TX_TRIO1_C | BB19 | | O | MIPI_DPHY1_TX_CLKP | MIPI_DPHY1_TX_CLKP | - |
| 75 | MIPI_DPHY1_TX_D2N/MIPI_CPHY1_TX_TRIO2_A | BB20 | | O | MIPI_DPHY1_TX_D2N | MIPI_DPHY1_TX_D2N | - |
| 77 | MIPI_DPHY1_TX_D2P/MIPI_CPHY1_TX_TRIO2_B | BA20 | | O | MIPI_DPHY1_TX_D2P | MIPI_DPHY1_TX_D2P | - |
| 79 | MIPI_DPHY1_TX_D3N/MIPI_CPHY1_TX_TRIO2_C | BA22 | | O | MIPI_DPHY1_TX_D3N | MIPI_DPHY1_TX_D3N | - |
| 81 | MIPI_DPHY1_TX_D3P/NO_USE | BB22 | | O | MIPI_DPHY1_TX_D3P | MIPI_DPHY1_TX_D3P | - |
| 83 | MIPI_DPHY1_RX_D0N/MIPI_CPHY1_RX_TRIO0_A | BB23 | | O | MIPI_DPHY1_RX_D0N/MIPI_CPHY1_RX_TRIO0_A | MIPI_DPHY1_RX_D0N/MIPI_CPHY1_RX_TRIO0_A | - |
| 85 | MIPI_DPHY1_RX_D0P/MIPI_CPHY1_RX_TRIO0_B | BA23 | | O | MIPI_DPHY1_RX_D0P/MIPI_CPHY1_RX_TRIO0_B | MIPI_DPHY1_RX_D0P/MIPI_CPHY1_RX_TRIO0_B | - |
| 87 | MIPI_DPHY1_RX_D1N/MIPI_CPHY1_RX_TRIO0_C | BA25 | | O | MIPI_DPHY1_RX_D1N/MIPI_CPHY1_RX_TRIO0_C | MIPI_DPHY1_RX_D1N/MIPI_CPHY1_RX_TRIO0_C | - |
| 89 | MIPI_DPHY1_RX_D1P/MIPI_CPHY1_RX_TRIO1_A | BB25 | | O | MIPI_DPHY1_RX_D1P/MIPI_CPHY1_RX_TRIO1_A | MIPI_DPHY1_RX_D1P/MIPI_CPHY1_RX_TRIO1_A | - |
| 91 | MIPI_DPHY1_RX_CLKN/MIPI_CPHY1_RX_TRIO1_B | BB26 | | O | MIPI_DPHY1_RX_CLKN/MIPI_CPHY1_RX_TRIO1_B | MIPI_DPHY1_RX_CLKN/MIPI_CPHY1_RX_TRIO1_B | - |
| 93 | MIPI_DPHY1_RX_CLKP/MIPI_CPHY1_RX_TRIO1_C | BA26 | | O | MIPI_DPHY1_RX_CLKP/MIPI_CPHY1_RX_TRIO1_C | MIPI_DPHY1_RX_CLKP/MIPI_CPHY1_RX_TRIO1_C | - |
| 95 | MIPI_DPHY1_RX_D2N/MIPI_CPHY1_RX_TRIO2_A | BA28 | | O | MIPI_DPHY1_RX_D2N/MIPI_CPHY1_RX_TRIO2_A | MIPI_DPHY1_RX_D2N/MIPI_CPHY1_RX_TRIO2_A | - |
| 97 | MIPI_DPHY1_RX_D2P/MIPI_CPHY1_RX_TRIO2_B | BB28 | | O | MIPI_DPHY1_RX_D2P/MIPI_CPHY1_RX_TRIO2_B | MIPI_DPHY1_RX_D2P/MIPI_CPHY1_RX_TRIO2_B | - |



Interface definition

| | | | | | | | |
|-----|--|------|--|---|--|--|-----|
| 99 | MIPI_DPHY1_RX_D3N/MIPI_CPHY1_RX_TRIO2_C | BB29 | | O | MIPI_DPHY1_RX_D3N/MIPI_CPHY1_RX_TRIO2_C | MIPI_DPHY1_RX_D3N/MIPI_CPHY1_RX_TRIO2_C | - |
| 101 | MIPI_DPHY1_RX_D3P/NO_USE | BA29 | | O | MIPI_DPHY1_RX_D3P | MIPI_DPHY1_RX_D3N/MIPI_CPHY1_RX_TRIO2_C | - |
| 103 | GND | | | G | GND | GND | GND |
| 105 | MIPI_DPHY0_TX_D0N/MIPI_CPHY0_TX_TRIO0_A | BA31 | | O | MIPI_DPHY0_TX_D0N/MIPI_CPHY0_TX_TRIO0_A | MIPI_DPHY0_TX_D0N/MIPI_CPHY0_TX_TRIO0_A | - |
| 107 | MIPI_DPHY0_TX_D0P/MIPI_CPHY0_TX_TRIO0_B | BB31 | | O | MIPI_DPHY0_TX_D0P/MIPI_CPHY0_TX_TRIO0_B | MIPI_DPHY0_TX_D0P/MIPI_CPHY0_TX_TRIO0_B | - |
| 109 | MIPI_DPHY0_TX_D1N/MIPI_CPHY0_TX_TRIO0_C | BB32 | | O | MIPI_DPHY0_TX_D1N/MIPI_CPHY0_TX_TRIO0_C | MIPI_DPHY0_TX_D1N/MIPI_CPHY0_TX_TRIO0_C | - |
| 111 | MIPI_DPHY0_TX_D1P/MIPI_CPHY0_TX_TRIO1_A | BA32 | | O | MIPI_DPHY0_TX_D1P/MIPI_CPHY0_TX_TRIO1_A | MIPI_DPHY0_TX_D1P/MIPI_CPHY0_TX_TRIO1_A | - |
| 113 | MIPI_DPHY0_TX_CLKN/MIPI_CPHY0_TX_TRIO1_B | BA34 | | O | MIPI_DPHY0_TX_CLKN/MIPI_CPHY0_TX_TRIO1_B | MIPI_DPHY0_TX_CLKN/MIPI_CPHY0_TX_TRIO1_B | - |
| 115 | MIPI_DPHY0_TX_CLKP/MIPI_CPHY0_TX_TRIO1_C | BB34 | | O | MIPI_DPHY0_TX_CLKP/MIPI_CPHY0_TX_TRIO1_C | MIPI_DPHY0_TX_CLKP/MIPI_CPHY0_TX_TRIO1_C | - |
| 117 | MIPI_DPHY0_TX_D2N/MIPI_CPHY0_TX_TRIO2_A | BB35 | | O | MIPI_DPHY0_TX_D2N/MIPI_CPHY0_TX_TRIO2_A | MIPI_DPHY0_TX_D2N/MIPI_CPHY0_TX_TRIO2_A | - |
| 119 | MIPI_DPHY0_TX_D2P/MIPI_CPHY0_TX_TRIO2_B | BA35 | | O | MIPI_DPHY0_TX_D2P/MIPI_CPHY0_TX_TRIO2_B | MIPI_DPHY0_TX_D2P/MIPI_CPHY0_TX_TRIO2_B | - |
| 121 | MIPI_DPHY0_TX_D3N/MIPI_CPHY0_TX_TRIO2_C | BA37 | | O | MIPI_DPHY0_TX_D3N/MIPI_CPHY0_TX_TRIO2_C | MIPI_DPHY0_TX_D3N/MIPI_CPHY0_TX_TRIO2_C | - |
| 123 | MIPI_DPHY0_TX_D3P/NO_USE | BB37 | | O | MIPI_DPHY0_TX_D3P | MIPI_DPHY0_TX_D3P | - |
| 125 | MIPI_DPHY0_RX_D0N/MIPI_CPHY0_RX_TRIO0_A | BB38 | | I | MIPI_DPHY0_RX_D0N/MIPI_CPHY0_RX_TRIO0_A | MIPI_DPHY0_RX_D0N/MIPI_CPHY0_RX_TRIO0_A | - |
| 127 | MIPI_DPHY0_RX_D0P/MIPI_CPHY0_RX_TRIO0_B | BA38 | | I | MIPI_DPHY0_RX_D0P/MIPI_CPHY0_RX_TRIO0_B | MIPI_DPHY0_RX_D0P/MIPI_CPHY0_RX_TRIO0_B | - |
| 129 | MIPI_DPHY0_RX_D1N/MIPI_CPHY0_RX_TRIO0_C | AY40 | | I | MIPI_DPHY0_RX_D1N/MIPI_CPHY0_RX_TRIO0_C | MIPI_DPHY0_RX_D1N/MIPI_CPHY0_RX_TRIO0_C | - |
| 131 | MIPI_DPHY0_RX_D1P/MIPI_CPHY0_RX_TRIO1_A | BA40 | | I | MIPI_DPHY0_RX_D1P/MIPI_CPHY0_RX_TRIO1_A | MIPI_DPHY0_RX_D1P/MIPI_CPHY0_RX_TRIO1_A | - |
| 133 | MIPI_DPHY0_RX_CLKN/MIPI_CPHY0_RX_TRIO1_B | BA41 | | I | MIPI_DPHY0_RX_CLKN/MIPI_CPHY0_RX_TRIO1_B | MIPI_DPHY0_RX_CLKN/MIPI_CPHY0_RX_TRIO1_B | - |
| 135 | MIPI_DPHY0_RX_CLKP/MIPI_CPHY0_RX_TRIO1_C | BB41 | | I | MIPI_DPHY0_RX_CLKP/MIPI_CPHY0_RX_TRIO1_C | MIPI_DPHY0_RX_CLKP/MIPI_CPHY0_RX_TRIO1_C | - |



Interface definition

| | | | | | | | |
|-----|---|------|----|------|---|---|------|
| 137 | MIPI_DPHY0_RX_D2N/MIPI_CPHY0_RX_Trio2_A | BA42 | | I | MIPI_DPHY0_RX_D2N/MIPI_CPHY0_RX_TRIO2_A | MIPI_DPHY0_RX_D2N/MIPI_CPHY0_RX_TRIO2_A | - |
| 139 | MIPI_DPHY0_RX_D2P/MIPI_CPHY0_RX_TRIO2_B | AY42 | | I | MIPI_DPHY0_RX_D2P/MIPI_CPHY0_RX_TRIO2_B | MIPI_DPHY0_RX_D2P/MIPI_CPHY0_RX_TRIO2_B | - |
| 141 | MIPI_DPHY0_RX_D3N/MIPI_CPHY0_RX_TRIO2_C | AW42 | | I | MIPI_DPHY0_RX_D3N/MIPI_CPHY0_RX_TRIO2_C | MIPI_DPHY0_RX_D3N/MIPI_CPHY0_RX_TRIO2_C | - |
| 143 | MIPI_DPHY0_RX_D3P/NO_USE | AW41 | | I | MIPI_DPHY0_RX_D3P | MIPI_DPHY0_RX_D3P | - |
| 145 | TYPECO_USB20_VBUSDET | AV10 | | I | TYPECO_OTG_VBUSDET | TYPECO_OTG_VBUSDET, Active H | 3.3V |
| 147 | MIPI_CSIO_CLK1P | AU41 | | I | MIPI_CSIO_RX_CLK1P | MIPI_CSIO_RX_CLK1P | - |
| 149 | MIPI_CSIO_CLK1N | AU42 | | I | MIPI_CSIO_RX_CLK1N | MIPI_CSIO_RX_CLK1N | - |
| 151 | MIPI_CSIO_D2N | AT42 | | I | MIPI_CSIO_RX_D2N | MIPI_CSIO_RX_D2N | - |
| 153 | MIPI_CSIO_D2P | AT41 | | I | MIPI_CSIO_RX_D2P | MIPI_CSIO_RX_D2P | - |
| 155 | MIPI_CSIO_D3N | AP41 | | I | MIPI_CSIO_RX_D3N | MIPI_CSIO_RX_D3N | - |
| 157 | MIPI_CSIO_D3P | AP42 | | I | MIPI_CSIO_RX_D3P | MIPI_CSIO_RX_D3P | - |
| 159 | MIPI_CSIO_CLK0P | AN42 | | I | MIPI_CSIO_RX_CLK0P | MIPI_CSIO_RX_CLK0P | - |
| 161 | MIPI_CSIO_CLK0N | AN41 | | I | MIPI_CSIO_RX_CLK0N | MIPI_CSIO_RX_CLK0N | - |
| 163 | MIPI_CSIO_D0N | AL41 | | I | MIPI_CSIO_RX_D0N | MIPI_CSIO_RX_D0N | - |
| 165 | MIPI_CSIO_D0P | AL42 | | I | MIPI_CSIO_RX_D0P | MIPI_CSIO_RX_D0P | - |
| 167 | MIPI_CSIO_D1N | AK42 | | I | MIPI_CSIO_RX_D1N | MIPI_CSIO_RX_D1N | - |
| 169 | MIPI_CSIO_D1P | AK41 | | I | MIPI_CSIO_RX_D1P | MIPI_CSIO_RX_D1P | - |
| 171 | GND | | | G | GND | GND | GND |
| 173 | PCIE20_0_RXP/SATA30_0_RXP | J42 | | I | PCIE20_0_RXP | PCIE20_0_RXP | - |
| 175 | PCIE20_0_RXN/SATA30_0_RXN | J41 | | I | PCIE20_0_RXN | PCIE20_0_RXN | - |
| 177 | PCIE20_0_TXP/SATA30_0_TXP | H41 | | O | PCIE20_0_TXP | PCIE20_0_TXP | - |
| 179 | PCIE20_0_TXN/SATA30_0_TXN | H42 | | O | PCIE20_0_TXN | PCIE20_0_TXN | - |
| 181 | PCIE20_0_REFCLKN | K41 | | AI/O | PCIE20_0_REFCLKN | PCIE20_0_REFCLKN | - |
| 183 | PCIE20_0_REFCLKP | L42 | | AI/O | PCIE20_0_REFCLKP | PCIE20_0_REFCLKP | - |
| 185 | GND | | | G | GND | GND | GND |
| 187 | MIPI_CAMERA1_CLK_M0/SPDIF0_TX_M0/I2C5_SCL_M3/UART1_TX_M1/GPIO1_B6_u | L38 | UP | I/O | I2C5_SCL_M3_CAM | I2C5_SCL_M3_CAM | 1.8V |
| 189 | MIPI_CAMERA2_CLK_M0/SPDIF1_TX_M0/SATA2_ACT_LED_M1/I2C5_SDA_M3/UART1_RX_M1/PWM13_M2/GPIO1_B7_u | F37 | UP | I/O | I2C5_SDA_M3_CAM | I2C5_SDA_M3_CAM | 1.8V |



Interface definition

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|-----|--|-----|------|------|----------------|---|---------|
| 191 | GND | | | G | GND | GND | GND |
| 193 | PDM1_CLK0_M1/UART7_RX_M2/SPI0_CS0_M2/GPIO1_B4_u | M39 | UP | I/O | SPI0_CS0_M2 | SPI0_CS0_M2 | 1.8V |
| 195 | MIPI_CAMERA3_CLK_M0/I2C8_SCL_M2/UART1_RTSN_M1/PWM14_M2/GPIO1_D6_u | L37 | UP | I/O | MIPI_CAM_MCLK3 | MIPI_CAM_MCLK3 Output | 1.8V |
| 197 | MIPI_CAMERA4_CLK_M0/I2C8_SDA_M2/UART1_CTSN_M1/PWM15_IR_M3/GPIO1_D7_u | G38 | UP | I/O | MIPI_CAM_MCLK4 | MIPI_CAM_MCLK4 Output | 1.8V |
| 199 | PDM1_SDI0_M1/PCIE20X1_1_PERSTN_M2/PWM3_IR_M3/SPI2_CS0_M0/GPIO1_A7_u | H38 | UP | I/O | MIPI_PDN1_CAM | MIPI_PDN1_CAM | 1.8V |
| 201 | PDM1_SDI1_M1/SPI2_CS1_M0/GPIO1_B0_u | H39 | UP | I/O | GPIO1_B0_u | GPIO1_B0_u | 1.8V |
| 203 | PDM1_SDI2_M1/SPI0_MISO_M2/GPIO1_B1_d | G39 | DWON | I/O | SPI0_MISO_M2 | SPI0_MISO_M2 | 1.8V |
| 205 | GND | | | G | GND | GND | GND |
| 207 | PCIE20_2_REFCLKP | F41 | | AI/O | NC | NC (PCIE20_2_REFCLKP) | - |
| 209 | PCIE20_2_REFCLKN | F42 | | AI/O | NC | NC (PCIE20_2_REFCLKN) | - |
| 211 | PCIE20_2_TXP/SATA30_2_TXP/USB30_2_SSTXP | E41 | | O | USB30_2_SSTXP | USB30_2_SSTXP | - |
| 213 | PCIE20_2_TXN/SATA30_2_TXN/USB30_2_SSTXN | D41 | | O | USB30_2_SSTXN | USB30_2_SSTXN | - |
| 215 | PCIE20_2_RXP/SATA30_2_RXP/USB30_2_SSRXP | D42 | | I | USB30_2_SSRXP | USB30_2_SSRXP | - |
| 217 | PCIE20_2_RXN/SATA30_2_RXN/USB30_2_SSRXN | C42 | | I | USB30_2_SSRXN | USB30_2_SSRXN | - |
| 219 | GND | | | | GND | GND | GND |
| 221 | POWER_ON | | | | PWRON_L | Power Key Input,Active L | 5.0V |
| 223 | VDC | | | | VDC | PMIC Power_EN Input, Active H--Power-on and power-on signal input, NC can be used without this function | 1V~4.0V |
| 225 | VCC_3V3_S3 | | | | VCC_3V3_S3 | 3.3V Output (Pin224/225/226/227 Total Max:500mA) | 3.3V |
| 227 | VCC_3V3_S3 | | | | VCC_3V3_S3 | | 3.3V |
| 229 | VCC_1V8_S3 | | | | VCC_1V8_S3 | 1.8V Output (Pin228/229 Total Max:500mA) | 1.8V |
| 231 | VCCA_1V8_S0 | | | | VCCA_1V8_S0 | 1.8V Output (Pin230/231 Total Max:100mA) | 1.8V |
| 233 | VCCA (TO RK806-1) | | | | VCCA | Power supply of PMIC Power on circuit | 5.0V |
| 235 | VCCA_3V3_S0 | | | | VCCA_3V3_S0 | 3.3V Output (Pin234/235 Total Max:100mA) | 3.3V |
| 237 | CORE-ID | | | | NC | NC | 3.3V |



Interface definition

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|------------|---|------------------------|-----------------|----------------|--|--|------------------------|
| 239 | VCCIO5_CTL | | | | NC | VCCIO5_CTL Input: NC (default) or L : VCCIO5=1.8V, H:VCCIO5=3.3V | 3.3V |
| 241 | GND | | G | | GND | GND | GND |
| 243 | GND | | G | | | | GND |
| 245 | GND | | G | | | | GND |
| 247 | GND | | G | | | | GND |
| 249 | GND | | G | | | | GND |
| 251 | VCC4V0 | | P | | VCC4V0_SYS Input | Input Voltage 4.0V +/-5% Min: 0.04W(4.0V/10mA) Normal: 1.6W(4.0V/400mA) Max: 12W(4.0V/3000mA) Recommended Power Supply: 4.0V/3.5A | 4.0V |
| 253 | VCC4V0 | | P | | | | 4.0V |
| 255 | VCC4V0 | | P | | | | 4.0V |
| 257 | VCC4V0 | | P | | | | 4.0V |
| 259 | VCC4V0 | | P | | | | 4.0V |
| PIN | CORE-3588SD4 pin definition | RK3588S Pin NO. | Pad type | IO Pull | Function for Main BOARD(MB-JD4-RK3588S) | Defual function description | IO Power domain |
| 2 | GND | | | G | GND | GND | GND |
| 4 | SDMMC_D1/PDM1_SDI2_M0/JTAG_TMS_M1/I2C3_SDA_M4/UART2_RX_M1/PWM9_M1/GPIO4_D1_u | AR2 | UP | I/O | SDMMC_D1 | SDMMC_D1 to TF Card, | 3.3V/1.8V Auto |
| 6 | SDMMC_CLK/PDM1_CLK0_M0/TEST_CLKOUT_M0/MCU_JTAG_TMS_M0/CAN0_RX_M1/UART5_TX_M0/GPIO4_D5_d | AR1 | DWON | I/O | SDMMC_CLK | SDMMC_CLK to TF Card, | |
| 8 | SDMMC_D3/PDM1_SDI0_M0/JTAG_TMS_M0/I2C8_SDA_M0/UART5_RTSN_M0/PWM10_M1/GPIO4_D3_u | AT1 | UP | I/O | SDMMC_D3 | SDMMC_D3 to TF Card, | |
| 10 | SDMMC_CMD/PDM1_CLK1_M0/MCU_JTAG_TCK_M0/CAN0_TX_M1/UART5_RX_M0/PWM7_IR_M1/GPIO4_D4_u | AU1 | UP | I/O | SDMMC_CMD | SDMMC_CMD to TF Card, | |
| 12 | SDMMC_D2/PDM1_SDI1_M0/JTAG_TCK_M0/I2C8_SCL_M0/UART5_CTSN_M0/GPIO4_D2_u | AV1 | UP | I/O | SDMMC_D2 | SDMMC_D2 to TF Card, | |
| 14 | SDMMC_D0/PDM1_SDI3_M0/JTAG_TCK_M1/I2C3_SCL_M4/UART2_TX_M1/PWM8_M1/GPIO4_D0_u | AV2 | UP | I/O | SDMMC_D0 | SDMMC_D0 to TF Card, | |
| 16 | SDMMC_DET/GPIO0_A4_u | AC38 | UP | I/O | SDMMC_DET_L | SDMMC0_DET Input, Active L | 1.8V |
| 18 | GND | | | G | GND | GND | GND |
| 20 | TYPEC0_USB20_OTG_ID | AW10 | | I | NC | NC (TYPEC0_USB20_OTG_ID, Active L) | 3.3V |
| 22 | CIF_CLKIN/BT1120_CLKOUT/I2S1_SDI3_M0/DDRPHY_CH2_DTB0/I2C6_SDA_M3/UART8_TX_M0/SPI2_CS1_M1/GPIO4_B0_d | AW27 | DWON | I/O | I2C6_SDA_M3 | I2C6_SDA_M3 | 3.3V |



Interface definition

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|----|---|------|------|------|-----------------------|----------------------------------|--------|
| 24 | MIPI_CAMERA0_CLK_M0/SPDIF1_TX_M1/I2S1_SDO0_M0/SATA2_ACT_LED_M0/DDRPHY_CH2_DTB1/I2C6_SCL_M3/UART8_RX_M0/SPI0_CS1_M1/GPIO4_B1_u | AU22 | UP | I/O | I2C6_SCL_M3 | I2C6_SCL_M3 | 3.3V |
| 26 | TYPECO_SBU2/DP0_AUXN | BB8 | | AI/O | TYPECO_SBU2 | TYPECO_SBU2 | - |
| 28 | TYPECO_SBU1/DP0_AUXP | BA8 | | AI/O | TYPECO_SBU1 | TYPECO_SBU1 | - |
| 30 | CIF_D4/BT1120_D4/DDRPHY_CH1_DTB_0/I2C3_SCL_M2/UART0_RX_M2/SPI2_MISO_M1/GPIO4_A4_d | AW19 | DWON | I/O | UART0_RX_M2 | UART0_RX_M2 | 3.3V |
| 32 | CIF_D1/BT1120_D1/I2S1_SCLK_M0/PCIE20X1_1_WAKEN_M1/DDRPHY_CH0_DTB_1/UART9_CTSN_M1/SPI0_MOSI_M1/GPIO4_A1_d | AW18 | DWON | I/O | I2S1_SCLK_M0 | I2S1_SCLK_M0 output | 3.3V |
| 34 | CIF_D0/BT1120_D0/I2S1_MCLK_M0/PCIE20X1_1_CLKREQN_M1/DDRPHY_CH0_DTB0/UART9_RTSN_M1/SPI0_MISO_M1/GPIO4_A0_d | AV19 | DWON | I/O | SPK_CTL | Seaker_EN ,Active H | 3.3V |
| 36 | BT1120_D13/PCIE20X1_2_CLKREQN_M1/HDMI_TX0_SCL_M0/DDRPHY_CH3_DTB3/I2C5_SDA_M1/SPI3_CLK_M1/GPIO4_B7_u | AV22 | UP | I/O | HDMI_TX0_SCL_M0 | HDMI_TX0_SCL_M0 | 3.3V |
| 38 | BT1120_D14/PCIE20X1_2_WAKEN_M1/HDMI_TX0_SDA_M0/I2C8_SCL_M3/SPI3_CS0_M1/GPIO4_C0_u | AW23 | UP | I/O | HDMI_TX0_SDA_M0 | HDMI_TX0_SDA_M0 | 3.3V |
| 40 | HDMI_TX0_HPD_M0/SPI2_MOSI_M0/GPIO1_A5_d | M40 | DWON | I/O | HDMI_TX0_HPD_M0 | HDMITX0_HPD Input, Active H | 1.8V |
| 42 | BT1120_D15/SPDIF1_TX_M2/PCIE20X1_2_PERSTN_M1/HDMI_TX0_CEC_M0/I2C8_SDA_M3/PWM6_M1/SPI3_CS1_M1/GPIO4_C1_d | AY26 | DWON | I/O | HDMI_TX0_CEC_M0 | HDMI_TX0_CEC_M0 | 3.3V |
| 44 | BT1120_D12/SATA0_ACT_LED_M0/DDRPHY_CH3_DTB2/I2C5_SCL_M1/PWM13_M1/SPI3_MOSI_M1/GPIO4_B6_d | AW22 | DWON | I/O | HDMI0_TX_ON_H | HDMI0_TX_ON_H | 3.3V |
| 46 | BT1120_D11/DDRPHY_CH3_DTB1/UART9_RX_M1/PWM12_M1/SPI3_MISO_M1/GPIO4_B5_d | AU23 | DWON | I/O | LCD_BL_PWM | LCD_BL_PWM Output | 3.3V |
| 48 | CIF_HREF/BT1120_D8/I2S1_SDO1_M0/PCIE20X1_1_BUTTON_RSTN/DDRPHY_CH2_DTB2/I2C7_SCL_M3/UART8_RTSN_M0/PWM14_M1/SPI0_CS0_M1/CAN1_RX_M1/GPIO4_B2_u | AT15 | UP | I/O | TP1_INT | TP1_INT Input ,Active L | 3.3V |
| 50 | CIF_VSYNC/BT1120_D9/I2S1_SDO2_M0/PCIE20X1_2_BUTTON_RSTN/DDRPHY_CH2_DTB3/I2C7_SDA_M3/UART8_CTSN_M0/PWM15_IR_M1/CAN1_TX_M1/GPIO4_B3_u | AV23 | UP | I/O | LCD_RESET_L | Mipi DSI0 Reset Output ,Active L | 3.3V |
| 52 | CIF_D11/PCIE20X1_2_CLKREQN_M0/HDMI_TX0_SCL_M2/I2C5_SCL_M0/SPI3_MOSI_M3/GPIO3_C7_u | AU30 | UP | I/O | PCIE20X1_2_CLKREQN_M0 | PCIE20X1_2_CLKREQN_M0 | VCCIO5 |
| 54 | CIF_D10/SPI3_MISO_M3/GPIO3_C6_u | AV30 | UP | I/O | SDMMC_PWREN | TF Card Power EN, Active H | VCCIO5 |
| 56 | CIF_D12/PCIE20X1_2_WAKEN_M0/HDMI_TX0_SDA_M2/I2C5_SDA_M0/UART4_RX_M1/PWM8_M2/SPI3_CLK_M3/GPIO3_D0_u | AW31 | UP | I/O | PCIE20X1_2_WAKEN_M0 | PCIE20X1_2_WAKEN_M0 | VCCIO5 |
| 58 | CIF_D7/BT1120_D7/I2S1_SDI2_M0/DDRPHY_CH1_DTB3/I2C5_SDA_M2/SPI2_CS0_M1/GPIO4_A7_d | AW26 | DWON | I/O | I2S1_SDI2_M0 | I2S1_SDI2_M0 | 3.3V |
| 60 | CIF_D13/PCIE20X1_2_PERSTN_M0/UART4_TX_M1/PWM9_M2/SPI0_MISO_M3/GPIO3_D1_d | AY27 | DWON | I/O | PCIE20X1_2_PERSTN_M0 | PCIE20X1_2_PERSTN_M0 | VCCIO5 |
| 62 | CIF_D6/BT1120_D6/I2S1_SDI1_M0/DDRPHY_CH1_DTB2/I2C5_SCL_M2/UART3_RX_M2/SPI2_CLK_M1/GPIO4_A6_d | AV18 | DWON | I/O | UART3_RX_M2 | UART3_RX_M2 | 3.3V |
| 64 | I2S1_SDO3_M1/CPU_BIG1_AV5/I2C1_SDA_M2/CAN2_TX_M1/HDMI_TX0_SCL_M1/SPI3_CS1_M2/SATA_MP_SWITCH/GPIO0_D5_u | AM39 | UP | I/O | CAN2_TX_M1 | CAN2_TX_M1 | 1.8V |



Interface definition

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|-----|--|------|------|-----|------------------|--|--------|
| 66 | I2S1_SDI3_M1/PDM0_SDI1_M1/I2C6_SCL_M0/UART1_CTSN_M2/PWM7_IR_M0/SPI3_MISO_M2/GPIO0_D0_d | AG39 | DWON | I/O | BT_REG_ON_H | BT EN, Active H | 1.8V |
| 68 | CIF_D14/I2C7_SCL_M2/UART9_RTSN_M2/SPI0_MOSI_M3/GPIO3_D2_d | AY30 | DWON | I/O | UART9_RTSN_M2_BT | UART9_RTSN_M2_BT | VCCIO5 |
| 70 | CIF_D15/I2C7_SDA_M2/UART9_CTSN_M2/PWM10_M2/SPI0_CLK_M3/GPIO3_D3_d | AY31 | DWON | I/O | UART9_CTSN_M2_BT | UART9_CTSN_M2_BT | VCCIO5 |
| 72 | MCU_JTAG_TMS_M1/UART9_TX_M2/PWM11_IR_M3/SPI0_CS1_M3/GPIO3_D5_d | AW30 | DWON | I/O | UART9_TX_M2_BT | UART9_TX_M2_BT | VCCIO5 |
| 74 | HDMI_TX0_HPDM1/MCU_JTAG_TCK_M1/UART9_RX_M2/SPI0_CS0_M3/GPIO3_D4_d | AV31 | DWON | I/O | UART9_RX_M2_BT | UART9_RX_M2_BT | VCCIO5 |
| 76 | I2C0_SDA_M2 (VDD_CPU_BIG0/BIG1) | AG41 | | I/O | I2C0_SDA_M2 | I2C0_SDA_M2 (core board pull up resistance 2.2K) | 1.8V |
| 78 | I2C0_SCL_M2 (VDD_CPU_BIG0/BIG1) | AH41 | | I/O | I2C0_SCL_M2 | I2C0_SCL_M2 (core board pull up resistance 2.2K) | 1.8V |
| 80 | PDM0_CLK1_M1/PWM2_M0/UART0_RX_M0/I2C4_SDA_M2/DP0_HPDM1/GPIO0_C4_d | AL38 | DWON | I/O | CC_INT0_L | Type-C insert INT ,Active L | 1.8V |
| 82 | CIF_D8/FSPI_CS0N_M2/CAN2_RX_M0/UART5_TX_M1/SPI3_CS0_M3/GPIO3_C4_u | AU34 | UP | I/O | FAN_CTL | Fan EN, Active H | VCCIO5 |
| 84 | CIF_D9/FSPI_CS1N_M2/CAN2_TX_M0/UART5_RX_M1/SPI3_CS1_M3/GPIO3_C5_u | AV34 | UP | I/O | PCA9555_INT | PCA9555_INT Input ,Active L | VCCIO5 |
| 86 | CIF_D5/BT1120_D5/I2S1_SDI0_M0/DDRPHY_CH1_DTB_1/I2C3_SDA_M2/UART3_TX_M2/SPI2_MOSI_M1/GPIO4_A5_d | AU15 | DWON | I/O | UART3_TX_M2 | UART3_TX_M2 | 3.3V |
| 88 | CIF_D2/BT1120_D2/I2S1_LRCK_M0/PCIE20X1_1_PERSTN_M1/DDRPHY_CH0_DTB2/SPI0_CLK_M1/GPIO4_A2_d | AV26 | DWON | I/O | I2S1_LRCK_M0 | I2S1_LRCK_M0 | 3.3V |
| 90 | I2C2_SDA_M0 (VDD_NPU) | AM40 | | I/O | I2C2_SDA_M0 | I2C2_SDA_M0 (core board pull up resistance 2.2K) | 1.8V |
| 92 | I2C2_SCL_M0 (VDD_NPU) | AK39 | | I/O | I2C2_SCL_M0 | I2C2_SCL_M0 (core board pull up resistance 2.2K) | 1.8V |
| 94 | I2S1_SDI2_M1/PDM0_SDI0_M1/I2C6_SDA_M0/UART1_RTSN_M2/PWM6_M0/SPI0_MISO_M0/GPIO0_C7_d | AL40 | DWON | I/O | WIFI_REG_ON_H | WIFI EN, Active H | 1.8V |
| 96 | I2C1_SCL_M2/CAN2_RX_M1/HDMI_TX0_SDA_M1/SPI3_CS0_M2/SATA_CPDET/GPIO0_D4_u | AL39 | UP | I/O | CAN2_RX_M1 | CAN2_RX_M1 | 1.8V |
| 98 | I2S1_SDI1_M1/NPU_AV5/UART0_RTSN/PWM5_M1/SPI0_CLK_M0/SATA_CP_POD/GPIO0_C6_u | AH42 | UP | I/O | HOST_WAKE_BT_H | Host wake BT, Active H | 1.8V |
| 100 | I2S1_SCLK_M1/JTAG_TMS_M2/I2C1_SDA_M0/UART2_RX_M0/PCIE20X1_1_WAKEN_M0/GPIO0_B6_d | AH40 | DWON | I/O | UART2_RX_M0 | UART2_RX_M0 for system Debug | 1.8V |
| 102 | I2S1_MCLK_M1/JTAG_TCK_M2/I2C1_SCL_M0/UART2_TX_M0/PCIE20X1_1_CLKREQN_M0/GPIO0_B5_d | AH39 | DWON | I/O | UART2_TX_M0 | UART2_TX_M0 for system Debug | 1.8V |
| 104 | I2S1_SDI0_M1/GPU_AV5/UART0_TX_M0/I2C4_SCL_M2/PWM4_M0/GPIO0_C5_u | AG38 | UP | I/O | BT_WAKE_HOST_H | BT WAKE Host, Active H | 1.8V |
| 106 | GMAC1_PPSCCLK/UART7_RX_M1/SPI1_CLK_M1/GPIO3_C1_d | AW38 | DWON | I/O | LCD_PWREN | MIPI DSI0 Power EN, Active H | VCCIO5 |



Interface definition

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|-----|---|------|-----------|-----|---------------------|--|--------|
| 108 | LITCPU_AV5/SPI3_CLK_M2/GPIO0_D3_u | AG37 | UP | I/O | GPIO0_D3_u | GPIO0_D3_u | 1.8V |
| 110 | GMAC1_PPSTRIG/I2C3_SDA_M1/UART7_TX_M1/SPI1_MISO_M1/GPIO3_C0_d | AR36 | DWON | I/O | PHONE_CTL | Earphone EN, Active H | VCCIO5 |
| 112 | SPI2_CS1_M2/I2C1_SCL_M1/UART0_RX_M1/GPIO0_B0_z | AC37 | Tri-State | I/O | RTC_INT_L | RTC_INT Input ,Active L | 1.8V |
| 114 | REFCLK_OUT/GPIO0_A0_d | W38 | DWON | I/O | WIFI_WAKE_HOST_H | WIFI WAKE HOST, Active H | 1.8V |
| 116 | I2S0_SDO2/I2S0_SDI3/PDM0_SDI1_M0/I2C7_SDA_M0/UART6_RX_M2/SPI1_MOSI_M2/GPIO1_D1_d | U38 | DWON | I/O | I2C7_SDA_M0_CODEC | I2C7_SDA_M0 | 1.8V |
| 118 | I2S0_SDO1/I2C7_SCL_M0/UART6_TX_M2/SPI1_MISO_M2/GPIO1_D0_d | U37 | DWON | I/O | I2C7_SCL_M0_CODEC | I2C7_SCL_M0 | 1.8V |
| 120 | GND | | | G | GND | GND | GND |
| 122 | CLK32K_IN/CLK32K_OUT0/GPIO0_B2_u | AD38 | UP | I/O | RTC_32K_IN | RTC Clock 32.768KHz Input (to 3588S) | 1.8V |
| 124 | GND | | | G | GND | GND | GND |
| 126 | I2S0_MCLK/I2C6_SDA_M1/UART3_RTSN/PWM3_IR_M2/SPI4_CLK_M0/GPIO1_C2_d | U36 | DWON | I/O | I2S0_MCLK | I2S0_MCLK Output | 1.8V |
| 128 | I2S0_LRCK/I2C2_SCL_M3/UART4_RTSN/GPIO1_C5_d | P39 | DWON | I/O | I2S0_LRCK_TX | I2S0_LRCK_ Output | 1.8V |
| 130 | I2S0_SDO0/I2C4_SCL_M4/UART4_CTSN/GPIO1_C7_d | P41 | DWON | I/O | I2S0_SDO0 | I2S0_SDO0 (Data Out) | 1.8V |
| 132 | I2S0_SDI0/GPIO1_D4_d | N42 | DWON | I/O | I2S0_SDI0 | I2S0_SDI0 (Data In) | 1.8V |
| 134 | I2S0_SCLK/I2C6_SCL_M1/UART3_CTSN/PWM7_IR_M2/SPI4_CS0_M0/GPIO1_C3_d | M42 | DWON | I/O | I2S0_SCLK_TX | I2S0_SCLK_ Output | 1.8V |
| 136 | I2S0_SDO3/I2S0_SDI2/PDM0_SDI2_M0/I2C1_SCL_M4/UART4_TX_M0/PWM0_M1/SPI1_CLK_M2/GPIO1_D2_d | P40 | DWON | I/O | WORK_LED | WORK_LED EN, Active H | 1.8V |
| 138 | PDM0_SDI0_M0/SPI1_CS1_M2/GPIO1_D5_d | P38 | DWON | I/O | DIY_LED | DIY_LED EN, Active H | 1.8V |
| 140 | PDM0_CLK1_M0/I2C2_SDA_M3/PWM11_IR_M2/SPI4_CS1_M0/GPIO1_C4_d | U35 | DWON | I/O | MIPI_CAM_PDN2 | MIPI_CAM_PDN2 Output | 1.8V |
| 142 | PDM0_CLK0_M0/I2C4_SDA_M4/PWM15_IR_M2/GPIO1_C6_d | M41 | DWON | I/O | MIPI_CAM_RESET2 | MIPI_CAM_RESET2 Output , Active L | 1.8V |
| 144 | GND | | | G | GND | GND | GND |
| 146 | I2S0_SDI1/PDM0_SDI3_M0/I2C1_SDA_M4/UART4_RX_M0/PWM1_M1/SPI1_CS0_M2/GPIO1_D3_d | R39 | DWON | I/O | MIPI_CAM_RESET1 | MIPI_CAM_RESET1 Output , Active L | 1.8V |
| 148 | GND | | | G | GND | GND | GND |
| 150 | SARADC_IN2 | AV11 | | I | SARADC_VIN2 | ADC2 Input (core board pull up resistance 10K) | 1.8V |
| 152 | SARADC_IN0_BOOT | AW15 | | I | SARADC_VIN0_BOOT | ADC0 Input (BOOT Mode)(core board pull up resistance 100K) | 1.8V |
| 154 | SARADC_IN3 | AV13 | | I | SARADC_VIN3 | ADC3 Input (core board pull up resistance 10K) | 1.8V |
| 156 | SARADC_IN4 | AY15 | | I | SARADC_VIN4_HP_HOOK | ADC4 Input (HP_HOOK)(core board pull up resistance 10K) | 1.8V |



Interface definition

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|-----|--|------|-----------|-----|--------------------------|--|--------|
| 158 | SARADC_IN1 | AY13 | | I | SARADC_VIN1_KEY/RECOVERY | ADC1 Input (RECOVERY Key)(core board pull up resistance 10K) | 1.8V |
| 160 | I2C3_SCL_M0/UART3_TX_M0/SPI4_MOSI_M0/GPIO1_C1_z | N41 | Tri-State | I/O | MIPI_CAM_PDN1 | MIPI_CAM_PDN1 Output | 1.8V |
| 162 | I2C3_SDA_M0/UART3_RX_M0/SPI4_MISO_M0/GPIO1_C0_z | R38 | Tri-State | I/O | HP_DET_L | Phone detect ,Active L | 1.8V |
| 164 | PDM1_CLK1_M1/SATA0_ACT_LED_M1/UART4_TX_M2/SPI0_CLK_M2/GPIO1_B3_d | M37 | DWON | I/O | SPI0_CLK_M2 | SPI0_CLK_M2 Output | 1.8V |
| 166 | PDM1_SDI3_M1/UART4_RX_M2/SPI0_MOSI_M2/GPIO1_B2_d | M38 | DWON | I/O | SPI0_MOSI_M2 | SPI0_MOSI_M2 (Data Out) | 1.8V |
| 168 | PCIE20X1_1_WAKEN_M2/I2C2_SCL_M4/UART6_TX_M1/SPI4_MOSI_M2/GPIO1_A1_d | L40 | DWON | I/O | MIPI_RESET1_CAM | MIPI_RESET1_CAM ,Active L | 1.8V |
| 170 | PCIE20X1_1_CLKREQN_M2/DP0_HPDIN_M2/I2C2_SDA_M4/UART6_RX_M1/SPI4_MISO_M2/GPIO1_A0_d | G40 | DWON | I/O | MIPI_RESET0_CAM | MIPI_RESET0_CAM ,Active L | 1.8V |
| 172 | I2C4_SCL_M3/UART6_CTSN_M1/PWM1_M2/SPI4_CS0_M2/GPIO1_A3_d | L39 | DWON | I/O | I2C4_SCL_M3 | I2C4_SCL_M3 | 1.8V |
| 174 | VOP_POST_EMPTY/I2C4_SDA_M3/UART6_RTSN_M1/PWM0_M2/SPI4_CLK_M2/GPIO1_A2_d | D38 | DWON | I/O | I2C4_SDA_M3 | I2C4_SDA_M3 | 1.8V |
| 176 | GND | | | G | GND | GND | GND |
| 178 | ETH1_REFCLKO_25M/MIPI_CAMERA1_CLK_M1/I2C4_SCL_M0/GPIO3_A6_d | AV37 | DWON | I/O | MIPI_CAMERA1_CLK_M1 | MIPI_CAMERA1_CLK_M1 Output | VCCIO5 |
| 180 | GND | | | G | GND | GND | GND |
| 182 | GMAC1_MDIO/MIPI_TE1/I2C8_SDA_M4/UART7_CTSN_M1/PWM15_IR_M0/SPI1_CS1_M1/GPIO3_C3_d | AW39 | DWON | I/O | GMAC1_MDIO | GMAC1_MDIO | VCCIO5 |
| 184 | GMAC1_MDC/MIPI_TE0/I2C8_SCL_M4/UART7_RTSN_M1/PWM14_M0/SPI1_CS0_M1/GPIO3_C2_d | AV40 | DWON | I/O | GMAC1_MDC | GMAC1_MDC | VCCIO5 |
| 186 | GMAC1_TXCLK/SDIO_CMD_M1/I2S3_SDI/AUDDSM_RP/UART8_RTSN_M1/SPI4_CS1_M1/GPIO3_A4_d | AT39 | DWON | I/O | GMAC1_TXCLK | GMAC1_TXCLK | VCCIO5 |
| 188 | GMAC1_RXCLK/SDIO_CLK_M1/MIPI_CAMERA0_CLK_M1/FSPI_CLK_M2/I2C4_SDA_M0/UART8_CTSN_M1/GPIO3_A5_d | AV38 | DWON | I/O | GMAC1_RXCLK | GMAC1_RXCLK | VCCIO5 |
| 190 | GND | | | G | GND | GND | GND |
| 192 | GMAC1_MCLKINOUT/I2S2_LRCK_M1/CAN1_TX_M0/UART3_RX_M1/PWM13_M0/GPIO3_B6_d | AW37 | DWON | I/O | GMAC1_MCLKINOUT | GMAC1_MCLK Input/Output | VCCIO5 |
| 194 | GMAC1_RXD1/MIPI_CAMERA3_CLK_M1/PWM9_M0/GPIO3_B0_u | AR39 | UP | I/O | GMAC1_RXD1 | GMAC1_RXD1 | VCCIO5 |
| 196 | GMAC1_RXD3/SDIO_D3_M1/I2S3_SDO/AUDDSM_RN/FSPI_D3_M2/UART8_RX_M1/SPI4_CS0_M1/GPIO3_A3_u | AT40 | UP | I/O | GMAC1_RXD3 | GMAC1_RXD3 | VCCIO5 |
| 198 | GMAC1_RXD0/MIPI_CAMERA2_CLK_M1/PWM8_M0/GPIO3_A7_u | AT37 | UP | I/O | GMAC1_RXD0 | GMAC1_RXD0 | VCCIO5 |
| 200 | GMAC1_RXD2/SDIO_D2_M1/I2S3_LRCK/AUDDSM_LP/FSPI_D2_M2/UART8_TX_M1/SPI4_CLK_M1/GPIO3_A2_u | AT38 | UP | I/O | GMAC1_RXD2 | GMAC1_RXD2 | VCCIO5 |
| 202 | GMAC1_RXDV_CRS/MIPI_CAMERA4_CLK_M1/UART2_TX_M2/PWM2_M1/GPIO3_B1_d | AV39 | DWON | I/O | GMAC1_RXDV_CRS | GMAC1_RXDV_CRS | VCCIO5 |
| 204 | GMAC1_TXD0/I2S2_SDO_M1/UART2_RTSN/GPIO3_B3_u | AW35 | UP | I/O | GMAC1_TXD0 | GMAC1_TXD0 | VCCIO5 |



Interface definition

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|-----|--|------|------|-----|-----------------|--|--------|
| 206 | GMAC1_TXD2/SDIO_D0_M1/I2S3_MCLK/FSPI_D0_M2/I2C6_SDA_M4/PWM10_M0/SPI4_MISO_M1/GPIO3_A0_u | AR38 | UP | I/O | GMAC1_TXD2 | GMAC1_TXD2 | VCCIO5 |
| 208 | GMAC1_TXD3/SDIO_D1_M1/I2S3_SCLK/AUDDSM_LN/FSPI_D2_M2/I2C6_SCL_M4/PWM11_IR_M0/SPI4_MOSI_M1/GPIO3_A1_u | AR37 | UP | I/O | GMAC1_TXD3 | GMAC1_TXD3 | VCCIO5 |
| 210 | GMAC1_TXD1/I2S2_MCLK_M1/UART2_CTSN/GPIO3_B4_u | AV35 | UP | I/O | GMAC1_TXD1 | GMAC1_TXD1 | VCCIO5 |
| 212 | GMAC1_TXEN/I2S2_SCLK_M1/CAN1_RX_M0/UART3_TX_M1/PWM12_M0/GPIO3_B5_u | AY35 | UP | I/O | GMAC1_TXEN | GMAC1_TXEN | VCCIO5 |
| 214 | GMAC1_TXER/I2S2_SDI_M1/UART2_RX_M2/PWM3_IR_M1/GPIO3_B2_d | AW34 | DWON | I/O | LCD1_BL_PWM | PWM for lcd Backlight Output | VCCIO5 |
| 216 | GMAC1_PTP_REF_CLK/I2C3_SCL_M1/SPI1_MOSI_M1/GPIO3_B7_d | AY34 | DWON | I/O | GMAC1_RSTN_L | GMAC1_Reset Output ,Active L | VCCIO5 |
| 218 | NPOR | V42 | UP | I | RESET_L | System Reset Input, Active L | 1.8V |
| 220 | PMIC_EXT_EN_OUT | | | I | PMIC_EXT_EN_OUT | PMIC_EXT_EN_Output Active H | 5.0V |
| 222 | GND | | | | GND | GND | GND |
| 224 | VCC_3V3_S3 | | | G | VCC_3V3_S3 | 3.3V Output (Pin224/225/226/227 Total Max:500mA) | 3.3V |
| 226 | VCC_3V3_S3 | | | | VCC_3V3_S3 | | 3.3V |
| 228 | VCC_1V8_S3 | | | | VCC_1V8_S3 | 1.8V Output (Pin228/229 Total Max:500mA) | 1.8V |
| 230 | VCCA_1V8_S0 | | | | VCCA_1V8_S0 | 1.8V Output (Pin230/231 Total Max:100mA) | 1.8V |
| 232 | NC | | | | NC | | |
| 234 | VCCA_3V3_S0 | | | | VCCA_3V3_S0 | 3.3V Output (Pin234/235 Total Max:100mA) | 3.3V |
| 236 | SPI2_MISO_M0/GPIO1_A4_d | G37 | DWON | I/O | GPIO1_A4_d | GPIO1_A4 | 1.8V |
| 238 | SPI2_CLK_M0/GPIO1_A6_d | D39 | DWON | I/O | MIPI_PDN0_CAM | MIPI_Camera_PDN0 | 1.8V |
| 240 | UART7_TX_M2/SPI0_CS1_M2/GPIO1_B5_u | D40 | UP | I/O | TP_INT_L | TP_INT Input ,Active L | 1.8V |
| 242 | GND | | | G | GND | GND | GND |
| 244 | GND | | | G | | | GND |
| 246 | GND | | | G | | | GND |
| 248 | GND | | | G | | | GND |
| 250 | GND | | | G | | | GND |



Interface definition

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|-----|--|--|---|--|------------|---|------|
| 252 | VCC4V0 | | P | | VCC4V0_SYS | Input Voltage 4.0V +/-5%; Min: 0.04W(4.0V/10mA) Normal: 1.6W(4.0V/400mA) Max: 12W(4.0V/3000mA) Recommended Power Supply: 4.0V/3.5A | 4.0V |
| 254 | VCC4V0 | | P | | | | 4.0V |
| 256 | VCC4V0 | | P | | | | 4.0V |
| 258 | VCC4V0 | | P | | | | 4.0V |
| 260 | VCC4V0 | | P | | | | 4.0V |
| | VCCIO5_CTL is Hight: VCCIO5=3.3V; VCCIO5_CTL is Low(Or NC): VCCIO5=1.8V---Default | | | | | | |



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