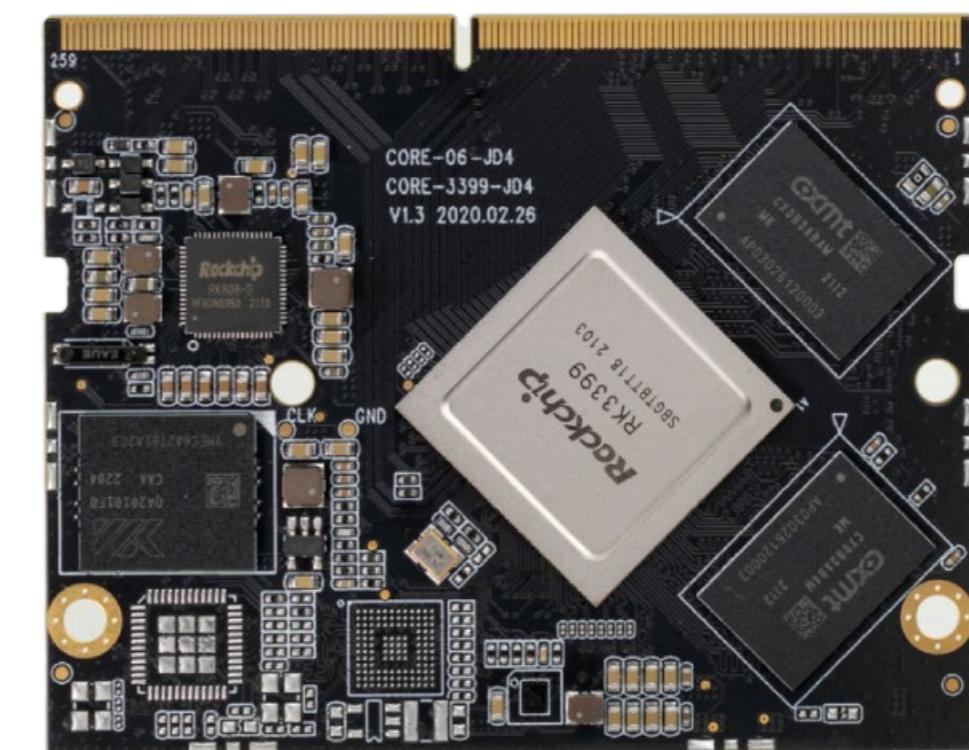




Hexa-Core High Performance Core Board

- | Core-3399-JD4(Commercial)
- | Core-3399K-JD4(Industrial)

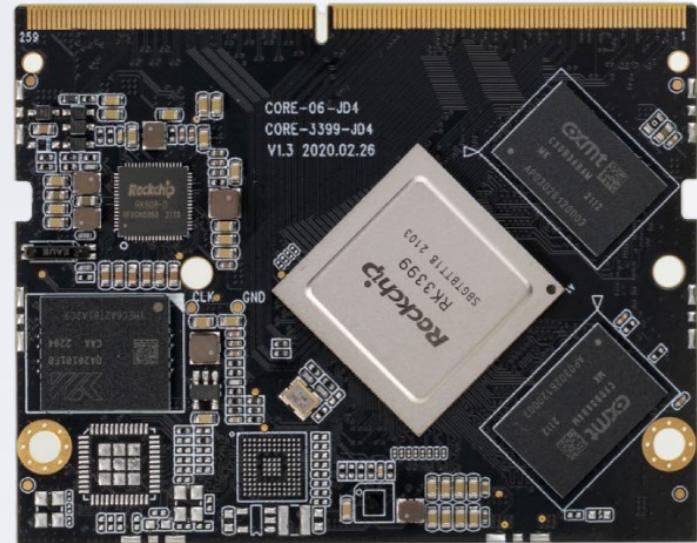
V1.3 2024-10-8



T-CHIP INTELLIGENCE TECHNOLOGY



Product features



Six-core 64-bit High-performance Processor

Adopts RK3399 six-core 64-bit (A72x2+A53x4) high-performance processor, frequency up to 1.8GHz, integrated quad-core ARM high-end GPU Mali-T860.



Powerful Hardware Decoding Capability

Supports MIPI-DSI, EDP, HDMI, DP1.2 multiple display output interfaces, dual-screen identical display/dual-screen differential display, supports 4K@60fps H.265/VP9, 4K@30fps H.264 video decoding, and 1080P@30fps H.264/AVC/VP8 video encoding.



Dual ISP processing

Dual hardware ISP, up to 13MPix/s or 8MPix/s dual, simultaneous input of dual-channel camera data, and high-end processing such as panoramic shooting, gesture detection, depth detection, and 3D, accelerate image recognition applications.

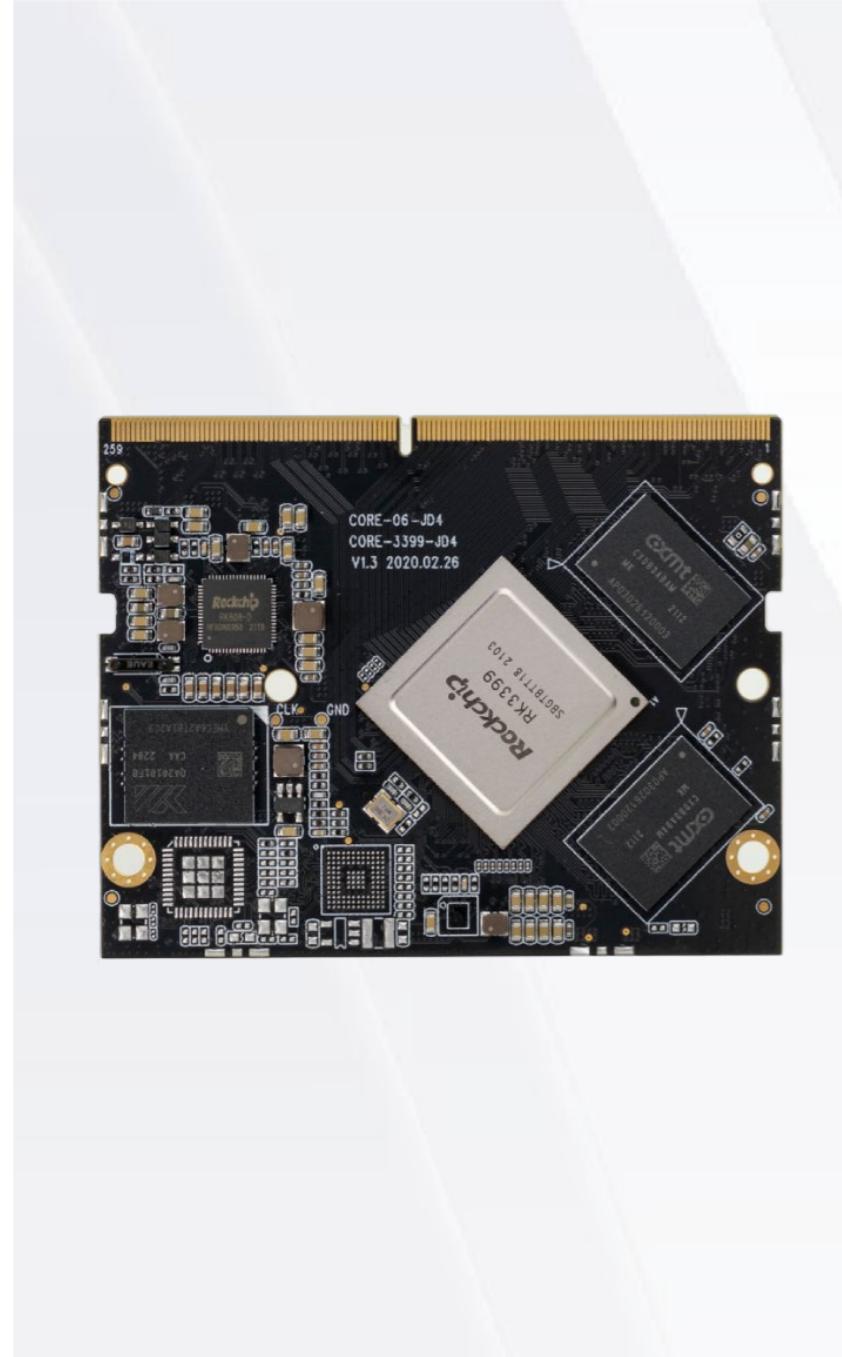


Strong network communication capabilities

Integrated GMAC/SDIO3.0/USB3.0 interfaces, expandable to 1 Gigabit Ethernet, 2.4GHz/5GHz dual band WiFi/Bluetooth, 3G/4G LTE, providing higher network communication speeds.



Product features



Stable And Reliable

With SODIMM 260P interface, the data transmission and expansion performance can be best achieved, immersion gold process pin, corrosion resistant, 2 studs fixed, stable and reliable. Designed measurement is only 69.6mm×55mm for saving more precious space.



Support For Multiple OS

It supports Android, Linux+QT, and Ubuntu operating systems to provide a safe and stable system environment for product research and production.



Rich Extension Interfaces

With rich interfaces such as I2C, SPI, UART, ADC, PWM, GPIO, PCIe, USB3.0, I2S (supports 8-way digital microphone array input), and so on.



A wide range of applications

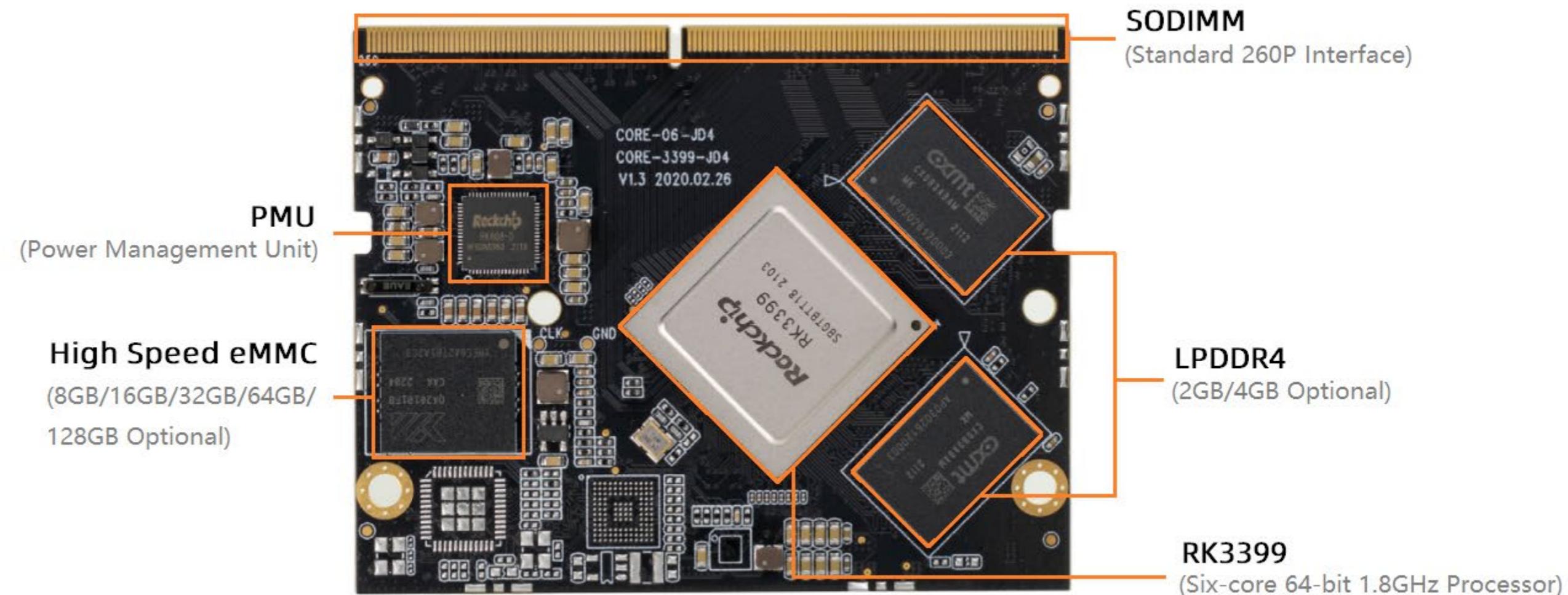
It is suitable for cluster servers, high-performance computing/storage, computer vision, gaming equipment, commercial display equipment, medical equipment, vending machines, industrial computers, etc.

Specifications

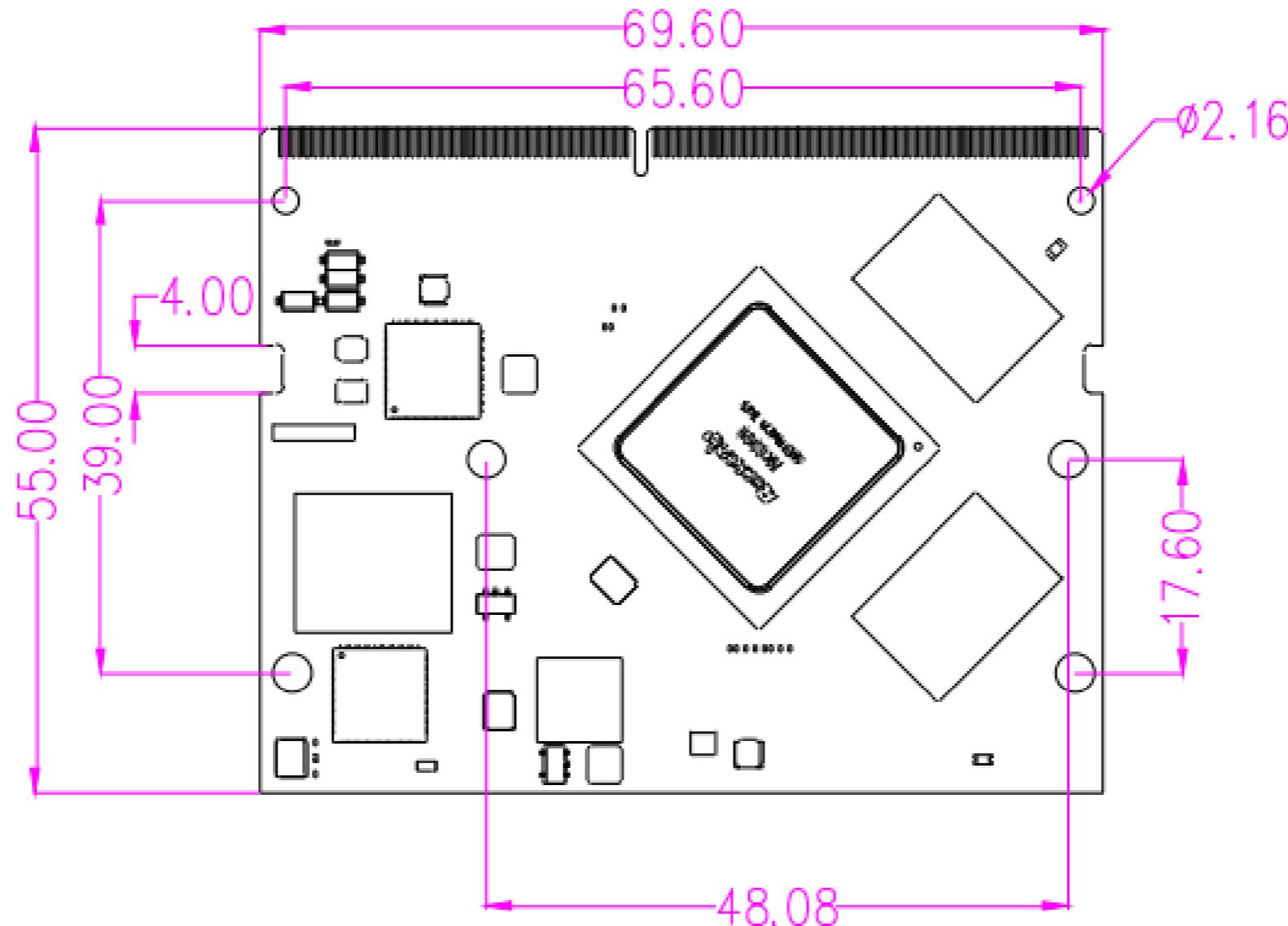


| | | Core-3399-JD4(Commercial) | Core-3399K-JD4(Industrial) |
|--------------------------|-------------------|---|---|
| Basic Specifications | CPU | RK3399 Hexa-core 64-bit (Cortex-A72×2 + Cortex-A53×4) processor Up to 1.8GHz | RK3399K Hexa-core 64-bit (Cortex-A72×2 + Cortex-A53×4) processor Up to 2.0GHz |
| | GPU | Mali-T860 MP4 quad-core GPU Support OpenGL ES1.1/2.0/3.0/3.1, OpenVG1.1, OpenCL, DX11 Support AFBC (Frame Buffer Compression) | |
| | ISP | Built-in dual hardware ISP Support up to single 13M pixel or dual 8M pixel | |
| | VPU | Hardware decoding: 4K@60fps H.265/VP9, 4K@30fps H.264 video decoding, 1080P@60fps(VC-1, MPEG-1/2/4) multi-format video decoding Hardware encoding: 1080P@30fps H.264/AVC/VP8 video encoding Video post-processing: deinterlacing, noise reduction, edge/detail/color optimization | |
| | RAM | LPDDR4 (2GB/4GB optional) | |
| | Storage | eMMC (16GB/32GB/64GB/128GB optional) | |
| | Power | 5V (voltage tolerance ± 5%) | |
| | Power consumption | Normal: 3.41W(5V/682mA), Max: 10W(5V/2000mA) | |
| | OS | Android and Linux OS | |
| | Interface | Gold finger (260 PIN, SODIMM, 0.5mm pitch) | |
| Interface Specifications | Size | 69.6mm × 55 mm | |
| | Environment | Operating temperature: -20°C ~ 60°C Operating humidity: 10% ~ 90%RH (non-condensing) | Operating temperature: -20°C ~ 70°C Operating humidity: 10% ~ 90%RH (non-condensing) |
| | Internet | Integrated with GMAC/SDIO3.0/USB3.0, expandable 1 Gigabit Ethernet, 2.4GHz/5GHz dual-band WiFi/Bluetooth, 3G/4G LTE | |
| | Video Input | 2 × MIPI-CSI (4 lanes) | |
| | Video Output | 1 × HDMI2.0 (supports 4K@60fps output and HDCP 1.4/2.2) 1 × MIPI-DSI (supports single-channel 2560×1600@60fps output) 1 × eDP1.3 (4 lanes with 10.8Gbps) 1 × DP1.2 (DisplayPort, supports up to 4K×2K@60Hz resolution, output from the Type-C) * Support dual-display | |
| | Audio Output | 2 × I2S/PCM, 1 × SPDIF | |
| | USB | 2 × USB2.0 HOST, 2 × USB3.0 OTG | |
| | PCIe | 1 × PCIe2.1 | |
| | Other | 8 × I2C, 5 × SPI, 5 × UART, 4 × ADC, 3 × PWM, GPIOs, 2 × I2S (supporting 8-channel digital microphone array input) | |

Core board Interface description

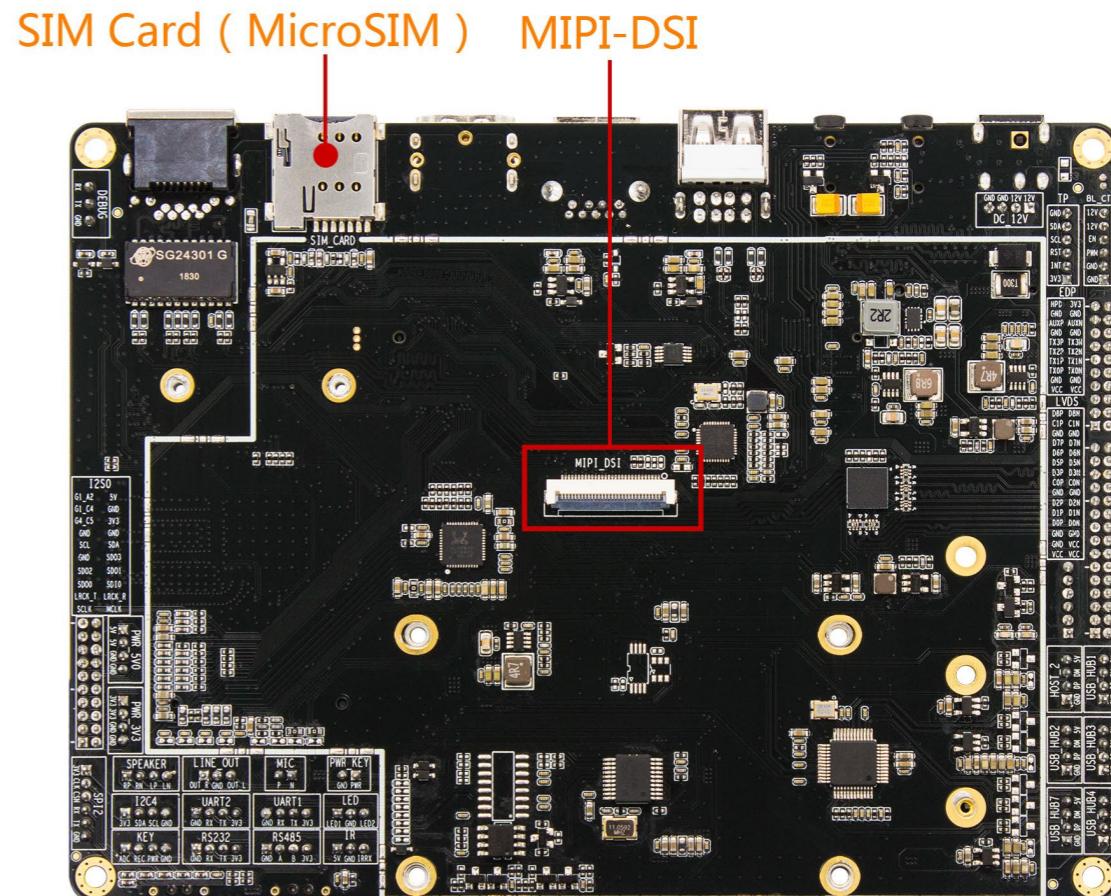
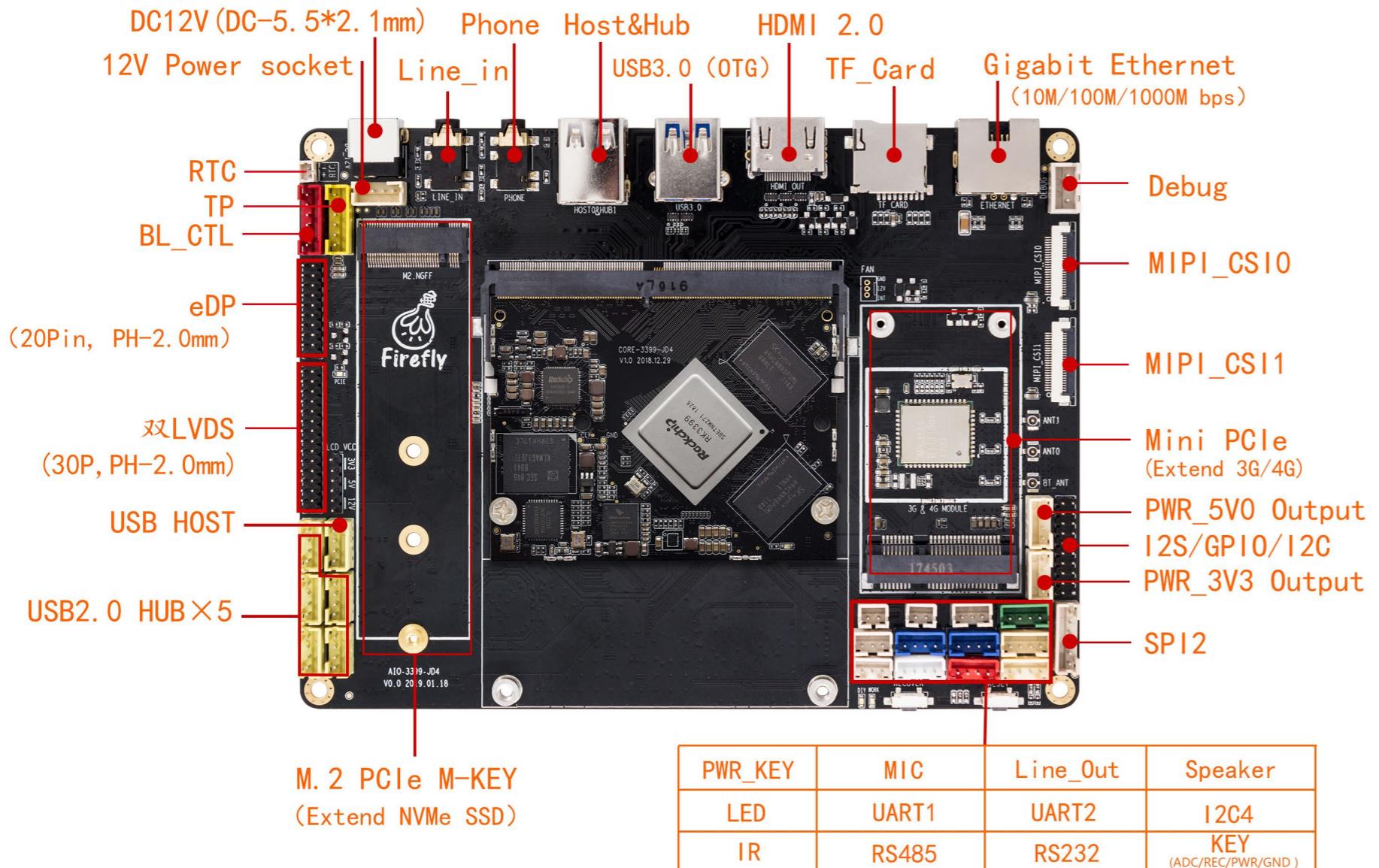


Core board Dimension

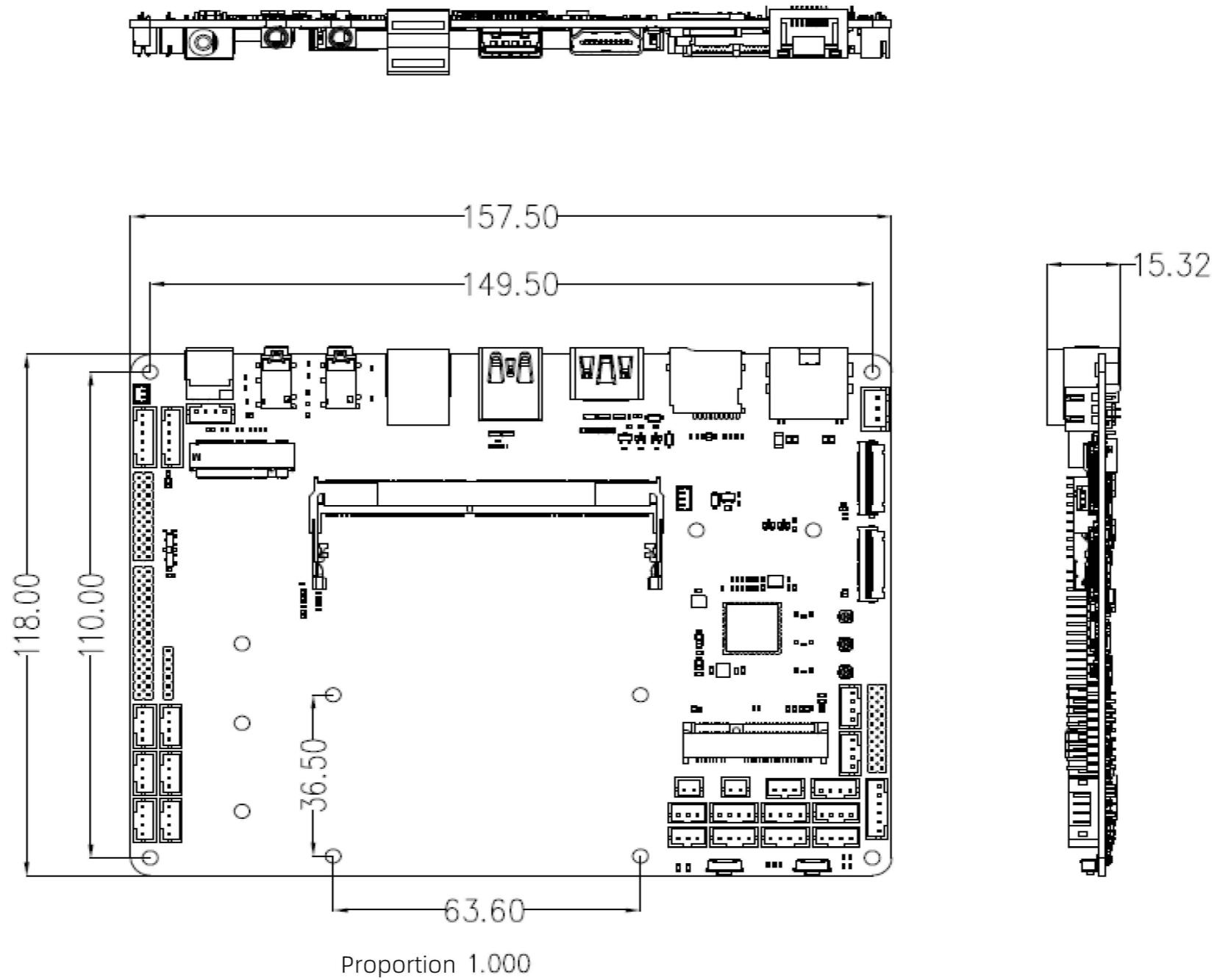




Mainboard Interface description



Mainboard Dimension





Interface definition

| Notes1: Pin type: I = input, O = output, I/O = input/output (bidirectional) ,G= Ground , P = power supply , DOWN = Internal pull down , UP = Internal pull UP | | | | | | | | | |
|--|-----|---|----------|----------|-----------------------------------|--|-----------------|-------------------|--|
| Part A | pin | Core board pin definition | Pin type | I/O Pull | Function for Floor(MB-RK3399-JD4) | Default function description | IO Power domain | RK3399 Pin Number | RK3399 Pin Name |
| | 1 | GND_1 | G | | GND | GND | | | |
| | 3 | GPIO2_D3/SDIO0_PWREN_D_1.8V | I/O | DOWN | WORK_LED | System LED control 1:Enable 0:Disable | 1.8V | AD9 | GPIO2_D3/SDIO0_PWREN |
| | 5 | GPIO0_B5/TCPD_VBUS_FDIS/TCPD_VBUS_SOURCE3_D_1.8V | I/O | DOWN | DIY_LED | DiY led control 1:Enable 0:Disable | 1.8V | P24 | GPIO0_B5/TCPD_VBUS_FDIS/TCPD_VBUS_SOURCE3 |
| | 7 | GPIO1_A0/ISP0_SHUTTER_EN/ISP1_SHUTTER_EN/TCPD_VBUS_SINK_EN_D_3.0V | I/O | DOWN | VCC5V0_HOST_EN | Host usb 5v power enable 1:Enable 0:Disable Core board internal series resistance 33R | 3.0V | R25 | GPIO1_A0/ISP0_SHUTTER_EN/ISP1_SHUTTER_EN/TCPD_VBUS_SINK_EN |
| | 9 | GPIO1_A3/ISP0_FLASHTRIGOUT/ISP1_FLASHTRIGOUT_D_3.0V | I/O | DOWN | VCC5V0_TYPECO_EN | OTG 5v power enable 1:Enable 0:Disable Core board internal series resistance 33R | 3.0V | R27 | GPIO1_A3/ISP0_FLASHTRIGOUT/ISP1_FLASHTRIGOUT |
| | 11 | GPIO1_B5_D_3.0V | I/O | DOWN | LVDS_RESETX | LVDS Reset | 3.0V | M24 | GPIO1_B5 |
| | 13 | GPIO1_B4/I2C4_SCL_U_3.0V | I/O | UP | I2C4_SCL | I2C clock , Core board interiorl pull up Resistor 2.2K | 3.0V | P30 | GPIO1_B4/I2C4_SCL |
| | 15 | GPIO1_B3/I2C4_SDA_U_3.0V | I/O | UP | I2C4_SDA | I2C data , Core board interiorl pull up Resistor 2.2K | 3.0V | P31 | GPIO1_B3/I2C4_SDA |
| | 17 | GPIO1_A4/ISP0_PRELIGHT_TRIG/ISP1_PRELIGHT_TRIG_D_3.0V | I/O | DOWN | LCD_EN | LCD enable , Core board internal series resistance 33R | 3.0V | R28 | GPIO1_A4/ISP0_PRELIGHT_TRIG/ISP1_PRELIGHT_TRIG |



Interface definition

| | | | | | | | | |
|----|---|-----|------|----------------------------|---|------|-----|--|
| 19 | GPIO1_A1/ISPO_SHUTTER_TRIG/ISP1_SHUTTER_TRIG/TCPD_CCO_VCONN_EN_D_3.0V | I/O | DOWN | CAM_PWR | Camera power enable , Core board internal series resistance 33R | 3.0V | T31 | GPIO1_A1/ISPO_SHUTTER_TRIG/ISP1_SHUTTER_TRIG/TCPD_CCO_VCONN_EN |
| 21 | GPIO0_B4/TCPD_VBUS_BDIS_D_1.8V | I/O | DOWN | MIPI_PWR_EN | MIPI power enable | 1.8V | V26 | GPIO0_B4/TCPD_VBUS_BDIS |
| 23 | GPIO4_C5/SPDIF_TX_D_3.0V | I/O | DOWN | GPIO4_C5 | GPIO | 3.0V | AK1 | GPIO4_C5/SPDIF_TX |
| 25 | GPIO0_B0/SDMMC0_WRPT/TEST_CLKOUT2_U_1.8V | I/O | UP | MIPI_RST | Mipi reset | 1.8V | U28 | GPIO0_B0/SDMMC0_WRPT/TEST_CLKOUT2 |
| 27 | GPIO0_A1/DDRIO_PWROFF/TCPD_CCDB_EN_U_1.8V | I/O | UP | LCD_BL_EN | LCD panel power enable | 1.8V | R29 | GPIO0_A1/DDRIO_PWROFF/TCPD_CCDB_EN |
| 29 | GPIO2_B4/SPI2_CSNO_U_3.0V | I/O | UP | GPIO2_B4/SPI2_CSNO | SPI bus port 2 | 3.0V | F31 | GPIO2_B4/SPI2_CSNO |
| 31 | GPIO2_B2/SPI2_TXD/CIF_CLKIN/I2C6_SCL_U_3.0V | I/O | UP | GPIO2_B2/SPI2_TXD/I2C6_SCL | SPI bus port 2, I2C serial port 6,need external pull-up | 3.0V | H24 | GPIO2_B2/SPI2_TXD/CIF_CLKIN/I2C6_SCL |
| 33 | GPIO2_B1/SPI2_RXD/CIF_HREF/I2C6_SDA_U_3.0V | I/O | UP | GPIO2_B1/SPI2_RXD/I2C6_SDA | SPI bus port 2, I2C serial port 6,need external pull-up | 3.0V | F30 | GPIO2_B1/SPI2_RXD/CIF_HREF/I2C6_SDA |
| 35 | GPIO2_B3/SPI2_CLK/VOP_DEN/CIF_CLKOUTA_U_3.0V | I/O | UP | GPIO2_B3/SPI2_CLK | GPIO / SP2 CLK / MIPI CLK | 3.0V | H31 | GPIO2_B3/SPI2_CLK/VOP_DEN/CIF_CLKOUTA |
| 37 | GPIO1_C7/TCPD_VBUS_SOURCE1_D_3.0V | I/O | DOWN | TP_RST | TP Reset(Active Low) | 3.0V | M31 | GPIO1_C7/TCPD_VBUS_SOURCE1 |
| 39 | GPIO1_C4/I2C8_SDA_U_3.0V | I/O | UP | GPIO1_C4 | GPIO | 3.0V | M29 | GPIO1_C4/I2C8_SDA |
| 41 | GPIO1_C1/SPI3_CLK_D_3.0V | I/O | DOWN | GPIO1_C1 | GPIO | 3.0V | M27 | GPIO1_C1/SPI3_CLK |
| 43 | GND_4 | G | | GND | GND | | | |
| 45 | MIPI_TX1/RX1_DOP | I/O | | MIPI_TX1/RX1_DOP | MIPI-DSI1/CSI1 differential lane 0 positive | 1.8V | AK6 | MIPI_TX1/RX1_DOP |



Interface definition

| | | | | | | | | |
|----|--|-----|------|------------------|--|------|-----|------------------------------------|
| 42 | GPIO0_B2_D_1.8V | I/O | DOWN | WIFI_REG_ON_H | WIFI module power enable(active high) | 1.8V | W31 | GPIO0_B2 |
| 44 | GPIO0_A3/SDIO0_WRPT_D_1.8V | I/O | DOWN | WIFI_HOST_WAKE_L | WIFI module wake up AP(Wifi-->RK3399) | 1.8V | V31 | GPIO0_A3/SDIO0_WRPT |
| 46 | GPIO2_C6/SDIO0_D2/SPI5_CLK_U_1.8V | I/O | UP | SDIO0_D2 | SDIO0 data2 , for WIFI module | 1.8V | AG7 | GPIO2_C6/SDIO0_D2/SPI5_CLK |
| 48 | GPIO2_C7/SDIO0_D3/SPI5_CSNO_U_1.8V | I/O | UP | SDIO0_D3 | SDIO0 data3 , for WIFI module | 1.8V | AE8 | GPIO2_C7/SDIO0_D3/SPI5_CSNO |
| 50 | GPIO2_D0/SDIO0_CMD_U_1.8V | I/O | UP | SDIO0_CMD | SDIO0 command output , for WIFI module | 1.8V | AH6 | GPIO2_D0/SDIO0_CMD |
| 52 | GPIO2_D1/SDIO0_CLKOUT/TEST_CLKOUT_1_U_1.8V | I/O | UP | SDIO0_CLK | SDIO0 clock output, for WIFI module | 1.8V | AF7 | GPIO2_D1/SDIO0_CLKOUT/TEST_CLKOUT1 |
| 54 | GPIO2_C4/SDIO0_D0/SPI5_RXD_U_1.8V | I/O | UP | SDIO0_D0 | SDIO0 data0 , for WIFI module | 1.8V | AD8 | GPIO2_C4/SDIO0_D0/SPI5_RXD |
| 56 | GPIO2_C5/SDIO0_D1/SPI5_TXD_U_1.8V | I/O | UP | SDIO0_D1 | SDIO0 data1, for WIFI module | 1.8V | AK5 | |
| 58 | GND_7 | G | | GND | GND | | | |
| 60 | RTC_CLKO_WIFI | | | RTC_CLKO_WIFI | 32.768K clock output to WIFI Core board interiorl pull up Resistor 10K | 1.8V | | |
| 62 | GPIO0_B1/PMUIO2_VOLSEL_D_1.8V | I/O | DOWN | BT_REG_ON_H | BT module power enable 1:Enable 0:Disable Core board interiorl pull up Resistor 10K | 1.8V | V30 | GPIO0_B1/PMUIO2_VOLSEL |
| 64 | GPIO2_C0/UART0_RX_U_1.8V | I/O | UP | UART0_RXD | UART0 RX, for BT module | 1.8V | AE9 | GPIO2_C0/UART0_RX |
| 66 | GPIO2_C1/UART0_TX_U_1.8V | I/O | UP | UART0_TXD | UART0 RX, for BT module | 1.8V | AH8 | GPIO2_C1/UART0_TX |
| 68 | GPIO2_C2/UART0_CTSN_U_1.8V | I/O | UP | UART0_CTS | UART0 CTS, for BT module(hardware flow control) | 1.8V | AG8 | GPIO2_C2/UART0_CTSN |
| 70 | GPIO2_C3/UART0_RTSN_U_1.8V | I/O | UP | UART0_RTS | UART0 RTS, for BT module(hardware flow control) | 1.8V | AL5 | GPIO2_C3/UART0_RTSN |



Interface definition

| | | | | | | | | |
|----|-------------------|-----|--|-------------------|---|------|------|-------------------|
| 47 | MIPI_TX1/RX1_D0N | I/O | | MIPI_TX1/RX1_D0N | MIPI-DSI1/CSI1 differential lane 0 negative | 1.8V | AL6 | MIPI_TX1/RX1_D0N |
| 49 | MIPI_TX1/RX1_D1P | I/O | | MIPI_TX1/RX1_D1P | MIPI-DSI1/CSI1 differential lane 1 positive | 1.8V | AK7 | MIPI_TX1/RX1_D1P |
| 51 | MIPI_TX1/RX1_D1N | I/O | | MIPI_TX1/RX1_D1N | MIPI-DSI1/CSI1 differential lane 1 negative | 1.8V | AL7 | MIPI_TX1/RX1_D1N |
| 53 | MIPI_TX1/RX1_CLKP | I/O | | MIPI_TX1/RX1_CLKP | MIPI-DSI1/CSI1 differential clock lane positive | 1.8V | AK8 | MIPI_TX1/RX1_CLKP |
| 55 | MIPI_TX1/RX1_CLKN | I/O | | MIPI_TX1/RX1_CLKN | MIPI-DSI1/CSI1 differential clock lane negative | 1.8V | AL8 | MIPI_TX1/RX1_CLKN |
| 57 | MIPI_TX1/RX1_D2P | I/O | | MIPI_TX1/RX1_D2P | MIPI-DSI1/CSI1 differential lane 2 positive | 1.8V | AK9 | MIPI_TX1/RX1_D2P |
| 59 | MIPI_TX1/RX1_D2N | I/O | | MIPI_TX1/RX1_D2N | MIPI-DSI1/CSI1 differential lane 2 negative | 1.8V | AL9 | MIPI_TX1/RX1_D2N |
| 61 | MIPI_TX1/RX1_D3P | I/O | | MIPI_TX1/RX1_D3P | MIPI-DSI1/CSI1 differential lane 3 positive | 1.8V | AK10 | MIPI_TX1/RX1_D3P |
| 63 | MIPI_TX1/RX1_D3N | I/O | | MIPI_TX1/RX1_D3N | MIPI-DSI1/CSI1 differential lane 3 negative | 1.8V | AL10 | MIPI_TX1/RX1_D3N |
| 65 | GND_6 | G | | GND | GND | | | |
| 67 | MIPI_RX0_D3P | I | | MIPI_RX0_D3P | MIPI-CSI0 differential lane 3 positive | 1.8V | AK11 | MIPI_RX0_D3P |
| 69 | MIPI_RX0_D3N | I | | MIPI_RX0_D3N | MIPI-CSI0 differential lane 3 positive | 1.8V | AL11 | MIPI_RX0_D3N |



Interface definition

| | | | | | | | | |
|----|---|-----|----|---------------|---|-------------|------|------------------------------------|
| 71 | MIPI_RX0_D2P | I | | MIPI_RX0_D2P | MIPI-CSI0 differential lane 2 positive | 1.8V | AK12 | MIPI_RX0_D2P |
| 73 | MIPI_RX0_D2N | I | | MIPI_RX0_D2N | MIPI-CSI0 differential lane 2 negative | 1.8V | AL12 | MIPI_RX0_D2N |
| 75 | MIPI_RX0_CLKP | I | | MIPI_RX0_CLKP | MIPI-CSI0 differential clock lane positive | 1.8V | AK13 | MIPI_RX0_CLKP |
| 77 | MIPI_RX0_CLKN | I | | MIPI_RX0_CLKN | MIPI-CSI0 differential clock lane negative | 1.8V | AL13 | MIPI_RX0_CLKN |
| 79 | MIPI_RX0_D1P | I | | MIPI_RX0_D1P | MIPI-CSI0 differential lane 1 positive | 1.8V | AK14 | MIPI_RX0_D1P |
| 81 | MIPI_RX0_D1N | I | | MIPI_RX0_D1N | MIPI-CSI0 differential lane 1 negative | 1.8V | AL14 | MIPI_RX0_D1N |
| 83 | MIPI_RX0_D0P | I | | MIPI_RX0_D0P | MIPI-CSI0 differential lane 0 positive | 1.8V | AK15 | MIPI_RX0_D0P |
| 85 | MIPI_RX0_D0N | I | | MIPI_RX0_D0N | MIPI-CSI0 differential lane 0 negative | 1.8V | AL15 | MIPI_RX0_D0N |
| 87 | GND_9 | G | | GND | GND | | | |
| 89 | HDMI_HPD | I | | HDMI_HPD | HDMI Hot Plug Detection interrupt with 5V tolerance | HDMI_DET_IN | AE15 | HDMI_HPD |
| 91 | GPIO4_C0/I2C3_SDA/UART2B_RX_U_3.0V | I/O | UP | I2C3_SDA_HDMI | I2C serial port 3,for HDMI, need external pull-up | 3.0V | AG6 | GPIO4_C0/I2C3_SDA/UART2B_RX |
| 93 | GPIO4_C1/I2C3_SCL/UART2B_TX_U_3.0V | I/O | UP | I2C3_SCL_HDMI | I2C serial port 3,for HDMI, need external pull-up | 3.0V | AL2 | GPIO4_C1/I2C3_SCL/UART2B_TX |
| 95 | GPIO4_C7/HDMI_CECINOUT/EDP_HOTPLUG_U_3.0V | I/O | UP | HDMI_CEC | HDMI CEC communication | 3.0V | AD7 | GPIO4_C7/HDMI_CECINOUT/EDP_HOTPLUG |



Interface definition

| | | | | | | | | |
|-----|-------------------|-----|--|----------------|--|------|------|-------------------|
| 97 | GND_11 | G | | GND | GND | | | |
| 99 | HDMI_TCN | O | | HDMI_TXCN | HDMI differential pixel clock negative | 1.8V | AL16 | HDMI_TCN |
| 101 | HDMI_TCP | O | | HDMI_TXCP | HDMI differential pixel clock positive | 1.8V | AK16 | HDMI_TCP |
| 103 | HDMI_TX0N | O | | HDMI_TX0N | HDMI channel 0 differential serial data negative | 1.8V | AL17 | HDMI_TX0N |
| 105 | HDMI_TX0P | O | | HDMI_TX0P | HDMI channel 0 differential serial data positive | 1.8V | AK17 | HDMI_TX0P |
| 107 | HDMI_TX1N | O | | HDMI_TX1N | HDMI channel 1 differential serial data negative | 1.8V | AL18 | HDMI_TX1N |
| 109 | HDMI_TX1P | O | | HDMI_TX1P | HDMI channel 1 differential serial data positive | 1.8V | AK18 | HDMI_TX1P |
| 111 | HDMI_TX2N | O | | HDMI_TX2N | HDMI channel 2 differential serial data negative | 1.8V | AL19 | HDMI_TX2N |
| 113 | HDMI_TX2P | O | | HDMI_TX2P | HDMI channel 2 differential serial data positive | 1.8V | AK19 | HDMI_TX2P |
| 115 | GND_13 | G | | GND | GND | | | |
| 117 | TYPECO_AUXP_PD_PU | | | TYPECO_SBU1_DC | TYPECO AUX pull-up/pull-down polarity reversal pins. | | AH17 | TYPECO_AUXP_PD_PU |
| 119 | TYPECO_AUXM_PU_PD | | | TYPECO_SBU2_DC | TYPECO AUX pull-up/pull-down polarity reversal pins. | | AG17 | TYPECO_AUXM_PU_PD |
| 121 | TYPECO_AUXM | I/O | | TYPECO_SBU2 | TYPECO AUX differential TX/RX serial data | | AL20 | TYPECO_AUXM |
| 123 | TYPECO_AUXP | I/O | | TYPECO_SBU1 | TYPECO AUX differential TX/RX serial data | | AK20 | TYPECO_AUXP |



Interface definition

| | | | | | | | | |
|-----|------------------|---|--|------------------|---|------|------|------------------|
| 125 | TYPECO_RX1M | I | | TYPECO_RX1N | TYPECO negative half of first Super Speed RX differential pair | | AL21 | TYPECO_RX1M |
| 127 | TYPECO_RX1P | I | | TYPECO_RX1P | TYPECO positive half of first Super Speed RX differential pair | | AK21 | TYPECO_RX1P |
| 129 | TYPECO_TX1P | O | | TYPECO_TX1P | TYPECO positive half of first Super Speed TX differential pair. | | AL22 | TYPECO_TX1P |
| 131 | TYPECO_TX1M | O | | TYPECO_TX1N | TYPECO negative half of first Super Speed TX differential pair | | AK22 | TYPECO_TX1M |
| 133 | TYPECO_DP | A | | TYPECO_DP | TYPECO Data Plus port(for system update) | | AG23 | TYPECO_DP |
| 135 | TYPECO_DM | A | | TYPECO_DM | TYPECO Data Minus port(for system update) | | AH23 | TYPECO_DN |
| 137 | TYPECO_RX2M | I | | TYPECO_RX2N | TYPECO negative half of second SuperSpeedRX differential pair. | | AL23 | TYPECO_RX2M |
| 139 | TYPECO_RX2P | I | | TYPECO_RX2P | TYPECO positive half of second SuperSpeedRX differential pair. | | AK23 | TYPECO_RX2P |
| 141 | TYPECO_TX2P | O | | TYPECO_TX2P | TYPECO positive half of second SuperSpeedTX differential pair. | | AL24 | TYPECO_TX2P |
| 143 | TYPECO_TX2M | O | | TYPECO_TX2N | TYPECO negative half of second SuperSpeedTX differential pair. | | AK24 | TYPECO_TX2M |
| 145 | TYPECO_U2VBUSDET | I | | TYPECO_U2VBUSDET | TYPECO connected / vbus power detect for USB2.0 | | AK30 | TYPECO_U2VBUSDET |
| 147 | GND_14 | G | | GND | GND | | | |
| 149 | PCIE_RX3_P | I | | PCIE_RX3_P | PCIE differential lane 3 positive input | 1.8V | AF27 | PCIE_RX3_P |



Interface definition

| | | | | | | | | |
|-----|------------|---|--|------------|--|------|------|------------|
| 151 | PCIE_RX3_N | I | | PCIE_RX3_N | PCIE differential lane 3 negative input | 1.8V | AF28 | PCIE_RX3_N |
| 153 | PCIE_TX3_P | O | | PCIE_TX3P | PCIE differential lane 3 positive output | 1.8V | AD27 | PCIE_TX3_P |
| 155 | PCIE_TX3_N | O | | PCIE_TX3N | PCIE differential lane 3 negative output | 1.8V | AD28 | PCIE_TX3_N |
| 157 | PCIE_RX2_P | I | | PCIE_RX2_P | PCIE differential lane 2 positive input | 1.8V | AC27 | PCIE_RX2_P |
| 159 | PCIE_RX2_N | I | | PCIE_RX2_N | PCIE differential lane 2 negative input | 1.8V | AC28 | PCIE_RX2_N |
| 161 | PCIE_TX2_P | O | | PCIE_TX2P | PCIE differential lane 2 positive output | 1.8V | AA27 | PCIE_TX2_P |
| 163 | PCIE_TX2_N | O | | PCIE_TX2N | PCIE differential lane 2 negative output | 1.8V | AA28 | PCIE_TX2_N |
| 165 | PCIE_RX1_P | I | | PCIE_RX1_P | PCIE differential lane 1 positive input | 1.8V | AH30 | PCIE_RX1_P |
| 167 | PCIE_RX1_N | I | | PCIE_RX1_N | PCIE differential lane 1 negative input | 1.8V | AH31 | PCIE_RX1_N |
| 169 | PCIE_TX1_P | O | | PCIE_TX1P | PCIE differential lane 1 positive output | 1.8V | AG30 | PCIE_TX1_P |
| 171 | PCIE_TX1_N | O | | PCIE_TX1N | PCIE differential lane 1 negative output | 1.8V | AG31 | PCIE_TX1_N |
| 173 | PCIE_RX0_P | I | | PCIE_RX0_P | PCIE differential lane 0 positive input | 1.8V | AF30 | PCIE_RX0_P |
| 175 | PCIE_RX0_N | I | | PCIE_RX0_N | PCIE differential lane 0 negative input | 1.8V | AF31 | PCIE_RX0_N |



Interface definition

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|-----|------------------|---|--|---------------|---|------|------|------------------|
| 177 | PCIE_TX0_P | O | | PCIE_TX0P | PCIE differential lane 0 positive output | 1.8V | AE30 | PCIE_TX0_P |
| 179 | PCIE_TX0_N | O | | PCIE_TX0N | PCIE differential lane 0 negative output | 1.8V | AE31 | PCIE_TX0_N |
| 181 | PCIE_RCLK_100M_N | O | | PCIE_REF_CLKN | PCIE 100MHz reference clock as input to PLL | 1.8V | AD30 | PCIE_RCLK_100M_N |
| 183 | PCIE_RCLK_100M_P | O | | PCIE_REF_CLKP | PCIE 100MHz reference clock as input to PLL | 1.8V | AD31 | PCIE_RCLK_100M_P |
| 185 | GND_18 | G | | GND | GND | | | |
| 187 | HOST0_DP | | | HOST0_DP | USB HOST0 Data Plus port | | AB30 | USBO_DP |
| 189 | HOST0_DM | | | HOST0_DM | USB HOST0 Data Minus port | | AB31 | USBO_DN |
| 191 | GND_19 | G | | GND | GND | | | |
| 193 | HOST1_DP | | | HOST1_DP | USB HOST1 Data Plus port | | AA30 | USB1_DP |
| 195 | HOST1_DM | | | HOST1_DM | USB HOST1 Data Minus port | | AA31 | USB1_DN |
| 197 | GND_20 | G | | GND | GND | | | |
| 199 | EDP_TX3N | O | | EDP_TX3N | eDP differential lane 3 negative output | 1.8V | D31 | EDP_TX3N |
| 201 | EDP_TX3P | O | | EDP_TX3P | eDP differential lane 3 positive output | 1.8V | D30 | EDP_TX3P |



Interface definition

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|-----|-----------------|-----|--|---------------|--|--------------|-----|----------|
| 203 | EDP_TX2N | O | | EDP_TX2N | eDP differential lane 2 negative output | 1.8V | C31 | EDP_TX2N |
| 205 | EDP_TX2P | O | | EDP_TX2P | eDP differential lane 2 positive output | 1.8V | C30 | EDP_TX2P |
| 207 | EDP_TX1N | O | | EDP_TX1N | eDP differential lane 1 negative output | 1.8V | A30 | EDP_TX1N |
| 209 | EDP_TX1P | O | | EDP_TX1P | eDP differential lane 1 positive output | 1.8V | B30 | EDP_TX1P |
| 211 | EDP_TX0N | O | | EDP_TX0N | eDP differential lane 0 negative output | 1.8V | A29 | EDP_TX0N |
| 213 | EDP_TX0P | O | | EDP_TX0P | eDP differential lane 0 positive output | 1.8V | B29 | EDP_TX0P |
| 215 | EDP_AUXN | I/O | | EDP_AUXN | eDP differential AUX channel positive output | 1.8V | A28 | EDP_AUXN |
| 217 | EDP_AUXP | I/O | | EDP_AUXP | eDP differential AUX channel negative output | 1.8V | B28 | EDP_AUXP |
| 219 | GND_25 | G | | GND | GND | | | |
| 221 | POWER_ON | | | POWER_ON | Power on Signal Input, External connection Power key , active low | To POWER_KEY | | |
| 223 | PMIC_VDC | P | | VCC_5V_S | Input Voltage 3.3V-5.5V, Rated input current 50mA | 5V | | |
| 225 | VDDIO_WL_1 | P | | VDDIO_WL | 1.8V output,Max current 1A to WIFI_IO | 1.8V | | |
| 227 | VCC_3V3_S0 | P | | VCC_LAN | 3.3V output,Max current 300mA TO LAN | 3.3V | | |
| 229 | VCCA1V8_CODEC_1 | P | | VCCA1V8_CODEC | 1.8V output,Max current 150mA to Codec | 1.8V | | |
| 231 | VCCA3V0_CODEC_1 | P | | VCCA3V0_CODEC | 3.0V output,Max current 300mA to Codec | 3.0V | | |
| 233 | VCC_5V_S | P | | VCC_5V_S | 5.0V input, Max current 50mA | 5.0V | | |
| 235 | VCC3V3_SYS_1 | P | | VCC3V3_SYS | 3.3V output,Max current 1A | 3.3V | | |



Interface definition

| 237 | NC_2 | | | | | | | | |
|--------|-----------|------------------------------|----------|------------|---|--------------------------------------|-----------------|-------------------|-----------------------|
| 239 | NC_4 | | | | | | | | |
| 241 | NC_6 | | | | | | | | |
| 243 | GND_28 | G | | GND | Power ground | | | | |
| 245 | GND_30 | G | | GND | Power ground | | | | |
| 247 | GND_32 | G | | GND | Power ground | | | | |
| 249 | GND_34 | G | | GND | Power ground | | | | |
| 251 | VCC_SYS_1 | P | | VCC5V0_SYS | Input Voltage 4.8V-5.5V | 5.0V | | | |
| 253 | VCC_SYS_3 | P | | VCC5V0_SYS | Input Voltage 4.8V-5.5V | 5.0V | | | |
| 255 | VCC_SYS_5 | P | | VCC5V0_SYS | Input Voltage 4.8V-5.5V | 5.0V | | | |
| 257 | VCC_SYS_7 | P | | VCC5V0_SYS | Input Voltage 4.8V-5.5V | 5.0V | | | |
| 259 | VCC_SYS_9 | P | | VCC5V0_SYS | Input Voltage 4.8V-5.5V | 5.0V | | | |
| Part B | pin | Core board pin definition | Pad type | IO Pull | Function for Floor(MB-JD4-RK3399&3399PRO) | Default function description | IO Power domain | RK3399 Pin Number | RK3399 Pin Name |
| | 2 | GND_2 | G | | GND | GND | | | |
| | 4 | GPIO3_D0/I2S0_SCLK_D_1.8V | I/O | DOWN | I2S0_SCLK | I2S 0 serial clock , for audio codec | 1.8V | AG3 | GPIO3_D0/I2S0_SCLK |
| | 6 | GPIO3_D1/I2S0_LRCK_RX_D_1.8V | I/O | DOWN | I2S0_LRCK_RX | I2S 0 port , for audio codec | 1.8V | AF4 | GPIO3_D1/I2S0_LRCK_RX |
| | 8 | GPIO3_D2/I2S0_LRCK_TX_D_1.8V | I/O | DOWN | I2S0_LRCK_TX | I2S 0 port , for audio codec | 1.8V | AJ2 | GPIO3_D2/I2S0_LRCK_TX |



Interface definition

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|----|---|-----|------|--------------|---|------|-----|--------------------------------------|
| 10 | GPIO3_D3/I2S0_SDIO_D_1.8V | I/O | DOWN | I2S0_SDIO | I2S serial data input 0 | 1.8V | Y7 | GPIO3_D3/I2S0_SDIO |
| 12 | GPIO3_D7/I2S0_SDO0_D_1.8V | I/O | DOWN | I2S0_SDO0 | I2S serial data output 0 | 1.8V | AH1 | GPIO3_D7/I2S0_SDO0 |
| 14 | GPIO3_D4/I2S0_SDI1SDO3_D_1.8V | I/O | DOWN | I2S0_SDO3 | I2S serial data output 3 | 1.8V | AE5 | GPIO3_D4/I2S0_SDI1SDO3 |
| 16 | GPIO3_D5/I2S0_SDI2SDO2_D_1.8V | I/O | DOWN | I2S0_SDO2 | I2S serial data output 2 | 1.8V | AA6 | GPIO3_D5/I2S0_SDI2SDO2 |
| 18 | GPIO3_D6/I2S0_SDI3SDO1_D_1.8V | I/O | DOWN | I2S0_SDO1 | I2S serial data output 1 | 1.8V | AH2 | GPIO3_D6/I2S0_SDI3SDO1 |
| 20 | GPIO4_A0/I2S_CLK_D_1.8V | I/O | DOWN | I2S_CLK | I2S MCLK, for both I2S0 and I2S1 | 1.8V | AC7 | GPIO4_A0/I2S_CLK |
| 22 | GPIO4_A1/I2C1_SDA_U_1.8V | I/O | UP | I2C1_SDA | I2C serial port 1,for Audio, Core board interiorl pull up Resistor 2.2K | 1.8V | AG1 | GPIO4_A1/I2C1_SDA |
| 24 | GPIO4_A2/I2C1_SCL_U_1.8V | I/O | UP | I2C1_SCL | I2C serial port 1,for Audio, Core board interiorl pull up Resistor 2.2K | 1.8V | Y6 | GPIO4_A2/I2C1_SCL |
| 26 | GND_3 | G | | GND | GND | | | |
| 28 | GPIO3_C0/MAC_COL/UART3_CTSN/SPDIF_TX_U_3.3V | I/O | UP | EAR_CTL | EARPHONE out EN (Active high) | 3.3V | D27 | GPIO3_C0/MAC_COL/UART3_CTSN/SPDIF_TX |
| 30 | GPIO4_A3/I2S1_SCLK_D_1.8V | I/O | DOWN | I2S1_SCLK | I2S 1 port, | 1.8V | AF3 | GPIO4_A3/I2S1_SCLK |
| 32 | GPIO4_A4/I2S1_LRCK_RX_D_1.8V | I/O | DOWN | I2S1_LRCK_RX | I2S 1 port, | 1.8V | AA7 | GPIO4_A4/I2S1_LRCK_RX |
| 34 | GPIO4_A5/I2S1_LRCK_TX_D_1.8V | I/O | DOWN | I2S1_LRCK_TX | I2S 1 port, | 1.8V | AJ1 | GPIO4_A5/I2S1_LRCK_TX |
| 36 | GPIO4_A6/I2S1_SDIO_D_1.8V | I/O | DOWN | I2S1_SDIO | I2S 1 port, | 1.8V | AD6 | GPIO4_A6/I2S1_SDIO |
| 38 | GPIO4_A7/I2S1_SDO0_D_1.8V | I/O | DOWN | I2S1_SDO0 | I2S 1 port, | 1.8V | AC6 | GPIO4_A7/I2S1_SDO0 |
| 40 | GND_5 | G | | GND | GND | | | |



Interface definition

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|-----|--|-----|------|------------------------------|---|------|------|-----------------------------------|
| 72 | GPIO2_D2/SDIO0_DETIN/PCIE_CLKREQN_U_1.8V | I/O | UP | BT_WAKE_L | AP wake up BT module | 1.8V | AL4 | GPIO2_D2/SDIO0_DETIN/PCIE_CLKREQN |
| 74 | GPIO0_A4/SDIO0_INTN_D_1.8V | I/O | DOWN | BT_HOST_WAKE_L | BT module wake up AP | 1.8V | AA25 | GPIO0_A4/SDIO0_INTN |
| 76 | GND_8 | G | | GND | GND | | | |
| 78 | GPIO2_D4/SDIO0_BKPWR_D_1.8V | I/O | DOWN | GPIO2_D4/3G_PWR_EN | 3G Power_EN (active high) | 1.8V | AF8 | GPIO2_D4/SDIO0_BKPWR |
| 80 | GPIO4_D4_D_3.0V | I/O | DOWN | TP_INT1 | Touch pannel interrupt input 1 | 3.0V | AH5 | GPIO4_D4 |
| 82 | GPIO1_B1/SPI1_CLK/PMCU_JTAG_TCK_U_3.0V | I/O | UP | SPI1_CLK/GPIO1_B1_u | SPI bus port 1 | 3.0V | P28 | GPIO1_B1/SPI1_CLK/PMCU_JTAG_TCK |
| 84 | GPIO1_B2/SPI1_CS0/PMCU_JTAG_TMS_U_3.0V | I/O | UP | SPI1_CS0/GPIO1_B2_u | SPI bus port 1 | 3.0V | P29 | GPIO1_B2/SPI1_CS0/PMCU_JTAG_TMS |
| 86 | GPIO1_B0/SPI1_TXD/UART4_TX_U_3.0V | I/O | UP | SPI1_RXD/UART4_RX/GPIO1_B0_u | SPI bus port 1 | 3.0V | R31 | GPIO1_B0/SPI1_TXD/UART4_RX |
| 88 | GPIO1_A7/SPI1_RXD/UART4_RX_U_3.0V | I/O | UP | SPI1_RXD/UART4_RX/GPIO1_A7_u | SPI bus port 1 | 3.0V | P27 | GPIO1_A7/SPI1_RXD/UART4_RX |
| 90 | GPIO1_C6/TCPD_VBUS_SOURCE0_D_3.0V | I/O | DOWN | SDMMC0_PWR | TF_Card Power_EN (active high) | 3.0V | L25 | GPIO1_C6/TCPD_VBUS_SOURCE0 |
| 92 | GPIO1_D0/TCPD_VBUS_SOURCE2_D_3.0V | I/O | DOWN | GPIO1_D0_d | GPIO | 3.0V | L26 | GPIO1_D0/TCPD_VBUS_SOURCE2 |
| 94 | GPIO4_C2/PWM0/VOP0_PWM/VOP1_PWM_D_3.0V | I/O | DOWN | LCD_BL_PWM0 | PWM0 output:EDP backlight control(external) | 3.0V | AF5 | GPIO4_C2/PWM0/VOP0_PWM/VOP1_PWM |
| 96 | GPIO4_C6/PWM1_D_3.0V | I/O | DOWN | LCD_BL_PWM1 | PWM1 output:MIPI backlight control | 3.0V | AL3 | GPIO4_C6/PWM1 |
| 98 | GPIO0_A6/PWM3A_IR_D_1.8V | I/O | DOWN | IR_INT | IR receiver input | 1.8V | P25 | GPIO0_A6/PWM3A_IR |
| 100 | GPIO4_C3/UART2C_RX_U_3.0V | I/O | UP | UART2DBG_RX | Uart2 serial port data input, for AP debug | 3.0V | AK2 | GPIO4_C3/UART2C_RX |



Interface definition

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|-----|---|-----|------|----------------------|---|------|------|--|
| 102 | GPIO4_C4/UART2C_TX_U_3.0V | I/O | UP | UART2DBG_TX | Uart2 serial port data output ,for AP debug | 3.0V | AJ4 | GPIO4_C4/UART2C_TX |
| 104 | GPIO2_A0/VOP_D0/CIF_D0/I2C2_SDA_U_3.0V | I/O | UP | GPIO2_B0/MIPI_PDN0_H | MIPI Camera0 enable | 3.0V | G31 | GPIO2_A0/VOP_D0/CIF_D0/I2C2_SDA |
| 106 | GPIO2_A1/VOP_D1/CIF_D1/I2C2_SCL_U_3.0V | I/O | UP | GPIO2_A1/MIPI_PDN1_H | MIPI Camera1 enable | 3.0V | H25 | GPIO2_A1/VOP_D1/CIF_D1/I2C2_SCL |
| 108 | GPIO2_A7/VOP_D7/CIF_D7/I2C7_SDA_U_3.0V | I/O | UP | EDP_HPD | EDP_DET Input | 3.0V | G30 | GPIO2_A7/VOP_D7/CIF_D7/I2C7_SDA |
| 110 | GPIO2_B0/VOP_CLK/CIF_VSYNC/I2C7_SCL_U_3.0V | I/O | UP | WK2124_INT | WK2124_INT Input | 3.0V | H28 | GPIO2_B0/VOP_CLK/CIF_VSYNC/I2C7_SCL |
| 112 | GPIO2_A2/VOP_D2/CIF_D2_D_3.0V | I/O | DOWN | TP_INT | TP_INT Input | 3.0V | H30 | GPIO2_A2/VOP_D2/CIF_D2 |
| 114 | GPIO2_A3/VOP_D3/CIF_D3_D_3.0V | I/O | DOWN | AT18_RST | AT18_Reset Output (active low) | 3.0V | F28 | GPIO2_A3/VOP_D3/CIF_D3 |
| 116 | GPIO1_A2/ISPO_FLASHTRIGIN/ISP1_FLASHTRIGIN/TCPD_CC1_VCONN_EN_D_3.0V | I/O | DOWN | WK2124_RST | WK2124_Reset Output (active low) | 3.0V | R26 | GPIO1_A2/ISPO_FLASHTRIGIN/ISP1_FLASHTRIGIN/TCPD_CC1_VCONN_EN |
| 118 | GPIO4_D5_D_3.0V | I/O | DOWN | LCD_RST | LCD panel reset output (active low) | 3.0V | AJ3 | GPIO4_D5 |
| 120 | GPIO4_D6_D_3.0V | I/O | DOWN | PCIE_RST | PCIE_Reset Output (active low) | 3.0V | AG4 | GPIO4_D6 |
| 122 | GPIO4_D3_D_3.0 | I/O | DOWN | GPIO4_D3_d | GPIO | 3.0V | AK3 | GPIO4_D3 |
| 124 | GND_10 | G | | GND | GND | | | |
| 126 | MIPI_TX0_D3P | O | | MIPI_TX0_D3P | MIPI-DSI0 differential lane 3 positive | 1.8V | AG9 | MIPI_TX0_D3P |
| 128 | MIPI_TX0_D3N | O | | MIPI_TX0_D3N | MIPI-DSI0 differential lane 3 negative | 1.8V | AH9 | MIPI_TX0_D3N |
| 130 | MIPI_TX0_D2P | O | | MIPI_TX0_D2P | MIPI-DSI0 differential lane 2 positive | 1.8V | AG11 | MIPI_TX0_D2P |



Interface definition

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|-----|-------------------------------|-----|------|---------------|--|------|------|------------------------|
| 132 | MIPI_TX0_D2N | O | | MIPI_TX0_D2N | MIPI-DSI0 differential lane 2 negative | 1.8V | AH11 | MIPI_TX0_D2N |
| 134 | MIPI_TX0_CLKP | O | | MIPI_TX0_CLKP | MIPI-DSI0 differential clock lane positive | 1.8V | AG12 | MIPI_TX0_CLKP |
| 136 | MIPI_TX0_CLKN | O | | MIPI_TX0_CLKN | MIPI-DSI0 differential clock lane negative | 1.8V | AH12 | MIPI_TX0_CLKN |
| 138 | MIPI_TX0_D1P | O | | MIPI_TX0_D1P | MIPI-DSI0 differential lane 1 positive | 1.8V | AG14 | MIPI_TX0_D1P |
| 140 | MIPI_TX0_D1N | O | | MIPI_TX0_D1N | MIPI-DSI0 differential lane 1 negativ | 1.8V | AH14 | MIPI_TX0_D1N |
| 142 | MIPI_TX0_D0P | O | | MIPI_TX0_D0P | MIPI-DSI0 differential lane 0 positive | 1.8V | AG15 | MIPI_TX0_D0P |
| 144 | MIPI_TX0_D0N | O | | MIPI_TX0_D0N | MIPI-DSI0 differential lane 0 negativ | 1.8V | AH15 | MIPI_TX0_D0N |
| 146 | TYPEC1_DM | | | USB3_DM | TYPEC1 Data Minus port | | AH24 | TYPEC1_DN |
| 148 | TYPEC1_DP | | | USB3_DP | TYPEC1 Data Plus port | | AG24 | TYPEC1_DP |
| 150 | ADC_IN0 | I | | ADC_IN0 | ADC0 input,Core board interiorl pull up Resistor 10K | 1.8V | AG26 | ADC_IN0 |
| 152 | ADC_IN1 | I | | RECOVER | ADC0(recover_key) input, Core board interiorl pull up Resistor 10K | 1.8V | AH26 | ADC_IN1 |
| 154 | ADC_IN2 | I | | LINE_IN_DET | ADC2 input, Core board interiorl pull up Resistor 10K | 1.8V | AG25 | ADC_IN2 |
| 156 | ADC_IN3 | I | | HP_DET | AD3C input, Core board interiorl pull up Resistor 10K | 1.8V | AG28 | ADC_IN3 |
| 158 | GPIO4_D2_D_3.0V | I/O | DOWN | PCIE_WAKE | AP wake up PCIE Output | 3.0V | AH3 | GPIO4_D2 |
| 160 | GPIO4_D0/PCIE_CLKREQNB_U_3.0V | I/O | UP | PCIE_CLKREQ | PCIE CLKREQN Output | 3.0V | AE6 | GPIO4_D0/PCIE_CLKREQNB |



Interface definition

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|---|---|-----|------|------------|--|--------|-----|------------------------------------|
| 162 | GPIO4_D1/DP_HOTPLUG_D_3.0V | I/O | DOWN | GPIO4_D1 | GPIO | 3.0V | AK4 | GPIO4_D1/DP_HOTPLUG |
| 164 | GND_12 | G | | GND | GND | | | |
| 166 | GPIO4_B1/SDMMC0_D1/UART2A_TX_U_3.0V | I/O | UP | SDMMC0_D1 | SDMMC0 data1 (TF-Card) | Note 2 | Y26 | GPIO4_B1/SDMMC0_D1/UART2A_TX |
| 168 | GPIO4_B0/SDMMC0_D0/UART2A_RX_U_3.0V | I/O | UP | SDMMC0_D0 | SDMMC0 data0 (TF-Card) | | Y27 | GPIO4_B0/SDMMC0_D0/UART2A_RX |
| 170 | GPIO4_B2/SDMMC0_D2/APJTAG_TCK_U_3.0V | I/O | UP | SDMMC0_D2 | SDMMC0 data2 (TF-Card) | | Y28 | GPIO4_B2/SDMMC0_D2/APJTAG_TCK |
| 172 | GPIO4_B5/SDMMC0_CMD/MCUJTAG_TMS_U_3.0V | I/O | UP | SDMMC0_CMD | SDMMC0 command output (TF-Card) | | V25 | GPIO4_B5/SDMMC0_CMD/MCUJTAG_TMS |
| 174 | GPIO4_B3/SDMMC0_D3/APJTAG_TMS_U_3.0V | I/O | UP | SDMMC0_D3 | SDMMC0 data3 (TF-Card) | | U27 | GPIO4_B3/SDMMC0_D3/APJTAG_TMS |
| 176 | GPIO4_B4/SDMMC0_CLKOUT/MUCJTAG_TCK_D_3.0V | I/O | DOWN | SDMMC0_CLK | SDMMC0 clock output (TF-Card) Core board internal series resistance 22R | | V29 | GPIO4_B4/SDMMC0_CLKOUT/MUCJTAG_TCK |
| Note 2: Default is 3.0V; SDMMC0 1.8V(SDIO3.0 model)/3.0V(SDIO2.0 model) Auto | | | | | | | | |
| 178 | GPIO0_A7/SDMMC0_DET_U_1.8V | I/O | UP | SDMMC0_DET | SDMMC0 detect input (active low) | 1.8V | V28 | GPIO0_A7/SDMMC0_DET |
| 180 | GND_16 | G | | GND | GND | | | |
| 182 | GPIO3_B5/MAC_MDIO/UART1_TX_U_3.3V | I/O | UP | MAC_MDIO | MAC management command and data | 3.3V | G26 | GPIO3_B5/MAC_MDIO/UART1_TX |
| 184 | GPIO3_B0/MAC_MDC/SPI0_CSN1_U_3.3V | I/O | UP | MAC_MDC | MAC management clock | 3.3V | E29 | GPIO3_B0/MAC_MDC/SPI0_CSN1 |
| 186 | GPIO3_C1/MAC_TXCLK/UART3_RTSN_U_3.3V | I/O | UP | PHY_TXCLK | MAC transmit clock Core board internal series resistance 22R | 3.3V | E28 | GPIO3_C1/MAC_TXCLK/UART3_RTSN |
| 188 | GPIO3_B6/MAC_RXCLK/UART3_RX_U_3.3V | I/O | UP | MAC_RXCLK | MAC receive clock | 3.3V | F25 | GPIO3_B6/MAC_RXCLK/UART3_RX |
| 190 | GND_21 | G | | GND | GND | | | |



Interface definition

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|-----|--|-----|------|----------|---|------|-----|---------------------------------------|
| 192 | GPIO3_B3/MAC_CLK/I2C5_SCL_U_3.3V | I/O | UP | MAC_CLK | MAC reference clock output , I2C serial port 5, need external pull-up Core board internal series resistance 22R | 3.3V | G24 | GPIO3_B3/MAC_CLK/I2C5_SCL |
| 194 | GPIO3_A7/MAC_RXD1/SPI0_CSNO_U_3.3V | I/O | UP | MAC_RXD1 | MAC receive data | 3.3V | F27 | GPIO3_A7/MAC_RXD1/SPI0_CSNO |
| 196 | GPIO3_A3/MAC_RXD3/SPI4_CSNO_U_3.3V | I/O | UP | MAC_RXD3 | MAC receive data | 3.3V | E25 | GPIO3_A3/MAC_RXD3/SPI4_CSNO |
| 198 | GPIO3_A6/MAC_RXD0/SPI0_CLK_U_3.3V | I/O | UP | MAC_RXD0 | MAC receive data | 3.3V | E26 | GPIO3_A6/MAC_RXD0/SPI0_CLK |
| 200 | GPIO3_A2/MAC_RXD2/SPI4_CLK_U_3.3V | I/O | UP | MAC_RXD2 | MAC receive data | 3.3V | E30 | GPIO3_A2/MAC_RXD2/SPI4_CLK |
| 202 | GPIO3_B1/MAC_RXDV_D_3.3V | I/O | DOWN | MAC_RXDV | MAC receive data valid | 3.3V | C27 | GPIO3_B1/MAC_RXDV |
| 204 | GPIO3_A4/MAC_TXD0/SPI0_RXD_D_3.3V | I/O | DOWN | PHY_TXD0 | MAC transmit data Core board internal series resistance 22R | 3.3V | D26 | GPIO3_A4/MAC_TXD0/SPI0_RXD |
| 206 | GPIO3_A0/MAC_TXD2/SPI4_RXD_D_3.3V | I/O | DOWN | PHY_TXD2 | MAC transmit data Core board internal series resistance 22R | 3.3V | F24 | GPIO3_A0/MAC_TXD2/SPI4_RXD |
| 208 | GPIO3_A1/MAC_TXD3/SPI4_TXD_D_3.3V | I/O | DOWN | PHY_TXD3 | MAC transmit data Core board internal series resistance 22R | 3.3V | H23 | GPIO3_A1/MAC_TXD3/SPI4_TXD |
| 210 | GPIO3_A5/MAC_TXD1/SPI0_TXD_D_3.3V | I/O | DOWN | PHY_TXD1 | MAC transmit data Core board internal series resistance 22R | 3.3V | G23 | GPIO3_A5/MAC_TXD1/SPI0_TXD |
| 212 | GPIO3_B4/MAC_TXEN/UART1_RX_U_3.3V | I/O | UP | PHY_TXEN | MAC transmit enable Core board internal series resistance 22R | 3.3V | H22 | GPIO3_B4/MAC_TXEN/UART1_RX |
| 214 | GPIO3_B2/MAC_RXER/I2C5_SDA_U_3.3V | I/O | UP | FAN_CTL | PHY interrupt input, I2C serial port 5, need external pull-up Core board internal series resistance 22R | 3.3V | F23 | GPIO3_B2/MAC_RXER/I2C5_SDA |
| 216 | GPIO3_B7/MAC_CRS/CIF_CLKOUTB/UART3_TX_U_3.3V | I/O | UP | PHY_RST | phy reset output(active low) | 3.3V | B27 | GPIO3_B7/MAC_CRS/UART3_TX/CIF_CLKOUTB |



Interface definition

| | | | | | | | | |
|-----|-----------------|---|--|---------------|--|----------|--|--|
| 218 | RESET_KEY | | | RESET_KEY | system reset signal Input, External connection Reset key, active low | | | |
| 220 | PMIC_EXT_EN | | | PMIC_EXT_EN | External Power enable output, Voltage 5V | | | |
| 222 | GND_26 | G | | GND | GND | | | |
| 224 | VDDIO_WL_2 | P | | VDDIO_WL | 1.8V output,Max current 1A to WIFI_IO | 1.8V_OUT | | |
| 226 | VCC_3V3_S0_2 | P | | VCC_LAN | 3.3V output,Max current 300mA TO LAN | 3.3V_OUT | | |
| 228 | VCCA1V8_CODEC_2 | P | | VCCA1V8_CODEC | 1.8V output,Max current 150mA to Codec | 1.8V_OUT | | |
| 230 | VCCA3V0_CODEC_2 | P | | VCCA3V0_CODEC | 3.0V output,Max current 300mA to Codec | 3.0V_OUT | | |
| 232 | VCC_RTC | P | | VCC_RTC | 5.0V input, Max current 50mA | 5.0V_IN | | |
| 234 | VCC3V3_SYS_2 | P | | VCC3V3_SYS | 3.3V output,Max current 1A | 3.3V_OUT | | |
| 236 | NC_1 | | | | | | | |
| 238 | NC_3 | | | | | | | |
| 240 | NC_5 | | | | | | | |
| 242 | NC_7 | | | | | | | |
| 244 | GND_27 | G | | GND | Power ground | | | |
| 246 | GND_29 | G | | GND | Power ground | | | |
| 248 | GND_31 | G | | GND | Power ground | | | |
| 250 | GND_33 | G | | GND | Power ground | | | |



Interface definition

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|-----|------------|---|--|------------|-------------------------|---------|--|--|
| 252 | VCC_SYS_2 | P | | VCC5V0_SYS | Input Voltage 4.8V-5.5V | 5.0V_IN | | |
| 254 | VCC_SYS_4 | P | | VCC5V0_SYS | Input Voltage 4.8V-5.5V | 5.0V_IN | | |
| 256 | VCC_SYS_6 | P | | VCC5V0_SYS | Input Voltage 4.8V-5.5V | 5.0V_IN | | |
| 258 | VCC_SYS_8 | P | | VCC5V0_SYS | Input Voltage 4.8V-5.5V | 5.0V_IN | | |
| 260 | VCC_SYS_10 | P | | VCC5V0_SYS | Input Voltage 4.8V-5.5V | 5.0V_IN | | |



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