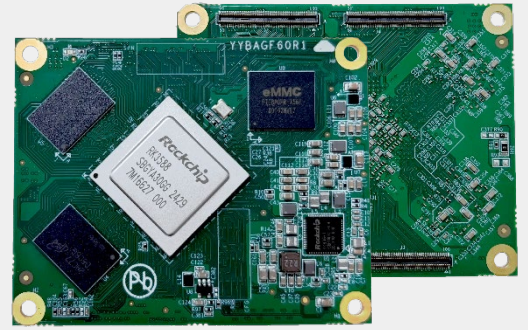


## VT-CORE-3588

### Computer-on-Module



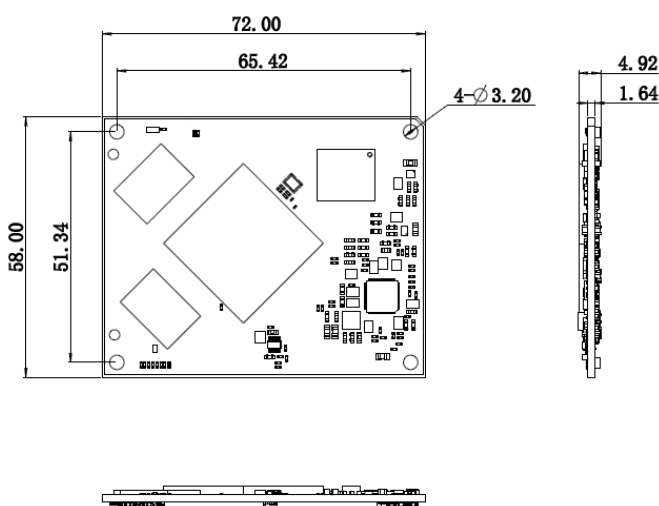
#### Product Brief

VT-CORE-3588 computer-on-module is powered by Rockchip's flagship RK3588 AIoT chipset, seamlessly integrating high-performance computing, and advanced multimedia capabilities within a compact and energy-efficient form factor. It features an octa-core 64-bit CPU and a powerful ARM Mali-G610 MP4 GPU, delivering seamless multitasking and advanced graphics rendering. The 6 TOPS built-in NPU excels in machine learning and AI workloads, making it ideal for applications such as smart vision, robotics, and edge AI.

VT-CORE-3588 supports 8K video decoding, 8K encoding, and multiple display outputs, enabling stunning visuals for digital signage, smart displays, and multimedia systems. In addition, it offers rich I/O options, including MIPI DSI, MIPI CSI, HDMI, USB, CAN, I<sup>2</sup>C, PCIe, and UART, all routed to four expansion headers for flexible integration and scalability.

Designed as a reliable and versatile industrial IoT solution, VT-CORE-3588 is perfect for AI-driven IoT devices, robotics, multimedia entertainment, and smart display applications, offering both performance and flexibility in demanding environments.

#### Product Outlines and Features



#### VT-CORE-3588

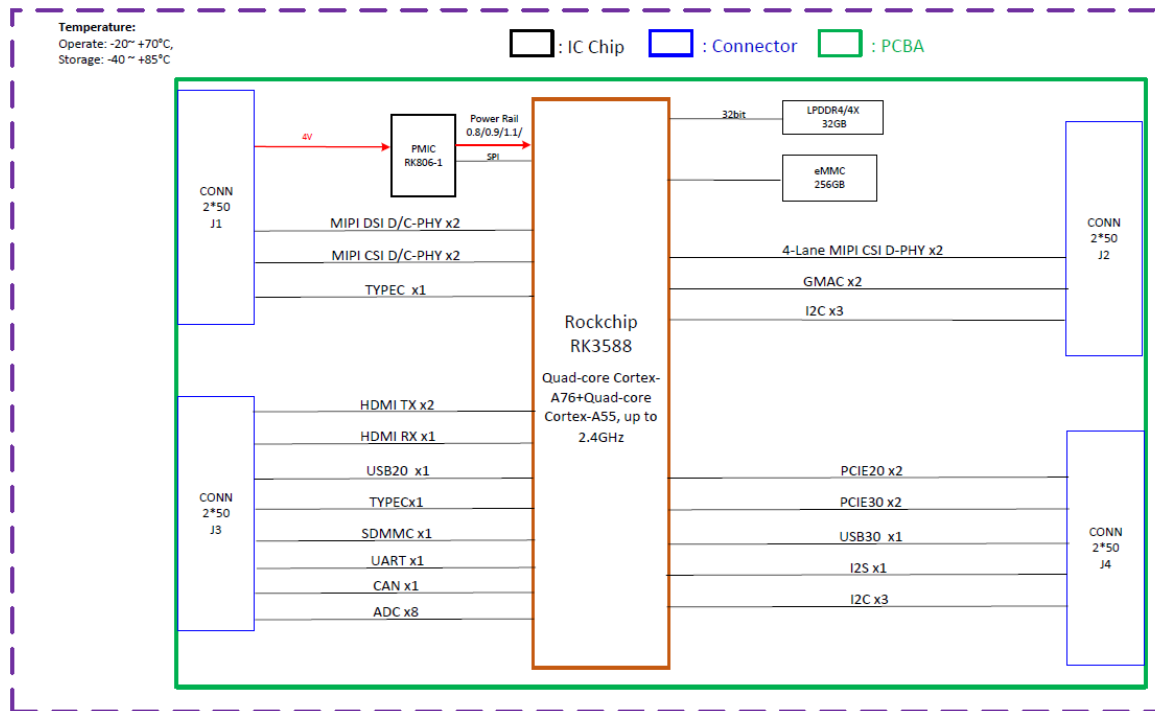
-  Rockchip RK3588 octa-core flagship processor
-  8K video decoding and encoding
-  HDMI/eDP/MIPI DSI for high-quality display
-  Multiple camera interfaces supported
-  Rich interfaces for flexible expansion
-  Dual gigabit Ethernet
-  AI acceleration and edge computing
-  Available in extended temperature configurations

## VT-CORE-3588 Computer-on-Module Datasheet

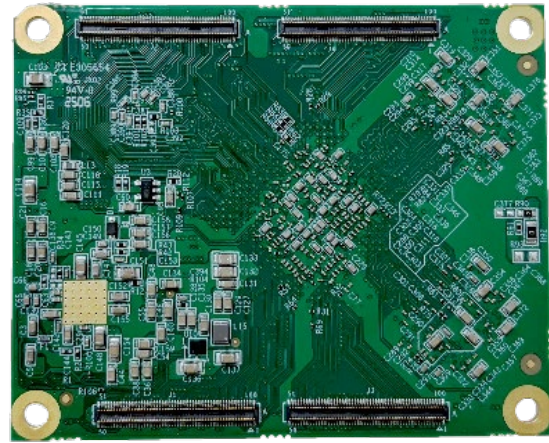
| Specifications                 |                                                                                                               |                                                                                                                                                                        |                                             |
|--------------------------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| System                         | CPU                                                                                                           | RK3588 Quad-core Cortex-A76 + Quad-core Cortex-A55 processor, Max. 2.4GHz<br>Optional: RK3588J Quad-core Cortex-A76 (Max. 2.0GHz) + Quad-core Cortex-A55 (Max. 1.7GHz) |                                             |
|                                | GPU                                                                                                           | ARM Mali-G610 MC4, Max. 1GHz<br>OpenGL ES1.1/2.0/3.2, OpenCL 2.2, Vulkan 1.2 supported                                                                                 |                                             |
|                                | NPU                                                                                                           | 6 TOPS, int4/int8/int16/FP16/BF16/TF32 supported                                                                                                                       |                                             |
|                                | Memory                                                                                                        | 32GB LPDDR4x                                                                                                                                                           |                                             |
|                                | Storage                                                                                                       | 256GB eMMC V5.1                                                                                                                                                        |                                             |
| Media                          | Video processing                                                                                              | 8K@30fps H.265/H.264 video encoder                                                                                                                                     | 8K@60fps H.265/8K@30fps H.264 video decoder |
|                                | Camera ISP                                                                                                    | Up to 48MP: 8064 × 6048@15fps dual ISP (HDR, 3DNR, 2DNR)                                                                                                               |                                             |
| Power                          | Input                                                                                                         | 4V DC                                                                                                                                                                  |                                             |
|                                | Consumption                                                                                                   | Typical: 1.8W (power-on without applications running)                                                                                                                  |                                             |
| Software                       | Operating system                                                                                              | Android12, Debian 11, Ubuntu 20.04                                                                                                                                     |                                             |
|                                | Device management                                                                                             | BlueSphere MDM (Android version optional)                                                                                                                              |                                             |
| Mechanical                     | Dimensions                                                                                                    | 72mm x 58mm x 4.92mm                                                                                                                                                   |                                             |
| Environment Condition          | Temperature                                                                                                   | Operating: 0°C ~ +60°C<br>(Optional RK3588J: -40°C~+85°C)                                                                                                              | Storage: -40°C ~ +85°C                      |
|                                | Humidity                                                                                                      | Operating: 10%~90% RH                                                                                                                                                  | Storage: 5%~95% RH                          |
|                                |                                                                                                               |                                                                                                                                                                        |                                             |
| I/O*                           |                                                                                                               |                                                                                                                                                                        |                                             |
| Display                        | 2 x 4-lane MIPI DSI (D-PHY) / 2 x 3-lane MIPI DSI (C-PHY), up to 4K@60Hz                                      |                                                                                                                                                                        |                                             |
|                                | 2 x HDMI TX 2.0/2.1 / eDP, 7680 × 4320@60Hz for HDMI TX; 4K@60Hz for eDP                                      |                                                                                                                                                                        |                                             |
|                                | 2 x DP TX 1.4a / USB 3.1 Type-C OTG, up to 7680 × 4320@30Hz                                                   |                                                                                                                                                                        |                                             |
|                                | 1 x HDMI RX 1.4b/2.0, 2160p@60Hz for HDMI 2.0; 1080p@120Hz for HDMI 1.4b                                      |                                                                                                                                                                        |                                             |
| Camera                         | 2 x 4-lane MIPI CSI (D-PHY) / 2 x 3-lane MIPI CSI (C-PHY)                                                     |                                                                                                                                                                        |                                             |
| (4 or 5 or 6 cameras in total) | 2 x 4-lane MIPI CSI (D-PHY) / 4 x 2-lane MIPI CSI (D-PHY) / 1 x 4-lane MIPI CSI + 2 x 2-lane MIPI CSI (D-PHY) |                                                                                                                                                                        |                                             |
| Ethernet                       | 2 x RGMII/RMII (10/100/1000Mbps)                                                                              |                                                                                                                                                                        |                                             |
| USB                            | 2 x USB 3.1 Type-C OTG / DP TX 1.4a                                                                           |                                                                                                                                                                        |                                             |
|                                | 1 x USB 3.0 Host                                                                                              |                                                                                                                                                                        |                                             |
|                                | 1 x USB 2.0 Host                                                                                              |                                                                                                                                                                        |                                             |
| UART                           | 1 x UART (baud rate up to 4Mbps)                                                                              |                                                                                                                                                                        |                                             |
| CAN                            | 1 x CAN (support CAN 2.0B)                                                                                    |                                                                                                                                                                        |                                             |
| GPIO                           | 124 x GPIO (Max.)                                                                                             |                                                                                                                                                                        |                                             |
| I <sup>2</sup> S               | 1 x I <sup>2</sup> S                                                                                          |                                                                                                                                                                        |                                             |
| I <sup>2</sup> C               | 6 x I <sup>2</sup> C                                                                                          |                                                                                                                                                                        |                                             |
| PCIe                           | 2 x PCIe 2.0 (5Gbps)                                                                                          | 2 x PCIe 3.0 (8Gbps)                                                                                                                                                   |                                             |
| SATA                           | 1 x SATA 3.0                                                                                                  |                                                                                                                                                                        |                                             |
| ADC                            | 8 x 12-bit SAR-ADC, up to 1MS/S sampling rate                                                                 |                                                                                                                                                                        |                                             |
| SDMMC                          | 1 x SDMMC                                                                                                     |                                                                                                                                                                        |                                             |
| PWM                            | 3 x PWM                                                                                                       |                                                                                                                                                                        |                                             |

\* The count of each I/O is based on the default function assigned to the pins, as outlined in **Pinout**.

## Block Diagram



## Product Exterior



## Pinout

| Header | Pin | Function 1*    | Function 2* | GPIO | Level | Description              |
|--------|-----|----------------|-------------|------|-------|--------------------------|
| J1     | 100 | GND            | -           | -    | -     | Ground                   |
|        | 99  | TYPECO_SSRX1_N | DPO_TX0N    | -    | -     | Type-C 0 receiver 1 -    |
|        | 98  | TYPECO_SSRX1_P | DPO_TX0P    | -    | -     | Type-C 0 receiver 1 +    |
|        | 97  | GND            | -           | -    | -     | Ground                   |
|        | 96  | TYPECO_SSTX1_N | DPO_TX1N    | -    | -     | Type-C 0 transmitter 1 - |
|        | 95  | TYPECO_SSTX1_P | DPO_TX1P    | -    | -     | Type-C 0 transmitter 1 + |

| Header | Pin | Function 1*         | Function 2*                                                | GPIO     | Level | Description                       |
|--------|-----|---------------------|------------------------------------------------------------|----------|-------|-----------------------------------|
| J1     | 94  | GND                 | -                                                          | -        | -     | Ground                            |
|        | 93  | TYPECO_SSRX2_N      | DP0_TX2N                                                   | -        | -     | Type-C 0 receiver 2 -             |
|        | 92  | TYPECO_SSRX2_P      | DP0_TX2P                                                   | -        | -     | Type-C 0 receiver 2 +             |
|        | 91  | GND                 | -                                                          | -        | -     | Ground                            |
|        | 90  | TYPECO_SSTX2_N      | DP0_TX3N                                                   | -        | -     | Type-C 0 transmitter 2 -          |
|        | 89  | TYPECO_SSTX2_P      | DP0_TX3P                                                   | -        | -     | Type-C 0 transmitter 2 +          |
|        | 88  | GND                 | -                                                          | -        | -     | Ground                            |
|        | 87  | MIPI_DPHY1_TX_D0_N  | MIPI_CPHY1_TX_TRIO0_A                                      | -        | -     | MIPI DPHY 1 transmitting data 0 - |
|        | 86  | MIPI_DPHY1_TX_D0_P  | MIPI_CPHY1_TX_TRIO0_B                                      | -        | -     | MIPI DPHY 1 transmitting data 0 + |
|        | 85  | GND                 | -                                                          | -        | -     | Ground                            |
|        | 84  | MIPI_DPHY1_TX_D1_N  | MIPI_CPHY1_TX_TRIO0_C                                      | -        | -     | MIPI DPHY 1 transmitting data 1 - |
|        | 83  | MIPI_DPHY1_TX_D1_P  | MIPI_CPHY1_TX_TRIO1_A                                      | -        | -     | MIPI DPHY 1 transmitting data 1 + |
|        | 82  | GND                 | -                                                          | -        | -     | Ground                            |
|        | 81  | MIPI_DPHY1_TX_CLK_N | MIPI_CPHY1_TX_TRIO1_B                                      | -        | -     | MIPI DPHY 1 transmitting clock -  |
|        | 80  | MIPI_DPHY1_TX_CLK_P | MIPI_CPHY1_TX_TRIO1_C                                      | -        | -     | MIPI DPHY 1 transmitting clock +  |
|        | 79  | GND                 | -                                                          | -        | -     | Ground                            |
|        | 78  | MIPI_DPHY1_TX_D2_N  | MIPI_CPHY1_TX_TRIO2_A                                      | -        | -     | MIPI DPHY 1 transmitting data 2 - |
|        | 77  | MIPI_DPHY1_TX_D2_P  | MIPI_CPHY1_TX_TRIO2_B                                      | -        | -     | MIPI DPHY 1 transmitting data 2 + |
|        | 76  | GND                 | -                                                          | -        | -     | Ground                            |
|        | 75  | MIPI_DPHY1_TX_D3_N  | MIPI_CPHY1_TX_TRIO2_C                                      | -        | -     | MIPI DPHY 1 transmitting data 3 - |
|        | 74  | MIPI_DPHY1_TX_D3_P  | -                                                          | -        | -     | MIPI DPHY 1 transmitting data 3 + |
|        | 73  | GND                 | -                                                          | -        | -     | Ground                            |
|        | 72  | MIPI_DPHY0_TX_D0_N  | MIPI_CPHY0_TX_TRIO0_A                                      | -        | -     | MIPI DPHY 0 transmitting data 0 - |
|        | 71  | MIPI_DPHY0_TX_D0_P  | MIPI_CPHY0_TX_TRIO0_B                                      | -        | -     | MIPI DPHY 0 transmitting data 0 + |
|        | 70  | GND                 | -                                                          | -        | -     | Ground                            |
|        | 69  | MIPI_DPHY0_TX_D1_N  | MIPI_CPHY0_TX_TRIO0_C                                      | -        | -     | MIPI DPHY 0 transmitting data 1 - |
|        | 68  | MIPI_DPHY0_TX_D1_P  | MIPI_CPHY0_TX_TRIO1_A                                      | -        | -     | MIPI DPHY 0 transmitting data 1 + |
|        | 67  | GND                 | -                                                          | -        | -     | Ground                            |
|        | 66  | MIPI_DPHY0_TX_CLK_N | MIPI_CPHY0_TX_TRIO1_B                                      | -        | -     | MIPI DPHY 0 transmitting clock -  |
|        | 65  | MIPI_DPHY0_TX_CLK_P | MIPI_CPHY0_TX_TRIO1_C                                      | -        | -     | MIPI DPHY 0 transmitting clock +  |
|        | 64  | GND                 | -                                                          | -        | -     | Ground                            |
|        | 63  | MIPI_DPHY0_TX_D2_N  | MIPI_CPHY0_TX_TRIO2_A                                      | -        | -     | MIPI DSI 0 transmitting data 2 -  |
|        | 62  | MIPI_DPHY0_TX_D2_P  | MIPI_CPHY0_TX_TRIO2_B                                      | -        | -     | MIPI DSI 0 transmitting data 2 +  |
|        | 61  | GND                 | -                                                          | -        | -     | Ground                            |
|        | 60  | MIPI_DPHY0_TX_D3_N  | MIPI_CPHY0_TX_TRIO2_C                                      | -        | -     | MIPI DPHY 0 transmitting data 3 - |
|        | 59  | MIPI_DPHY0_TX_D3_P  | -                                                          | -        | -     | MIPI DPHY 0 transmitting data 3 + |
|        | 58  | GND                 | -                                                          | -        | -     | Ground                            |
|        | 57  | MIPI_DSI0_RESET     | CIF_D3/BT1120_D3/<br>PCIE30X1_0_CLKREQN_M1/<br>UART0_TX_M2 | GPIO4_A3 | 3.3V  | MIPI DSI 0 reset                  |

\* Function 1 is set as the default. For specific pins, there are multiple functions available.

| Header | Pin | Function 1           | Function 2                                                                        | GPIO     | Level | Description                    |
|--------|-----|----------------------|-----------------------------------------------------------------------------------|----------|-------|--------------------------------|
| J1     | 56  | MIPI_DSI1_RESET      | CIF_D4/BT1120_D4/PCIE30X1_0<br>_WAKEN_M1/I2C3_SCL_M2/<br>UART0_RX_M2/SPI2_MISO_M1 | GPIO4_A4 | 3.3V  | MIPI DSI 1 reset               |
|        | 55  | RESET_L              | -                                                                                 | -        | -     | Module reset                   |
|        | 54  | VCC4.0               | -                                                                                 | -        | -     | 4V power input                 |
|        | 53  |                      | -                                                                                 | -        | -     | 4V power input                 |
|        | 52  |                      | -                                                                                 | -        | -     | 4V power input                 |
|        | 51  |                      | -                                                                                 | -        | -     | 4V power input                 |
|        | 1   | GND                  | -                                                                                 | -        | -     | Ground                         |
|        | 2   | TYPEC1_OTG_D_N       | -                                                                                 | -        | -     | Type-C 1 OTG data -            |
|        | 3   | TYPEC1_OTG_D_P       | -                                                                                 | -        | -     | Type-C 1 OTG data +            |
|        | 4   | GND                  | -                                                                                 | -        | -     | Ground                         |
|        | 5   | TYPEC1_SBU1          | DP1_AUXP                                                                          | -        | -     | Type-C 1 SBU1                  |
|        | 6   | TYPEC1_SBU2          | DP1_AUXN                                                                          | -        | -     | Type-C 1 SBU2                  |
|        | 7   | TYPECO_USB20_VBUSDET | TYPEC1                                                                            | -        | -     | Type-C 0 plug detection        |
|        | 8   | TYPECO_SBU1          | DPO_AUXP                                                                          | -        | -     | Type-C 0 SBU1                  |
|        | 9   | TYPECO_SBU2          | DPO_AUXN                                                                          | -        | -     | Type-C 0 SBU1                  |
|        | 10  | GND                  | -                                                                                 | -        | -     | Ground                         |
|        | 11  | TYPECO_OTG_D_N       | -                                                                                 | -        | -     | Type-C 0 OTG data -            |
|        | 12  | TYPECO_OTG_D_P       | -                                                                                 | -        | -     | Type-C 0 OTG data +            |
|        | 13  | GND                  | -                                                                                 | -        | -     | Ground                         |
|        | 14  | MIPI_DPHY1_RX_D0_P   | MIPI_CPHY1_RX_TRIO0_B                                                             | -        | -     | MIPI DPHY 1 receiving data 0 + |
|        | 15  | MIPI_DPHY1_RX_D0_N   | MIPI_CPHY1_RX_TRIO0_A                                                             | -        | -     | MIPI DPHY 1 receiving data 0 - |
|        | 16  | GND                  | -                                                                                 | -        | -     | Ground                         |
|        | 17  | MIPI_DPHY1_RX_D1_P   | MIPI_CPHY1_RX_TRIO1_A                                                             | -        | -     | MIPI DPHY 1 receiving data 1 + |
|        | 18  | MIPI_DPHY1_RX_D1_N   | MIPI_CPHY1_RX_TRIO0_C                                                             | -        | -     | MIPI DPHY 1 receiving data 1 - |
|        | 19  | GND                  | -                                                                                 | -        | -     | Ground                         |
|        | 20  | MIPI_DPHY1_RX_CLK_P  | MIPI_CPHY1_RX_TRIO1_C                                                             | -        | -     | MIPI DPHY 1 receiving clock +  |
|        | 21  | MIPI_DPHY1_RX_CLK_N  | MIPI_CPHY1_RX_TRIO1_B                                                             | -        | -     | MIPI DPHY 1 receiving clock -  |
|        | 22  | GND                  | -                                                                                 | -        | -     | Ground                         |
|        | 23  | MIPI_DPHY1_RX_D2_P   | MIPI_CPHY1_RX_TRIO2_B                                                             | -        | -     | MIPI DPHY 1 receiving data 2 + |
|        | 24  | MIPI_DPHY1_RX_D2_N   | MIPI_CPHY1_RX_TRIO2_A                                                             | -        | -     | MIPI DPHY 1 receiving data 2 - |
|        | 25  | GND                  | -                                                                                 | -        | -     | Ground                         |
|        | 26  | MIPI_DPHY1_RX_D3_P   | -                                                                                 | -        | -     | MIPI DPHY 1 receiving data 3 + |
|        | 27  | MIPI_DPHY1_RX_D3_N   | MIPI_CPHY1_RX_TRIO2_C                                                             | -        | -     | MIPI DPHY 1 receiving data 3 - |
|        | 28  | GND                  | -                                                                                 | -        | -     | Ground                         |
|        | 29  | MIPI_DPHY0_RX_D0_P   | MIPI_CPHY0_RX_TRIO0_B                                                             | -        | -     | MIPI DPHY 0 receiving data 0 + |
|        | 30  | MIPI_DPHY0_RX_D0_N   | MIPI_CPHY0_RX_TRIO0_A                                                             | -        | -     | MIPI DPHY 0 receiving data 0 - |
|        | 31  | GND                  | -                                                                                 | -        | -     | Ground                         |

| Header    | Pin | Function 1          | Function 2                                                                                      | GPIO     | Level | Description                    |
|-----------|-----|---------------------|-------------------------------------------------------------------------------------------------|----------|-------|--------------------------------|
| <b>J1</b> | 32  | MIPI_DPHY0_RX_D1_P  | MIPI_CPHY0_RX_TRIO1_A                                                                           | -        | -     | MIPI DPHY 0 receiving data 1 + |
|           | 33  | MIPI_DPHY0_RX_D1_N  | MIPI_CPHY0_RX_TRIO0_C                                                                           | -        | -     | MIPI DPHY 0 receiving data 1 - |
|           | 34  | GND                 | -                                                                                               | -        | -     | Ground                         |
|           | 35  | MIPI_DPHY0_RX_CLK_P | MIPI_CPHY0_RX_TRIO1_C                                                                           | -        | -     | MIPI DPHY 0 receiving clock +  |
|           | 36  | MIPI_DPHY0_RX_CLK_N | MIPI_CPHY0_RX_TRIO1_B                                                                           | -        | -     | MIPI DPHY 0 receiving clock -  |
|           | 37  | GND                 | -                                                                                               | -        | -     | Ground                         |
|           | 38  | MIPI_DPHY0_RX_D2_P  | MIPI_CPHY0_RX_TRIO2_B                                                                           | -        | -     | MIPI DPHY 0 receiving data 2 + |
|           | 39  | MIPI_DPHY0_RX_D2_N  | MIPI_CPHY0_RX_TRIO2_A                                                                           | -        | -     | MIPI DPHY 0 receiving data 2 - |
|           | 40  | GND                 | -                                                                                               | -        | -     | Ground                         |
|           | 41  | MIPI_DPHY0_RX_D3_P  | -                                                                                               | -        | -     | MIPI DPHY 0 receiving data 3 + |
|           | 42  | MIPI_DPHY0_RX_D3_N  | MIPI_CPHY0_RX_TRIO2_C                                                                           | -        | -     | MIPI DPHY 0 receiving data 3 - |
|           | 43  | GND                 | -                                                                                               | -        | -     | Ground                         |
|           | 44  | PWRON_L             | -                                                                                               | -        | -     | Power on                       |
|           | 45  | PMIC_EXT_EN_OUT     | -                                                                                               | -        | -     | External power control         |
|           | 46  | VCC4V0_SYS          | -                                                                                               | -        | -     | 4V power input                 |
|           | 47  |                     | -                                                                                               | -        | -     | 4V power input                 |
|           | 48  |                     | -                                                                                               | -        | -     | 4V power input                 |
|           | 49  |                     | -                                                                                               | -        | -     | 4V power input                 |
|           | 50  |                     | -                                                                                               | -        | -     | 4V power input                 |
| Header    | Pin | Function 1          | Function 2                                                                                      | GPIO     | Level | Description                    |
| <b>J2</b> | 100 | SDMMC_DET_L         | GPIO                                                                                            | GPIO0_A4 | 1.8V  | SD card plug detection         |
|           | 99  | WIFI_DISABLE1       | GPIO                                                                                            | GPIO0_A0 | 1.8V  | Wi-Fi antenna 1 disable        |
|           | 98  | SYS4V0_MODE_L       | GPIO                                                                                            | GPIO0_C2 | 3.3V  | Power mode selection           |
|           | 97  | WIFI_DISABLE2       | CLK32K_IN /CLK32K_OUT0                                                                          | GPIO0_B2 | 1.8V  | Wi-Fi antenna 2 disable        |
|           | 96  | RTC_INT_L           | SPI2_CS1_M2/I2C1_SCL_M1/<br>UART0_RX_M1                                                         | GPIO0_B0 | 1.8V  | RTC interrupt                  |
|           | 95  | SDMMC_PWREN         | I2S1_LRCK_M1/PWM0_M0/<br>I2C2_SCL_M0/SPI0_CS1_M0/<br>PCIE30X1_1_PERSTN_M0                       | GPIO0_B7 | 3.3V  | SD card enable                 |
|           | 94  | PCIE_PWREN_H        | CLK32K_OUT1                                                                                     | GPIO2_C5 | 1.8V  | PCle enable                    |
|           | 93  | I2C4_SCL_M1         | GMAC0_PPSTRING/FSPI_CS1N_<br>M1/HDMI_TX1_SCL_M0/<br>UART7_TX_M0                                 | GPIO2_B5 | 1.8V  | I <sup>2</sup> C4 clock        |
|           | 92  | I2C4_SDA_M1         | GMAC0_PTP_REFCLK/FSPI_CS0N<br>_M1/HDMI_TX1_SDA_M0/<br>UART7_RX_M0                               | GPIO2_B4 | 1.8V  | I <sup>2</sup> C4 data         |
|           | 91  | TYPECO_PWREN        | I2S1_SDIO_M1/GPU_AVS/UART0_TX_<br>M0/ I2C4_SCL_M2/DP1_HPDIN_M1/<br>PWM4_M0/PCIE30X1_0_PERSTN_M0 | GPIO0_C5 | 3.3V  | Type-C 0 enable                |

| Header | Pin | Function 1       | Function 2                                                                     | GPIO     | Level | Description                       |
|--------|-----|------------------|--------------------------------------------------------------------------------|----------|-------|-----------------------------------|
| J2     | 90  | TYPEC1_PWREN     | ETH0_REFCLKO_25M/I2S2_SDI_M0/I2C6_SCL_M2/SPI1_CS0_M0                           | GPIO2_C3 | 1.8V  | Type-C 1 enable                   |
|        | 89  | HDMI_RX_HPDIN_M1 | PCIE30X2_PERSTN_M2/MCU_JTAG_TCK_M1/UART9_RX_M2/SPI0_CS0_M3                     | GPIO3_D4 | 3.3V  | HDMI receiver hot plug detection  |
|        | 88  | GND              | -                                                                              | -        | -     | Ground                            |
|        | 87  | GMAC1_TXD3       | SDIO_D1_M1/I2S3_SCLK/AUDDSM_LN/FSPI_D1_M2/I2C6_SCL_M4/PWM11_IR_M0/SPI4_MOSI_M1 | GPIO3_A1 | 3.3V  | RGMII/RMII 1 transmitting data 3  |
|        | 86  | GMAC1_TXD2       | SDIO_D0_M1/I2S3_MCLK/FSPI_D0_M2/I2C6_SDA_M4/PWM10_M0/SPI4_MISO_M1              | GPIO3_A0 | 3.3V  | RGMII/RMII 1 transmitting data 2  |
|        | 85  | GMAC1_TXD1       | I2S2_MCLK_M1/UART2_CTSN                                                        | GPIO3_B4 | 3.3V  | RGMII/RMII 1 transmitting data 1  |
|        | 84  | GMAC1_TXD0       | I2S2_SDO_M1/UART2_RTSN                                                         | GPIO3_B3 | 3.3V  | RGMII/RMII 1 transmitting data 0  |
|        | 83  | GMAC1_TXEN       | I2S2_SCLK_M1/UART3_TX_M1/PWM12_M0                                              | GPIO3_B5 | 3.3V  | RGMII/RMII 1 transmitting control |
|        | 82  | GMAC1_TXCLK      | SDIO_CMD_M1/I2S3_SDI/AUDDSM_RP/UART8_RTSN_M1/SPI4_CS1_M1                       | GPIO3_A4 | 3.3V  | RGMII/RMII 1 transmitting clock   |
|        | 81  | GND              | -                                                                              | -        | -     | Ground                            |
|        | 80  | GMAC1_RXD3       | SDIO_D3_M1/I2S3_SDO/AUDDSM_RN/FSPI_D3_M2/UART8_RX_M1/SPI4_CS0_M1               | GPIO3_A3 | 3.3V  | RGMII/RMII 1 receiving data 3     |
|        | 79  | GMAC1_RXD2       | SDIO_D2_M1/I2S3_LRCK/AUDDSM_LP/FSPI_D2_M2/UART8_TX_M1/SPI4_CLK_M1              | GPIO3_A2 | 3.3V  | RGMII/RMII 1 receiving data 2     |
|        | 78  | GMAC1_RXD1       | MIPI_CAMERA3_CLK_M1/PWM9_M0                                                    | GPIO3_B0 | 3.3V  | RGMII/RMII 1 receiving data 1     |
|        | 77  | GMAC1_RXD0       | MIPI_CAMERA2_CLK_M1/PWM8_M0                                                    | GPIO3_A7 | 3.3V  | RGMII/RMII 1 receiving data 0     |
|        | 76  | GMAC1_RXDV CRS   | MIPI_CAMERA4_CLK_M1/UART2_TX_M2/PWM2_M1                                        | GPIO3_B1 | 3.3V  | RGMII/RMII 1 receiving control    |
|        | 75  | GMAC1_RXCLK      | SDIO_CLK_M1/MIPI_CAMERA0_CLK_M1/FSPI_CLK_M2/I2C4_SDA_M0/UART8_CTSN_M1          | GPIO3_A5 | 3.3V  | RGMII/RMII 1 receiving clock      |
|        | 74  | GND              | -                                                                              | -        | -     | Ground                            |
|        | 73  | GMAC1_MDIO       | MIPI_TE1/I2C8_SDA_M4/UART7_CTSN_M1/PWM15_IR_M0/SPI1_CS1_M1                     | GPIO3_C3 | 3.3V  | ENET management data input/output |

| Header | Pin | Function 1          | Function 2                                                                          | GPIO     | Level | Description                    |
|--------|-----|---------------------|-------------------------------------------------------------------------------------|----------|-------|--------------------------------|
| J2     | 72  | GMAC1_MDC           | MIPI_TE0/I2C8_SCL_M4/UART7_RTSN_M1/PWM14_M0/SPI1_CS0_M1                             | GPIO3_C2 | 3.3V  | ENET management data clock     |
|        | 71  | GMAC1_RSTnL         | HDMI_TX1_HPD_M1/I2C3_SCL_M1/SPI1_MOSI_M1                                            | GPIO3_B7 | 3.3V  | ENET reset                     |
|        | 70  | TYPEC1_INT          | GMAC1_MCLKINOUT/I2S2_LRCK_M1/UART3_RX_M1/PWM13_M0                                   | GPIO3_B6 | 3.3V  | Type-C 1 interrupt             |
|        | 69  | GND                 | -                                                                                   | -        | -     | Ground                         |
|        | 68  | MIPI_CSI1_RX_D0_P   | -                                                                                   | -        | -     | MIPI CSI 1 receiving data 0 +  |
|        | 67  | MIPI_CSI1_RX_D0_N   | -                                                                                   | -        | -     | MIPI CSI 1 receiving data 0 -  |
|        | 66  | GND                 | -                                                                                   | -        | -     | Ground                         |
|        | 65  | MIPI_CSI1_RX_D1_P   | -                                                                                   | -        | -     | MIPI CSI 1 receiving data 1 +  |
|        | 64  | MIPI_CSI1_RX_D1_N   | -                                                                                   | -        | -     | MIPI CSI 1 receiving data 1 -  |
|        | 63  | GND                 | -                                                                                   | -        | -     | Ground                         |
|        | 62  | MIPI_CSI1_RX_CLK0_P | -                                                                                   | -        | -     | MIPI CSI 1 receiving clock 0 + |
|        | 61  | MIPI_CSI1_RX_CLK0_N | -                                                                                   | -        | -     | MIPI CSI 1 receiving clock 0 - |
|        | 60  | GND                 | -                                                                                   | -        | -     | Ground                         |
|        | 59  | MIPI_CSI1_RX_D2_P   | -                                                                                   | -        | -     | MIPI CSI 1 receiving data 2 +  |
|        | 58  | MIPI_CSI1_RX_D2_N   | -                                                                                   | -        | -     | MIPI CSI 1 receiving data 2 -  |
|        | 57  | GND                 | -                                                                                   | -        | -     | Ground                         |
|        | 56  | MIPI_CSI1_RX_D3_P   | -                                                                                   | -        | -     | MIPI CSI 1 receiving data 3 +  |
|        | 55  | MIPI_CSI1_RX_D3_N   | -                                                                                   | -        | -     | MIPI CSI 1 receiving data 3 -  |
|        | 54  | GND                 | -                                                                                   | -        | -     | Ground                         |
|        | 53  | MIPI_CSI1_RX_CLK1_P | -                                                                                   | -        | -     | MIPI CSI 1 receiving clock 1 + |
|        | 52  | MIPI_CSI1_RX_CLK1_N | -                                                                                   | -        | -     | MIPI CSI 1 receiving clock 1 - |
|        | 51  | GND                 | -                                                                                   | -        | -     | Ground                         |
|        | 1   | PWM3_M1_FAN         | GMAC1_TXER/I2S2_SDI_M1/UART2_RX_M2                                                  | GPIO3_B2 | 3.3V  | Fan PWM speed control          |
|        | 2   | 5G_RESET            | I2S1_SDI1_M1/NPU_AVS/UART0_RTSN/PWM5_M1/SPI0_CLK_M0/PCIE30X4_CLKREQN_M0/SATA_CP_POD | GPIO0_C6 | 3.3V  | 5G reset                       |
|        | 3   | I2C6_SDA/M0         | I2S1_SDI2_M1/PDM0_SDI0_M1/UART1_RTSN_M2/PWM6_M0/SPI0_MISO_M0/PCIE30X4_WAKEN_M0      | GPIO0_C7 | 3.3V  | I <sup>2</sup> C 6 data        |
|        | 4   | I2C6_SCL/M0         | I2S1_SDI3_M1/PDM0_SDI1_M1/UART1_CTSN_M2/PWM7_IR_M0/SPI3_MISO_M2/PCIE30X4_PERSTN_M0  | GPIO0_D0 | 3.3V  | I <sup>2</sup> C 6 clock       |
|        | 5   | TYPEC0_INT          | LITCPU_AVS/SPI3_CLK_M2                                                              | GPIO0_D3 | 3.3V  | Type-C 0 interrupt             |
|        | 6   | TP1_INT_L           | GMAC1_PPSTRIG/I2C3_SDA_M1/UART7_TX_M1/SPI1_MISO_M1                                  | GPIO3_C0 | 3.3V  | MIPI DSI 1 interrupt           |

| Header | Pin | Function 1     | Function 2                                                                             | GPIO     | Level | Description                       |
|--------|-----|----------------|----------------------------------------------------------------------------------------|----------|-------|-----------------------------------|
| J2     | 7   | TP2_RST_L      | ETH1_REFCLKO_25M/MIPI_CAMERA1_CLK_M1/I2C4_SCL_M0                                       | GPIO3_A6 | 3.3V  | MIPI DSI 2 reset                  |
|        | 8   | TP2_INT_L      | PCIE30X4_BUTTON_RSTN/DP1_HPDIN_M0/MCU_JTAG_TMS_M1/UART9_TX_M2/ PWM11_IR_M3/SPI0_CS1_M3 | GPIO3_D5 | 3.3V  | MIPI DSI 2 interrupt              |
|        | 9   | TP1_RST_L      | GMAC1_PPSCCLK/PCIE30X2_BUTTON_RSTN/UART7_RX_M1/SPI1_CLK_M1                             | GPIO3_C1 | 3.3V  | MIPI DSI 1 reset                  |
|        | 10  | I2C5_SCL_M0    | CIF_D11/PCIE20X1_2_CLKREQN_M0/HDMI_TX0_SCL_M2/ SPI3_MOSI_M3                            | GPIO3_C7 | 3.3V  | I <sup>2</sup> C 5 data           |
|        | 11  | I2C5_SDA_M0    | CIF_D12/PCIE20X1_2_WAKEN_M0/HDMI_TX0_SDA_M2/UART4_RX_M1/ PWM8_M2/SPI3_CLK_M3           | GPIO3_D0 | 3.3V  | I <sup>2</sup> C 5 clock          |
|        | 12  | GSENSOR_INT    | GMAC0_PPSCCLK/TEST_CLKOUT_M1/HDMI_TX1_CEC_M0/UART9_RX_M0/ SPI1_CS1_M0                  | GPIO2_C4 | 1.8V  | G-sensor interrupt                |
|        | 13  | GND            | -                                                                                      | -        | -     | Ground                            |
|        | 14  | GMAC0_TXD3     | SDIO_CMD_M0/I2C3_SCL_M3                                                                | GPIO2_B2 | 1.8V  | RGMII/RMII 0 transmitting data 3  |
|        | 15  | GMAC0_TXD2     | SDIO_D3_M0/FSPI_D3_M1/I2C8_SDA_M1/UART6_CTSN_M0                                        | GPIO2_B1 | 1.8V  | RGMII/RMII 0 transmitting data 2  |
|        | 16  | GMAC0_TXD1     | I2S2_SCLK_M0/I2C5_SDA_M4/ UART1_TX_M0                                                  | GPIO2_B7 | 1.8V  | RGMII/RMII 0 transmitting data 1  |
|        | 17  | GMAC0_TXD0     | I2S2_MCLK_M0/I2C5_SCL_M4/ UART1_RX_M0                                                  | GPIO2_B6 | 1.8V  | RGMII/RMII 0 transmitting data 0  |
|        | 18  | GMAC0_TXEN     | I2S2_LRCK_M0/I2C2_SDA_M1/ UART1_RTSN_M0/SPI1_CLK_M0                                    | GPIO2_C0 | 1.8V  | RGMII/RMII 0 transmitting control |
|        | 19  | GMAC0_TXCLK    | SDIO_CLK_M0/FSPI_CLK_M1/ I2C3_SDA_M3                                                   | GPIO2_B3 | 1.8V  | RGMII/RMII 0 transmitting clock   |
|        | 20  | GND            | -                                                                                      | -        | -     | Ground                            |
|        | 21  | GMAC0_RXD3     | SDIO_D1_M0/FSPI_D1_M1/ UART6_TX_M0                                                     | GPIO2_A7 | 1.8V  | RGMII/RMII 0 receiving data 3     |
|        | 22  | GMAC0_RXD2     | SDIO_D0_M0/FSPI_D0_M1/ UART6_RX_M0                                                     | GPIO2_A6 | 1.8V  | RGMII/RMII 0 receiving data 2     |
|        | 23  | GMAC0_RXD1     | I2C6_SDA_M2/UART9_TX_M0/ SPI1_MOSI_M0                                                  | GPIO2_C2 | 1.8V  | RGMII/RMII 0 receiving data 1     |
|        | 24  | GMAC0_RXD0     | I2C2_SCL_M1/UART1_CTSN_M0/ SPI1_MISO_M0                                                | GPIO2_C1 | 1.8V  | RGMII/RMII 0 receiving data 0     |
|        | 25  | GMAC0_RXDV_CRS | UART7_RTSN_M0/PWM2_M2/ SPI3_CS0_M0                                                     | GPIO4_C2 | 1.8V  | RGMII/RMII 0 receiving control    |
|        | 26  | GMAC0_RXCLK    | SDIO_D2_M0/FSPI_D2_M1/I2C8_SCL_M1/UART6_RTSN_M0                                        | GPIO2_B0 | 1.8V  | RGMII/RMII 0 receiving clock      |

| Header    | Pin | Function 1          | Function 2                                                          | GPIO     | Level | Description                          |
|-----------|-----|---------------------|---------------------------------------------------------------------|----------|-------|--------------------------------------|
| <b>J2</b> | 28  | GMAC0_MDIO          | I2C0_SCL_M1/UART9_CTSN_M0/<br>PWM6_M2/SPI3_MOSI_M0                  | GPIO4_C5 | 1.8V  | ENET management data<br>input/output |
|           | 29  | GMAC0_MDC           | I2C7_SDA_M1/UART9_RTSN_M0/<br>PWM5_M2/SPI3_MISO_M0                  | GPIO4_C4 | 1.8V  | ENET management data<br>clock        |
|           | 30  | GMAC0_RSTn_L        | 2C0_SDA_M1/UART7_CTSN_M0/<br>PWM7_IR_M3/SPI3_CLK_M0                 | GPIO4_C6 | 1.8V  | ENET reset                           |
|           | 31  | PHONE_CTL           | GMAC0_MCLKINOUT/I2S2_SDO_<br>M0/I2C7_SCL_M1/PWM4_M1/<br>SPI3_CS1_M0 | GPIO4_C3 | 1.8V  | Earphone control                     |
|           | 32  | GND                 | -                                                                   | -        | -     | Ground                               |
|           | 33  | MIPI_CSIO_RX_D0_N   | -                                                                   | -        | -     | MIPI CSI 0 receiving data 0 -        |
|           | 34  | MIPI_CSIO_RX_D0_P   | -                                                                   | -        | -     | MIPI CSI 0 receiving data 0 +        |
|           | 35  | GND                 | -                                                                   | -        | -     | Ground                               |
|           | 36  | MIPI_CSIO_RX_D1_N   | -                                                                   | -        | -     | MIPI CSI 0 receiving data 1 -        |
|           | 37  | MIPI_CSIO_RX_D1_P   | -                                                                   | -        | -     | MIPI CSI 0 receiving data 1 +        |
|           | 38  | GND                 | -                                                                   | -        | -     | Ground                               |
|           | 39  | MIPI_CSIO_RX_CLK0_N | -                                                                   | -        | -     | MIPI CSI 0 receiving clock 0 -       |
|           | 40  | MIPI_CSIO_RX_CLK0_P | -                                                                   | -        | -     | MIPI CSI 0 receiving clock 0 +       |
|           | 41  | GND                 | -                                                                   | -        | -     | Ground                               |
|           | 42  | MIPI_CSIO_RX_D2_N   | -                                                                   | -        | -     | MIPI CSI 0 receiving data 2 -        |
|           | 43  | MIPI_CSIO_RX_D2_P   | -                                                                   | -        | -     | MIPI CSI 0 receiving data 2 +        |
|           | 44  | GND                 | -                                                                   | -        | -     | Ground                               |
|           | 45  | MIPI_CSIO_RX_D3_N   | -                                                                   | -        | -     | MIPI CSI 0 receiving data 3 -        |
|           | 46  | MIPI_CSIO_RX_D3_P   | -                                                                   | -        | -     | MIPI CSI 0 receiving data 3 +        |
|           | 47  | GND                 | -                                                                   | -        | -     | Ground                               |
|           | 48  | MIPI_CSIO_RX_CLK1_N | -                                                                   | -        | -     | MIPI CSI 0 receiving clock 1 -       |
|           | 49  | MIPI_CSIO_RX_CLK1_P | -                                                                   | -        | -     | MIPI CSI 0 receiving clock 1 +       |
|           | 50  | GND                 | -                                                                   | -        | -     | Ground                               |
| Header    | Pin | Function 1          | Function 2                                                          | GPIO     | Level | Description                          |
| <b>J3</b> | 100 | GND                 | -                                                                   | -        | -     | Ground                               |
|           | 99  | SDMMC0_D0           | PDM1_SDI3_M0/JTAG_TCK_M1/<br>I2C3_SCL_M4/UART2_TX_M1/<br>PWM8_M1    | GPIO4_D0 | 3.3V  | SDMMC 0 data 0                       |
|           | 98  | SDMMC0_D1           | PDM1_SDI2_M0/JTAG_TMS_M1/<br>I2C3_SDA_M4/UART2_RX_M1/<br>PWM9_M1    | GPIO4_D1 | 3.3V  | SDMMC 0 data 1                       |
|           | 97  | SDMMC0_D2           | PDM1_SDI1_M0/JTAG_TCK_M0/<br>I2C8_SCL_M0/UART5_CTSN_M0              | GPIO4_D2 | 3.3V  | SDMMC 0 data 2                       |

| Header | Pin | Function 1     | Function 2                                                          | GPIO     | Level | Description                   |
|--------|-----|----------------|---------------------------------------------------------------------|----------|-------|-------------------------------|
| J3     | 96  | SDMMC0_D3      | PDM1_SDIO_M0/JTAG_TMS_M0/<br>I2C8_SDA_M0/UART5_RTSN_M0/<br>PWM10_M1 | GPIO4_D3 | 3.3V  | SDMMC 0 data 3                |
|        | 95  | SDMMC0_CMD     | PDM1_CLK1_M0/MCU_JTAG_TCK_M0/<br>UART5_RX_M0/PWM7_IR_M1             | GPIO4_D4 | 3.3V  | SDMMC 0 command               |
|        | 94  | SD_CLK         | PDM1_CLK0_M0/TEST_CLKOUT_M0/<br>MCU_JTAG_TMS_M0/UART5_TX_M0         | GPIO4_D5 | 3.3V  | SDMMC clock                   |
|        | 93  | GND            | -                                                                   | -        | -     | Ground                        |
|        | 92  | HDMI0_TX_SBD_N | eDP0_TX_AUX_N                                                       | -        | -     | HDMI 0 transmitter sideband - |
|        | 91  | HDMI0_TX_SBD_P | eDP0_TX_AUX_P                                                       | -        | -     | HDMI 0 transmitter sideband + |
|        | 90  | GND            | -                                                                   | -        | -     | Ground                        |
|        | 89  | HDMI0_TX3_N    | eDP0_TX_D3_N                                                        | -        | -     | HDMI 0 transmitter 3 -        |
|        | 88  | HDMI0_TX3_P    | eDP0_TX_D3_P                                                        | -        | -     | HDMI 0 transmitter 3 +        |
|        | 87  | GND            | -                                                                   | -        | -     | Ground                        |
|        | 86  | HDMI0_TX0_N    | eDP0_TX_D0_N                                                        | -        | -     | HDMI 0 transmitter 0 -        |
|        | 85  | HDMI0_TX0_P    | eDP0_TX_D0_P                                                        | -        | -     | HDMI 0 transmitter 0 +        |
|        | 84  | GND            | -                                                                   | -        | -     | Ground                        |
|        | 83  | HDMI0_TX1_N    | eDP0_TX_D1_N                                                        | -        | -     | HDMI 0 transmitter 1 -        |
|        | 82  | HDMI0_TX1_P    | eDP0_TX_D1_P                                                        | -        | -     | HDMI 0 transmitter 1 +        |
|        | 81  | GND            | -                                                                   | -        | -     | Ground                        |
|        | 80  | HDMI0_TX2_N    | eDP0_TX_D2_N                                                        | -        | -     | HDMI 0 transmitter 2 -        |
|        | 79  | HDMI0_TX2_P    | eDP0_TX_D2_P                                                        | -        | -     | HDMI 0 transmitter 2 +        |
|        | 78  | GND            | -                                                                   | -        | -     | Ground                        |
|        | 77  | HDMI1_TX_SBD_N | eDP1_TX_AUX_N                                                       | -        | -     | HDMI 1 transmitter sideband - |
|        | 76  | HDMI1_TX_SBD_P | eDP1_TX_AUX_P                                                       | -        | -     | HDMI 1 transmitter sideband + |
|        | 75  | GND            | -                                                                   | -        | -     | Ground                        |
|        | 74  | HDMI1_TX3_N    | eDP1_TX_D3_N                                                        | -        | -     | HDMI 1 transmitter 3 -        |
|        | 73  | HDMI1_TX3_P    | eDP1_TX_D3_P                                                        | -        | -     | HDMI 1 transmitter 3 +        |
|        | 72  | GND            | -                                                                   | -        | -     | Ground                        |
|        | 71  | HDMI1_TX0_N    | eDP1_TX_D0_N                                                        | -        | -     | HDMI 1 transmitter 0 -        |
|        | 70  | HDMI1_TX0_P    | eDP1_TX_D0_P                                                        | -        | -     | HDMI 1 transmitter 0 +        |
|        | 69  | GND            | -                                                                   | -        | -     | Ground                        |
|        | 68  | HDMI1_TX1_N    | eDP1_TX_D1_N                                                        | -        | -     | HDMI 1 transmitter 1 -        |
|        | 67  | HDMI1_TX1_P    | eDP1_TX_D1_P                                                        | -        | -     | HDMI 1 transmitter 1 +        |
|        | 66  | GND            | -                                                                   | -        | -     | Ground                        |
|        | 65  | HDMI1_TX2_N    | eDP1_TX_D2_N                                                        | -        | -     | HDMI 1 transmitter 2 -        |
|        | 64  | HDMI1_TX2_P    | eDP1_TX_D2_P                                                        | -        | -     | HDMI 1 transmitter 2 +        |
|        | 63  | GND            | -                                                                   | -        | -     | Ground                        |
|        | 62  | HDMI_RX_CLK_N  | -                                                                   | -        | -     | HDMI receiver clock -         |
|        | 61  | HDMI_RX_CLK_P  | -                                                                   | -        | -     | HDMI receiver clock +         |

| Header | Pin | Function 1      | Function 2                                                                 | GPIO     | Level | Description                                            |
|--------|-----|-----------------|----------------------------------------------------------------------------|----------|-------|--------------------------------------------------------|
| J3     | 60  | GND             | -                                                                          | -        | -     | Ground                                                 |
|        | 59  | HDMI_RX_D0_N    | -                                                                          | -        | -     | HDMI receiving data 0 -                                |
|        | 58  | HDMI_RX_D0_P    | -                                                                          | -        | -     | HDMI receiving data 0 +                                |
|        | 57  | GND             | -                                                                          | -        | -     | Ground                                                 |
|        | 56  | HDMI_RX_D1_N    | -                                                                          | -        | -     | HDMI receiving data 1 -                                |
|        | 55  | HDMI_RX_D1_P    | -                                                                          | -        | -     | HDMI receiving data 1 +                                |
|        | 54  | GND             | -                                                                          | -        | -     | Ground                                                 |
|        | 53  | HDMI_RX_D2_N    | -                                                                          | -        | -     | HDMI receiving data 2 -                                |
|        | 52  | HDMI_RX_D2_P    | -                                                                          | -        | -     | HDMI receiving data 2 +                                |
|        | 51  | GND             | -                                                                          | -        | -     | Ground                                                 |
|        | 1   | GND             | -                                                                          | -        | -     | Ground                                                 |
|        | 2   | BOOT_SARADC_IN0 | -                                                                          | -        | -     | Flashing mode determination based on the button status |
|        | 3   | SARADC_VIN1     | -                                                                          | -        | -     | SARADC_VIN1_KEY/RECOVERY                               |
|        | 4   | SARADC_VIN2     | -                                                                          | -        | -     | SARADC_VIN2                                            |
|        | 5   | SARADC_VIN3     | -                                                                          | -        | -     | SARADC_VIN3_HP_HOOK                                    |
|        | 6   | SARADC_VIN4     | -                                                                          | -        | -     | SARADC_VIN4                                            |
|        | 7   | SARADC_VIN5     | -                                                                          | -        | -     | SARADC_VIN5_HW_ID                                      |
|        | 8   | SARADC_VIN6     | -                                                                          | -        | -     | SARADC_VIN6                                            |
|        | 9   | SARADC_VIN7     | -                                                                          | -        | -     | SARADC_VIN7_LCD_ID0                                    |
|        | 10  | HDMITX1_SDA_M1  | CIF_D9/FSPI_CS1N_M2/PCIE30 X4_WAKEN_M2/UART5_RX_M1 /SPI3_CS1_M3            | GPIO3_C5 | 3.3V  | HDMI 1 transmitter I <sup>2</sup> C data               |
|        | 11  | HDMITX1_SCL_M1  | CIF_D10/PCIE30X4_PERSTN_M2/SPI3_MISO_M3                                    | GPIO3_C6 | 3.3V  | HDMI 1 transmitter I <sup>2</sup> C clock              |
|        | 12  | HDMITX1_CEC_M2  | CIF_D8/FSPI_CS0N_M2/PCIE30 X4_CLKREQN_M2/UART5_TX_M1/ SPI3_CS0_M3          | GPIO3_C4 | 3.3V  | HDMI 1 transmitter CEC                                 |
|        | 13  | HDMI_RX_SCL_M1  | CIF_D14/PCIE30X2_CLKREQN_M2/I2C7_SCL_M2/UART9_RTSN_M2/ SPI0_MOSI_M3        | GPIO3_D2 | 3.3V  | HDMI receiver I <sup>2</sup> C clock                   |
|        | 14  | HDMI_RX_SDA_M1  | CIF_D15/PCIE30X2_WAKEN_M2/ I2C7_SDA_M2/UART9_CTSN_M2/ PWM10_M2/SPI0_CLK_M3 | GPIO3_D3 | 3.3V  | HDMI receiver I <sup>2</sup> C data                    |
|        | 15  | HDMI_RX_CEC_M1  | CIF_D13/PCIE20X1_2_PERSTN_M0/ UART4_TX_M1/PWM9_M2/ SPI0_MISO_M3            | GPIO3_D1 | 3.3V  | HDMI receiver CEC                                      |
|        | 16  | HDMITX0_SDA_M0  | BT1120_D14/PCIE20X1_2_WAKEN_M1/ I2C8_SCL_M3/SPI3_CS0_M1                    | GPIO4_C0 | 3.3V  | HDMI 0 transmitter I <sup>2</sup> C data               |

| Header | Pin | Function 1          | Function 2                                                                                                                            | GPIO     | Level | Description                               |
|--------|-----|---------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------|-------|-------------------------------------------|
| J3     | 17  | HDMITX0_SCL_M0      | BT1120_D13/PCIE20X1_2_CLKREQN<br>—<br>M1/HDMI_TX0_SCL_M0/I2C5_SDA_M1/<br>SPI3_CLK_M1                                                  | GPIO4_B7 | 3.3V  | HDMI 0 transmitter I <sup>2</sup> C clock |
|        | 18  | HDMITX0_CEC_M0      | BT1120_D15/SPDIF1_TX_M2/PCIE<br>20X1_2_PERSTN_M1/I2C8_SDA_M3/<br>PWM6_M1/ SPI3_CS1_M1                                                 | GPIO4_C1 | 3.3V  | HDMI 0 transmitter CEC                    |
|        | 19  | HDMI0_TX_ON_H       | MIPI_CAMERA0_CLK_M0/SPDIF1_TX_M1/<br>I2S1_SDO0_M0/PCIE30X1_0_BUTTON_RSTN/<br>SATA2_ACT_LED_M0/I2C6_SCL_M3/UART8_RX_M0/<br>SPI0_CS1_M1 | GPIO4_B1 | 3.3V  | HDMI 0 transmitter output enable          |
|        | 20  | TYPECO_USB20_OTG_ID | -                                                                                                                                     | -        | -     | TYPECO_USB20_OTG_ID                       |
|        | 21  | TYPEC1_USB20_OTG_ID | -                                                                                                                                     | -        | -     | TYPEC1_USB20_OTG_ID                       |
|        | 22  | CAN1_TX_M1          | CIF_VSYNC/BT1120_D9/I2S1_SDO2_M0/<br>PCIE20X1_2_BUTTON_RSTN/I2C7_SDA_M3/<br>UART8_CTSN_M0/PWM15_IR_M1                                 | GPIO4_B3 | 3.3V  | CAN 1 transmitter                         |
|        | 23  | CAN1_RX_M1          | CIF_HREF/BT1120_D8/I2S1_SDO1_M0/<br>PCIE30X1_1_BUTTON_RSTN/I2C7_SCL_M3/<br>UART8_RTSN_M0/PWM14_M1/ SPI0_CS0_M1                        | GPIO4_B2 | 3.3V  | CAN 1 receiver                            |
|        | 24  | SPK_CTL_H           | CIF_CLKIN/BT1120_CLKOUT/I2S1_SDI3_M0/<br>PCIE30X2_PERS TN_M1/I2C6_SDA_M3/<br>UART8_TX_M0/SPI2_CS1_M1                                  | GPIO4_B0 | 3.3V  | Speaker control                           |
|        | 25  | TYPECO_SBU2_DC      | UART9_CTSN_M1/SPI0_MOSI_M1                                                                                                            | GPIO4_A1 | 3.3V  | Type-C 0 SBU2                             |
|        | 26  | TYPECO_SBU1_DC      | CIF_D0/BT1120_D0/I2S1_MCLK_M0/<br>PCIE30X1_1_CLKREQN_M1/UART9_RTSN_M1/<br>SPI0_MISO_M1                                                | GPIO4_A0 | 3.3V  | Type-C 0 SBU1                             |
|        | 27  | UART3_TX_M2         | CIF_D5/BT1120_D5/I2S1_SDI0_M0/<br>PCIE30X1_0_PERSTN_M1/I2C3_SDA_M2/<br>SPI2_MOSI_M1                                                   | GPIO4_A5 | 3.3V  | UART 3 transmitting data                  |
|        | 28  | UART3_RX_M2         | CIF_D6/BT1120_D6/I2S1_SDI1_M0/<br>PCIE30X2_CLKREQN_M1/I2C5_SCL_M2/<br>UART3_RX_M2/SPI2_CLK_M1                                         | GPIO4_A6 | 3.3V  | UART 3 receiving data                     |
|        | 29  | TYPEC1_SBU2_DC      | CIF_D7/BT1120_D7/I2S1_SDI2_M0/<br>PCIE30X2_WAKEN_M1/I2C5_SDA_M2/<br>SPI2_CS0_M1                                                       | GPIO4_A7 | 3.3V  | Type-C 1 SBU2                             |

| Header    | Pin | Function 1           | Function 2                                                                  | GPIO     | Level | Description                   |
|-----------|-----|----------------------|-----------------------------------------------------------------------------|----------|-------|-------------------------------|
| <b>J3</b> | 30  | TYPEC1_SBU1_DC       | CIF_D2/BT1120_D2/I2S1_LRCK_M0/PCIE30X1_1_PERSTN_M1/SPIO_CLK_M1              | GPIO4_A2 | 3.3V  | Type-C 1 SBU1                 |
|           | 31  | TYPEC1_USB20_VBUSDET | -                                                                           | -        | -     | VBUS power detection          |
|           | 32  | GND                  | -                                                                           | -        | -     | Ground                        |
|           | 33  | TYPEC1_SSRX1_N       | DP1_TX0N                                                                    | -        | -     | Type-C 1 receiver 1 -         |
|           | 34  | TYPEC1_SSRX1_P       | DP1_TX0P                                                                    | -        | -     | Type-C 1 receiver 1 +         |
|           | 35  | GND                  | -                                                                           | -        | -     | Ground                        |
|           | 36  | TYPEC1_SSTX1_N       | DP1_TX1N                                                                    | -        | -     | Type-C 1 transmitter 1 -      |
|           | 37  | TYPEC1_SSTX1_P       | DP1_TX1P                                                                    | -        | -     | Type-C 1 transmitter 1 +      |
|           | 38  | GND                  | -                                                                           | -        | -     | Ground                        |
|           | 39  | TYPEC1_SSRX2_N       | DP1_TX2N                                                                    | -        | -     | Type-C 1 receiver 2 -         |
|           | 40  | TYPEC1_SSRX2_P       | DP1_TX2P                                                                    | -        | -     | Type-C 1 receiver 2 +         |
|           | 41  | GND                  | -                                                                           | -        | -     | Ground                        |
|           | 42  | TYPEC1_SSTX2_N       | DP1_TX3N                                                                    | -        | -     | Type-C 1 transmitter 2 -      |
|           | 43  | TYPEC1_SSTX2_P       | DP1_TX3P                                                                    | -        | -     | Type-C 1 transmitter 2 +      |
|           | 44  | GND                  | -                                                                           | -        | -     | Ground                        |
|           | 45  | USB20_HOST0_D_P      | -                                                                           | -        | -     | USB 2.0 Host 0 data +         |
|           | 46  | USB20_HOST0_D_N      | -                                                                           | -        | -     | USB 2.0 Host 0 data -         |
|           | 47  | GND                  | -                                                                           | -        | -     | Ground                        |
|           | 48  | USB20_HOST1_D_P      | -                                                                           | -        | -     | USB 2.0 Host 1 data +         |
|           | 49  | USB20_HOST1_D_N      | -                                                                           | -        | -     | USB 2.0 Host 1 data -         |
|           | 50  | GND                  | -                                                                           | -        | -     | Ground                        |
| Header    | Pin | Function 1           | Function 2                                                                  | GPIO     | Level | Description                   |
| <b>J4</b> | 100 | I2C2_SDA_M4          | CIE30X1_1_CLKREQN_M2/DP0_HPDIIN_M2/UART6_RX_M1/SPI4_MISO_M2                 | GPIO1_A0 | 1.8V  | I <sup>2</sup> C2 data        |
|           | 99  | I2C2_SCL_M4          | PCIE30X1_1_WAKEN_M2/DP1_HPDIIN_M2/SATA1_ACT_LED_M1/UART6_TX_M1/SPI4_MOSI_M2 | GPIO1_A1 | 1.8V  | I <sup>2</sup> C2 clock       |
|           | 98  | MIPI_CAM3_PDN_L      | PDM1_SDI0_M1/PCIE30X1_1_PERSTN_M2/PWM3_IR_M3/SPI2_CS0_M0                    | GPIO1_A7 | 1.8V  | MIPI CSI 3 power down control |
|           | 97  | MIPI_CAM3_RST_L      | DM1_SDI2_M1/PCIE30X4_WAKEN_M3/SPIO_MISO_M2                                  | GPIO1_B1 | 1.8V  | MIPI CSI 3 reset              |
|           | 96  | MIPI_CAM4_PDN_L      | PDM1_SDI1_M1/PCIE30X4_CLKREQN_M3/SPI2_CS1_M0                                | GPIO1_B0 | 1.8V  | MIPI CSI 4 power down control |

| Header | Pin | Function 1               | Function 2                                                                           | GPIO     | Level | Description                              |
|--------|-----|--------------------------|--------------------------------------------------------------------------------------|----------|-------|------------------------------------------|
| J4     | 95  | MIPI_CAM4_RST_L          | PDM1_SDI3_M1/PCIE30X4_PERSTN_M3/UART4_RX_M2/SPI0_MOSI_M2                             | GPIO1_B2 | 1.8V  | MIPI CSI 4 reset                         |
|        | 94  | MIPI_CAM3_CLKOUT         | HDMI_RX_SCL_M2/I2C8_SCL_M2/UART1_RTSN_M1/PWM14_M2                                    | GPIO1_D6 | 1.8V  | MIPI CSI 3 clock output                  |
|        | 93  | MIPI_CAM4_CLKOUT         | PCIE30X2_CLKREQN_M3/HDMI_RX_SDA_M2/I2C8_SDA_M2/UART1_CTSN_M1/PWM15_IR_M3             | GPIO1_D7 | 1.8V  | MIPI CSI 4 clock output                  |
|        | 92  | I2C3_SDA_M0              | UART3_RX_M0/SPI4_MISO_M0                                                             | GPIO1_C0 | 1.8V  | I <sup>2</sup> C 3 data                  |
|        | 91  | I2C3_SCL_M0              | UART3_TX_M0/SPI4_MOSI_M0                                                             | GPIO1_C1 | 1.8V  | I <sup>2</sup> C 3 clock                 |
|        | 90  | LCD_BL2_PWM15            | PDM0_CLK0_M0/I2C4_SDA_M4                                                             | GPIO1_C6 | 1.8V  | MIPI DSI 2 backlight control             |
|        | 89  | HDMIRX_DET_L             | PDM0_SDI0_M0/SPI1_CS1_M2                                                             | GPIO1_D5 | 1.8V  | HDMI receiver detection                  |
|        | 88  | HDMI1_TX_ON_H            | PDM0_CLK1_M0/I2C2_SDA_M3/PWM11_IR_M2/SPI4_CS1_M0                                     | GPIO1_C4 | 1.8V  | HDMI 1 transmitter output enable         |
|        | 87  | HDMIRX_HPDOWN_H          | I2S0_SDI0                                                                            | GPIO1_D4 | 1.8V  | HDMI receiver hot plug detection control |
|        | 86  | MIPI_CAM1_RST_L          | 2S0_SDO3/I2S0_SDI2/PDM0_SDI2_M0/I2C1_SCL_M4/UART4_TX_M0/PWM0_M1/SPI1_CLK_M2          | GPIO1_D2 | 1.8V  | MIPI CSI 1 reset                         |
|        | 85  | HDMITX0_HPDIN_M0         | SPI2_MOSI_M0                                                                         | GPIO1_A5 | 1.8V  | HDMI 0 transmitter hot plug detection    |
|        | 84  | PCIE30X4_WAKEn_M1_L      | BT1120_D11/HDMI_RX_CEC_M0/SATA1_ACT_LED_M0/UART9_RX_M1/PWM12_M1/SPI3_MISO_M1         | GPIO4_B5 | 3.3V  | PCIe 3.0 x4 wake up                      |
|        | 83  | PCIE30X4_CLKREQn_M1_L    | CIF_CLKOUT/BT1120_D10/I2S1_SDO3_M0/DPO_HPDIN_M0/SPDIF0_TX_M1/UART9_TX_M1/PWM11_IR_M1 | GPIO4_B4 | 3.3V  | PCIe 3.0 x4 clock request                |
|        | 82  | PCIE30X4_PERSTn_M1_L     | BT1120_D12/HDMI_RX_HPDOWN_M0/SATA0_ACT_LED_M0/I2C5_SCL_M1/PWM13_M1/SPI3_MOSI_M1      | GPIO4_B6 | 3.3V  | PCIe 3.0 x4 reset                        |
|        | 81  | GND                      | -                                                                                    | -        | -     | Ground                                   |
|        | 80  | PCIE30_PORT1_REFCLK_IN_P | -                                                                                    | -        | -     | PCIe 3.0_1 reference clock +             |
|        | 79  | PCIE30_PORT1_REFCLK_IN_N | -                                                                                    | -        | -     | PCIe 3.0_1 reference clock -             |
|        | 78  | GND                      | -                                                                                    | -        | -     | Ground                                   |
|        | 77  | PCIE30_PORT1_TX3_N       | -                                                                                    | -        | -     | PCIe 3.0_1 transmitter 3 -               |
|        | 76  | PCIE30_PORT1_TX3_P       | -                                                                                    | -        | -     | PCIe 3.0_1 transmitter 3 +               |
|        | 75  | GND                      | -                                                                                    | -        | -     | Ground                                   |

| Header | Pin | Function 1         | Function 2                                                                                        | GPIO     | Level | Description                           |
|--------|-----|--------------------|---------------------------------------------------------------------------------------------------|----------|-------|---------------------------------------|
| J4     | 74  | PCIE30_PORT1_TX2_N | -                                                                                                 | -        | -     | PCIe 3.0_1 transmitter 2 -            |
|        | 73  | PCIE30_PORT1_TX2_P | -                                                                                                 | -        | -     | PCIe 3.0_1 transmitter 2 +            |
|        | 72  | GND                | -                                                                                                 | -        | -     | Ground                                |
|        | 71  | PCIE30_PORT1_RX3_N | -                                                                                                 | -        | -     | PCIe 3.0_1 receiver 3 -               |
|        | 70  | PCIE30_PORT1_RX3_P | -                                                                                                 | -        | -     | PCIe 3.0_1 receiver 3 +               |
|        | 69  | GND                | -                                                                                                 | -        | -     | Ground                                |
|        | 68  | PCIE30_PORT1_RX2_N | -                                                                                                 | -        | -     | PCIe 3.0_1 receiver 2 -               |
|        | 67  | PCIE30_PORT1_RX2_P | -                                                                                                 | -        | -     | PCIe 3.0_1 receiver 2 +               |
|        | 66  | GND                | -                                                                                                 | -        | -     | Ground                                |
|        | 65  | USB30_2_SSTX_P     | -                                                                                                 | -        | -     | USB 3.0_2 transmitter +               |
|        | 64  | USB30_2_SSTX_N     | -                                                                                                 | -        | -     | USB 3.0_2 transmitter -               |
|        | 63  | GND                | -                                                                                                 | -        | -     | Ground                                |
|        | 62  | USB30_2_SSRX_P     | -                                                                                                 | -        | -     | USB 3.0_2 receiver +                  |
|        | 61  | USB30_2_SSRX_N     | -                                                                                                 | -        | -     | USB 3.0_2 receiver -                  |
|        | 60  | GND                | -                                                                                                 | -        | -     | Ground                                |
|        | 59  | PCIE20_0_REFCLK_P  | -                                                                                                 | -        | -     | PCIe 2.0_0 reference clock +          |
|        | 58  | PCIE20_0_REFCLK_N  | -                                                                                                 | -        | -     | PCIe 2.0_0 reference clock -          |
|        | 57  | GND                | -                                                                                                 | -        | -     | Ground                                |
|        | 56  | SATA30_0_TX_P      | -                                                                                                 | -        | -     | SATA 3.0_0 transmitter +              |
|        | 55  | SATA30_0_TX_N      | -                                                                                                 | -        | -     | SATA 3.0_0 transmitter -              |
|        | 54  | GND                | -                                                                                                 | -        | -     | Ground                                |
|        | 53  | SATA30_0_RX_P      | -                                                                                                 | -        | -     | SATA 3.0_0 receiver +                 |
|        | 52  | SATA30_0_RX_N      | -                                                                                                 | -        | -     | SATA 3.0_0 receiver -                 |
|        | 51  | GND                | -                                                                                                 | -        | -     | Ground                                |
|        | 1   | MIPI_CAM1_PDN_L    | VOP_POST_EMPTY/I2C4_SDA_M3/UART6_RTSN_M1/PWM0_M2/SPI4_CLK_M2                                      | GPIO1_A2 | 1.8V  | MIPI CSI 1 power down control         |
|        | 2   | MIPI_CAM1_CLKOUT   | SPDIF0_TX_M0/PCIE30X2_WAKEN_M3/HDMI_RX_HPDIN_M2/I2C5_SCL_M3/UART1_TX_M1                           | GPIO1_B6 | 1.8V  | MIPI CSI 1 clock output               |
|        | 3   | HDMITX1_HPDIN_M0   | SPI2_CLK_M0                                                                                       | GPIO1_A6 | 1.8V  | HDMI 1 transmitter hot plug detection |
|        | 4   | MIPI_CAM2_PDN_L    | HDMI_TX1_SCL_M2/ SPI2_MISO_M0                                                                     | GPIO1_A4 | 1.8V  | MIPI CSI 2 power down control         |
|        | 5   | MIPI_CAM2_CLKOUT   | SPDIF1_TX_M0/PCIE30X2_PE_RSTN_M3/HDMI_RX_CEC_M2/SATA2_ACT_LED_M1/I2C5_SDA_M3/UART1_RX_M1/PWM13_M2 | GPIO1_B7 | 1.8V  | MIPI CSI 2 clock output               |

| Header | Pin | Function 1              | Function 2                                                                             | GPIO     | Level | Description                                 |
|--------|-----|-------------------------|----------------------------------------------------------------------------------------|----------|-------|---------------------------------------------|
| J4     | 6   | MIPI_CAM2_RST_L         | I2S0_SDI1/PDM0_SDI3_M0/<br>I2C1_SDA_M4/UART4_RX_M0/<br>PWM1_M1/SPI1_CS0_M2             | GPIO1_D3 | 1.8V  | MIPI CSI 2 reset                            |
|        | 7   | WORKING_LEDEN_H         | HDMI_TX1_SDA_M2/I2C4_SCL_<br>M3/UART6_CTSN_M1/<br>PWM1_M2/SPI4_CS0_M2                  | GPIO1_A3 | 1.8V  | Carrier board working<br>indicator          |
|        | 8   | LCD_BL1_PWM1            | PDM0_CLK0_M1/ I2C2_SDA_M0/<br>SPI0_MOSI_M0/PCIE30X1_0<br>_CLKREQN_M0                   | GPIO0_C0 | 3.3V  | MIPI DSI 1 backlight control                |
|        | 9   | UART2_RX_M0             | I2S1_SCLK_M1/JTAG_TMS_M2/I2C1<br>_SDA_M0/PCIE30X1_1_WAKEN_M0                           | GPIO0_B6 | 3.3V  | UART 2 receiving data                       |
|        | 10  | UART2_TX_M0             | I2S1_MCLK_M1/JTAG_TCK_M2/I2C1<br>_SCL_M0/PCIE30X1_1_CLKREQN_M0                         | GPIO0_B5 | 3.3V  | UART 2 transmitting data                    |
|        | 11  | GPIO                    | PDM0_CLK1_M1/PWM2_M0/UART<br>0_RX_M0/I2C4_SDA_M2/ DP0_HPD<br>IN_M1/PCIE30X1_0_WAKEN_M0 | GPIO0_C4 | 3.3V  | No connection                               |
|        | 12  | I2S0_SDI0               | -                                                                                      | GPIO1_D4 | 1.8V  | I <sup>2</sup> S 0 data input               |
|        | 13  | I2S0_LRCK_TX            | I2C2_SCL_M3/UART4_RTSN                                                                 | GPIO1_C5 | 1.8V  | I <sup>2</sup> S 0 left-right channel clock |
|        | 14  | I2S0_SDO0               | I2C4_SCL_M4/UART4_CTSN                                                                 | GPIO1_C7 | 1.8V  | I <sup>2</sup> S 0 data output              |
|        | 15  | I2S0_SCLK_TX            | 2C6_SCL_M1/UART3_CTSN/PWM7_<br>IR_M2/SPI4_CS0_M0                                       | GPIO1_C3 | 1.8V  | I <sup>2</sup> S 0 clock                    |
|        | 16  | I2S0_MCLK               | I2C6_SDA_M1/UART3_RTSN/<br>PWM3_IR_M2/SPI4_CLK_M0                                      | GPIO1_C2 | 1.8V  | I <sup>2</sup> S 0 master clock             |
|        | 17  | I2C7_SCL_M0/CODEC       | I2C7_SCL_M0/UART6_TX_M2/<br>SPI1_MISO_M2                                               | GPIO1_D0 | 1.8V  | I <sup>2</sup> C7 clock                     |
|        | 18  | I2C7_SDA_M0/CODEC       | I2S0_SDI3/PDM0_SDI1_M0/I2C7_SDA<br>_M0/UART6_RX_M2/SPI1_MOSI_M2                        | GPIO1_D1 | 1.8V  | I <sup>2</sup> C7 data                      |
|        | 19  | HP_DET_L                | PDM0_CLK1_M0/I2C2_SDA_M3/<br>PWM11_IR_M2/SPI4_CS1_M0                                   | GPIO1_C4 | 1.8V  | Headphone plug detection                    |
|        | 20  | PCIEx1_0_PERSTn_M1_L    | PDM1_CLK0_M1/PCIE30X1_0_PERSTN<br>_M2/UART7_RX_M2/SPI0_CS0_M2                          | GPIO1_B4 | 1.8V  | PCIe 3.0 x1 reset                           |
|        | 21  | PCIE30x1_0_CLKREQn_M1_L | UART7_TX_M2/SPI0_CS1_M2                                                                | GPIO1_B5 | 1.8V  | PCIe 3.0 x1 clock request                   |
|        | 22  | PCIE30x1_0_WAKEn_M1_L   | PDM1_CLK1_M1/PCIE30X1_0_WAKEN<br>_M2/SATA0_ACT_LED_M1/UART4_<br>TX_M2/SPI0_CLK_M2      | GPIO1_B3 | 1.8V  | PCIe 3.0 x1 wakeup                          |
|        | 23  | GND                     | -                                                                                      | -        | -     | Ground                                      |
|        | 24  | PCIE30_PORT0_TX1_N      | -                                                                                      | -        | -     | PCIe 3.0_0 transmitter 1 -                  |
|        | 25  | PCIE30_PORT0_TX1_P      | -                                                                                      | -        | -     | PCIe 3.0_0 transmitter 1 +                  |

| Header | Pin | Function 1               | Function 2    | GPIO | Level | Description                   |
|--------|-----|--------------------------|---------------|------|-------|-------------------------------|
| J4     | 26  | GND                      | -             | -    | -     | Ground                        |
|        | 27  | PCIE30_PORT0_TX0_N       | -             | -    | -     | PCle 3.0_0 transmitter 0 -    |
|        | 28  | PCIE30_PORT0_TX0_P       | -             | -    | -     | PCle 3.0_0 transmitter 0 +    |
|        | 29  | GND                      | -             | -    | -     | Ground                        |
|        | 30  | PCIE30_PORT0_REFCLK_IN_N | -             | -    | -     | PCle 3.0_0 reference clock -  |
|        | 31  | PCIE30_PORT0_REFCLK_IN_P | -             | -    | -     | PCle 3.0_0 reference clock +  |
|        | 32  | GND                      | -             | -    | -     | Ground                        |
|        | 33  | PCIE30_PORT0_RX1_N       | -             | -    | -     | PCle 3.0_0 receiver 1 clock - |
|        | 34  | PCIE30_PORT0_RX1_P       | -             | -    | -     | PCle 3.0_0 receiver 1 clock + |
|        | 35  | GND                      | -             | -    | -     | Ground                        |
|        | 36  | PCIE30_PORT0_RX0_N       | -             | -    | -     | PCle 3.0_0 receiver 0 clock - |
|        | 37  | PCIE30_PORT0_RX0_P       | -             | -    | -     | PCle 3.0_0 receiver 0 clock + |
|        | 38  | GND                      | -             | -    | -     | Ground                        |
|        | 39  | PCIE20_2_REFCLK_N        | -             | -    | -     | PCle 2.0_2 reference clock -  |
|        | 40  | PCIE20_2_REFCLK_P        | -             | -    | -     | PCle 2.0_2 reference clock +  |
|        | 41  | GND                      | -             | -    | -     | Ground                        |
|        | 42  | PCIE20_1_REFCLK_N        | -             | -    | -     | PCle 2.0_1 reference clock -  |
|        | 43  | PCIE20_1_REFCLK_P        | -             | -    | -     | PCle 2.0_1 reference clock +  |
|        | 44  | GND                      | -             | -    | -     | Ground                        |
|        | 45  | PCIE20_1_TX_P            | SATA30_1_TX_P | -    | -     | PCle 2.0_1 transmitter +      |
|        | 46  | PCIE20_1_TX_N            | SATA30_1_TX_N | -    | -     | PCle 2.0_1 transmitter -      |
|        | 47  | GND                      | -             | -    | -     | Ground                        |
|        | 48  | PCIE20_1_RX_P            | SATA30_1_RX_P | -    | -     | PCle 2.0_1 receiver +         |
|        | 49  | PCIE20_1_RX_N            | SATA30_1_RX_N | -    | -     | PCle 2.0_1 receiver -         |
|        | 50  | GND                      | -             | -    | -     | Ground                        |

**Ordering Information**

**Nomenclature: VT-CORE-P-OS**

**P (Processor): 3588-RK3588; 3588J-RK3588J**

**OS (Operating system): A-Android; D-Debian; U-Ubuntu**

| Example Ordering No. | Operating System | Memory | Storage | Operating Temperature |
|----------------------|------------------|--------|---------|-----------------------|
| VT-CORE-3588-A       | Android 12       | 32GB   | 256GB   | 0°C ~ +60°C           |
| VT-CORE-3588-D       | Debian 11        | 32GB   | 256GB   | 0°C ~ +60°C           |
| VT-CORE-3588J-D      | Debian 11        | 32GB   | 256GB   | -40°C ~ +85°C         |
| VT-CORE-3588J-U      | Ubuntu 22.04     | 32GB   | 256GB   | -40°C ~ +85°C         |

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