

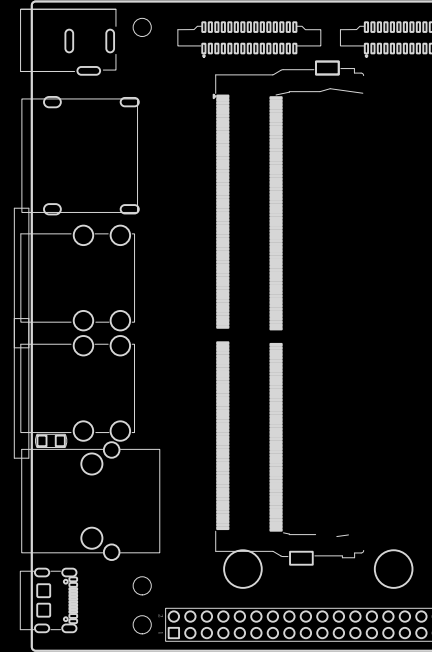
reComputer J202

Introduction

reComputer J202 is a high-performance, interface rich NVIDIA Jetson Nano / Xavier NX/ TX2 NX compatible carrier board, providing HDMI 2.0, Gigabit Ethernet, USB3.0, M.2 key E wifi / BT, M.2 key M, CSI camera, CAN, GPIO, I2C, I2S, Fan, and other rich peripheral interfaces. It has the same functional design and size as the carrier board of NVIDIA® Jetson Xavier™ NX DEVELOPER KIT.

Part list

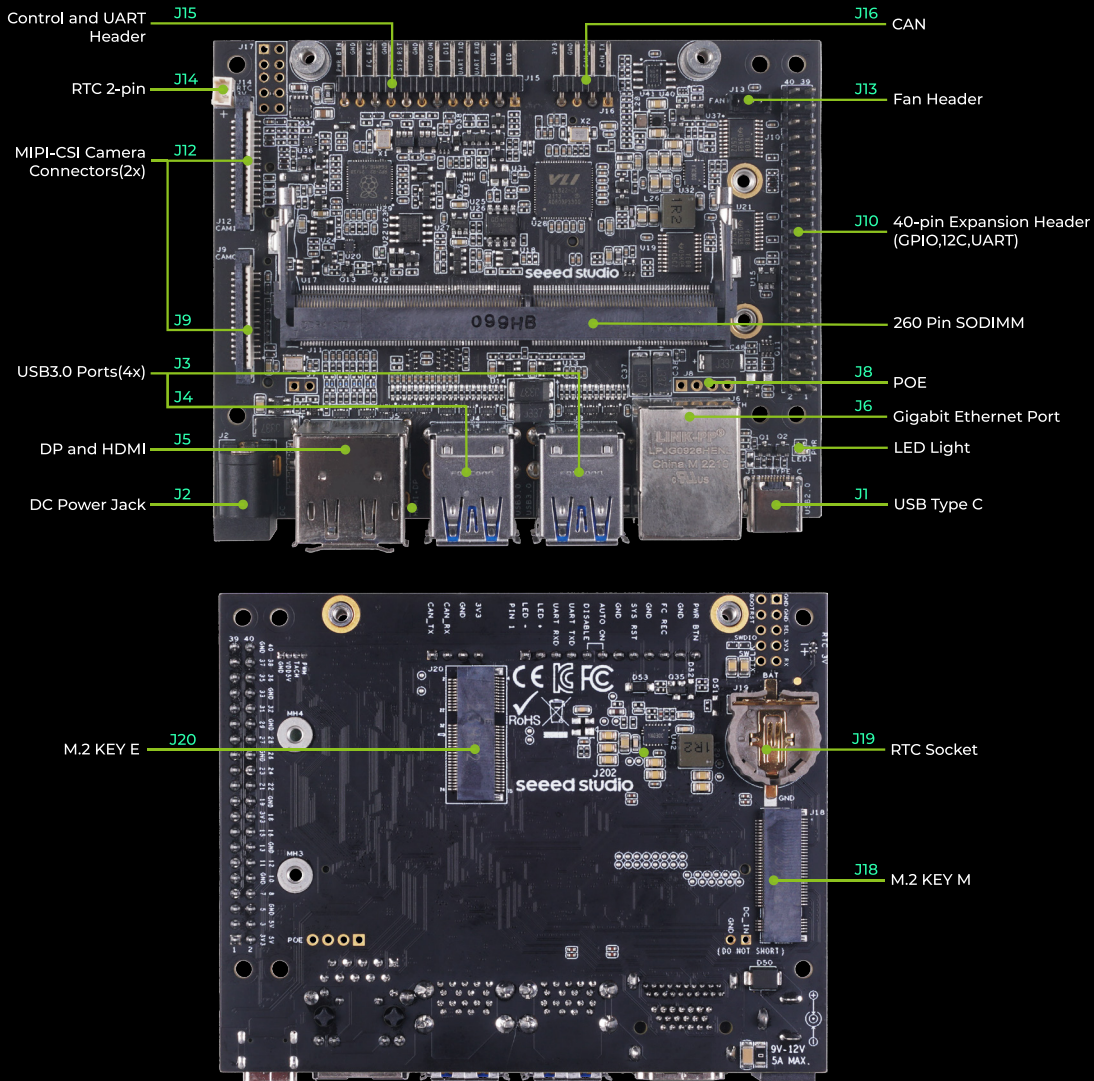
- reComputer J202 x1
- 12V/5A power adapter x1



Category

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Product Details



The reComputer J202 provides several connectors with industry standard pin outs to support additional functionality beyond what is integrated on the main platform board. This includes:

- USB 2.0: Type C Connector
- USB 3.0: 2 x Type A Stacked Connectors
- Gigabit Ethernet: RJ45 Connector
- HDMI / DP: HDMI Type A and Display Port Stacked Connector
- M.2, Key E Socket
- M.2, Key M Socket

Note: When using with Jetson Nano module, the M.2 E KEY and CAN cannot work.

USB Port

The carrier board supports several USB Connectors. One is a USB 2.0 Type C connector supporting Device mode only (including USB Recovery). There are two, dual stacked USB 3.0 Type A connectors. Each connector supports Host mode only. A single load switch supplies VBUS to all four USB 3.0 ports and is limited to 2A of output current.

USB 2.0 Type C data only - J1

| Pin # | Module Pin Name | Module Pin # | Net Name | Usage/Description | Type/Dir Default |
|--------|--------------------------|--------------|----------------|-------------------|------------------|
| A4/B9 | GPIO00 (USB_VBUS_EN0) | 87 | USB0_VBUS_DET* | VBUS Supply | Power |
| A9/B4 | | | | | |
| A5 | - | - | DAT_CC1 | - | - |
| B5 | - | - | DAT_CC2 | - | - |
| A7 | USB0_D_N | 109 | Type C_USB_DN | USB 2.0 #0 Data | Bidir |
| B7 | | | | | |
| A6 | USB0_D_P | 111 | Type C_USB_DP | | |
| B6 | | | | | |
| A8 | - | - | - | - | - |
| B8 | - | - | - | - | - |
| A1/B12 | - | - | - | Ground | Ground |
| A12/B1 | - | - | - | | Ground |

Note:

In the Type/Dir column, Output I s to USB connector. Input is form USB connector. Bidir is for bidirectional signals.

USB 3.0 Type A - J3:

| Pin # | Module Pin Name ¹ | Module Pin # | Net Name | Usage/Description | Type/Dir ² |
|--|------------------------------|--------------|-------------|-----------------------------------|-----------------------|
| USB 3.0 Type A (4) | | | | | |
| 1 | – | – | – | VBUS Supply | Power |
| 2 | USB1_D_N | 115 | HUB_HSD4_N | USB 2.0 #4 Data from hub | Bidir |
| 3 | USB1_D_P | 117 | HUB_HSD4_P | | |
| 4 | – | – | – | Ground | Ground |
| 5 | USBSS_RX_N | 161 | HUB_SSRX4_N | USB 3.1 Receive #4 Data from hub | Input |
| 6 | USBSS_RX_P | 163 | HUB_SSRX4_P | | |
| 7 | – | – | – | Ground | Ground |
| 8 | USBSS_TX_N | 166 | HUB_SSTX4_N | USB 3.1 Transmit #4 Data from hub | Output |
| 9 | USBSS_TX_P | 168 | HUB_SSTX4_P | | |
| USB 3.0 Type A (3) | | | | | |
| 10 | – | – | – | VBUS Supply | Power |
| 11 | USB1_D_N | 115 | HUB_HSD3_N | USB 2.0 Data #3 Data from hub. | Bidir |
| 12 | USB1_D_P | 117 | HUB_HSD3_P | | |
| 13 | – | – | – | Ground | Ground |
| 14 | USBSS_RX_N | 161 | HUB_SSRX3_N | USB 3.1 Receive #3 Data from hub | Input |
| 15 | USBSS_RX_P | 163 | HUB_SSRX3_P | | |
| 16 | – | – | – | Ground | Ground |
| 17 | USBSS_TX_N | 166 | HUB_SSTX3_N | USB 3.1 Transmit #3 Data from hub | Output |
| 18 | USBSS_TX_P | 168 | HUB_SSTX3_P | | |
| <p>Note:</p> <ol style="list-style-type: none"> 1. The module pin names not directly connected to the USB connector pins but are routed to the input of the USB hub. 2. In the Type/Dir column, Output is to USB connectors. Input is from USB connectors. Bidir is for bidirectional signals. | | | | | |

USB 3.0 Type A - J4:

| Pin # | Module Pin Name ¹ | Module Pin # | Net Name | Usage/Description | Type/Dir ² |
|--|------------------------------|--------------|-------------|-----------------------------------|-----------------------|
| USB 3.0 Type A (2) | | | | | |
| 1 | – | – | – | VBUS Supply | Power |
| 2 | USB1_D_N | 115 | HUB_HSD2_N | USB 2.0 #2 Data from hub | Bidir |
| 3 | USB1_D_P | 117 | HUB_HSD2_P | | |
| 4 | – | – | – | Ground | Ground |
| 5 | USBSS_RX_N | 161 | HUB_SSRX2_N | USB 3.1 Receive #2 Data from hub | Input |
| 6 | USBSS_RX_P | 163 | HUB_SSRX2_P | | |
| 7 | – | – | – | Ground | Ground |
| 8 | USBSS_TX_N | 166 | HUB_SSTX2_N | USB 3.1 Transmit #2 Data from hub | Output |
| 9 | USBSS_TX_P | 168 | HUB_SSTX2_P | | |
| USB 3.0 Type A (1) | | | | | |
| 10 | – | – | – | VBUS Supply | Power |
| 11 | USB1_D_N | 115 | HUB_HSD1_N | USB 2.0 Data #1 Data from hub | Bidir |
| 12 | USB1_D_P | 117 | HUB_HSD1_P | | |
| 13 | – | – | – | Ground | Ground |
| 14 | USBSS_RX_N | 161 | HUB_SSRX1_N | USB 3.1 Receive #1 Data from hub | Input |
| 15 | USBSS_RX_P | 163 | HUB_SSRX1_P | | |
| 16 | – | – | – | Ground | Ground |
| 17 | USBSS_TX_N | 166 | HUB_SSTX1_N | USB 3.0 Transmit #1 Data from hub | Output |
| 18 | USBSS_TX_P | 168 | HUB_SSTX1_P | | |
| <p>Note:</p> <ol style="list-style-type: none"> 1. The module pin names not directly connected to the USB connector pins but are routed to the input of the USB hub. 2. In the Type/Dir column, Output is to USB connectors. Input is from USB connectors. Bidir is for bidirectional signals. | | | | | |

Gigabit Ethernet - J6

| Pin # | Module Pin Name | Module Pin # | Net Name | Usage/Description | Type/Dir |
|-------|-----------------|--------------|--------------|--|----------|
| 1 | GBE_MDI0_P | 186 | GBE_MDI0_P | Gigabit Ethernet MDI 0+ | Bidir |
| 2 | GBE_MDI0_N | 184 | GBE_MDI0_N | Gigabit Ethernet MDI 0- | Bidir |
| 3 | GBE_MDI1_P | 192 | GBE_MDI1_P | Gigabit Ethernet MDI 1+ | Bidir |
| 4 | - | - | - | MCT | - |
| 5 | - | - | - | MCT | - |
| 6 | GBE_MDI1_N | 190 | GBE_MDI1_N | Gigabit Ethernet MDI 1- | Bidir |
| 7 | GBE_MDI2_P | 198 | GBE_MDI2_P | Gigabit Ethernet MDI 2+ | Bidir |
| 8 | GBE_MDI2_N | 196 | GBE_MDI2_N | Gigabit Ethernet MDI 2- | Bidir |
| 9 | GBE_MDI3_P | 204 | GBE_MDI3_P | Gigabit Ethernet MDI 3+ | Bidir |
| 10 | GBE_MDI3_N | 202 | GBE_MDI3_N | Gigabit Ethernet MDI 3- | Bidir |
| 11 | - | - | - | Power-Over-Ethernet | Power |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | - | - | - | Green LED Anode | Input |
| 16 | GBE_LED_LINK | 188 | GBE_LED_LINK | Green LED Cathode. On for 1000Mbps link. Off for 10/100Mbps. | Output |
| 17 | - | - | - | Yellow LED Anode | Input |
| 18 | GBE_LED_ACT | 194 | GBE_LED_ACT | Yellow LED Cathode. On indicates activity. | Output |
| 19 | - | - | | Shield Ground | Ground |
| 20 | | | | | |

Note:

In the Type/Dir column, Output is to RJ45 connector. Input is from RJ45 connector. Bidir is for bidirectional signals.

HDMI - J5A

| Pin # | Module Pin Name | Module Pin # | Net Name | Usage/Description | Type/Dir |
|-------|-----------------|--------------|--------------|-----------------------|------------|
| 1 | DPI_TXD0_P | 65 | HDMI_TXD2_P | HDMI Transmit Data 2+ | Output |
| 2 | - | - | | Ground | Ground |
| 3 | DPI_TXD0_N | 63 | HDMI_TXD2_N | HDMI Transmit Data 2- | Output |
| 4 | DPI_TXD1_P | 71 | HDMI_TXD1_P | HDMI Transmit Data 1+ | Output |
| 5 | - | - | | Ground | Ground |
| 6 | DPI_TXD1_N | 69 | HDMI_TXD1_N | HDMI Transmit Data 1- | Output |
| 7 | DPI_TXD2_P | 77 | HDMI_TXD0_P | HDMI Transmit Data 0+ | Output |
| 8 | - | - | | Ground | Ground |
| 9 | DPI_TXD2_N | 75 | HDMI_TXD0_N | HDMI Transmit Data 0- | Output |
| 10 | DPI_TXD3_P | 83 | HDMI_TXC_P | HDMI Transmit Clock+ | Output |
| 11 | - | - | | Ground | Ground |
| 12 | DPI_TXD3_N | 81 | HDMI_TXC_N | HDMI Transmit Clock- | Output |
| 13 | HDMI_CEC | 94 | HDMI_CEC | HDMI CEC | Bidir |
| 14 | - | - | | Unused | Unused |
| 15 | DPI_AUX_P | 100 | HDMI_DDC_SCL | HDMI DDC Clock | Output /OD |
| 16 | DPI_AUX_N | 98 | HDMI_DDC_SDA | HDMI DDC Data | Bidir/OD |
| 17 | - | - | | Ground | Ground |
| 18 | - | - | | HDMI 5V Power | Power |
| 19 | DPI_HPD | 96 | HDMI_HPD | HDMI Hot Plug Detect | Input |

Note:

In the Type/Dir column, Output is to HDMI connector. Input is from HDMI connector. Bidir is for bidirectional signals.

DP - J5B

| Pin # | Module Pin Name | Module Pin # | Net Name | Usage/Description | Type/Dir |
|-------|-----------------|--------------|------------|--|----------|
| 1 | DP0_TXD0_P | 41 | DP0_TXD0_P | DP Lane 0+ | Output |
| 2 | - | - | | Ground | Ground |
| 3 | DP0_TXD0_N | 39 | DP0_TXD0_N | DP Lane 0- | Output |
| 4 | DP0_TXD1_P | 47 | DP0_TXD1_P | DP Lane 1+ | Output |
| 5 | - | - | | Ground | Ground |
| 6 | DP0_TXD1_N | 45 | DP0_TXD1_N | DP Lane 1- | Output |
| 7 | DP0_TXD2_P | 53 | DP0_TXD2_P | DP Lane 2+ | Output |
| 8 | - | - | | Ground | Ground |
| 9 | DP0_TXD2_N | 51 | DP0_TXD2_N | DP Lane 2- | Output |
| 10 | DP0_TXD3_P | 59 | DP0_TXD3_P | DP Lane 3+ | Output |
| 11 | - | - | | Ground | Ground |
| 12 | DP0_TXD3_N | 57 | DP0_TXD3_N | DP Lane 3- | Output |
| 13 | - | - | | MODE: Selects between D P and TMDS (DVI/HDMI) signaling. | Unused |
| 14 | - | - | | CEC_DP: Not used – pulled to GND through 1Mohm resistor | Unused |
| 15 | DP0_AUX_N | 90 | DP0_AUX_N | DisplayPort Auxiliary Channel 0- | Bidir |
| 16 | - | - | | Ground | Ground |
| 17 | DP0_AUX_P | 92 | DP0_AUX_P | DisplayPort Auxiliary Channel 0+ | Bidir |
| 18 | DP0_HPD | 88 | DP0_HPD | HDMI Hot Plug Detect | Input |
| 19 | - | - | | Power Return (Ground) | Ground |
| 20 | - | - | | +3.3V | Power |

Note:

In the Type/Dir column, Output is to DP connector. Input is from DP connector. Bidir is for bidirectional signals.

M.2 Key E Expansion Slot-J20

| Pin # | Module Pin Name | Module Pin # | Usage/Description | Type/Dir |
|-------|-----------------|--------------|-------------------------|-------------|
| 1 | - | | Ground | Ground |
| 3 | USB2_D_P | 123 | USB 2.0 Data | Bidir |
| 5 | USB2_D_N | 121 | | |
| 7 | - | | Ground | Ground |
| 9 | - | - | Unused | Unused |
| 11 | | | | |
| 13 | | | | |
| 15 | | | | |
| 17 | | | | |
| 19 | | | | |
| 21 | | | | |
| 23 | | | | |
| 25 | - | - | Key | Unused |
| 27 | | | | |
| 29 | | | | |
| 31 | | | | |
| 33 | - | - | Ground | Ground |
| 35 | PCIE1_TX0_P | 174 | PCIe #1 Transmit Lane 0 | Output |
| 37 | PCIE1_TX0_N | 172 | | |
| 39 | - | - | Ground | Ground |
| 41 | PCIE1_RX0_P | 169 | PCIe #1 Receive Lane 0 | Input |
| 43 | PCIE1_RX0_N | 167 | | |
| 45 | - | - | Ground | Ground |
| 47 | PCIE1_CLK_P | 175 | PCIe #1 Reference clock | Output |
| 49 | PCIE1_CLK_N | 173 | | |
| 51 | - | - | Ground | Ground |
| 53 | PCIE1_CLKREQ* | 182 | PCIe #1 Clock Request | Bidir, 3.3V |
| 55 | PCIE_WAKE* | 179 | PCIe Wake | Input, 3.3V |
| 57 | - | - | Ground | Ground |
| 59 | - | - | Unused | Unused |
| 61 | | | | |
| 63 | - | - | Ground | Ground |
| 65 | - | - | Unused | Unused |
| 67 | | | | |
| 69 | - | - | Ground | Ground |
| 71 | - | - | Unused | Unused |
| 73 | | | | |
| 75 | - | - | Ground | Ground |

| Pin # | Module Pin Name | Module Pin # | Usage/Description | Type/Dir |
|-------|-----------------|--------------|----------------------------|----------------|
| 2 | - | - | Main 3.3V Supply | Power |
| 4 | | | | |
| 6 | - | - | Unused | Unused |
| 8 | I2S1_CLK | 226 | I2S #1 Clock | Bidir, 1.8V |
| 10 | I2S1_FS | 224 | I2S #1 Left/Right Clock | Bidir, 1.8V |
| 12 | I2S1_DIN | 222 | I2S #1 Data In | Input, 1.8V |
| 14 | I2S1_DOUT | 220 | I2S #1 Data Out | Bidir, 1.8V |
| 16 | - | - | Unused | Unused |
| 18 | - | - | Ground | Ground |
| 20 | GPIO02 | 124 | Bluetooth #2 Wake AP | Input, 3.3V |
| 22 | UART0_RXD | 101 | UART #0 Receive | Input, 1.8V |
| 24 | - | - | Key | Unused |
| 26 | | | | |
| 28 | | | | |
| 30 | | | | |
| 32 | UART0_TXD | 99 | UART #0 Transmit | Output, 1.8V |
| 34 | UART0_CTS* | 105 | UART #0 Clear to Send | Input, 1.8V |
| 36 | UART0_RTS* | 103 | UART #0 Request to Send | Output, 1.8V |
| 38 | - | - | Unused | Unused |
| 40 | | | | |
| 42 | | | | |
| 44 | | | | |
| 46 | | | | |
| 48 | | | | |
| 50 | CLK_32K_OUT | 210 | Suspend Clock (32KHz) | Output, 3.3V |
| 52 | PCIE1_RST* | 183 | PCIe #0 Reset | Output, 3.3V |
| 54 | - | - | Unused | Unused |
| 56 | | | | |
| 58 | I2C2_SDA | 234 | General I2C #2 (optional) | Bidir/OD, 1.8V |
| 60 | I2C2_SCL | 232 | | |
| 62 | GPIO10 | 212 | M.2, Key E Connector Alert | Input, 1.8V |
| 64 | - | - | Unused | Unused |
| 66 | | | | |
| 68 | | | | |
| 70 | | | | |
| 72 | - | - | Main 3.3V Supply | Power |
| 74 | | | | |

Note:

In the Type/Dir column, Output is to M.2 module. Input is from M.2 module. Bidir is for bidirectional signals.

M.2 Key M Expansion Slot -J18

| Pin # | Module Pin Name | Module Pin # | Usage/Description | Type/Dir Default |
|-------|-----------------|--------------|----------------------------|------------------|
| 1 | - | - | Ground | Ground |
| 3 | | | | |
| 5 | PCIE0_RX3_N | 155 | PCIe IF #0 Lane 3 Receive | Input |
| 7 | PCIE0_RX3_P | 157 | | |
| 9 | - | - | Ground | Ground |
| 11 | PCIE0_TX3_N | 154 | PCIe IF #0 Lane 3 Transmit | Output |
| 13 | PCIE0_TX3_P | 156 | | |
| 15 | - | - | Ground | Ground |
| 17 | PCIE0_RX2_N | 149 | PCIe IF #0 Lane 2 Receive | Input |
| 19 | PCIE0_RX2_P | 151 | | |
| 21 | - | - | Ground | Ground |
| 23 | PCIE0_TX2_N | 148 | PCIe IF #0 Lane 2 Transmit | Output |
| 25 | PCIE0_TX2_P | 150 | | |
| 27 | - | - | Ground | Ground |
| 29 | PCIE0_RX1_N | 137 | PCIe IF #0 Lane 1 Receive | Input |
| 31 | PCIE0_RX1_P | 139 | | |
| 33 | - | - | Ground | Ground |
| 35 | PCIE0_TX1_N | 140 | PCIe IF #0 Lane 1 Transmit | Output |
| 37 | PCIE0_TX1_P | 142 | | |
| 39 | - | - | Ground | Ground |
| 41 | PCIE0_RX0_N | 131 | PCIe IF #0 Lane 0 Receive | Input |
| 43 | PCIE0_RX0_P | 133 | | |
| 45 | - | - | Ground | Ground |
| 47 | PCIE0_TX0_N | 134 | PCIe IF #0 Lane 0 Transmit | Output |
| 49 | PCIE0_TX0_P | 136 | | |
| 51 | - | - | Ground | Ground |
| 53 | PCIE0_CLK_N | 160 | PCIe IF #0 Reference Clock | Output |
| 55 | PCIE0_CLK_P | 162 | | |
| 57 | - | - | Ground | Ground |
| 59 | - | - | Unused (Key) | Unused |
| 61 | | | | |
| 63 | | | | |
| 65 | | | | |
| 67 | - | - | Unused | Unused |
| 69 | - | - | Unused | Unused |
| 71 | - | - | Ground | Ground |
| 73 | | | | |
| 75 | | | | |

| Pin # | Module Pin Name | Module Pin # | Usage/Description | Type/Dir Default |
|--|-----------------|--------------|---|------------------|
| 2 | - | - | Main 3.3V Supply | Power |
| 4 | | | | |
| 6 | | | | |
| 8 | | | | |
| 10 | - | - | Unused | Unused |
| 12 | | | | |
| 14 | | | | |
| 16 | | | | |
| 18 | - | - | Main 3.3V Supply | Power |
| 20 | | | | |
| 22 | | | | |
| 24 | | | | |
| 26 | - | - | Unused | Unused |
| 28 | | | | |
| 30 | | | | |
| 32 | | | | |
| 34 | | | | |
| 36 | | | | |
| 38 | | | | |
| 40 | | | | |
| 42 | I2C2_SDA | 234 | | |
| 44 | SDMMC_DAT1 | 221 | M.2 Key M Alert | Output, 1.8V |
| 46 | - | - | Unused | Unused |
| 48 | | | | |
| 50 | PCIE0_RST* | 181 | PCIe IF #0 Reset | Output, 3.3V |
| 52 | PCIE0_CLKREQ* | 180 | PCIe IF #0 Clock Request | Input, 3.3V |
| 54 | PCIE_WAKE* | 179 | PCIe Wake (Level Shifted from 3.3V to 1.8V) | Input, 3.3V |
| 56 | - | - | Unused | Unused |
| 58 | | | | |
| 60 | - | - | Unused (Key) | Unused |
| 62 | | | | |
| 64 | | | | |
| 66 | | | | |
| 68 | - | - | 32KHz Suspend Clock | Output, 3.3V |
| 70 | - | - | Main 3.3V Supply | Power |
| 72 | | | | |
| 74 | | | | |
| <p>Note: In the Type/Dir column, Output is to M.2 module. Input is from M.2 Module. Bidir is for bidirectional signals.</p> | | | | |

CSI - J12

| Pin # | Module Pin Name | Usage/Description | Type/Dir |
|-------|-----------------|--|----------|
| 1 | – | Ground | Ground |
| 2 | CSI0_D0_N | CSI 0 Data 0 | Input |
| 3 | CSI0_D0_P | | |
| 4 | – | Ground | Ground |
| 5 | CSI0_D1_N | CSI 0 Data 1 | Input |
| 6 | CSI0_D1_P | | |
| 7 | – | Ground | Ground |
| 8 | CSI0_CLK_N | CSI 0 Clock | Input |
| 9 | CSI0_CLK_P | | |
| 10 | – | Ground | Ground |
| 11 | CAM0_PWDN | Camera #0 Power-down | Output |
| 12 | CAM0_MCLK | Camera #0 Master Clock | Output |
| 13 | CAM0_I2C_SCL | Camera I2C. 2.2k Ω pull-ups on module. 2.2k Ω pull-ups on the carrier board. The module CAM_I2C pins connect to an I2C mux. The camera connector #1 receives the I2C from the mux (1st output).The I2C signals on the camera side of the mux have 47k Ω pull-ups. | Output |
| 14 | CAM0_I2C_SDA | | Bidir |
| 15 | – | +3.3V | Power |
| 16 | – | Not Used | – |
| 17 | – | | |
| 18 | – | | |
| 19 | – | | |
| 20 | – | | |
| 21 | – | | |
| 22 | – | | |
| 23 | – | | |
| 24 | – | | |
| 25 | – | | |
| 26 | – | | |
| 27 | – | | |
| 28 | – | | |
| 29 | – | | |
| 30 | – | | |

CSI - J9

| Pin # | Module Pin Name | Usage/Description | Type/Dir |
|-------|-----------------|--|----------|
| 1 | – | Ground | Ground |
| 2 | CSI2_D0_N | CSI 2 Data 0 | Input |
| 3 | CSI2_D0_P | | |
| 4 | – | Ground | Ground |
| 5 | CSI2_D1_N | CSI 2 Data 1 | Input |
| 6 | CSI2_D1_P | | |
| 7 | – | Ground | Ground |
| 8 | CSI2_CLK_N | CSI 2 Clock | Input |
| 9 | CSI2_CLK_P | | |
| 10 | – | Ground | Ground |
| 11 | CAM1_PWDN | Camera #1 Power-down | Output |
| 12 | CAM1_MCLK | Camera #1 Master Clock | Output |
| 13 | CAM1_I2C_SCL | Camera I2C. 2.2kΩ pull-ups on module. 2.2kΩ pull-ups on the carrier board. The module CAM_I2C pins connect to an I2C mux. The camera connector #1 receives the I2C from the mux (2nd output).The I2C signals on the camera side of the mux have 47kΩ pull-ups. | Output |
| 14 | CAM1_I2C_SDA | | Bidir |
| 15 | – | +3.3V | Power |
| 16 | – | Not Used | – |
| 17 | – | | |
| 18 | – | | |
| 19 | – | | |
| 20 | – | | |
| 21 | – | | |
| 22 | – | | |
| 23 | – | | |
| 24 | – | | |
| 25 | – | | |
| 26 | – | | |
| 27 | – | | |
| 28 | – | | |
| 29 | – | | |
| 30 | – | | |

40 Pin Expansion Header - J10

| Header Pin # | Module Pin Name | Module Pin # | SoC Pin name | Default Usage / Description | Alternate Functionality |
|--------------|-----------------|--------------|--------------|-----------------------------|----------------------------|
| 1 | - | - | - | Main 3.3V Supply | - |
| 2 | - | - | - | Main 5.0V Supply | - |
| 3 | I2C1_SDA | 191 | DP_AUX_CH3_N | I2C #1 Data | - |
| 4 | - | - | - | Main 5.0V Supply | - |
| 5 | I2C1_SCL | 189 | DP_AUX_CH3_P | I2C #1 Clock | - |
| 6 | - | - | - | Ground | - |
| 7 | GPIO09 | 211 | AUD_MCLK | GPIO | Audio Master Clock |
| 8 | UART1_TXD | 203 | UART1_TX | UART #1 Transmit | GPIO |
| 9 | - | - | - | Ground | - |
| 10 | UART1_RXD | 205 | UART1_RX | UART #1 Receive | GPIO |
| | UART1_RTS* | 207 | UART1_RTS | GPIO | UART #2 Request to Send |
| 12 | I2S0_SCLK | 199 | DAP5_SCLK | GPIO | Audio I2S #0 Clock |
| 13 | SPI1_SCK | 106 | SPI3_SCK | GPIO | SPI #1 Shift Clock |
| 14 | - | - | - | Ground | - |
| 15 | GPIO12 | 218 | TOUCH_CLK | GPIO | - |
| 16 | SPI1_CS1* | 112 | SPI3_CS1 | GPIO | SPI #1 Chip Select #1 |
| 17 | - | - | - | Main 3.3V Supply | - |
| 18 | SPI1_CS10* | 110 | SPI3_CS0 | GPIO | SPI #0 Chip Select #0 |
| 19 | SPI0_MOSI | 89 | SPI1_MOSI | GPIO | SPI #0 Master Out/Slave In |
| 20 | - | - | - | Ground | - |
| 21 | SPI0_MISO | 93 | SPI1_MISO | GPIO | SPI #0 Master In/Slave Out |
| 22 | SPI1_MISO | 108 | SPI3_MISO | GPIO | SPI #1 Master In/Slave Out |
| 23 | SPI0_SCK | 91 | SPI1_SCK | GPIO | SPI #0 Shift Clock |
| 24 | SPI0_CS0* | 95 | SPI1_CS0 | GPIO | SPI #0 Chip Select #0 |
| 25 | - | - | - | Ground | - |
| 26 | SPI0_CS1* | 97 | SPI1_CS1 | GPIO | SPI #0 Chip Select #1 |
| 27 | I2C0_SDA | 187 | GEN2_I2C_SDA | I2C #0 Data | GPIO |
| 28 | I2C0_SCL | 185 | GEN2_I2C_SCL | I2C #0 Clock | GPIO |
| 29 | GPIO01 | 118 | SOC_GPIO41 | GPIO | General Purpose Clock #0 |
| 30 | - | - | - | Ground | - |
| 31 | GPIO11 | 216 | SOC_GPIO42 | GPIO | General Purpose Clock #1 |
| 32 | GPIO07 | 206 | SOC_GPIO44 | GPIO | PWM |
| 33 | GPIO13 | 228 | SOC_GPIO54 | GPIO | PWM |
| 34 | - | - | - | Ground | - |
| 35 | I2S0_FS | 197 | DAP5_FS | GPIO | Audio I2S #0 Field Select |
| 36 | UART1_CTS* | 209 | UART1_CTS | GPIO | UART #1 Clear to Send |
| 37 | SPI1_MOSI | 104 | SPI3_MOSI | GPIO | SPI #1 Master Out/Slave In |
| 38 | I2S0_DIN | 195 | DAP5_DIN | GPIO | Audio I2S #0 Data in |
| 39 | - | - | - | Ground | - |
| 40 | I2S0_DOUT | 193 | DAP5_DOUT | GPIO | Audio I2S #0 Data Out |

| Header Pin # | Type/ Dir | Pin Drive or Power Pin Max Current | SoC GPIO Port # | Power- on Default | PU/PD on Module | Notes |
|--------------|----------------------|------------------------------------|-----------------|-------------------|-----------------|-------|
| 1 | Power (input) | 1A | - | - | - | 1 |
| 2 | Power (input/output_ | 1A | - | - | - | 1 |
| 3 | Bidir OD | ±2mA | - | z | 2.2KΩ PU | 2 |
| 4 | Power | 1A | - | - | - | - |
| 5 | Bidir OD | ±2mA | - | z | 2.2KΩ PU | 2 |
| 6 | Ground | - | - | - | - | - |
| 7 | Bidir/Output | ±20uA | PS.04 | pd | | 3 |
| 8 | Output/Bidir | ±20uA | PR.02 | pd | | 3 |
| 9 | Ground | - | - | - | - | - |
| 10 | Input/Bidir | ±20uA | PR.03 | pu | | 3 |
| | Bidir/Output | ±20uA | PR.04 | pd | | 3 |
| 12 | Bidir | ±20uA | PT.05 | pd | | 3 |
| 13 | Bidir/Output | ±20uA | PY.00 | pd | | 3 |
| 14 | Ground | - | - | - | - | - |
| 15 | Bidir | ±20uA | PCC.04 | pd | | 3 |
| 16 | Bidir/Output | ±20uA | PY.04 | pu | | 3 |
| 17 | Power | 1A | - | - | - | 1 |
| 18 | Bidir/Output | ±20uA | PY.03 | pu | | 3 |
| 19 | Bidir/Output | ±20uA | PZ.05 | pd | | 3 |
| 20 | Ground | - | - | - | - | - |
| 21 | Bidir/Input | ±20uA | PZ.04 | pd | | 3 |
| 22 | Bidir/Input | ±20uA | PY.01 | pd | | 3 |
| 23 | Bidir/Output | ±20uA | PZ.03 | pd | | 3 |
| 24 | Bidir/Output | ±20uA | PZ.06 | pu | | 3 |
| 25 | Ground | - | - | - | - | - |
| 26 | Bidir/Output | ±20uA | PZ.07 | pu | | 3 |
| 27 | Bidir OD/Bidir | ±2mA | PDD.00 | z | 2.2KΩ PU | 2 |
| 28 | Bidir OD/Bidir | ±2mA | PCC.07 | z | 2.2KΩ PU | 2 |
| 29 | Bidir/Output | ±20uA | PQ.05 | pd | | 3 |
| 30 | Ground | - | - | - | - | - |
| 31 | Bidir/Output | ±20uA | PQ.06 | pd | | 3 |
| 32 | Bidir/Output | ±20uA | PR.00 | pd | | 3 |
| 33 | Bidir/Output | ±20uA | PN.01 | pd | | 3 |
| 34 | Ground | - | - | - | - | - |
| 35 | Bidir | ±20uA | PU.00 | pd | | 3 |
| 36 | Bidir/Input | ±20uA | PR.05 | pd | | 3 |
| 37 | Bidir/Output | ±20uA | PY.02 | pd | | 3 |
| 38 | Bidir/Input | ±20uA | PT.07 | pd | | 3 |
| 39 | Ground | - | - | - | - | - |
| 40 | Bidir/Output | ±20uA | PT.06 | pd | | 3 |

Note:

1. This is current capability per power pin.
2. These pins are connected to the SoC directly. They are open-drain (either pulled up or driven low by the SoC when configured as outputs). The max drive that meets the data sheet VOL is $\pm 2\text{mA}$.
3. These pins connect to TI TXB0108 level translators. Due to the design of these devices, the output drivers are very weak, so they can be overdriven by another connected device output for bidirectional support.
4. In the Type/Dir column, output is to expansion header. Input is from expansion header. Bidir is for bidirectional signals..
5. Where the signal direction is input or output in this table, this matches the typical special function usage (e.g. SPI, I2S, etc.). The direction is bidirectional if these are configured as GPIOs.
6. All signals on the 40-pin header are 3.3V levels.

Button Header - J15

| Pin # | Module Pin Name | Module Pin # | Net Name | Usage/Description | Type/Dir Default |
|-------|-------------------|--------------|-----------------|---|------------------|
| 1 | - | - | | PC_LED- : Connects to LED Cathode to indicate System Sleep/Wake (Off when system in sleep mode) | Input, 5V |
| 2 | - | - | | PC_LED+: Connects to LED Anode (see above) | Output |
| 3 | UART2_RXD (DEBUG) | 238 | UART2_RXD | UART #2 Receive | Input, 3.3V |
| 4 | UART2_TXD (DEBUG) | 236 | UART2_TXD | UART #2 Transmit | Output, 3.3V |
| 5 | - | - | | AC OK: Connect pins 5 and 6 to disable Auto-Power-On and require power button press. | Input, 3.3V |
| 6 | - | - | | Auto Power-on disable: Pulled to GND. See Pin 5. | na |
| 7 | - | - | | Ground | Ground |
| 8 | SYS_RESET* | 239 | SYS_RESET | Temporarily connect pins 7 and 8 to reset system | Input, 1.8V |
| 9 | - | - | | Ground | Ground |
| 10 | FORCE_RECOVERY* | 214 | FORCE_RECOVERY* | Connect pins 9 and 10 during power-on to put system in USB Force Recovery mode. | Input, 1.8V |
| 11 | - | - | | Ground | Ground |
| 12 | SLEEP/WAKE* | 240 | PWR_BTN* | Connect pins 11 and 12 to initiate power-on if Auto-Power-On disabled (Pins 5 and 6 connected). | Input, 5V |

Note:
In the Type/Dir column, Output is to button header. Input is from button header. Bidir is for bidirectional signals.

Fan Connector - J13

| Pin # | Module Pin Name | Module Pin # | Net Name | Usage/Description | Type/Dir Default |
|-------|-------------------|--------------|----------|-----------------------------------|------------------|
| 1 | - | | | Ground | Ground |
| 2 | - | | | Main 5.0V Supply | Power |
| 3 | GPIO08 (SDMMC_CD) | 208 | FAN_TACH | Fan Tachometer signal | Input, 5V |
| 4 | GPIO14 (PWM) | 230 | FAN_PWM | Fan Pulse Width Modulation signal | Output, 5V |

Note:
In the Type/Dir column, Output is to fan connector. Input is from fan connector. Bidir is for bidirectional signals.

CAN Bus Header- J16

| Pin # | Module Pin Name | Module Pin # | Net Name | Usage/Description | Type/Dir Default |
|-------|-----------------|--------------|----------|-------------------|------------------|
| 1 | CAN_TX | 145 | CAN_TX | CAN Bus transmit | Output, 3.3V |
| 2 | CAN_RX | 143 | CAN_RX | CAN Bus receive | Input, 3.3V |
| 3 | - | - | GND | Ground | Ground |
| 4 | - | - | | Main 3.3V Supply | Power |

Note:
In the Type/Dir column, Output is to CAN connector. Input is from CAN connector. Bidir is for bidirectional signals.

RTC-Coin Cell Batter Holder - J19

| Pin # | Module Pin Name | Module Pin # | Net Name | Usage/Description | Type/Dir Default |
|-------|-----------------|--------------|----------|--|------------------|
| 1 | - | | | Ground | Ground |
| 2 | PMIC_BBAT | 235 | BBAT | Power Management IC (PMIC) real-time clock battery back-up. Optionally used to provide back-up power for the Real-Time-Clock (RTC). Connects to coin cell (lithium or other). PMIC is supply when charging rechargeable cells. Coin cell is source when system is disconnected from power. Charging is enabled by default in software. If non-rechargeable battery is to be used, charging should be disabled. | Power |

RTC-Pin Header - J14

| Pin # | Module Pin Name | Module Pin # | Net Name | Usage/Description | Type/Dir Default |
|-------|-----------------|--------------|----------|--|------------------|
| 1 | - | | | Ground | Ground |
| 2 | PMIC_BBAT | 235 | BBAT | Power Management IC (PMIC) real-time clock battery back-up. Optionally used to provide back-up power for the Real-Time-Clock (RTC). Connects to coin cell (lithium or other). PMIC is supply when charging rechargeable cells. Coin cell is source when system is disconnected from power. Charging is enabled by default in software. If non-rechargeable battery is to be used, charging should be disabled. | Power |

POE - J8

| Pin # | Module Pin Name | Module Pin # | Net Name | Usage/Description | Type/Dir Default |
|-------|-----------------|--------------|----------|---------------------------------------|------------------|
| 1 | - | - | POE_VC1 | Ethernet RG45 connector PoE VC1 power | Power |
| 2 | - | - | POE_VC2 | Ethernet RG45 connector PoE VC2 power | Power |
| 3 | - | - | POE_VC3 | Ethernet RG45 connector PoE VC3 power | Power |
| 4 | - | - | POE_VC4 | Ethernet RG45 connector PoE VC4 power | Power |

DC Jack - J2

| Pin # | Module Pin Name | Module Pin # | Net Name | Usage/Description | Type/Dir Default |
|-------|-----------------|--------------|----------|---|------------------|
| 1 | - | - | - | Main DC input supplying DC jack input (9-16V) | Power |
| 2 | - | - | - | Ground | Ground |

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Control and UART Header

RTC 2-pin

MIPI-CSI Camera Connectors(2x)

USB3.1 Ports(4x)

DP and HDMI

DC Power Jack

CAN

Fan Header

40-pin Expansion Header (GPIO, I2C, UART)

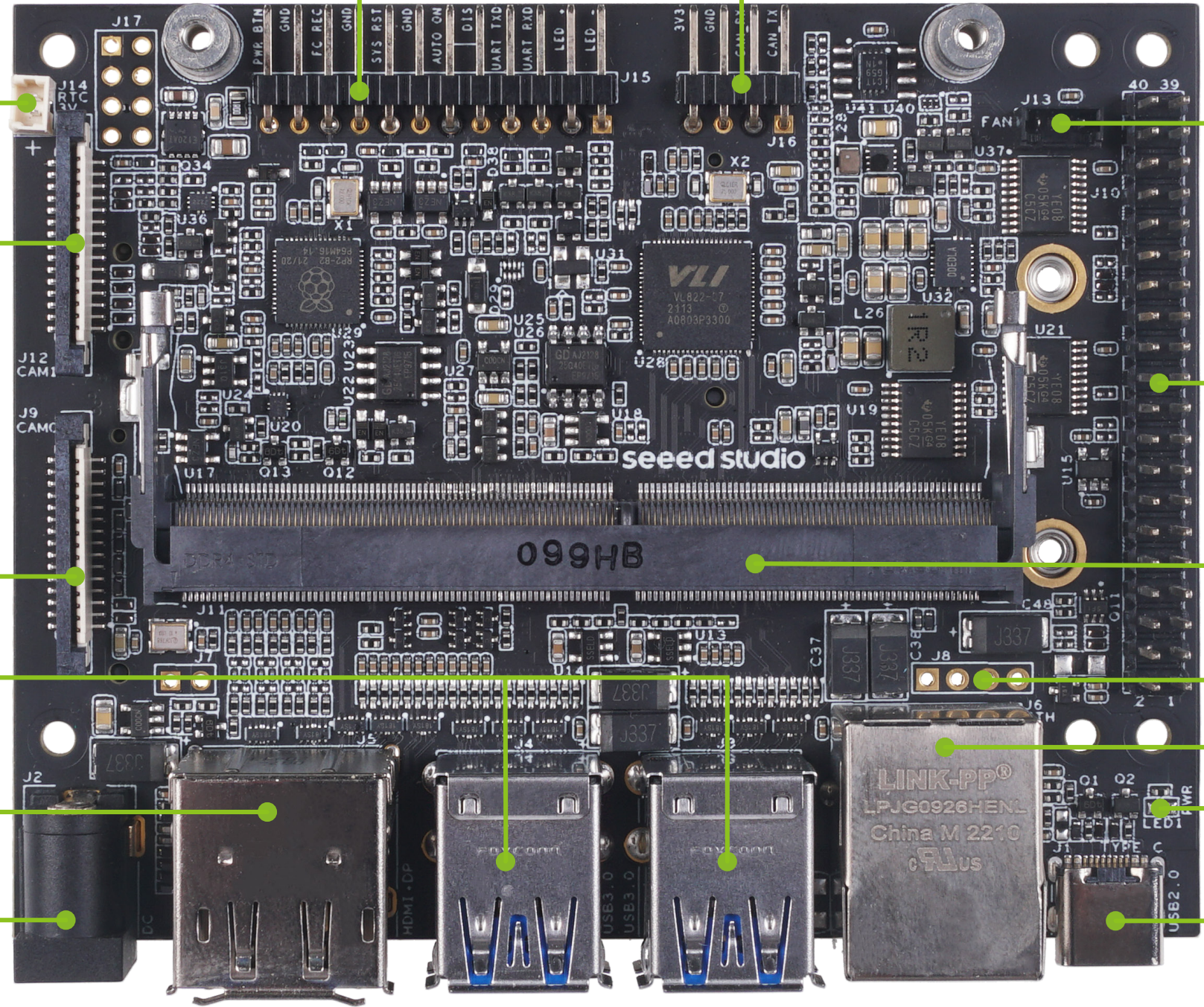
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