

---

# EmETXe-a10M0

## COM Express® Compact Type 6 CPU Module

### Quick Installation Guide

Version 1.1

|   |  |  |
|---|--|--|
| <b>Form Factor</b><br><i>COM Express® Compact Type 6 CPU Module</i> | <b>CPU</b><br><i>AMD Ryzen Embedded V1000 V1807B/ V1756B/ V1605B Processor</i> | <b>Memory</b><br><i>DDR4 ECC SO-DIMM Sockets</i> |
| <b>LAN</b><br><i>Intel® i210IT PCIe Controller</i>                  | <b>I/O</b><br><i>USB 2.0/ USB 3.0/ SATA/ PCIe x1/ I2C/ DIO</i>                 |  |

### ◆ Technical Support

If you have any technical difficulties, please consult the user's manual first on our website.

<https://www.arbor-technology.com>

Please do not hesitate to call or e-mail our customer service when you still can not find out the answer.

<https://www.arbor-technology.com>

E-mail: [info@arbor.com.tw](mailto:info@arbor.com.tw)

#### FCC Class B

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Copyright© 2020 All Rights Reserved.

   
4041100003110P

---

COM Express supports seven pin-out Type applying to Basic and Extended form factors:

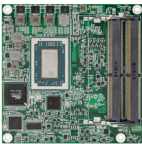
Module Type 1 and 10 support single connector with two rows of pins (220 pins) Module Type 2, 3, 4, 5 and 6 support two connectors with four rows of pins (440 pins) Connector placement and most mounting holes have transparency between Form Factors.

The differences among the Module Type 6 and EmETXe-a10M0 are summarized in table below:

| Module Type               | Standard Type 6 | EmETXe-a10M0 |
|---------------------------|-----------------|--------------|
| Connectors                | 2               | 2            |
| Connector Rows            | A, B, C, D      | A, B, C, D   |
| PCIe Lanes (Max)          | 24              | 16           |
| LAN (Max)                 | 1               | 1            |
| Serial Ports (Max)        | 2               | 2            |
| Digital Display I/F (Max) | 3               | 3            |
| USB 3.0 Ports (Max)       | 4               | 4            |

## Packing List

Before you begin installing your single board, please make sure that the following materials have been shipped:



1 x EmETXe-a10M0 COM Express CPU Module



1 x Quick Installation Guide

If any of the above items is damaged or missing, contact your vendor immediately.

## Specifications

| System                   |  |
|--------------------------|--|
| <b>CPU</b>               | Soldered onboard AMD Ryzen V1000 V1605B 2.0GHz(Base)/ 3.6GHz (Turbo) or V1756B 3.25GHz(Base)/ 3.6GHz (Turbo) or V1807B 3.25GHz(Base)/ 3.8GHz (Turbo) processor |
| <b>Memory</b>            | 2 x DDR4 ECC SO-DIMM sockets, supporting up to 32GB SDRAM  |
| <b>BIOS</b>              | AMI UEFI BIOS  |
| <b>Watchdog Timer</b>    | 1~255 levels reset   |
| I/O                      |  |
| <b>USB Port</b>          | 12 x USB ports:<br>- 8 x USB 2.0 ports<br>- 4 x USB 3.1 ports  |
| <b>Serial Port</b>       | 2 x UART ports (RX/TX only)  |
| <b>Expansion Bus</b>     | 8 x PCIe x1 lanes<br>1 x PCIe x8 lane,<br>LPC, SPI   |
| <b>DIO</b>               | 8-bit Digital Input/Output   |
| <b>Storage</b>           | 2 x Serial ATA ports with 600MB/s HDD transfer rate  |
| <b>Ethernet Chipset</b>  | 1 x Intel® i210IT GbE controller   |
| <b>Audio</b>             | HD audio link  |
| <b>TPM</b>               | Supports TPM 2.0 SLB9665TT   |
| Display                  |  |
| <b>Graphic Chipset</b>   | Integrated Vega Core Graphics controller   |
| <b>Graphic Interface</b> | Dual Channels 24-bit LVDS, with resolution up to 1920 x 1200 @60Hz   |
|                          | 3 x DDI ports  |
| <b>OS support</b>        | Windows 10 64-bit,<br>Linux: Ubuntu  |

| <b>Mechanical &amp; Environmental</b> |  |
|---------------------------------------|--|
| <b>Power Requirement</b>              | 8.5V~20V +/- 5% wide range voltage input |
| <b>Power Consumption</b>              | 2.39A@12V (V1605B typical)               |
| <b>Operating Temp.</b>                | -20 ~ 70°C (-4 ~ 158°F)                  |
| <b>Operating Humidity</b>             | 10 ~ 95% @ 70°C (non-condensing)         |
| <b>Dimension (L x W)</b>              | 95 x 95 mm (3.7" x 3.7")                 |

## Ordering Information

|                     |  |
|---------------------|--|
| EmETXe-a10M0-V1605B | AMD Ryzen Embedded V1000 V1605B COM Express® Compact Type 6 CPU Module |
| EmETXe-a10M0-V1756B | AMD Ryzen Embedded V1000 V1756B COM Express® Compact Type 6 CPU Module |
| EmETXe-a10M0-V1807B | AMD Ryzen Embedded V1000 V1807B COM Express® Compact Type 6 CPU Module |

## Optional Accessories

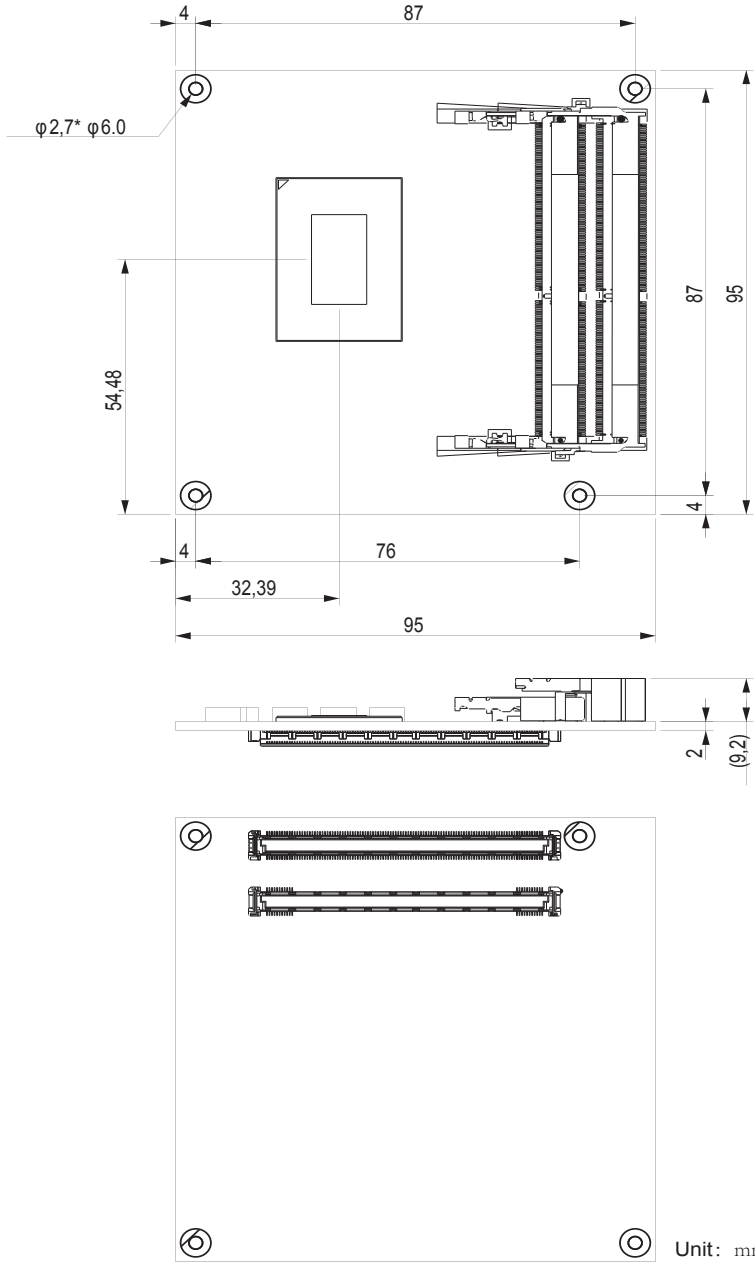
|                |  |
|----------------|--|
| HS-10M0-F2-T   | Heat spreader, with threaded standoffs (95x95x11mm)                                      |
| HS-10M0-F2-NT  | Heat spreader, without threaded standoffs (95x95x11mm)                                   |
| HS-10M0-C1     | Heat sink with Fan, PAD (95x95x51mm)   |
| PBE-1705-F1    | COM Express® Type 6 evaluation carrier board with SIO F71869ED module in ATX form factor |
| CBK-03-1705-00 | Cable kit<br>1 x SATA cable<br>2 x COM Flat cables                                       |

## Driver (7.2A) Installation

To install the drivers, please visit our website at [www.arbor.technology.com](http://www.arbor.technology.com) and download the driver pack from the product page.

| <b>Driver</b> | <b>Path</b>                        |
|---------------|------------------------------------|
| Audio         | \\EmETXe-a10M0\Audio\Win10_WHQLx64 |
| Chipset       | \\EmETXe-a10M0\Chipset\AES         |
| LAN           | \\EmETXe-a10M0\LAN                 |

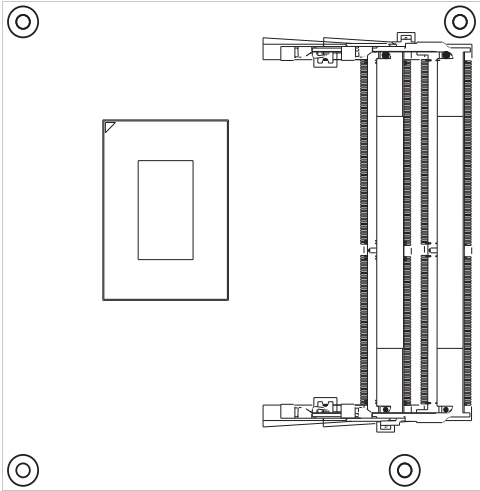
# Board Dimensions



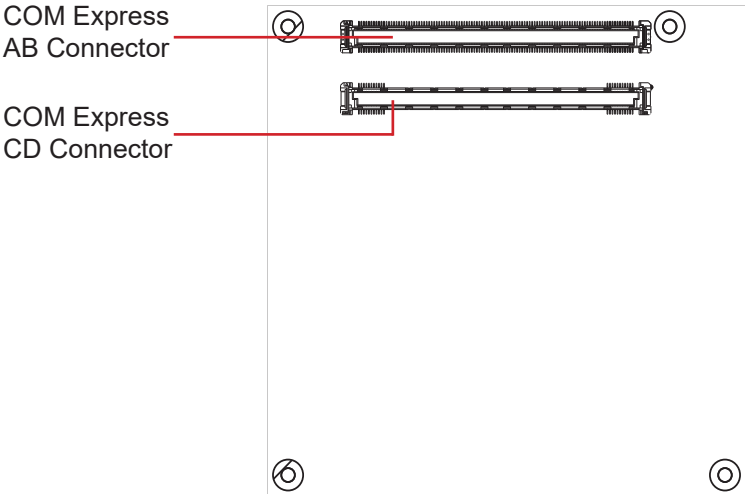
---

# Connectors Quick Reference

## Top Side



## Bottom Side



## COM Express AB Connector (bottom side)

|     |              |                |     |      |                |               |      |
|-----|--------------|----------------|-----|------|----------------|---------------|------|
| B1  | GND(FIXED)   | GND(FIXED)     | A1  | B56  | PCIE_RX4-      | PCIE_TX4-     | A56  |
| B2  | GBE0_ACT#    | GBE0_MDI3-     | A2  | B57  | GND            | GND           | A57  |
| B3  | LPC_FRAME#   | GBE0_MDI3+     | A3  | B58  | PCIE_RX3+      | PCIE_TX3+     | A58  |
| B4  | LPC_AD0      | GBE0_LINK100#  | A4  | B59  | PCIE_RX3-      | PCIE_TX3-     | A59  |
| B5  | LPC_AD1      | GBE0_LINK1000# | A5  | B60  | GND(FIXED)     | GND(FIXED)    | A60  |
| B6  | LPC_AD2      | GBE0_MDI2-     | A6  | B61  | PCIE_RX2+      | PCIE_TX2+     | A61  |
| B7  | LPC_AD3      | GBE0_MDI2+     | A7  | B62  | PCIE_RX2-      | PCIE_TX2-     | A62  |
| B8  | LPC_DRQ0#    | N/C            | A8  | B63  | GPO3           | GPI1          | A63  |
| B9  | LPC_DRQ1#    | GBE0_MDI1-     | A9  | B64  | PCIE_RX1+      | PCIE_TX1+     | A64  |
| B10 | LPC_CLK      | GBE0_MDI1+     | A10 | B65  | PCIE_RX1-      | PCIE_TX1-     | A65  |
| B11 | GND(FIXED)   | GND(FIXED)     | A11 | B66  | WAKE#          | GND           | A66  |
| B12 | PWRBTN#      | GBE0_MDI0-     | A12 | B67  | WAKE1#         | GPI2          | A67  |
| B13 | SMB_CK       | GBE0_MDI0+     | A13 | B68  | PCIE_RX0+      | PCIE_TX0+     | A68  |
| B14 | SMB_DAT      | N/C            | A14 | B69  | PCIE_RX0-      | PCIE_TX0-     | A69  |
| B15 | SMB_ALERT#   | SUS_S3#        | A15 | B70  | GND(FIXED)     | GND(FIXED)    | A70  |
| B16 | SATA1_TX+    | SATA0_TX+      | A16 | B71  | LVDS_B0+       | LVDS_A0+      | A71  |
| B17 | SATA1_TX-    | SATA0_TX-      | A17 | B72  | LVDS_B0-       | LVDS_A0-      | A72  |
| B18 | SUS_STAT#    | SUS_S4#        | A18 | B73  | LVDS_B1+       | LVDS_A1+      | A73  |
| B19 | SATA1_RX+    | SATA0_RX+      | A19 | B74  | LVDS_B1-       | LVDS_A1-      | A74  |
| B20 | SATA1_RX-    | SATA0_RX-      | A20 | B75  | LVDS_B2+       | LVDS_A2+      | A75  |
| B21 | GND(FIXED)   | GND(FIXED)     | A21 | B76  | LVDS_B2-       | LVDS_A2-      | A76  |
| B22 | N/C          | N/C            | A22 | B77  | LVDS_B3+       | LVDS_VDD_EN   | A77  |
| B23 | N/C          | N/C            | A23 | B78  | LVDS_B3-       | LVDS_A3+      | A78  |
| B24 | PWR_OK       | SUS_S5#        | A24 | B79  | LVDS_BKLT_EN   | LVDS_A3-      | A79  |
| B25 | N/C          | N/C            | A25 | B80  | GND(FIXED)     | GND(FIXED)    | A80  |
| B26 | N/C          | N/C            | A26 | B81  | LVDS_B_CK+     | LVDS_A_CK+    | A81  |
| B27 | WDT          | BATLOW#        | A27 | B82  | LVDS_B_CK-     | LVDS_A_CK-    | A82  |
| B28 | AD/HAD_SDIN2 | (S)ATA_ACT#    | A28 | B83  | LVDS_BKLT_CTRL | LVDS_I2C_CK   | A83  |
| B29 | AD/HAD_SDIN1 | AC/HAD_SYNC    | A29 | B84  | VCC_5V_SBY     | LVDS_I2C_DAT  | A84  |
| B30 | AD/HAD_SDINO | AC/HAD_RST#    | A30 | B85  | VCC_5V_SBY     | GPI3          | A85  |
| B31 | GND(FIXED)   | GND(FIXED)     | A31 | B86  | VCC_5V_SBY     | RSVD          | A86  |
| B32 | SPKR         | AC/HAD_BITCLK  | A32 | B87  | VCC_5V_SBY     | RSVD          | A87  |
| B33 | I2C_CK       | AC/HAD_SDOUT   | A33 | B88  | BIOS_DIS1#     | PCIE_CLK_REF+ | A88  |
| B34 | I2C_DAT      | BIOS_DIS#      | A34 | B89  | N/C            | PCIE_CLK_REF- | A89  |
| B35 | THRM#        | THRMTRIP#      | A35 | B90  | GND(FIXED)     | GND(FIXED)    | A90  |
| B36 | USB7-        | USB6-          | A36 | B91  | N/C            | SPI_POWER     | A91  |
| B37 | USB7+        | USB6+          | A37 | B92  | N/C            | SPI_MISO      | A92  |
| B38 | USB_4_5_OC#  | USB_6_7_OC#    | A38 | B93  | N/C            | GPO0          | A93  |
| B39 | USB5-        | USB4-          | A39 | B94  | N/C            | SPI_CLK       | A94  |
| B40 | USB5+        | USB4+          | A40 | B95  | N/C            | SPI_MOSI      | A95  |
| B41 | GND(FIXED)   | GND(FIXED)     | A41 | B96  | N/C            | TPM_PP        | A96  |
| B42 | USB3-        | USB2-          | A42 | B97  | SPI_CS#        | N/C           | A97  |
| B43 | USB3+        | USB2+          | A43 | B98  | N/C            | SER0_TX       | A98  |
| B44 | USB_0_1_OC#  | USB_2_3_OC#    | A44 | B99  | N/C            | SER0_RX       | A99  |
| B45 | USB1-        | USB0-          | A45 | B100 | GND(FIXED)     | GND(FIXED)    | A100 |
| B46 | USB1+        | USB0+          | A46 | B101 | FAN_PWNOUT     | SER1_TX       | A101 |
| B47 | EXCD1_PERST# | VCC_RTC        | A47 | B102 | FAN_TACHIN     | SER1_RX       | A102 |
| B48 | EXCD1_CPPE#  | EXCD0_PERST#   | A48 | B103 | SLEEP#         | LID#          | A103 |
| B49 | SYS_RESET#   | EXCD0_CPPE#    | A49 | B104 | VCC_12V        | VCC_12V       | A104 |
| B50 | CB_RESET#    | LPC_SERIRQ     | A50 | B105 | VCC_12V        | VCC_12V       | A105 |
| B51 | GND(FIXED)   | GND(FIXED)     | A51 | B106 | VCC_12V        | VCC_12V       | A106 |
| B52 | PCIE_RX5+    | PCIE_TX5+      | A52 | B107 | VCC_12V        | VCC_12V       | A107 |
| B53 | PCIE_RX5-    | PCIE_TX5-      | A53 | B108 | VCC_12V        | VCC_12V       | A108 |
| B54 | GPO1         | GPI0           | A54 | B109 | VCC_12V        | VCC_12V       | A109 |
| B55 | PCIE_RX4+    | PCIE_TX4+      | A55 | B110 | GND(FIXED)     | GND(FIXED)    | A110 |

## COM Express CD Connector (bottom side)

|     |                   |                   |     |      |            |            |      |
|-----|-------------------|-------------------|-----|------|------------|------------|------|
| D1  | GND(FIXED)        | GND(FIXED)        | C1  | D56  | PEG_TX1-   | PEG_RX1-   | C56  |
| D2  | GND               | GND               | C2  | D57  | TYPE2#     | N/C        | C57  |
| D3  | USB_SSTX0-        | USB_SSRX0-        | C3  | D58  | PEG_TX2+   | PEG_RX2+   | C58  |
| D4  | USB_SSTX0+        | USB_SSRX0+        | C4  | D59  | PEG_TX2-   | PEG_RX2-   | C59  |
| D5  | GND               | GND               | C5  | D60  | GND(FIXED) | GND(FIXED) | C60  |
| D6  | USB_SSTX1-        | USB_SSRX1-        | C6  | D61  | PCIE_TX3+  | PCIE_RX3+  | C61  |
| D7  | USB_SSTX1+        | USB_SSRX1+        | C7  | D62  | PCIE_TX3-  | PCIE_RX3-  | C62  |
| D8  | GND               | GND               | C8  | D63  | RSVD       | RSVD       | C63  |
| D9  | USB_SSTX2-        | USB_SSRX2-        | C9  | D64  | RSVD       | RSVD       | C64  |
| D10 | USB_SSTX2+        | USB_SSRX2+        | C10 | D65  | PCIE_TX4+  | PCIE_RX4+  | C65  |
| D11 | GND(FIXED)        | GND(FIXED)        | C11 | D66  | PCIE_TX4-  | PCIE_RX4-  | C66  |
| D12 | USB_SSTX3-        | USB_SSRX3-        | C12 | D67  | RSVD       | RSVD       | C67  |
| D13 | USB_SSTX3+        | USB_SSRX3+        | C13 | D68  | PCIE_TX5+  | PCIE_RX5+  | C68  |
| D14 | GND               | GND               | C14 | D69  | PCIE_TX5-  | PCIE_RX5-  | C69  |
| D15 | DDI1_CTRLCLK_AUX+ | N/C               | C15 | D70  | GND(FIXED) | GND(FIXED) | C70  |
| D16 | DDI1_CTRLCLK_AUX- | N/C               | C16 | D71  | PCIE_TX6+  | PCIE_RX6+  | C71  |
| D17 | RSVD              | RSVD              | C17 | D72  | PCIE_TX6-  | PCIE_RX6-  | C72  |
| D18 | RSVD              | RSVD              | C18 | D73  | GND        | GND        | C73  |
| D19 | PCIE_TX6+         | PCIE_RX6+         | C19 | D74  | PCIE_TX7+  | PCIE_RX7+  | C74  |
| D20 | PCIE_TX6-         | PCIE_RX6-         | C20 | D75  | PCIE_TX7-  | PCIE_RX7-  | C75  |
| D21 | GND(FIXED)        | GND(FIXED)        | C21 | D76  | GND        | GND        | C76  |
| D22 | PCIE_TX7+         | PCIE_RX7+         | C22 | D77  | RSVD       | RSVD       | C77  |
| D23 | PCIE_TX7-         | PCIE_RX7-         | C23 | D78  | N/C        | N/C        | C78  |
| D24 | RSVD              | DDI1_HPD          | C24 | D79  | N/C        | N/C        | C79  |
| D25 | RSVD              | N/C               | C25 | D80  | GND(FIXED) | GND(FIXED) | C80  |
| D26 | DDI1_PAIR0+       | N/C               | C26 | D81  | N/C        | N/C        | C81  |
| D27 | DDI1_PAIR0-       | RSVD              | C27 | D82  | N/C        | N/C        | C82  |
| D28 | RSVD              | RSVD              | C28 | D83  | RSVD       | RSVD       | C83  |
| D29 | DDI1_PAIR1+       | N/C               | C29 | D84  | GND        | GND        | C84  |
| D30 | DDI1_PAIR1-       | N/C               | C30 | D85  | N/C        | N/C        | C85  |
| D31 | GND(FIXED)        | GND(FIXED)        | C31 | D86  | N/C        | N/C        | C86  |
| D32 | DDI1_PAIR2+       | DDI2_CTRLCLK_AUX+ | C32 | D87  | GND        | GND        | C87  |
| D33 | DDI1_PAIR2-       | DDI2_CTRLCLK_AUX- | C33 | D88  | N/C        | N/C        | C88  |
| D34 | DDI1_DDC_AUX_SEL  | DDI2_DDC_AUX_SEL  | C34 | D89  | N/C        | N/C        | C89  |
| D35 | RSVD              | RSVD              | C35 | D90  | GND(FIXED) | GND(FIXED) | C90  |
| D36 | DDI1_PAIR3+       | DDI3_CTRLCLK_AUX+ | C36 | D91  | N/C        | N/C        | C91  |
| D37 | DDI1_PAIR3-       | DDI3_CTRLCLK_AUX- | C37 | D92  | N/C        | N/C        | C92  |
| D38 | RSVD              | DDI3_DDC_AUX_SEL  | C38 | D93  | GND        | GND        | C93  |
| D39 | DDI2_PAIR0+       | DDI3_PAIR0+       | C39 | D94  | N/C        | N/C        | C94  |
| D40 | DDI2_PAIR0-       | DDI3_PAIR0-       | C40 | D95  | N/C        | N/C        | C95  |
| D41 | GND(FIXED)        | GND(FIXED)        | C41 | D96  | GND        | GND        | C96  |
| D42 | DDI2_PAIR1+       | DDI3_PAIR1+       | C42 | D97  | RSVD       | RSVD       | C97  |
| D43 | DDI2_PAIR1-       | DDI3_PAIR1-       | C43 | D98  | N/C        | N/C        | C98  |
| D44 | DDI2_HPD          | DDI3_HPD          | C44 | D99  | N/C        | N/C        | C99  |
| D45 | RSVD              | RSVD              | C45 | D100 | GND(FIXED) | GND(FIXED) | C100 |
| D46 | DDI2_PAIR2+       | DDI3_PAIR2+       | C46 | D101 | N/C        | N/C        | C101 |
| D47 | DDI2_PAIR2-       | DDI3_PAIR2-       | C47 | D102 | N/C-       | N/C        | C102 |
| D48 | RSVD              | RSVD              | C48 | D103 | GND        | GND        | C103 |
| D49 | DDI2_PAIR3+       | DDI3_PAIR3+       | C49 | D104 | VCC_12V    | VCC_12V    | C104 |
| D50 | DDI2_PAIR3-       | DDI3_PAIR3-       | C50 | D105 | VCC_12V    | VCC_12V    | C105 |
| D51 | GND(FIXED)        | GND(FIXED)        | C51 | D106 | VCC_12V    | VCC_12V    | C106 |
| D52 | PEG_TX0+          | PEG_RX0+          | C52 | D107 | VCC_12V    | VCC_12V    | C107 |
| D53 | PEG_TX0-          | PEG_RX0-          | C53 | D108 | VCC_12V    | VCC_12V    | C108 |
| D54 | PEG_LANE_RV#      | N/C               | C54 | D109 | VCC_12V    | VCC_12V    | C109 |
| D55 | PEG_TX1+          | PEG_RX1+          | C55 | D110 | GND(FIXED) | GND(FIXED) | C110 |