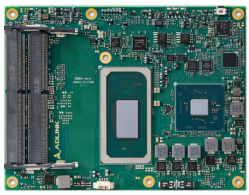
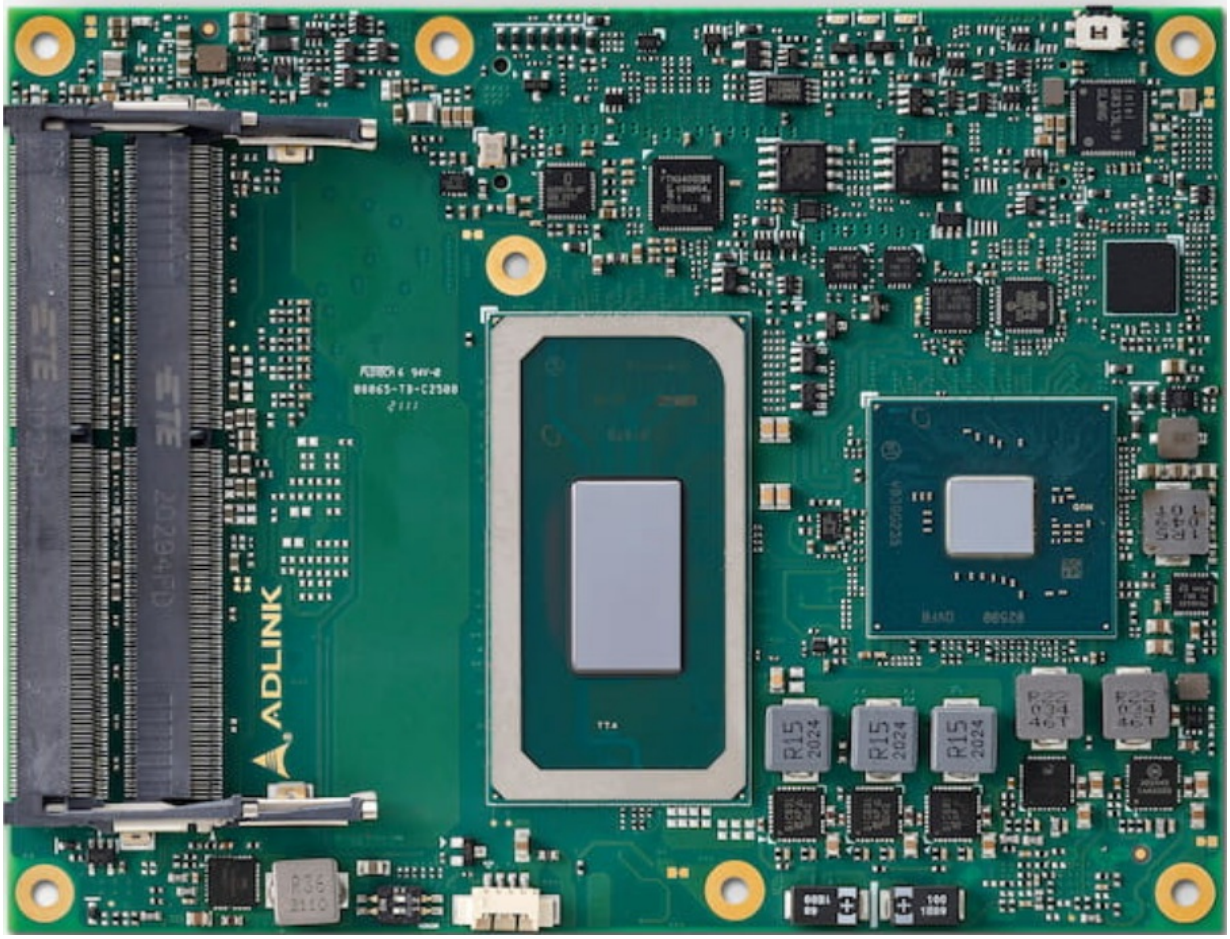


ARBOR EmETXe-i91U0 COM Express Compact Type 6 CPU Module Installation Guide

Contents

ARBOR EmETXe-i91U0 COM Express Compact Type 6 CPU Module



COM Express® Compact Type 6 CPU Module

- **Form Factor**
  - COM Express® Compact Type 6 CPU Module
- **CPU**
  - 8th Gen. Intel® Core™
  - i7-8665UE/ i5-8365UE/
  - i3-8145UE/ Celeron 4305UE
- **Video**
  - 24-bit Dual Channels LVDS/ DDI/ Analog RGB
- **LAN**
  - Intel® i219LM PCIe GbE PHY
- **Audio**
  - HD Audio Link
- **I/O**
  - USB / SATA/ PCIe / I2C/DIO / UART

Technical Support

- If you have any technical difficulties, please consult the user's manual first on our website.
- http://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. E-mail: i[nfo@arbor.com.tw](mailto:info@arbor.com.tw)

FCC Class A

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.

- 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-i91U0 are summarized in table below:

Module Type	Standard Type 6	EmETXe-i91U0
Connectors	2	2
Connector Rows	A, B, C, D	A, B, C, D
PCIe Lanes (Max)	24	8
LAN (Max)	1	1
Serial Ports (Max)	2	2
Digital Display I/F (Max)	3	2
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-i91U0 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	
CPU	Soldered onboard 8th Generation Intel® Core™ – i7-8665UE 1.7GHz (Base)/ 4.4GHz (Turbo) – i5-8365UE 1.6GHz (Base)/ 4.1GHz (Turbo) – i3-8145UE 2.2GHz (Base)/ 3.9GHz (Turbo) – Celeron 4305UE 2.2GHz processor
Memory	2 x DDR4 SO-DIMM sockets

BIOS	AMI UEFI BIOS
Watchdog Timer	1~255 levels reset
I/O	
USB Port	12 x USB ports: – 8 x USB 2.0 ports – 4 x USB 3.1 ports
Serial Port	2 x UART ports (RX/TX only)
Expansion Bus	8 x PCIex1 lanes, I2C Interface
Digital I/O	8-bit Digital Input/Output
Storage	2 x Serial ATA ports Soldered onboard eMMC 5.0 up to 32GB (OEM Request)
Ethernet Chipset	1 x Intel® i219LM PCIe GbE PHY

Audio	HD audio link
TPM	Supports TPM (OEM Request)
Display	
Graphic Chipset	Integrated Intel® HD Graphics 620
Graphic Interface	LCD: Dual Channels 24-bit LVDS
	2 x DDI ports or 1 x DDI port, 1 x Analog RGB port
Mechanical & Environmental	
Power Requirement	8.5V~20V +/- 5% wide range voltage input, +5VSB
Power Consumption	2.3A@12V (i7-8665UE typical, CPU module only)
Operating Temp.	-40 ~ 85ºC (-40 ~ 185ºF)

Operating Humidity	10 ~ 95% @ 85ºC (non-condensing)
Dimensions (L x W)	95 x 95 mm (3.7” x 3.7”)

Ordering Information

EmETXe-i91U0-WT-8665UE	8th Generation Intel® Core™ i7-8665UE WT COM Express® Compact Type 6 CPU module, w/ DDI
EmETXe-i91U0-WT-8365UE	8th Generation Intel® Core™ i5-8365UE WT COM Express® Compact Type 6 CPU module, w/ DDI
EmETXe-i91U0-WT-8145UE	8th Generation Intel® Core™ i3-8145UE WT COM Express® Compact Type 6 CPU module-, w/ DDI
EmETXe-i91U0-WT-4305UE	8th Generation Intel® Core™ Celeron 4305UE WT COM Express® Compact Type 6 CPU module, w/ DDI

EmETXe-i91U0-WT-8665UE-RGB	8th Generation Intel® Core™ i7-8665UE WT COM Express® Compact Type 6 CPU module, w/ DDI+RGB
EmETXe-i91U0-WT-8365UE-RGB	8th Generation Intel® Core™ i5-8365UE WT COM Express® Compact Type 6 CPU module, w/ DDI+RGB
EmETXe-i91U0-WT-8145UE-RGB	8th Generation Intel® Core™ i3-8145UE WT COM Express® Compact Type 6 CPU module-, w/ DDI+RGB
EmETXe-i91U0-WT-4305UE-RGB	8th Generation Intel® Core™ Celeron 4305UE WT COM Express® Compact Type 6 CPU module, w/ DDI+RGB
EmETXe-i91U0D-WT-8665UE (OEM Request)	8th Generation Intel® Core™ i7-8665UE COM Express® Compact Type 6 CPU module, w/ 32GB eMMC, DDI

EmETXe-i91U0D-WT-8365UE (OEM Request)	8th Generation Intel® Core™ i5-8365UE COM Express® Compact Type 6 CPU module, w/ 32GB eMMC, DDI
EmETXe-i91U0D-WT-8145UE (OEM Request)	8th Generation Intel® Core™ i3-8145UE COM Express® Compact Type 6 CPU module, w/ 32GB eMMC, DDI
EmETXe-i91U0D-WT-4305UE (OEM Request)	8th Generation Intel® Core™ Celeron 4305UE COM Express® Compact Type 6 CPU module, w/ 32GB eMMC, DDI
EmETXe-i91U0D-WT-8665UE- RGB (OEM Request)	8th Generation Intel® Core™ i7-8665UE COM Express® Compact Type 6 CPU module, w/ 32GB eMMC, DDI+RGB
EmETXe-i91U0D-WT-8365UE- RGB (OEM Request)	8th Generation Intel® Core™ i5-8365UE COM Express® Compact Type 6 CPU module, w/ 32GB eMMC, DDI+RGB

EmETXe-i91U0D-WT-8145UE- RGB (OEM Request)	8th Generation Intel® Core™ i3-8145UE COM Express® Compact Type 6 CPU module, w/ 32GB eMMC, DDI+RGB
EmETXe-i91U0D-WT-4305UE- RGB (OEM Request)	8th Generation Intel® Core™ Celeron 4305UE COM Express® Compact Type 6 CPU module, w/ 32GB eMMC, DDI+RGB

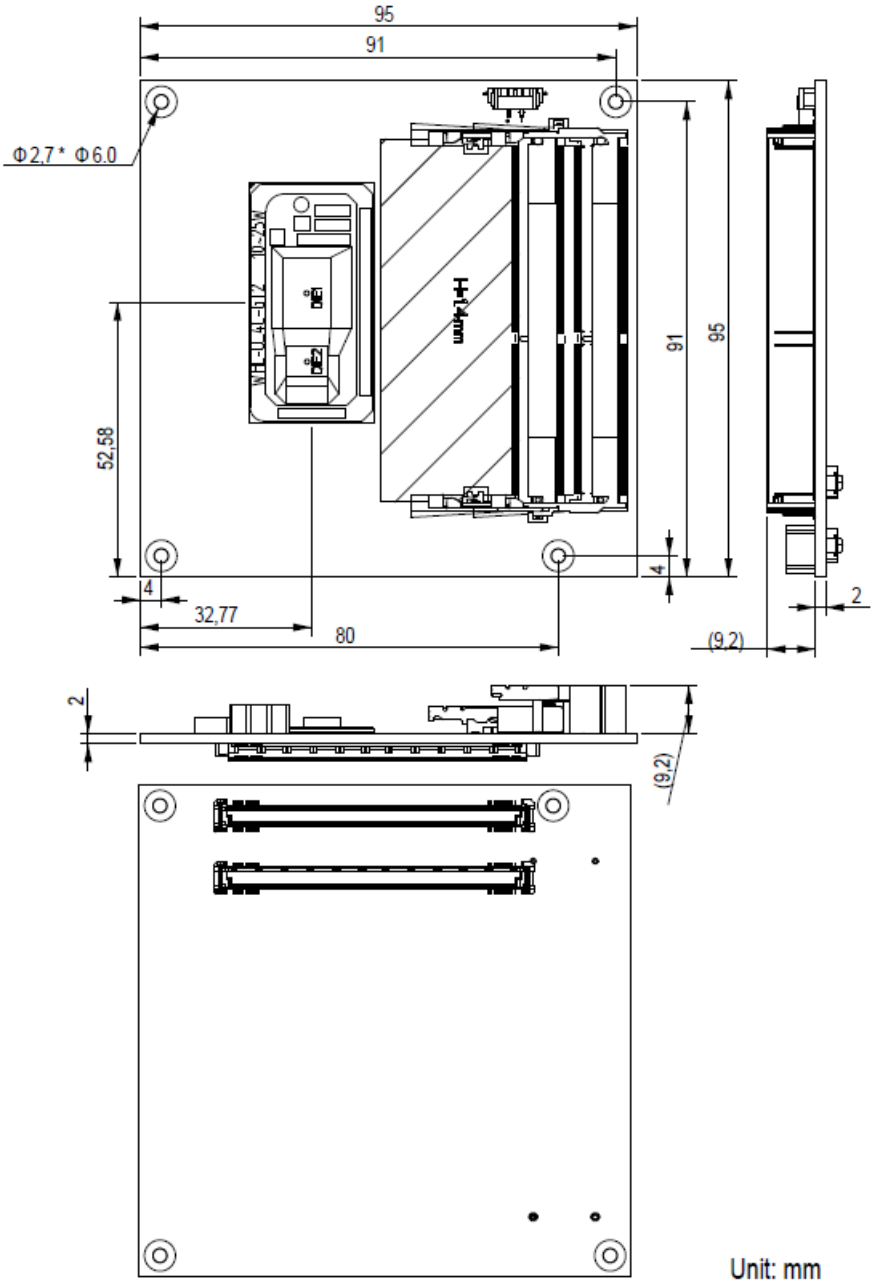
Optional Accessories

HS-91U0-F2-T	Heat spreader, threaded standoffs (bore hole) (95x95x11mm)
HS-91U0-F2-NT	Heat spreader, non-threaded standoffs (bore hole) (95x95x11mm)
HS-91U0-C1	Heat sink with Fan (95x95x37.6mm)
PBE-1705-F1	COM Express® Type 6 evaluation carrier board with SIO F71869ED module in ATX form factor
CBK-03-1705-00	Cable kit 1 x SATA cable 2 x Serial port cables

Driver (7.4A) Installation
To install the drivers, please visit our website at **www.arbor.technology.com** and download the driver pack from the product page.

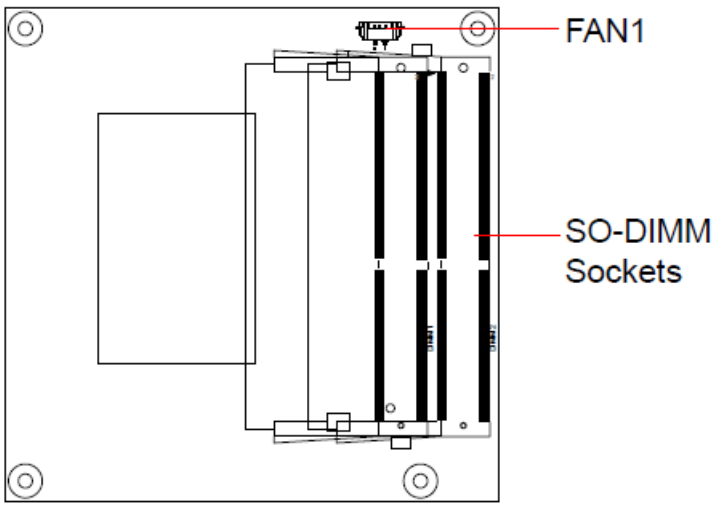
Driver	Path
Audio	\EmETXe-i91U0\Audio\Win10_Win8.1_Win8_Win7_WHQLx64
Chipset	\EmETXe-i91U0\Chipset
LAN	\EmETXe-i91U0\Ethernet
Graphic	\EmETXe-i91U0\Graphic\igfx_win10_100.7212
ME	\EmETXe-i91U0\ME

Board Dimensions

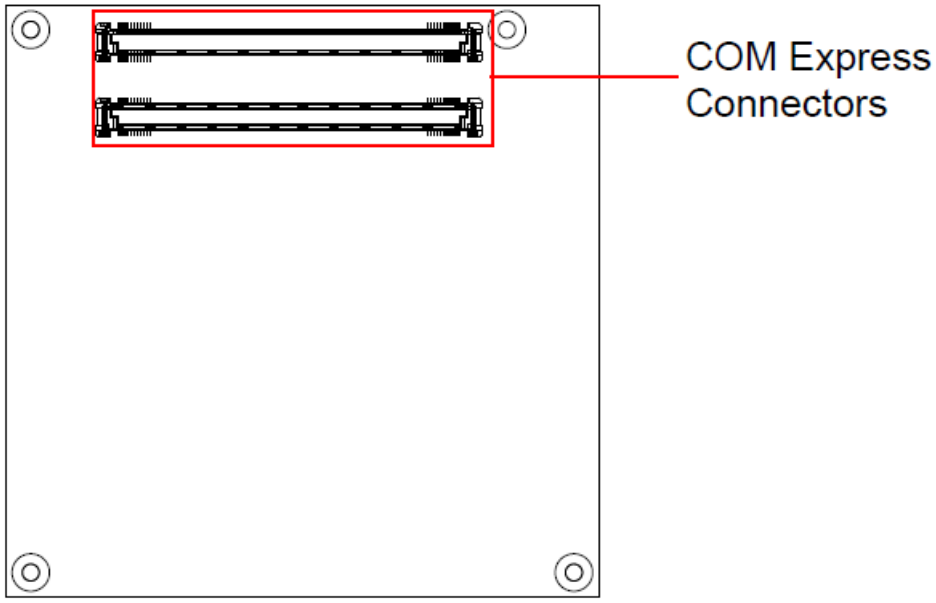


Connectors Quick Reference

Top Side

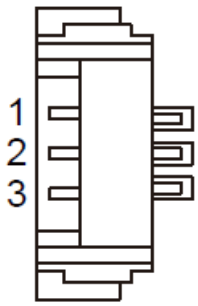


Bottom Side



FAN1: Fan connector
Connector type: Wafer 3-pin 1.25mm 85204-03X0L

Pin	Description
1	GND
2	Fan out
3	Fan Tachometer Input



COM Express AB Connector (bottom side)

B1	*GND*	*GND (FIXED)*	A1
B2	*LAN_LED_ACT#*	*LAN1_MDI3N*	A2
B3	*LPC_FRAME#*	*LAN1_MDI3P*	A3
B4	*LPC_AD0*	*LAN_LED_100#*	A4
B5	*LPC_AD1*	*LAN_LED_1000#*	A5
B6	*LPC_AD2*	*LAN1_MDI2N*	A6
B7	*LPC_AD3*	*LAN1_MDI2P*	A7
B8	*LPC_LDRQ0-*	*LAN_LED_LNK#*	A8
B9	*LPC_LDRQ1-*	*LAN1_MDI1N*	A9
B10	*LPC_CLK*	*LAN1_MDI1P*	A10
B11	*GND*	*GND (FIXED)*	A11
B12	*CB_PWRBTN#*	*LAN1_MDI0N*	A12
B13	*SMB_CLK*	*LAN1_MDI0P*	A13

B14	*SMB_DATA*	*0V9_LAN*	A14
B15	*SMB_ALERT#*	*SLP_S3#*	A15
B16	*SATA_TXP1*	*SATA_TXP0*	A16
B17	*SATA_TXN1*	*SATA_TXN0*	A17
B18	*SUS_STAT#*	*SLP_S4#*	A18
B19	*SATA_RXP1*	*SATA_RXP0*	A19
B20	*SATA_RXN1*	*SATA_RXN0*	A20
B21	*GND*	*GND (FIXED)*	A21
B22	*N/C*	*N/C*	A22
B23	*N/C*	*N/C*	A23
B24	*CB_PWROK*	*SLP_S5#*	A24
B25	*N/C*	*N/C*	A25
B26	*N/C*	*N/C*	A26
B27	*WDT*	*PM_BATLOW#*	A27

B28	*N/C*	*SEALED-*	A28
B29	*HDA_SDIN1*	*HDA_SYNC*	A29
B30	*HDA_SDIN0*	*HDA_RST-*	A30
B31	*GND*	*GND*	A31
B32	*SPCA*	*HDA_BIT_CLK*	A32
B33	*I2C_CLK*	*HDA_SDOUT*	A33
B34	*I2C_DAT*	*BIOS_DIS0#*	A34
B35	*THRM#*	*CB_TRIP#*	A35
B36	*USBP_7N*	*USBP_6N*	A36
B37	*USBP_7P*	*USBP_6P*	A37
B38	*USBOC_45-*	*USBOC_67-*	A38
B39	*USBP_5N*	*USBP_4N*	A39
B40	*USBP_5P*	*USBP_4P*	A40
B41	*GND*	*GND*	A41

B42	*USBP_3N*	*USBP_2N*	A42
B43	*USBP_3P*	*USBP_2P*	A43
B44	*USBOC_01-*	*USBOC_23-*	A44
B45	*USBP_1N*	*USBP_0N*	A45
B46	*USBP_1P*	*USBP_0P*	A46
B47	*PLTRST#_BUFF*	*VCC_RTC*	A47
B48	*EXCD1_CCPE#*	*PLTRST#_BUFF*	A48
B49	*CB_SYSRST#*	*EXCD0_CCPE#*	A49
B50	*CB_RESET#*	*LPC_SERIRQ*	A50
B51	*GND*	*GND*	A51
B52	*PCIE_RXP7*	*PCIE_TXP7*	A52
B53	*PCIE_RXN7*	*PCIE_TXN7*	A53
B54	*DIO_1*	*DIO_0*	A54
B55	*PCIE_RXP6*	*PCIE_TXP6*	A55

B56	*PCIE_RXN6*	*PCIE_TXN6*	A56
B57	*DIO_2*	*GND*	A57
B58	*PCIE_RXP4*	*PCIE_TXP4*	A58
B59	*PCIE_RXN4*	*PCIE_TXN4*	A59
B60	*GND*	*GND*	A60
B61	*PCIE_RXP3*	*PCIE_TXP3*	A61
B62	*PCIE_RXN3*	*PCIE_TXN3*	A62
B63	*DIO_3*	*DIO_1*	A63
B64	*PCIE_RXP2*	*PCIE_TXP2*	A64
B65	*PCIE_RXN2*	*PCIE_TXN2*	A65
B66	*PCH_WAKE#*	*GND*	A66
B67	*EC_WAKE_IN#*	*DIO_2*	A67
B68	*PCIE_RXP1*	*PCIE_TXP1*	A68
B69	*PCIE_RXN1*	*PCIE_TXN1*	A69

B70	*GND*	*GND*	A70
B71	*LVDSB_DATA0*	*LVDSA_DATA0*	A71
B72	*LVDSB_DATA0-*	*LVDSA_DATA0-*	A72
B73	*LVDSB_DATA1*	*LVDSA_DATA1*	A73
B74	*LVDSB_DATA1-*	*LVDSA_DATA1-*	A74
B75	*LVDSB_DATA2*	*LVDSA_DATA2*	A75
B76	*LVDSB_DATA2-*	*LVDSA_DATA2-*	A76
B77	*LVDSB_DATA3*	*LVDS_VDD_EN*	A77
B78	*LVDSB_DATA3-*	*LVDSA_DATA3*	A78
B79	*LVDS_BKLT_EN*	*LVDSA_DATA3-*	A79
B80	*GND*	*GND*	A80
B81	*LVDSB_CLK+*	*LVDSA_CLK+*	A81
B82	*LVDSB_CLK-*	*LVDSA_CLK-*	A82
B83	*COM_BKLT_CTRL*	*LVDS_DDC_CLK*	A83

B84	*VCC_5V_SBY*	*LVDS_DDC_DATA*	A84
B85	*VCC_5V_SBY*	*DIO_3*	A85
B86	*VCC_5V_SBY*	*H_RCIN#*	A86
B87	*VCC_5V_SBY*	*A20GATE*	A87
B88	*BIOS_DIS1#*	*COM_EXP_CLK_P*	A88
B89	*N/C*	*COM_EXP_CLK_N*	A89
B90	*GND*	*GND*	A90
B91	*CRT_GREEN*	*+V3.3A*	A91
B92	*CRT_BLUE*	*SPI_MISO*	A92
B93	*CRT_HSYNC*	*DIO_0*	A93
B94	*CRT_VSYNC*	*SPI_CLK*	A94
B95	*CRT_DDC_CLK*	*SPI_MOSI*	A95
B96	*CRT_DDC_DATA*	*COM_TMP_PP*	A96
B97	*SPI_CS1#*	*N/C*	A97

B98	*N/C*	*UART_TX0*	A98
B99	*N/C*	*UART_RX0*	A99
B100	*GND*	*GND*	A100
B101	*FAN_PWMOUT*	*UART_TX1*	A101
B102	*FAN_TACHIN*	*UART_RX1*	A102
B103	*SLEEP#*	*LID#*	A103
B104	*VCC_12V*	*VCC_12V*	A104
B105	*VCC_12V*	*VCC_12V*	A105
B106	*VCC_12V*	*VCC_12V*	A106
B107	*VCC_12V*	*VCC_12V*	A107
B108	*VCC_12V*	*VCC_12V*	A108
B109	*VCC_12V*	*VCC_12V*	A109
B110	*GND*	*GND*	A110

COM Express CD Connector (bottom side)

D1	*GND (FIXED)*	*GND (FIXED)*	C1
D2	*GND*	*GND*	C2
D3	*USB_SSTX0-*	*USB_SSRX0-*	C3
D4	*USB_SSTX0+*	*USB_SSRX0+*	C4
D5	*GND*	*GND*	C5
D6	*USB_SSTX1-*	*USB_SSRX1-*	C6
D7	*USB_SSTX1+*	*USB_SSRX1+*	C7
D8	*GND*	*GND*	C8
D9	*USB_SSTX2-*	*USB_SSRX2-*	C9
D10	*USB_SSTX2+*	*USB_SSRX2+*	C10
D11	*GND (FIXED)*	*GND (FIXED)*	C11
D12	*USB_SSTX3-*	*USB_SSRX3-*	C12
D13	*USB_SSTX3+*	*USB_SSRX3+*	C13
D14	*GND*	*GND*	C14

D15	*DDI1_CTRLCLK_AUX+*	*N/C*	C15
D16	*DDI1_CTRLCLK_AUX-*	*N/C*	C16
D17	*N/C*	*RSVD*	C17
D18	*N/C*	*RSVD*	C18
D19	*PCIE_TX6+*	*PCIE_RX6+*	C19
D20	*PCIE_TX6-*	*PCIE_RX6-*	C20
D21	*GND(FIXED)*	*GND(FIXED)*	C21
D22	*PCIE_TX7+*	*PCIE_RX7+*	C22
D23	*PCIE_TX7-*	*PCIE_RX7-*	C23
D24	*N/C*	*DDI1_HPD*	C24
D25	*N/C*	*N/C*	C25
D26	*DDI1_PAIR0+*	*N/C*	C26
D27	*DDI1_PAIR0-*	*RSVD*	C27

D28	*N/C*	*RSVD*	C28
D29	*DDI1_PAIR1+*	*N/C*	C29
D30	*DDI1_PAIR1-*	*N/C*	C30
D31	*GND(FIXED)*	*GND (FIXED)*	C31
D32	*DDI1_PAIR2+*	*DDI2_CTRLCLK_AUX+*	C32
D33	*DDI1_PAIR2-*	*DDI2_CTRLCLK_AUX-*	C33
D34	*DDI1_DDC_AUX_SEL*	*DDI2_DDC_AUX_SEL*	C34
D35	*N/C*	*RSVD*	C35
D36	*DDI1_PAIR3+*	*N/C*	C36
D37	*DDI1_PAIR3-*	*N/C*	C37
D38	*N/C*	*N/C*	C38
D39	*DDI2_PAIR0+*	*N/C*	C39
D40	*DDI2_PAIR0-*	*N/C*	C40
D41	*GND(FIXED)*	*GND(FIXED)*	C41

D42	*DDI2_PAIR1+*	*N/C*	C42
D43	*DDI2_PAIR1-*	*N/C*	C43
D44	*DDI2_HPD*	*N/C*	C44
D45	*N/C*	*RSVD*	C45
D46	*DDI2_PAIR2+*	*N/C*	C46
D47	*DDI2_PAIR2-*	*N/C*	C47
D48	*N/C*	*RSVD*	C48
D49	*DDI2_PAIR3+*	*N/C*	C49
D50	*DDI2_PAIR3-*	*N/C*	C50
D51	*GND (FIXED)*	*GND (FIXED)*	C51
D52	*N/C*	*N/C*	C52
D53	*N/C*	*N/C*	C53
D54	*PEG_LANE_RV#*	*N/C*	C54
D55	*N/C*	*N/C*	C55

D56	*N/C*	*N/C*	C56
D57	*TYPE2#*	*N/C*	C57
D58	*N/C*	*N/C*	C58
D59	*N/C*	*N/C*	C59
D60	*GND (FIXED)*	*GND (FIXED)*	C60
D61	*N/C*	*N/C*	C61
D62	*N/C*	*N/C*	C62
D63	*N/C*	*N/C*	C63
D64	*N/C*	*N/C*	C64
D65	*N/C*	*N/C*	C65
D66	*N/C*	*N/C*	C66
D67	*N/C*	*N/C*	C67
D68	*N/C*	*N/C*	C68

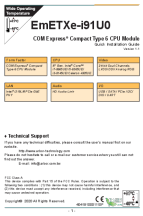
D69	*N/C*	*N/C*	C69
D70	*GND (FIXED)*	*GND (FIXED)*	C70
D71	*N/C*	*N/C*	C71
D72	*N/C*	*N/C*	C72
D73	*GND*	*GND*	C73
D74	*N/C*	*N/C*	C74
D75	*N/C*	*N/C*	C75
D76	*GND*	*GND*	C76
D77	*N/C*	*N/C*	C77
D78	*N/C*	*N/C*	C78
D79	*N/C*	*N/C*	C79
D80	*GND (FIXED)*	*GND (FIXED)*	C80
D81	*N/C*	*N/C*	C81

D82	*N/C*	*N/C*	C82
D83	*N/C*	*N/C*	C83
D84	*GND*	*GND*	C84
D85	*N/C*	*N/C*	C85
D86	*N/C*	*N/C*	C86
D87	*GND*	*GND*	C87
D88	*N/C*	*N/C*	C88
D89	*N/C*	*N/C*	C89
D90	*GND (FIXED)*	*GND (FIXED)*	C90
D91	*N/C*	*N/C*	C91
D92	*N/C*	*N/C*	C92
D93	*GND*	*GND*	C93
D94	*N/C*	*N/C*	C94

D95	*N/C*	*N/C*	C95
D96	*GND*	*GND*	C96
D97	*N/C*	*N/C*	C97
D98	*N/C*	*N/C*	C98
D99	*N/C*	*N/C*	C99
D100	*GND (FIXED)*	*GND (FIXED)*	C100
D101	*N/C*	*N/C*	C101
D102	*N/C*	*N/C*	C102
D103	*GND*	*GND*	C103
D104	*VCC_12V*	*VCC_12V*	C104
D105	*VCC_12V*	*VCC_12V*	C105
D106	*VCC_12V*	*VCC_12V*	C106
D107	*VCC_12V*	*VCC_12V*	C107

D108	*VCC_12V*	*VCC_12V*	C108
D109	*VCC_12V*	*VCC_12V*	C109
D110	*GND (FIXED)*	*GND (FIXED)*	C110

Documents / Resources

	ARBOR EmETXe-i91U0 COM Express Compact Type 6 CPU Module [pdf] Installation Guide EmETXe-i91U0 COM Express Compact Type 6 CPU Module, EmETXe-i91U0, EmETXe-i91U0 Type 6 CPU Module, COM Express Compact Type 6 CPU Module, Type 6 CPU Module, CPU Module, Module

References

- ARBOR Technology \| Embedded Computing, Rugged Mobile Computing, Medical Computing, Industrial Automation
- technology.com