
EmETXe-a58M0

COM Express® Type 6 CPU Module Quick Installation Guide

Version 1.0

Form Factor <i>COM Express® Compact Type 6 CPU Module</i>	CPU <i>AMD APU G-series SoC GX-412HC processor</i>	Video <i>Analog RGB/ DDI</i>
LAN <i>Realtek RTL8111E GbE controller</i>	Audio <i>HD Link</i>	I/O <i>USB 2.0/ USB 3.0/ SATA/ PCIe x1/ Micro SD/ SDIO</i>

◆ Technical Support

If you have any technical difficulties, please consult the user's manual first at:
<http://www.arbor.com.tw>

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

<http://www.arbor.com.tw>

E-mail: 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.



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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-a58M0 are summarized in table below:

Module Type	Standard Type 6	EmETXe-a58M0
Connectors	2	2
Connector Rows	A, B, C, D	A, B, C, D
PCIe Lanes (Max)	24	7
LAN (Max)	1	1
Serial Ports (Max)	2	0
Digital Display I/F (Max)	3	2
USB 3.0 Ports (Max)	4	2

Packing List

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



1 x EmETXe-a58M0-412HC COM Express CPU Module



1 x Driver CD
1 x Quick Installation Guide

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

Specifications

System	
CPU	AMD APU G-series SoC GX-412HC processor
Memory	1 x DDR3L SO-DIMM socket, up to 8GB 1666MT/s SDRAM
BIOS	AMI® UEFI BIOS
Watchdog Timer	1~255 levels reset
I/O	
USB Port	7 x USB 2.0 ports 2 x USB SS ports (Super Speed)
Expansion Bus	7x PCIe x 1 Lanes, SDIO
Storage	2 x Serial ATA ports with 600MB/s HDD transfer rate (one is shared with optionally SATA NANDrive via SATA switch ASM1456) 1 x Micro SD socket
Ethernet Chipset	Realtek RTL8111E GbE controller
Audio	HD link
Display	
Graphics Chipset	Integrated AMD Radeon™ HD 8000E Graphics
Graphics Interface	Analog RGB, 2 x DDI ports
Mechanical & Environmental	
Power Requirement	+12V, +5VSB
Power Consumption	1.03A@12V (Typical)
Operating Temp.	0 ~ 60°C (32 ~ 140°F)
Operating Humidity	10 ~ 95% @ 60°C (non-condensing)
Dimension (L x W)	95 x 95mm (3.7" x 3.7")

Ordering Information

EmETXe-a58M0-412HC	AMD APU G-series GX-412HC COM Express® Compact Type 6 CPU module
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Optional Accessories

HS-58M0-F2-T	Heat Spreader; Threaded standoffs(bore hole) (95x95x11mm)
HS-58M0-F2-NT	Heat Spreader; Non-threaded standoffs(bore hole) (95x95x11mm)
HS-0000-W4	Universal evaluation heat sink kit w/ thermal pad,125x95x22mm, only used on a flat-type heat spreader
PBE-1702	COM Express type 6 evaluation carrier board in ATX form factor
CBK-04-1702-00	Cable Kit <ul style="list-style-type: none"> • 1 x SATA cable • 2 x Serial port cables • 1 x USB cable

Find Device Drivers on CD

The CPU module supports Windows 7 and 8.1. Find the necessary drivers on the CD that comes with your purchase. For different OS, the driver installation may vary slightly, but generally they are similar.

Find the drivers on CD by the following paths:

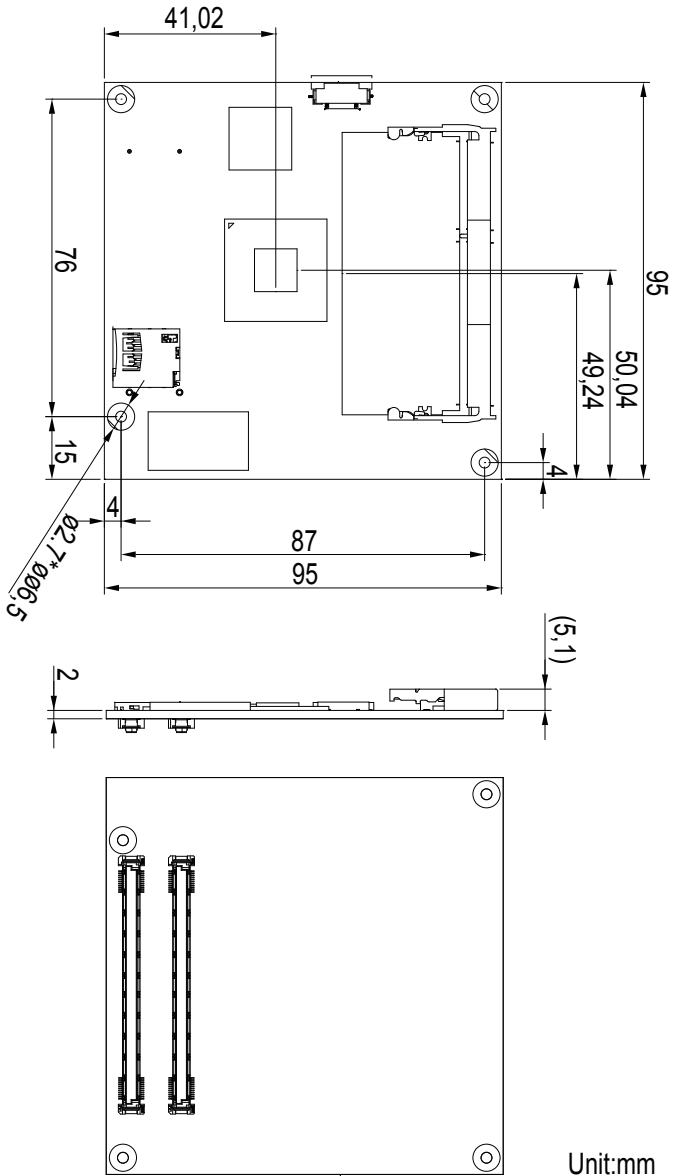
Windows 7

Driver	Path
Chipset	Win 32: EmETXe-a58M0\FT3B Chipset\Win7\32bit\14.502.1030-150428a-183767C-AES
	Win 64: EmETXe-a58M0\FT3B Chipset\Win7\64 bit\14.502.1030-150428a-183767C-AES
Audio	Win 32: \EmETXe-a58M0\Audio\32bit
	Win 64: \EmETXe-a58M0\Audio\64bit
LAN	\EmETXe-a58M0\LAN\RTL81111E for module\Install_Win7_7061_07272012
USB3.0	\EmETXe-a58M0\USB 3.0\win7

Windows 8.1

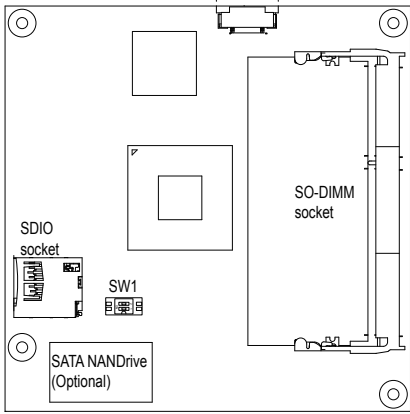
Driver	Path
Chipset	\EmETXe-a58M0\FT3B Chipset\Win8.1 64 bit\14.502.1030-150428a-183767C-AES
Audio	Win 32: \EmETXe-a58M0\Audio\32bit
	Win 64: \EmETXe-a58M0\Audio\64bit
LAN	\EmETXe-a58M0\LAN\RTL81111E for module\Install_Win8_8015_05242013

Board Dimensions

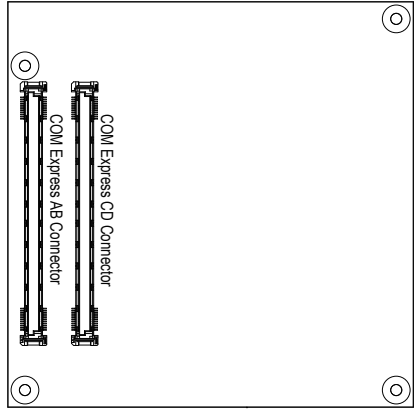


Connectors Quick Reference

Top Side



Bottom Side



SW1: SATA port selection

Pin	Mode
1	Set to SATA port (default)
2	Set to NANDrive



COM Express AB Connector (bottom side)

B1	GND	GND	A1	B56	PCIE_RX4-	PCIE_TX4-	A56
B2	GBE0_ACT#	GBE0_MDI3-	A2	B57	GPO2	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	GND	A60
B6	LPC_AD2	GBE0_MDI2-	A6	B61	PCIE_RX2+	PCIE_TX2+	A61
B7	LPC_AD3	GBE0_MDI2+	A7	B62	PCIE_RX2-	GPI1	A63
B8	LPC_DRQ0#	GBE0_LINK#(N/C)	A8	B63	GPO3	PCIE_TX2-	A62
B9	LPC_DRQ1#(N/C)	GBE0_MDI1-	A9	B64	PCIE_RX1+	PCIE_TX1+	A64
B10	LPC_CLK	GBE0_MDI1+	A10	B65	PCIE_RX1-	PCIE_TX1-	A65
B11	GND	GND	A11	B66	WAKE0#	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	GBE0_CTREF(N/C)	A14	B69	PCIE_RX0-	PCIE_TX0-	A69
B15	SMB_ALRERT#	SUS_S3#	A15	B70	GND	GND	A70
B16	SATA1_TX+	SATA0_TX+	A16	B71	LVDS_B0+(N/C)	LVDS_A0+(N/C)	A71
B17	SATA1_TX	SATA0_TX-	A17	B72	LVDS_B0-(N/C)	LVDS_A0-(N/C)	A72
B18	SUS_STAT#	SUS_S4#	A18	B73	LVDS_B1+(N/C)	LVDS_A1+(N/C)	A73
B19	SATA1_RX+	SATA0_RX+	A19	B74	LVDS_B1-(N/C)	LVDS_A1-(N/C)	A74
B20	SATA1_RX	SATA0_RX-	A20	B75	LVDS_B2+(N/C)	LVDS_A2+(N/C)	A75
B21	GND	GND	A21	B76	LVDS_B2-(N/C)	LVDS_A2-(N/C)	A76
B22	SATA3_TX+(N/C)	SATA2_TX+(N/C)	A22	B77	LVDS_B3+(N/C)	LVDS_VDD_EN(N/C)	A77
B23	SATA3_TX-(N/C)	SATA2_TX-(N/C)	A23	B78	LVDS_B3-(N/C)	LVDS_A3+(N/C)	A78
B24	PWR_OK	SUS_S5#	A24	B79	LVDS_BKLT_EN(N/C)	LVDS_A3-(N/C)	A79
B25	SATA3_RX+(N/C)	SATA2_RX+(N/C)	A25	B80	GND	GND	A80
B26	SATA3_RX-(N/C)	SATA2_RX-(N/C)	A26	B81	LVDS_B_CK+(N/C)	LVDS_A_CK+(N/C)	A81
B27	WDT(N/C)	BATLOW#	A27	B82	LVDS_B_CK-(N/C)	LVDS_A_CK-(N/C)	A82
B28	AC_SDIN2	ATA_ACT#	A28	B83	LVDS_BKLT_CTRL(N/C)	LVDS_I2C_CK(N/C)	A83
B29	AC_SDIN1	AC_SYNC	A29	B84	VCC_5V_SBY	LVDS_I2C_DAT(N/C)	A84
B30	AC_SDINO	AC_RST#	A30	B85	VCC_5V_SBY	GPI3	A85
B31	GND	GND	A31	B86	VCC_5V_SBY	RSV4	A86
B32	SPKR	AC_BITCLK	A32	B87	VCC_5V_SBY	RSV3	A87
B33	I2C_CK	AC_SDOULT	A33	B88	BIOS_DIS1#	PCIE0_CK_REF+	A88
B34	I2C_DAT	BIOS_DISABLE0#	A34	B89	VGA_RED	PCIE0_CK_REF-	A89
B35	THR#	THRMTrip#	A35	B90	GND	GND	A90
B36	USB7-(N/C)	USB6-	A36	B91	VGA_GRN	SPI_POWER	A91
B37	USB7+(N/C)	USB6+	A37	B92	VGA_BLU	SPI_MISO	A92
B38	USB_4_5_OC#	USB_6_7_OC#	A38	B93	VGA_HSYNC	GPO0	A93
B39	USB5-	USB4-	A39	B94	VGA_VSYNC	SPI_CLK	A94
B40	USB5+	USB4+	A40	B95	VGA_I2C_CK	SPI_MOSI	A95
B41	GND	GND	A41	B96	VGA_I2C_DAT	TPM_PP(N/C)	A96
B42	USB3-	USB2-	A42	B97	SPI_CS#	TYPE10#(N/C)	A97
B43	USB3+	USB2+	A43	B98	RSV2(N/C)	SERR0_TX(N/C)	A98
B44	USB_0_1_OC#	USB_2_3_OC#	A44	B99	RSV1(N/C)	SERR0_RX(N/C)	A99
B45	USB1-	USB0-	A45	B100	GND	GND	A100
B46	USB1+	USB0+	A46	B101	FAN_PWMOUT	SERR1_TX(N/C)	A101
B47	EXCD1_PERST#	VCC_RTC	A47	B102	FAN_TACHIN	SERR1_RX(N/C)	A102
B48	EXCD1_CPPE#	EXCD0_PERST#	A48	B103	SLEEP#	LID#	A103
B49	SYS_REST#	EXCD0_CPPE#	A49	B104	VCC_12V	VCC_12V	A104
B50	CB_REST#	LPC_SERIRQ	A50	B105	VCC_12V	VCC_12V	A105
B51	GND	GND	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	GND	A110

COM Express CD Connector (bottom side)

D1	GND	GND	C1	D56	PEG_TX1-(N/C)	PEG_RX1-(N/C)	C56
D2	GND	GND	C2	D57	TYPE2#(N/C)	TYPE1#(N/C)	C57
D3	USB_SSTX0-	USB_SSRX0-	C3	D58	PEG_TX2+(N/C)	PEG_RX2+(N/C)	C58
D4	USB_SSTX0+	USB_SSRX0+	C4	D59	PEG_TX2-(N/C)	PEG_RX2-(N/C)	C59
D5	GND	GND	C5	D60	GND	GND	C60
D6	USB_SSTX1-	USB_SSRX1-	C6	D61	PEG_TX3+(N/C)	PEG_RX3+(N/C)	C61
D7	USB_SSTX1+	USB_SSRX1+	C7	D62	PEG_TX3-(N/C)	PEG_RX3-(N/C)	C62
D8	GND	GND	C8	D63	RSV27(N/C)	RSV18(N/C)	C63
D9	USB_SSTX2-(N/C)	USB_SSRX2-(N/C)	C9	D64	RSV26(N/C)	RSV19(N/C)	C64
D10	USB_SSTX2+(N/C)	USB_SSRX2+(N/C)	C10	D65	PEG_TX4+(N/C)	PEG_RX4+(N/C)	C65
D11	GND	GND	C11	D66	PEG_TX4-(N/C)	PEG_RX4-(N/C)	C66
D12	USB_SSTX3-(N/C)	USB_SSRX3-(N/C)	C12	D67	GND	RSV20(N/C)	C67
D13	USB_SSTX3+(N/C)	USB_SSRX3+(N/C)	C13	D68	PEG_TX5+(N/C)	PEG_RX5+(N/C)	C68
D14	GND	GND	C14	D69	PEG_TX5-(N/C)	PEG_RX5-(N/C)	C69
D15	DDI1_CTRLCLK_AUX+	DDI1_PAIR6+/SDVO_FLDSTALL+(N/C)	C15	D70	GND	GND	C70
D16	DDI1_CTRLDATA_AUX-	DDI1_PAIR6-/SDVO_FLDSTALL-(N/C)	C16	D71	PEG_TX6+(N/C)	PEG_RX6+(N/C)	C71
D17	RSV10	RSV8	C17	D72	PEG_TX6-(N/C)	PEG_RX6-(N/C)	C72
D18	RSV9	RSV7	C18	D73	GND	GND	C73
D19	PCI_E_TX6+	PCI_E_RX6+	C19	D74	PEG_TX7+(N/C)	PEG_RX7+(N/C)	C74
D20	PCI_E_TX6-	PCI_E_RX6-	C20	D75	PEG_TX7-(N/C)	PEG_RX7-(N/C)	C75
D21	GND	GND	C21	D76	GND	GND	C76
D22	PCI_E_TX7+(N/C)	PCI_E_RX7+(N/C)	C22	D77	RSV17(N/C)	RSV21(N/C)	C77
D23	PCI_E_TX7-(N/C)	PCI_E_RX7-(N/C)	C23	D78	PEG_TX8+(N/C)	PEG_RX8+(N/C)	C78
D24	RSV5	DDI_HPD	C24	D79	PEG_TX8-(N/C)	PEG_RX8-(N/C)	C79
D25	RSV6	DDI1_PAIR4+/SDVO_IN+(N/C)	C25	D80	GND	GND	C80
D26	DDI1_PAIR0+/SDVO_RED+	DDI1_PAIR4-/SDVO_INT-(N/C)	C26	D81	PEG_TX9+(N/C)	PEG_RX9+(N/C)	C81
D27	DDI1_PAIR0-/SDVO_RED-	RSV1(N/C)	C27	D82	PEG_TX9-(N/C)	PEG_RX9-(N/C)	C82
D28	RSV3	RSV2(N/C)	C28	D83	RSV25(N/C)	RSV24(N/C)	C83
D29	DDI1_PAIR1+/SDVO_GRN+	DDI1_PAIR5+/SDVO_TVCLK+(N/C)	C29	D84	GND	GND	C84
D30	DDI1_PAIR1-/SDVO_GRN-	DDI1_PAIR5-/SDVO_TVCLK-(N/C)	C30	D85	PEG_TX10+(N/C)	PEG_RX10+(N/C)	C85
D31	GND	GND	C31	D86	PEG_TX10-(N/C)	PEG_RX10-(N/C)	C86
D32	DDI1_PAIR2+/SDVO_BLU+	DDI2_CTRLCLK_AUX+	C32	D87	GND	GND	C87
D33	DDI1_PAIR2-/SDVO_BLU-	DDI2_CTRLDATA_AUX-	C33	D88	PEG_TX11+(N/C)	PEG_RX11+(N/C)	C88
D34	DDI1_DDC_AUX_SEL	DDI2_DDC_AUX_SEL	C34	D89	PEG_TX11-(N/C)	PEG_RX11-(N/C)	C89
D35	RSV11(N/C)	RSV12(N/C)	C35	D90	GND	GND	C90
D36	DDI1_PAIR3+/SDVO_CLK+	DDI3_CTRLCLK_AUX+(N/C)	C36	D91	PEG_TX12+(N/C)	PEG_RX12+(N/C)	C91
D37	DDI1_PAIR3-/SDVO_CLK-	DDI3_CTRLDATA_AUX-(N/C)	C37	D92	PEG_TX12-(N/C)	PEG_RX12-(N/C)	C92
D38	RSV4(N/C)	DDI3_DDC_AUX_SEL(N/C)	C38	D93	GND	GND	C93
D39	DDI2_PAIR0+	DDI3_PAIR0+(N/C)	C39	D94	PEG_TX13+(N/C)	PEG_RX13+(N/C)	C94
D40	DDI2_PAIR0-	DDI3_PAIR0-(N/C)	C40	D95	PEG_TX13-(N/C)	PEG_RX13-(N/C)	C95
D41	GND	GND	C41	D96	GND	GND	C96
D42	DDI2_PAIR1+	DDI3_PAIR1+(N/C)	C42	D97	RSV23(N/C)	RSV22(N/C)	C97
D43	DDI2_PAIR1-	DDI3_PAIR1-(N/C)	C43	D98	PEG_TX14+(N/C)	PEG_RX14+(N/C)	C98
D44	DDI2_HPD	DDI3_HPD(N/C)	C44	D99	PEG_TX14-(N/C)	PEG_RX14-(N/C)	C99
D45	RSV13(N/C)	RSV14(N/C)	C45	D100	GND	GND	C100
D46	DDI2_PAIR2+	DDI3_PAIR2+(N/C)	C46	D101	PEG_TX15+(N/C)	PEG_RX15+(N/C)	C101
D47	DDI2_PAIR2-	DDI3_PAIR2-(N/C)	C47	D102	PEG_TX15-(N/C)	PEG_RX15-(N/C)	C102
D48	RSV16(N/C)	RSV15(N/C)	C48	D103	GND	GND	C103
D49	DDI2_PAIR3+	DDI3_PAIR3+(N/C)	C49	D104	VCC_12V	VCC_12V	C104
D50	DDI2_PAIR3-	DDI3_PAIR3-(N/C)	C50	D105	VCC_12V	VCC_12V	C105
D51	GND	GND	C51	D106	VCC_12V	VCC_12V	C106
D52	PEG_TX0+(N/C)	PEG_RX0+(N/C)	C52	D107	VCC_12V	VCC_12V	C107
D53	PEG_TX0-(N/C)	PEG_RX0-(N/C)	C53	D108	VCC_12V	VCC_12V	C108
D54	PEG_LANE_RV#	TYPE0#(N/C)	C54	D109	VCC_12V	VCC_12V	C109
D55	PEG_TX1+(N/C)	PEG_RX1+(N/C)	C55	D110	GND	GND	C110