

**COM Express Rev 2.1 Basic Type 6 Module, Intel® 4th Generation  
Atom™ Processor, VGA, DDI, GbE, SATA 3Gb/s,  
USB and Audio, RoHS**

# **ICE-BT-T6**

## **Quick Installation Guide**

**Version 1.0**

Feb 19, 2016.

### **Package List**

ICE-BT-T6 package includes the following items:

- 1 x ICE-BT-T6 single board computer
- 1 x Heatsink
- 1 x QIG (Quick Installation Guide)
- 1 x Utility CD



©2006 Copyright by IEI Integration corp.  
All rights reserved.

## Specifications

- CPU:
  - Intel® Atom™ E3845 on-board SoC (1.91GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Atom™ E3827 on-board SoC (1.75GHz, dual-core, 1MB cache, TDP=8W)
  - Intel® Atom™ E3826 on-board SoC (1.46GHz, dual-core, 1MB cache, TDP=7W)
  - Intel® Atom™ E3825 on-board SoC (1.33GHz, dual-core, 1MB cache, TDP=6W)
  - Intel® Atom™ E3815 on-board SoC (1.46GHz, single-core, 512KB cache, TDP=5W)
  - Intel® Celeron® J1900 on-board SoC (2GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Celeron® N2930 on-board SoC (1.83GHz, quad-core, 2MB cache, TDP=7.5W)
  - Intel® Celeron® N2807 on-board SoC (1.58GHz, dual-core, 2MB cache, TDP=4.3W)
- BIOS: UEFI BIOS
- Memory:
  - Two 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM support up to 8 GB (J1900, N2930, E3845, E3827, E3826)
  - One 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM supports up to 4 GB (N2807, E3825, E3815)
- Graphics Engine:
  - Intel® HD Graphics Gen 7 Engines with 4 execution units, supporting DX11.1, OpenGL 4.2 and OpenCL1.2
- Display Output:
  - 1 x VGA (2560x1600)
  - 1 x DDI 1 (DP/HDMI max. resolution 2560x1600/1920x1080)
  - 1 x LVDS: 18/24-bit dual-channel LVDS by CH7511B DP to LVDS converter (up to 1920x1200@60Hz)
  - Optional 1 x DDI 2 (Multi-function with LVDS)

- Ethernet:  
Intel® I210 GbE Ethernet
- Embedded Controller: ITE IT8528E/FX
- Storage:  
2 x SATA 3Gb/s signal to baseboard  
Optional soldered down 4GB SSD (SATA port 1)
- USB:  
7 x USB 2.0 signal to baseboard  
4 x USB 3.0 signal to baseboard (via 1 to 4 USB 3.0 hub)
- Audio: High definition audio interface to baseboard
- GPIO: Yes, to baseboard
- SMBus: Yes, to baseboard
- I2C: Yes, to baseboard
- LPC: Yes, to baseboard
- SPI: Yes, to baseboard
- Serial Port:  
2 x serial ports to baseboard (TX & RX from EC)
- Expansion:  
5 x PCIe x1 signal to baseboard (2 from SoC, 3 from PLX PEX8605 switch IC)
- Watchdog Timer:  
Software programmable, supports 1~255 sec. system reset (by EC)
- Internal Storage:  
The device shall have the capacity of at least 2 kbits, and shall have three address inputs. Suitable devices include the Atmel AT24C32C, ST M24C32 and other compatible devices.
- Power Consumption:  
+12V@0.54A, Vcore\_12V@0.95A  
(Intel® Celeron® J1900 CPU, 2 x 8GB 1333 MHz DDR3 memory)
- Operating Temperature:  
-20°C ~ 60°C

- Storage Temperature:  
-30°C ~ 70°C
- Operation Humidity: 5% ~ 95%, non-condensing
- Dimensions: 125 mm x 95 mm
- Weight(GW/ NW): 600g / 200g

## Ordering Information

- **ICE-BT-T6-J19001-R10:**  
COM Express Basic Type 6 module with Intel® Celeron® quad-core processor J1900 (10W), VGA, DDI, LVDS, GbE, SATA, USB 3.0 and HD Audio, RoHS
- **ICE-BT-T6-N29301-R10:**  
COM Express Basic Type 6 module with Intel® Celeron® quad-core processor N2930 (7.5W), VGA, DDI, LVDS, GbE, SATA, USB 3.0 and HD Audio, RoHS
- **ICE-BT-T6-N28071-R10:**  
COM Express Basic Type 6 module with Intel® Celeron® dual-core processor N2807 (4.3W), VGA, DDI, LVDS, GbE, SATA, USB 3.0 and HD Audio, RoHS
- **ICE-BT-T6-E38XX1-R10:**  
COM Express Basic Type 6 module with Intel® Atom™ processor E38XX, VGA, DDI, LVDS, GbE, SATA, USB 3.0 and HD Audio, RoHS (by request MOQ: 100pcs/lot)
- **ICE-DB-T6R-R10:**  
Baseboard for COM Express Type 6 Module COM.0 Rev. 2.1, supports PICMG EAPI R1.0

## Connector

J2 : COM Express Connector CD			
Pin	DESCRIPTION	Pin	DESCRIPTION
C1	GND0	D1	GND15
C2	GND	D2	GND
C3	USB_SSRX0-	D3	USB_SSTX0-
C4	USB_SSRX0+	D4	USB_SSTX0+
C5	GND	D5	GND
C6	USB_SSRX1-	D6	USB_SSTX1-
C7	USB_SSRX1+	D7	USB_SSTX1+
C8	GND	D8	GND
C9	USB_SSRX2-	D9	USB_SSTX2-
C10	USB_SSRX2+	D10	USB_SSTX2+
C11	GND1	D11	GND16
C12	USB_SSRX3-	D12	USB_SSTX3-
C13	USB_SSRX3+	D13	USB_SSTX3+
C14	GND	D14	GND
C15	RSVD	D15	DDI1_CTRLCLK_AUXP(Optional)
C16	RSVD	D16	DDI1_CTRLDATA_AUXN(Optional)
C17	RSVD	D17	RSVD
C18	RSVD	D18	RSVD
C19	RSVD	D19	RSVD
C20	RSVD	D20	RSVD
C21	GND2	D21	GND17
C22	RSVD	D22	RSVD
C23	RSVD	D23	RSVD
C24	DDI1_HPD	D24	RSVD
C25	RSVD	D25	RSVD
C26	RSVD	D26	DDI1_PAIR0+(Optional)
C27	RSVD	D27	DDI1_PAIR0-(Optional)
C28	RSVD	D28	RSVD
C29	RSVD	D29	DDI1_PAIR1+(Optional)
C30	RSVD	D30	DDI1_PAIR1-(Optional)
C31	GND3	D31	GND18
C32	DDI2_CTRLCLK_AUXP	D32	DDI1_PAIR2+(Optional)

C33	DDI2_CTRLDATA_AUXN	D33	DDI1_PAIR2-(Optional)
C34	DDI2_DDC_AUX_SEL	D34	DDI1_DDC_AUX_SEL(Optional)
C35	RSVD	D35	RSVD
C36	RSVD	D36	DDI1_PAIR3+(Optional)
C37	RSVD	D37	DDI1_PAIR3-(Optional)
C38	RSVD	D38	RSVD
C39	RSVD	D39	DDI2_PAIR0+
C40	RSVD	D40	DDI2_PAIR0-
C41	GND4	D41	GND19
C42	RSVD	D42	DDI2_PAIR1+
C43	RSVD	D43	DDI2_PAIR1-
C44	RSVD	D44	DDI2_HPD
C45	RSVD	D45	RSVD
C46	RSVD	D46	DDI2_PAIR2+
C47	RSVD	D47	DDI2_PAIR2-
C48	RSVD	D48	RSVD
C49	RSVD	D49	DDI2_PAIR3+
C50	RSVD	D50	DDI2_PAIR3-
C51	GND5	D51	GND20
C52	RSVD	D52	RSVD
C53	RSVD	D53	RSVD
C54	RSVD(TYPE0#)	D54	RSVD
C55	RSVD	D55	RSVD
C56	RSVD	D56	RSVD
C57	RSVD(TYPE1#)	D57	GND(TYPE2#)
C58	RSVD	D58	RSVD
C59	RSVD	D59	RSVD
C60	GND7	D60	GND21
C61	RSVD	D61	RSVD
C62	RSVD	D62	RSVD
C63	RSVD1	D63	RSVD10
C64	RSVD2	D64	RSVD9
C65	RSVD	D65	RSVD
C66	RSVD	D66	RSVD
C67	RSVD3	D67	GND28
C68	RSVD	D68	RSVD
C69	RSVD	D69	RSVD
C70	GND9	D70	GND22
C71	RSVD	D71	RSVD

C72	RSVD	D72	RSVD
C73	RSVD	D73	RSVD
C74	RSVD	D74	RSVD
C75	RSVD	D75	RSVD
C76	GND8	D76	GND29
C77	RSVD4	D77	RSVD
C78	RSVD	D78	RSVD
C79	RSVD	D79	RSVD
C80	GND10	D80	GND23
C81	RSVD	D81	RSVD
C82	RSVD	D82	RSVD
C83	RSVD5	D83	RSVD8
C84	GND6	D84	GND30
C85	RSVD	D85	RSVD
C86	RSVD	D86	RSVD
C87	GND35	D87	GND31
C88	RSVD	D88	RSVD
C89	RSVD	D89	RSVD
C90	GND27	D90	GND24
C91	RSVD	D91	RSVD
C92	RSVD	D92	RSVD
C93	GND11	D93	GND32
C94	RSVD	D94	RSVD
C95	RSVD	D95	RSVD
C96	GND12	D96	GND33
C97	RSVD6	D97	RSVD
C98	RSVD	D98	RSVD
C99	RSVD	D99	RSVD
C100	GND13	D100	GND25
C101	RSVD	D101	RSVD
C102	RSVD	D102	RSVD
C103	GND	D103	GND34
C104	VCC_12V1	D104	VCC_12V7
C105	VCC_12V2	D105	VCC_12V8
C106	VCC_12V3	D106	VCC_12V9
C107	VCC_12V4	D107	VCC_12V10
C108	VCC_12V5	D108	VCC_12V11
C109	VCC_12V6	D109	VCC_12V12
C110	GND14	D110	GND26

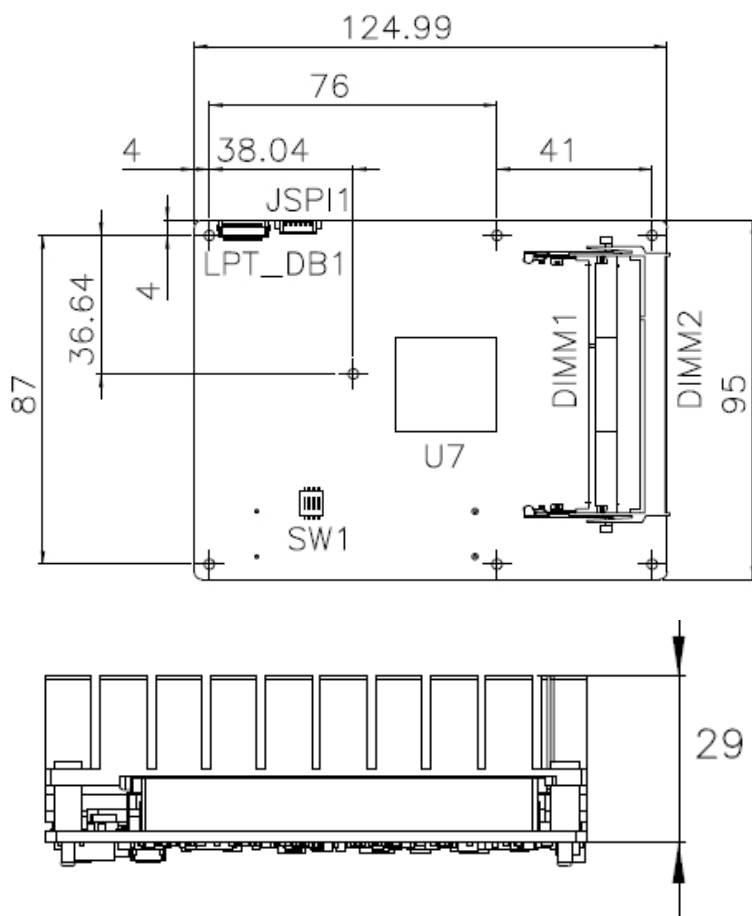
<b>J1 : COM Express Connector AB</b>			
<b>Pin No.</b>	<b>DESCRIPTION</b>	<b>Pin No.</b>	<b>DESCRIPTION</b>
A1	GND	B1	GND15
A2	GBE0_MDI3-	B2	GBE0_ACT#
A3	GBE0_MDI3+	B3	LPC_FRAME#
A4	GBE0_LINK100#	B4	LPC_AD0
A5	GBE0_LINK1000#	B5	LPC_AD1
A6	GBE0_MDI2-	B6	LPC_AD2
A7	GBE0_MDI2+	B7	LPC_AD3
A8	RSVD	B8	LPC_DRQ0#
A9	GBE0_MDI1-	B9	LPC_DRQ1#
A10	GBE0_MDI1+	B10	LPC_CLK
A11	GND1	B11	GND16
A12	GBE0_MDI0-	B12	PWRBTN#
A13	GBE0_MDI0+	B13	SMB_CK
A14	GBE0_CTREF	B14	SMB_DAT
A15	SUS_S3#	B15	SMB_ALERT#
A16	SATA0_TX+	B16	SATA1_TX+
A17	SATA0_TX-	B17	SATA1_TX-
A18	SUS_S4#	B18	SUS_STAT#
A19	SATA0_RX+	B19	SATA1_RX+
A20	SATA0_RX-	B20	SATA1_RX-
A21	GND2	B21	GND17
A22	RSVD	B22	RSVD
A23	RSVD	B23	RSVD
A24	SUS_S5#	B24	PWR_OK
A25	RSVD	B25	RSVD
A26	RSVD	B26	RSVD
A27	BATLOW#	B27	WDT
A28	ATA_ACT#	B28	RSVD
A29	AC_SYNC	B29	AC_SDIN1
A30	AC_RST#	B30	AC_SDIN0
A31	GND3	B31	GND18
A32	AC_BITCLK	B32	SPKR
A33	AC_SDOUT	B33	I2C_CK
A34	BIOS_DISABLE#	B34	I2C_DAT
A35	RSVD	B35	RSVD
A36	USB6-	B36	RSVD



A37	USB6+	B37	RSVD
A38	USB_6_7_OC#	B38	USB_4_5_OC#
A39	USB4-	B39	USB5-
A40	USB4+	B40	USB5+
A41	GND4	B41	GND
A42	USB2-	B42	USB3-
A43	USB2+	B43	USB3+
A44	USB_2_3_OC#	B44	USB_0_1_OC#
A45	USB0-	B45	USB1-
A46	USB0+	B46	USB1+
A47	VCC_RTC	B47	RSVD
A48	RSVD	B48	RSVD
A49	RSVD	B49	SYS_RESET#
A50	LPC_SERIRQ	B50	CB_RESET#
A51	GND5	B51	GND20
A52	RSVD	B52	RSVD
A53	RSVD	B53	RSVD
A54	GPIO	B54	GPO1
A55	PCIE_TX4+	B55	PCIE_RX4+
A56	PCIE_TX4-	B56	PCIE_RX4-
A57	GND6	B57	GPO2
A58	PCIE_TX3+	B58	PCIE_RX3+
A59	PCIE_TX3-	B59	PCIE_RX3-
A60	GND7	B60	GND
A61	PCIE_TX2+	B61	PCIE_RX2+
A62	PCIE_TX2-	B62	PCIE_RX2-
A63	GPI1	B63	GPO3
A64	PCIE_TX1+	B64	PCIE_RX1+
A65	PCIE_TX1-	B65	PCIE_RX1-
A66	GND8	B66	WAKE0#
A67	GPI2	B67	RSVD
A68	PCIE_TX0+	B68	PCIE_RX0+
A69	PCIE_TX0-	B69	PCIE_RX0-
A70	GND9	B70	GND22
A71	LVDS_A0+	B71	LVDS_B0+
A72	LVDS_A0-	B72	LVDS_B0-
A73	LVDS_A1+	B73	LVDS_B1+
A74	LVDS_A1-	B74	LVDS_B1-
A75	LVDS_A2+	B75	LVDS_B2+

A76	LVDS_A2-	B76	LVDS_B2-
A77	LVDS_VDD_EN	B77	LVDS_B3+
A78	LVDS_A3+	B78	LVDS_B3-
A79	LVDS_A3-	B79	LVDS_BKLT_EN
A80	GND10	B80	GND23
A81	LVDS_A_CLK+	B81	LVDS_B_CLK+
A82	LVDS_A_CLK-	B82	LVDS_B_CLK-
A83	LVDS_I2C_CLK	B83	LVDS_BKLT_CTRL
A84	LVDS_I2C_DAT	B84	VCC5SBY1
A85	GPI3	B85	VCC5SBY2
A86	RSVD	B86	VCC5SBY3
A87	RSVD	B87	VCC5SBY4
A88	PCIE0_CLK_REF+	B88	BIOS_DIS1#
A89	PCIE0_CLK_REF-	B89	VGA_RED
A90	GND11	B90	GND24
A91	SPI_VCC	B91	VGA_GRN
A92	SPI_MISO	B92	VGA_BLU
A93	GPO0	B93	VGA_HSYNC
A94	SPI_CLK	B94	VGA_VSYNC
A95	SPI_MOSI	B95	VGA_I2C_CLK
A96	RSVD	B96	VGA_I2C_DAT
A97	RSVD(TYPE10#)	B97	SPI_CS#
A98	RS1_TX	B98	RSVD
A99	RS1_RX	B99	RSVD
A100	GND13	B100	GND25
A101	RS2_TX	B101	FAN_PWMOUT
A102	RS2_RX	B102	FAN_TACHIN
A103	LID#	B103	SLEEP#
A104	VCC_12V7	B104	VCC_12V16
A105	VCC_12V8	B105	VCC_12V17
A106	VCC_12V9	B106	VCC_12V18
A107	VCC_12V10	B107	VCC_12V19
A108	VCC_12V11	B108	VCC_12V20
A109	VCC_12V12	B109	VCC_12V21
A110	GND14	B110	GND26

## Board Layout: Jumper and Connector Locations



\*\* E3825、E3815、N2807 僅有 DIMM1 上件

(Unit: mm)