cExpress-BT

**COM Express® Compact Size Type 6 Module with Intel Atom® E3800 series or Celeron® Processor SoC**

**Features**

- Single, dual, quad-core Intel Atom® or Celeron® Processor SoC
- Up to 8GB Dual Channel DDR3L at 1333MHz
- VGA and two DDI channels (build option LVDS)
- Three PCIe x1, GbE
- Two SATA 3Gb/s, one USB 3.0, seven USB 2.0
- Supports Smart Embedded Management Agent (SEMA®) functions
- Extreme Rugged operating temperature: -40°C to +85°C (build option)

**Specifications**

**Core System**

**CPU**

- Single, dual, quad-core Intel Atom® or Celeron® Processor
- Atom® E3845 1.91 GHz S42/792 (Turbo) 10W (4C/1333)
- Atom® E3827 1.75 GHz S42/792 (Turbo) 8W (2C/1333)
- Atom® E3826 1.46 GHz S33/667 (Turbo) 7W (2C/1066)
- Atom® E3825 1.33 GHz S33 (No Turbo) 6W (2C/1066)
- Atom® E3815 1.46 GHz 400 (No Turbo) 5W (2C/1066)
- Atom® E3805 1.33 GHz (No GFX) 3W (2C/1066)
- Celeron® N2930 1.83/2.16 (Burst) GHz, 313/854 (Turbo) 7.5W (4C/1333)
- Celeron® N2830 1.83/2.16 (Burst) GHz, 313/854 (Turbo) 10W (4C/1333)

Supports: Single, dual or quad Out-of-Order Execution (OOE) processor cores, Intel® VT-x, Intel® SSE4.1 and SSE4.2, Intel® 64 architecture, IA 32-bit, PCLMLDQI Instruction DRNG, Intel® Thermal Monitor (TM1 & TM2)

Note: Availability of features may vary between processor SKUs.

**Memory**

Dual channel non-ECC 1333/1066 MHz DDR3L memory up to 8GB in dual stacked SO-DIMM sockets

**Embedded BIOS**

AMI EFI with CMOS backup in 8MB SPI BIOS

**Cache**

Primary 32 KB, 8-way L1 instruction cache and 24 KB, 6-way L1 write-back data cache
- 2MB for E3845, N2930 and J1900
- 1MB for E3827, E3826, E3825 and E3805
- 512K for E3815

**Expansion Busses**

3 PCI Express x1 Gen2 (AB); lanes 0/1/2; build option PCIe x4 (lose GbE)
- LPC bus, SMBus (system), I2C (user)

**SEMA Board Controller**

Supports: Voltage/Current monitoring, Power sequence debug support, AT/ATX mode control, Logistics and Forensic information, Flat Panel Control, General Purpose I2C, Failsafe BIOS (dual BIOS), Watchdog Timer and Fan Control

**Debug Headers**

40-pin multipurpose flat cable connector
- Use in combination with DB-40 debug module providing: BIOS POST code LED, BMC access, SPI BIOS flashing, Power test points, Debug LEDs
- 26-pin XDP header for ICE debug of CPU/chipset

**Video**

**GPU Feature Support**

7th generation Intel® graphics core architecture with four execution units supporting two independent displays
- 3D graphics hardware acceleration
- Supports DirectX 11, OCL 1.1, OGL ES Halt/2.0/1.1, OGL 3.2
- Video decode hardware acceleration including support for H.264, MPEG2, MVC, VC1, WMV9 and VP8 formats
- Video encode hardware acceleration including support for H.264, MPEG2 and MVC formats

**Digital Display Interface**

DDI1 supporting DisplayPort/HDMI/DVI (build option dual channel 18/24-bit LVDS support)

DDI2 supporting DisplayPort/HDMI/DVI

**VGA**

Analog VGA supporting resolutions of up to 2560 x 1600 x 24bpp @60

**Audio**

**Chipset**

Intel® HD Audio integrated in SoC

**Audio Codec**

Located on carrier Express-BASE6

**Ethernet**

Intel® MAC/PHY: Intel® i210LM (MAC/PHY) Ethernet controller
- Interface: 10/100/1000 GbE connection

Note: "build option" indicates an alternative BOM configuration to support additional or alternative functions that are not available on the standard product.

Be aware that these "build option" part numbers will need to be newly created and this will result in production lead times.
Specifications

- **I/O Interfaces**
  - USB: 1x USB 3.0 (USB 0)
  - 6x USB 1.1/2.0 (USB 1/2/3/4/5/6, ports 3-6 from USB hub)
  - SATA: Two SATA 3 Gb/s ports
  - Serial: 2 UART ports COM 0/1 (COM 0 support console redirection)
  - eMMC: Build option soldered on module bootable eMMC flash storage
  - 8 to 32 GB
  - SDIO: On module mini SD card socket, eMMC feature may vary between OS
  - GPIO: 4 GPO and 4 GPI

- **Super I/O**
  - On carrier if needed (standard support for WB3627DHG-P)

- **TPM**
  - Chipset: Atmel AT97SC3204 (build option)
  - Type: TPM 1.2

- **Power**
  - Standard Input: ATX = 12V±5% / 5Vsb ±5% or AT = 12V±5%
  - Wide Input: ATX = 5~20 V / 5Vsb ±5% or AT = 5 ~20V
  - Management: ACPI 4.0 compliant, Smart Battery support
  - Power States: C0, C1, C1E, C4, C6
  - S0, S3, S4, S5 (Wake on USB S3 for port 0~7/S4 for port 0~3, WOL S3/S4/S5)
  - ECO mode: Wake on USB S3/S4, WOL S3/S4/S5

- **Mechanical and Environmental**
  - Specification: PICMG COM.0: Rev 2.1 Type 6
  - Form Factor: Compact size: 95 mm x 95 mm
  - **Operating Temperature**
    - Standard: 0°C to +60°C
    - Extreme Rugged™: -40°C to +85°C (build option, Atom™ E38xx series only)
  - **Humidity**
    - 5-90% RH operating, non-condensing
    - 5-95% RH storage (and operating with conformal coating)
  - **Shock and Vibration**
    - IEC 60068-2-64 and IEC-60068-2-27
    - MIL-STD-202F, Method 213B, Table 213-I, Condition A and Method 214A, Table 214-I, Condition D
  - **HALT**
    - Thermal Stress, Vibration Stress, Thermal Shock and Combined Test

- **Operating Systems**
  - **Standard Support**
    - Windows 7/8 32/64-bit, Linux 32/64-bit
  - **Extended Support (BSP)**
    - WES7/8, Linux, VxWorks 32/64-bit WEC7 32-bit

Note: “Build option” indicates an alternative BOM configuration to support additional or alternative functions that are not available on the standard product. Be aware that part numbers for SKUs with “build options” will need to be created and may cause production lead times.
Ordering Information

- **cExpress-BT-E3845**
  Compact COM Express® Type 6 Module with Intel Atom® E3845 at 1.91 GHz

- **cExpress-BT-E3827**
  Compact COM Express® Type 6 Module with Intel Atom® E3827 at 1.75 GHz

- **cExpress-BT-E3826**
  Compact COM Express® Type 6 Module with Intel Atom® E3826 at 1.46 GHz

- **cExpress-BT-E3825**
  Compact COM Express® Type 6 Module with Intel Atom® E3825 at 1.33 GHz

- **cExpress-BT-E3815**
  Compact COM Express® Type 6 Module with Intel Atom® E3815 at 1.46 GHz

- **cExpress-BT-E3805**
  Compact COM Express Type6 Module with Intel® Atom® E3805 at 1.33 GHz

- **cExpress-BT-J1900**
  Compact COM Express® Type 6 Module with Intel® Celeron® J1900 at 2.00 GHz

- **cExpress-BT-N2930**
  Compact COM Express® Type 6 Module with Intel® Celeron® N2930 at 1.83 GHz

Accessories

Heat Spreaders

- **HTS-cBT-B**
  Heatspreader for cExpress-BT with threaded standoffs for bottom mounting

- **HTS-cBT-BT**
  Heatspreader for cExpress-BT with through hole standoffs for top mounting

Passive Heatsinks

- **THS-cBT-B**
  Low profile heatsink for cExpress-BT with threaded standoffs for bottom mounting

- **THSH-cBT-B**
  High profile heatsink for cExpress-BT with threaded standoffs for bottom mounting

Active Heatsink

- **THSF-cBT-B**
  High profile heatsink with Fan for cExpress-BT with threaded standoffs for bottom mounting (-40°C to +85°C build option)

Starter Kit

- **COM Express Type 6 Starter Kit Plus**
  COM Express formfactor starter kit with Express-BASE6 board, power supply, and accessory kit