

**NEW**



### Features

- Single, dual, quad-core Intel® Atom™ or Celeron® Processor System-on-Chip (SOC)
- Up to 8GB Dual Channel DDR3L at 1333MHz
- VGA and two DDI channels (optional 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 (optional)

### Specifications

#### Core System

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CPU                   | Single, dual, quad-core Intel® Atom™ or Celeron® Processor<br>Atom™ E3845 1.91 GHz 542/792 (Turbo) 10W (4C/1333)<br>Atom™ E3827 1.75 GHz 542/792 (Turbo) 8W (2C/1333)<br>Atom™ E3826 1.46 GHz 533/667 (Turbo) 7W (2C/1066)<br>Atom™ E3825 1.33 GHz 533 (No Turbo) 6W (2C/1066)<br>Atom™ E3815 1.46 GHz 400 (No Turbo) 5W (1C/1066)<br>Atom™ E3805 1.33 GHz (No GFX) 3W (2C/1066)<br>Celeron® N2930 1.83/2.16 (Burst) GHz, 313/854 (Turbo) 7.5W (4C/1333)<br>Celeron® J1900 2.0/2.42 (Burst) GHz, 688/854 (Turbo) 10W (4C/1333)<br>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, PCLMULQDQ Instruction DRNG, Intel® Thermal Monitor (TM1 & TM2)<br>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 SODIMM 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<br>2MB for E3845, N2930 and J1900<br>1MB for E3827, E3826, E3825 and E3805<br>512K for E3815                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Expansion Busses      | 3 PCI Express x1 Gen2 (AB); lanes 0/1/2; build option PCIe x4 (lose GbE)<br>LPC bus, SMBus (system), I <sup>2</sup> C (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 I <sup>2</sup> C, Failsafe BIOS (dual BIOS), Watchdog Timer and Fan Control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Debug Headers         | 40-pin multipurpose flat cable connector<br>Use in combination with DB-40 debug module providing BIOS POST code LED, BMC access, SPI BIOS flashing, Power test points, Debug LEDs<br>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<br>3D graphics hardware acceleration<br>Supports DirectX 11, OCL 1.1, OGL ES 3.2<br>Video decode hardware acceleration including support for H.264, MPEG2, MVC, VC-1, WMV9 and VP8 formats<br>Video encode hardware acceleration including support for H.264, MPEG2 and MVC formats |
| Digital Display Interface | DDI1 supporting DisplayPort/HDMI/DVI (optional dual channel 18/24-bit LVDS support)<br>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                  |

#### I/O Interfaces

|        |                                                                                |
|--------|--------------------------------------------------------------------------------|
| USB    | 1x USB 3.0 (USB 0)<br>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   | Optional 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 W83627DHG-P)

#### TPM

|         |                             |
|---------|-----------------------------|
| Chipset | Atmel AT97SC3204 (optional) |
| 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<br>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                                                                   |

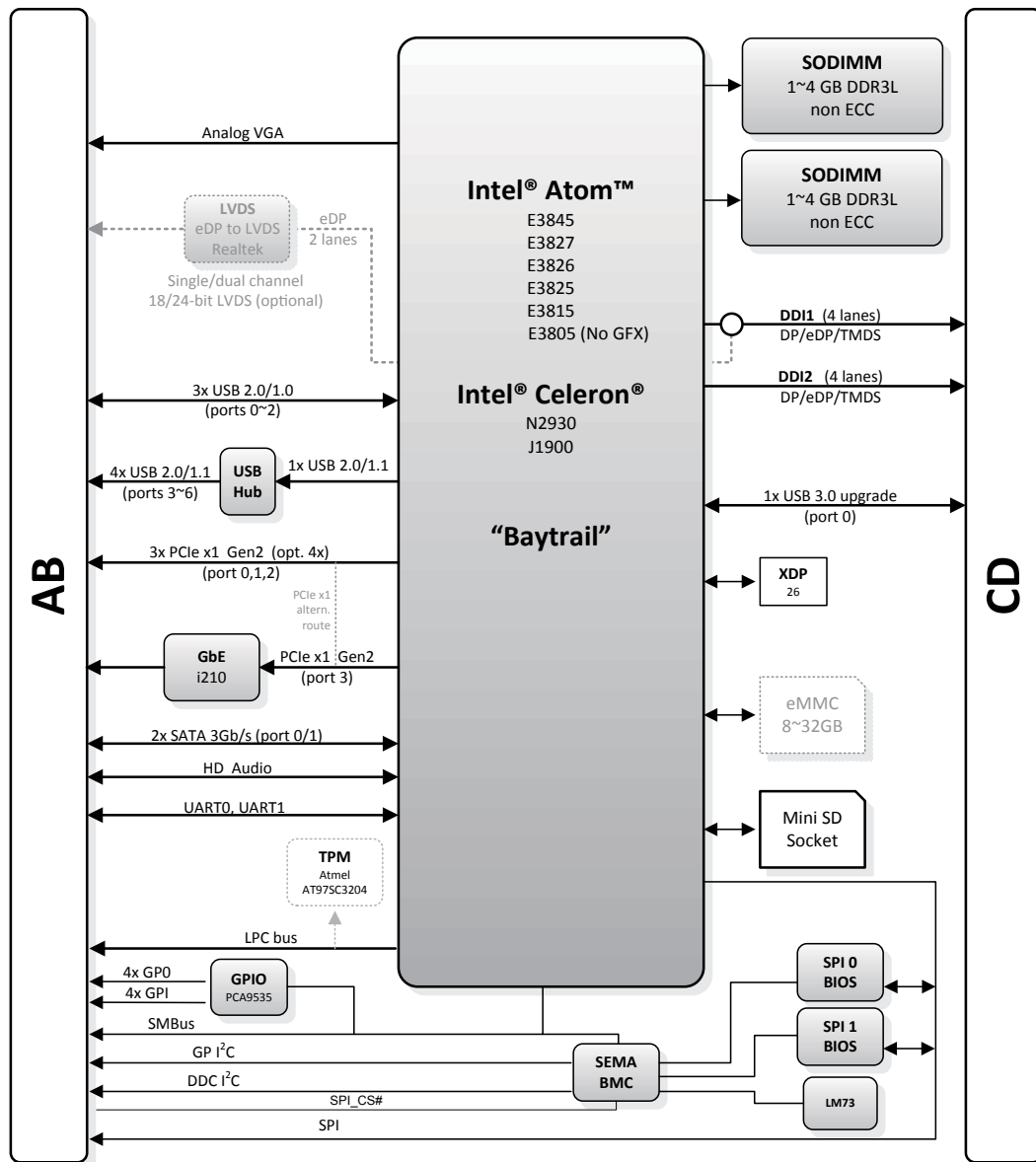
#### Mechanical and Environmental

|                       |                                                                                                                                    |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------|
| 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<br>Extreme Rugged™: -40°C to +85°C (optional, Atom™ E38xx series only)                                      |
| Humidity              | 5-90% RH operating, non-condensing<br>5-95% RH storage (and operating with conformal coating)                                      |
| Shock and Vibration   | IEC 60068-2-64 and IEC-60068-2-27<br>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<br>WEC7 32-bit |

## Functional Diagram



## Ordering Information

### Modules

| Model Number             | Description/Configuration                                                 |
|--------------------------|---------------------------------------------------------------------------|
| <b>cExpress-BT-E3845</b> | Compact COM Express® Type 6 Module with Intel® Atom™ E3845 at 1.91 GHz    |
| <b>cExpress-BT-E3827</b> | Compact COM Express® Type 6 Module with Intel® Atom™ E3827 at 1.75 GHz    |
| <b>cExpress-BT-E3826</b> | Compact COM Express® Type 6 Module with Intel® Atom™ E3826 at 1.46 GHz    |
| <b>cExpress-BT-E3825</b> | Compact COM Express® Type 6 Module with Intel® Atom™ E3825 at 1.33 GHz    |
| <b>cExpress-BT-E3815</b> | Compact COM Express® Type 6 Module with Intel® Atom™ E3815 at 1.46 GHz    |
| <b>cExpress-BT-E3805</b> | Compact COM Express Type6 Module with Intel Atom E3805 at 1.33 GHz        |
| <b>cExpress-BT-J1900</b> | Compact COM Express® Type 6 Module with Intel® Celeron® J1900 at 2.00 GHz |
| <b>cExpress-BT-N2930</b> | Compact COM Express® Type 6 Module with Intel® Celeron® N2930 at 1.83 GHz |

### Accessories

| Model Number             | Description/Configuration                                                                                              |
|--------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Heat Spreaders</b>    |                                                                                                                        |
| 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                                              |
| <b>Passive Heatsinks</b> |                                                                                                                        |
| 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                                      |
| <b>Active Heatsink</b>   |                                                                                                                        |
| THSF-cBT-B               | High profile heatsink with Fan for cExpress-BT with threaded standoffs for bottom mounting (-40°C to + 85°C operation) |
| <b>Starter Kit</b>       |                                                                                                                        |
| Starter kit plus         | Starter kit plus for cExpress-BT                                                                                       |