

**NEW**



### Features

- 5th Generation Low Power Intel® Core™ i7/i5/i3 and Celeron® System-on-Chip
- Up to 16 GB DDR3L at 1600MHz
- Two DDI channels, one LVDS supporting 3 independent displays
- Dual channel 18/24-bit LVDS (or optional eDP)
- Four PCIe x1 or 1 PCIe x4, Gigabit Ethernet
- Four SATA 6 Gb/s, two USB 3.0, six USB 2.0
- Supports Smart Embedded Management Agent (SEMA) functions
- Extreme Rugged™ operating temperature: -40°C to +85°C (optional)

### Specifications

#### Core System

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CPU                   | 5th Generation Intel® Core™ and Celeron® Processor (Mobile) - 14nm (formerly "Broadwell U-Series")<br>Core™ i7-5650U 2.2 GHz (3.2 GHz Turbo), 4MB, 15W (2C/GT3)<br>Core™ i5-5350U 1.8 GHz (2.9 GHz Turbo), 3MB, 15W (2C/GT3)<br>Core™ i3-5010U 2.1 GHz (no Turbo), 3MB, 15W (2C/GT2)<br>Supports: Intel® VT, Intel® TXT, Intel® SSE4.2, Intel® HT Technology, Intel® 64 Architecture, Execute Disable Bit, Intel® Turbo Boost Technology 2.0, Intel® AVX2, Intel® AES-NI, Intel® PCLMULQDQ Instruction, Intel® Device Protection Technology with Intel® Secure Key, Intel® TSX-NI.<br>Note: Availability of features may vary between processor SKUs. |
| Memory                | Dual channel non-ECC 1600/1333 MHz DDR3L memory up to 16 GB in dual SODIMM socket                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Embedded BIOS         | AMI EFI with CMOS backup in 8MB SPI BIOS with Intel AMT 10 support                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Expansion Busses      | 4 PCI Express x1: lanes 0/1/2/3<br>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 for use in combination with DB-40 debug module, providing BIOS POST code LED, BMC access, SPI BIOS flashing, power test points, debug LEDs<br>60-pin XDP header for ICE debug of CPU/Chipset                                                                                                                                                                                                                                                                                                                                                                                                                 |

#### Video

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GPU Feature Support       | Generation 8 Intel graphics core architecture, supporting 3 independent and simultaneous displays<br>Combinations of DisplayPort/HDMI/LVDS or eDP outputs<br>Encode/transcode HD content<br>Playback of high definition content including Blu-ray Disc<br>Superior image quality with sharper, more colorful images<br>Playback of Blu-ray disc 3D content using HDMI (1.4a spec compliant with 3D)<br>DirectX Video Acceleration (DXVA) support for accelerating video processing<br>Full AVC/VC1/MPEG2 HW Decode<br>Advanced Scheduler 2.0, 1.0, XPDM support<br>Windows 8, Windows 7, OSX, Linux OS support<br>DirectX 11.1, DirectX 11.1+, DirectX 10.1, DirectX 10, DirectX 9 support<br>OpenGL 4.2/4.0 support |
| LVDS/eDP                  | Single/dual channel 18/24-bit LVDS (default)<br>eDP support (optional)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Digital Display Interface | DDI1 supporting DisplayPort / HDMI<br>DDI2 supporting DisplayPort / HDMI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

#### Audio

|             |                                                              |
|-------------|--------------------------------------------------------------|
| Chipset     | Intel® HD Audio integrated in U-Series SoC                   |
| Audio Codec | located on carrier Express-BASE6 (ALC886 standard supported) |

#### Ethernet

|                          |                                                                           |
|--------------------------|---------------------------------------------------------------------------|
| Intel® MAC/PHY Interface | i218LM (Enterprise SKU) with AMT 10 support<br>10/100/1000 GbE connection |
|--------------------------|---------------------------------------------------------------------------|

#### I/O Interfaces

|        |                                                                   |
|--------|-------------------------------------------------------------------|
| USB    | 2x USB 1.1/2.0/3.0 (USB 0,1) and 6x USB 1.1/2.0 (USB 2,3,4,5,6,7) |
| SATA   | Four ports SATA 6Gb/s (SATA0, SATA1, SATA2, SATA3)                |
| Serial | 2 UART ports COM1/2 with console redirection                      |
| GPIO   | 4 GPO and 4 GPI                                                   |

#### Super I/O

Supported on carrier if needed (standard support for W83627DHG-P)

#### TPM (Optional)

|         |                  |
|---------|------------------|
| Chipset | Atmel AT97SC3204 |
| 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   | C1-C6, S0, S4, S3, S5, S5 ECO mode (Wake on USB S3/S4, WOL S3/S4/S5) |
| ECO mode       | Supports deep S5 mode for power saving                               |

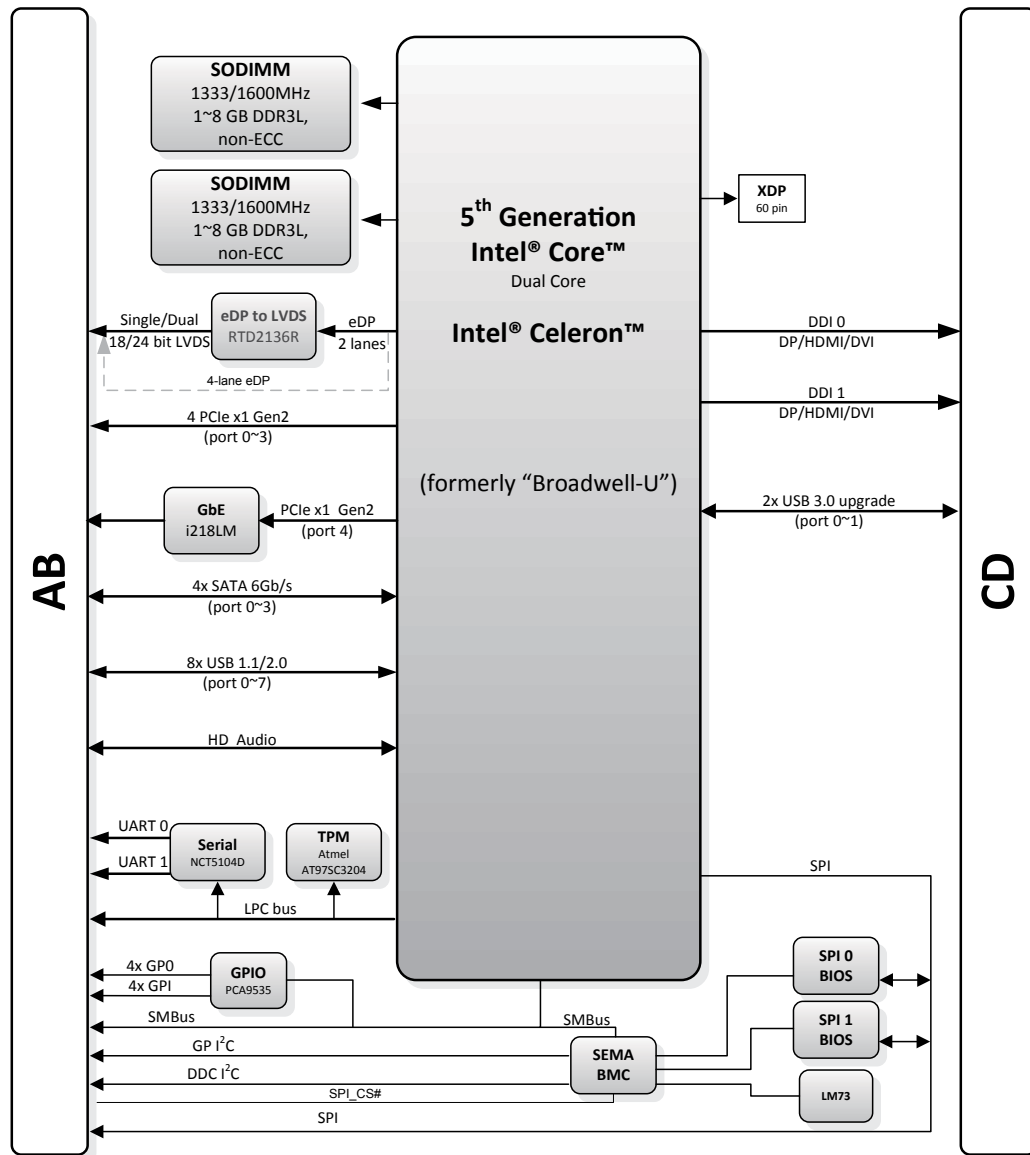
#### Mechanical and Environmental

|                       |                                                                                                                                    |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Form Factor           | PICMG COM.0 Rev 2.1 Type 6                                                                                                         |
| Dimension             | Compact size: 95 mm x 95 mm                                                                                                        |
| Operating Temperature | Standard: 0°C to 60°C<br>Extreme Rugged: -40°C + 85°C (optional)                                                                   |
| Humidity              | 5-90% RH operating, non-condensing<br>5-95% RH storage (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 7/8.1U 32/64-bit, Linux 32/64-bit          |
| Extended Support (BSP) | WES7, WE8S, Linux, VxWorks (all support 32/64-bit) |

## Functional Diagram



## Ordering Information

### Modules

| Model Number                            | Description/Configuration                                                                            |
|-----------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>cExpress-BL-i7-5650U</b>             | Compact COM Express® Type 6 module with Intel® Core™ i7-5650U at 2.2/3.2 GHz with GT3 level graphics |
| <b>cExpress-BL-i5-5350U</b>             | Compact COM Express® Type 6 module with Intel® Core™ i5-5350U at 1.8/2.9 GHz with GT3 level graphics |
| <b>cExpress-BL-i3-5010U</b>             | Compact COM Express® Type 6 module with Intel® Core™ i3-5010U at 2.1 GHz with GT2 level graphics     |
| <b>cExpress-BL-Celeron® Starter Kit</b> | Compact COM Express Type 6 module with Intel® Celeron®                                               |
| <b>Starterkit-COM Express 6 PLUS</b>    | COM Express formfactor starter kit with Express-BASE6 board, power supply, and accessory kit         |

### Accessories

| Model Number             | Description/Configuration                                                                  |
|--------------------------|--------------------------------------------------------------------------------------------|
| <b>Heat Spreaders</b>    |                                                                                            |
| HTS-cBL-B                | Heatspreader for cExpress-BL with threaded standoffs for bottom mounting                   |
| HTS-cBL-BT               | Heatspreader for cExpress-BL with through hole standoffs for top mounting                  |
| <b>Passive Heatsinks</b> |                                                                                            |
| THS-cBL-B                | Low profile heatsink for cExpress-BL with threaded standoffs for bottom mounting           |
| THS-cBL-BT               | Low profile heatsink for cExpress-BL with through hole standoffs for top mounting          |
| <b>Active Heatsink</b>   |                                                                                            |
| THSF-cBL-B               | High profile heatsink with Fan for cExpress-BL with threaded standoffs for bottom mounting |
| THSH-cBL-B               | High profile heatsink for cExpress-BL with through hole standoffs for bottom mounting      |