cExpress-BL

COM Express® Compact Size Type 6 Module with 5th Generation Intel® Core™ i7/i5/i3 and Celeron® SoC

Features

- 5th Generation Intel® Core™ i7/i5/i3 and Celeron® SoC
- Up to 32GB DDR3L at 1600MHz
- Two DDI channels, one LVDS supporting 3 independent displays
- Dual channel 18/24-bit LVDS (or build option eDP)
- GbE, four PCIe x1 or 1 PCIe x4
- 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 (build option)



Specifications

Core System

CPU

5th Generation Intel® Core™ and Celeron® Processor (Mobile) - 14nm (formerly "Broadwell U-Series")

Core™ i7-5650U 2.2 GHz (3.2 GHz Turbo), 4MB, 15W (2C/GT3)
Core™ i5-5350U 1.8 GHz (2.9 GHz Turbo), 3MB, 15W (2C/GT3)
Core™ i3-5010U 2.1 GHz (no Turbo), 3MB, 15W (2C/GT2)
Celeron® TBC

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.

Note: Availability of features may vary between processor SKUs.

Memory

Dual channel non-ECC 1600/1333 MHz DDR3L memory up to 32GB 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

LPC bus, SMBus (system) , I^2C (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^2C, 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

60-pin XDP header for ICE debug of CPU/Chipset

Audio

Chipset

Intel® HD Audio integrated in U-Series SoC

Audio Codec

located on carrier Express-BASE6 (ALC886 standard supported)

Video

GPU Feature Support

Generation 8 Intel graphics core architecture, supporting 3 independent and simultaneous displays

Combinations of DisplayPort/HDMI/LVDS or eDP outputs

Encode/transcode HD content

Playback of high definition content including Blu-ray Disc

Superior image quality with sharper, more colorful images

Playback of Blu-ray disc S3D content using HDMI (1.4a spec compliant with 3D)

DirectX Video Acceleration (DXVA) support for accelerating video processing

Full AVC/VC1/MPEG2 HW Decode

Advanced Scheduler 2.0, 1.0, XPDM support

Windows 8, Windows 7, OSX, Linux OS support

DirectX 11.1, DirectX 11.1+, DirectX 10.1, DirectX 10, DirectX 9 support

OpenGL 4.2/4.0 support

LVDS/eDP

Single/dual channel 18/24-bit LVDS (default)

eDP support (optional)

Digital Display Interface

DDI1 supporting DisplayPort / HDMI

DDI2 supporting DisplayPort / HDMI

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.

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Specifications

Ethernet

Intel® MAC/PHY: i218LM (Enterprise SKU) with AMT 10 support
Interface: 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

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

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)

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
Extreme Rugged: -40°C + 85°C (build option)

Humidity

5-90% RH operating, non-condensing
5-95% RH storage (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

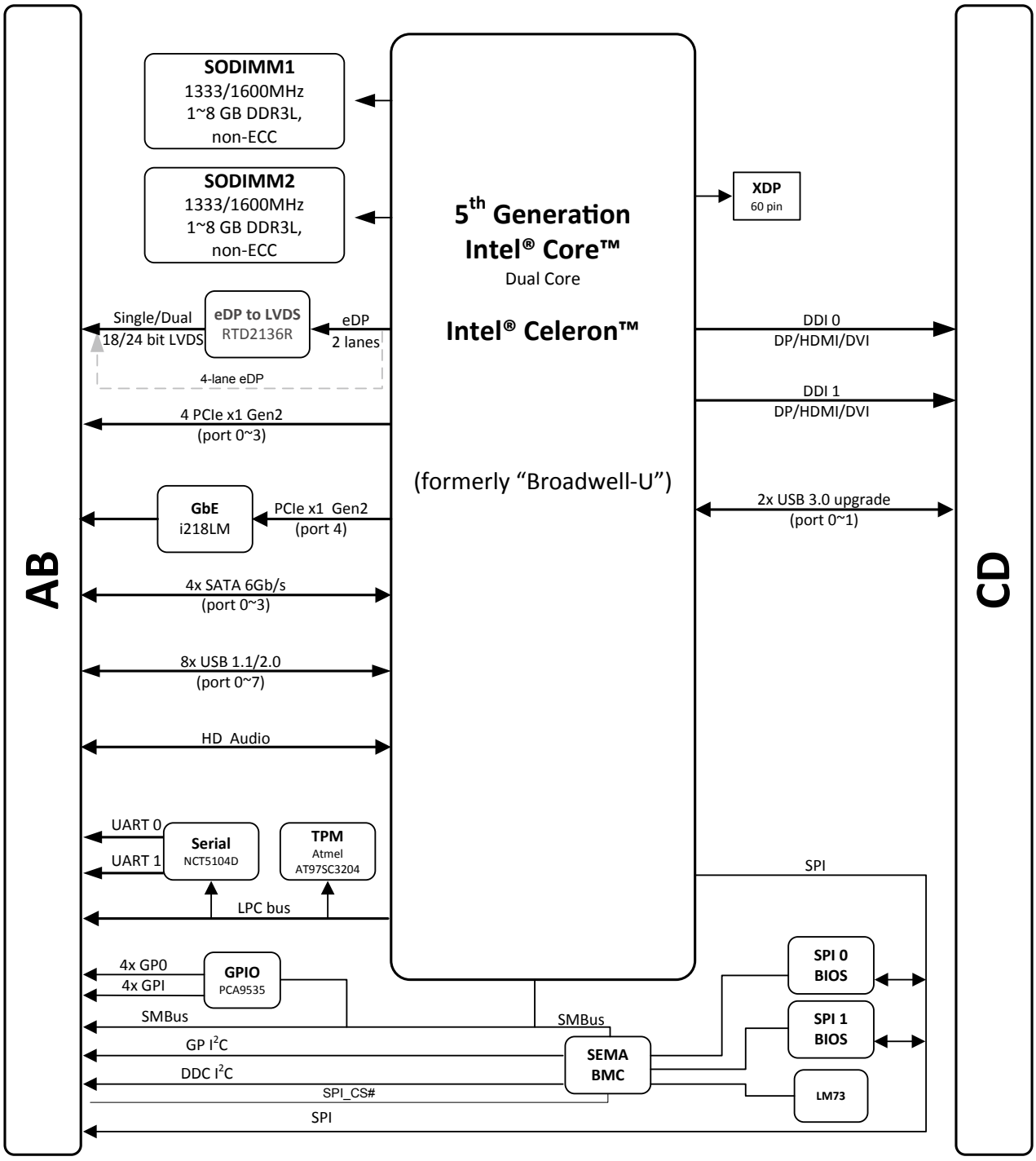
Intelligent Middleware

SEMA®

Local management, control of embedded computer systems
Extended EAPI for monitoring, controlling and analytics applications
Multiple OS support and across platforms (x86, ARM)

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.

Functional Diagram



Ordering Information

- **cExpress-BL-i7-5650U**
  Compact COM Express® Type 6 module with Intel® Core™ i7-5650U at 2.2/3.2 GHz with GT3 level graphics
- **cExpress-BL-i5-5350U**
  Compact COM Express® Type 6 module with Intel® Core™ i5-5350U at 1.8/2.9 GHz with GT3 level graphics
- **cExpress-BL-i3-5010U**
  Compact COM Express® Type 6 module with Intel® Core™ i3-5010U at 2.1 GHz with GT2 level graphics
- **cExpress-BL-Celeron®**
  Compact COM Express Type 6 module with Intel® Celeron®

Starter Kit

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

Accessories

Heat Spreaders

- **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

Passive Heatsinks

- **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

Active Heatsink

- **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

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