cExpress-SL

COM Express Compact Size Type 6 Module with 6th Gen Intel® Core™ and Celeron® Processors

Features





- 6th Generation Intel® Core™ and Celeron® Processors
- Up to 32GB Dual Channel non-ECC DDR4 at 1867/2133MHz
- Two DDI channels, one LVDS (build option 4 lanes eDP), supports up to 3 independent displays
- GbE, up to 6 PCIe x1 (build option)
- Up to three SATA 6 Gb/s, four USB 3.0 and four 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

6th Generation Intel® Core™ and Celeron® Processors - Mobile 14nm process (formerly "Skylake-U")

Core™ i7-6600U 2.6/3.4GHz (Turbo), 4M, 15W (7.5W cTDP)(2C/GT2)
Core™ i5-6300U 2.4/3.0GHz (Turbo), 3M, 15W (7.5W cTDP) (2C/GT2)
Core™ i3-6100U 2.3GHz, 3M, 15W (7.5W cTDP) (2C/GT2)
Celeron® 3955U 2GHz, 2M, 15W (10W cTDP) (2C/GT1)

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, PCLMULQDQ Instruction, Intel® Secure Key and Intel® TSX.

Note: Availability of features may vary between processor SKUs.

Memory

Dual channel 1867/2133 MHz non-ECC DDR4 memory up to 32GB in dual SODIMM socket

Embedded BIOS

AMI EFI with CMOS backup in 8MB SPI BIOS with Intel® AMT 11.0 support (AMT support available on Core™ i7/i5 only)

Cache

4MB for Core™ i7, 3MB for Core™ i5 and Core™ i3, 2MB for Celeron®

Expansion Busses

Up to 6 PCI Express x1 (AB): Lanes 0-5 (configurable to x2, x4, Lane 5 by build option)

Note: Gen3 for Core™ i7/i5/i3, Gen2 for Celeron® 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 with DB-40 debug module providing BIOS POST code LED, BMC access, SPI BIOS flashing, power testpoints, debug LEDs

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

Video

GPU Feature Support

Intel® Generation 9 LP Graphics Core Architecture, supporting 3 independent and simultaneous display combinations of DisplayPort/HDMI/LVDS or eDP outputs

Hardware encode/transcode HD content (including HEVC DirectX 12, DirectX 11.2, DirectX 11.1, DirectX 11, DirectX 10.1, DirectX 10, DirectX 9 support

OpenGL 5.0, 4.4/4.3 and ES 2.0 support

OpenCL 2.1, 2.0/1.2 support

Digital Display Interface

DDI1/2 supporting DisplayPort/HDMI/DVI

LVDS

Single/dual channel 18/24-bit LVDS from eDP-to-LVDS IC

eDP

4 lane support build option, in place of LVDS

Audio

Chipset

Intel® HD Audio integrated in SOC

Audio Codec

On carrier Express-BASE6 (ALC886 standard support)

Ethernet

Intel® MAC/PHY: i219LM/V with AMT 11.0 support
Interface: 10/100/1000 GbE connection

I/O Interfaces

USB: 4x USB 1.1/2.0/3.0 (USB 0,1,2,3) and 4x USB 1.1/2.0 (USB 4,5,6,7)

SATA: Up to three ports SATA 6 Gb/s (SATA 0,1,2; Celeron® supports two ports only

Serial: 2 UART ports with console redirection

GPIO: 4 GPO and 4 GPI from BMC

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.

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Specifications

Super I/O

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

TPM (option)

Chipset: Atmel AT97SC3204
Type: TPM 1.2

Power

Standard Input: ATX = 12V±5% / 5Vsb ±5% or AT = 12V±5%
Wide Input: ATX = 5-20V / 5Vsb ±5% or AT = 5-20V
Management: ACPI 5.0 compliant, Smart Battery support
Power States: C1-C6, S0, S1, S3, S4, S5 , S5 ECO mode (Wake on USB S3/S4, WOL S3/S4/S5)
ECO mode: support deep S5 mode for power saving

Operating Systems

Standard Support

Windows 7 32/64-bit, Windows 10/8.1 64-bit, Linux 64-bit

Extended Support (BSP)

WES7 32/64-bit, Linux 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 to +85°C (build option)

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

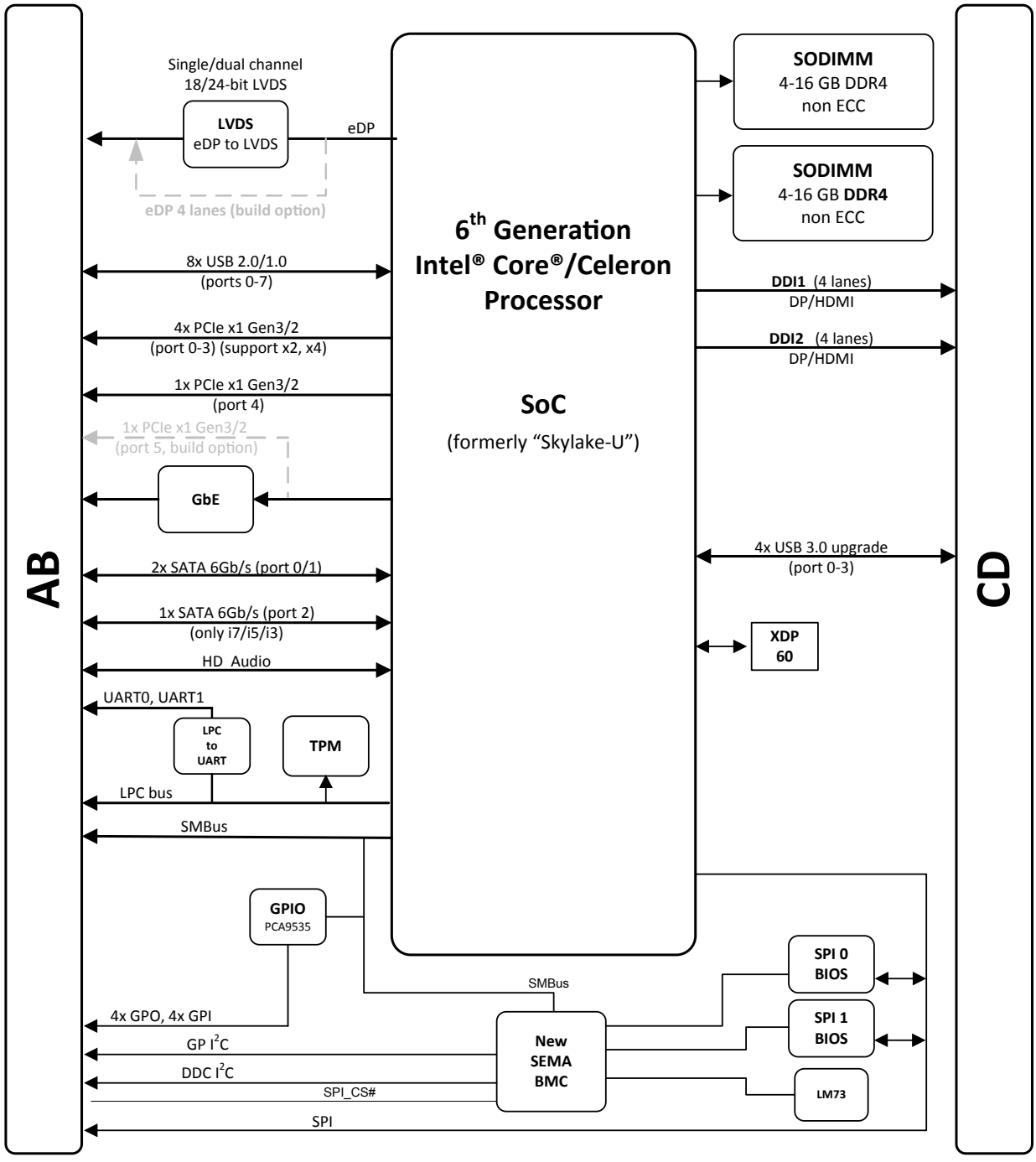
HALT

Thermal Stress, Vibration Stress, Thermal Shock and Combined Test

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Functional Diagram



Ordering Information

- **cExpress-SL-i7-6600U**
  Compact COM Express® Type 6 module with Intel® Core™ i7-6600U and GT2 graphics
- **cExpress-SL-i5-6300U**
  Compact COM Express® Type 6 module with Intel® Core™ i5-6300U and GT2 graphics
- **cExpress-SL-i3-6100U**
  Compact COM Express® Type 6 module with Intel® Core™ i3-6100U and GT2 graphics
- **cExpress-SL-3955U**
  Compact COM Express® Type 6 module with Intel® Celeron® 3955U and GT1 graphics

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-cSL-B**
  Heatspreader for cExpress-SL with threaded standoffs for bottom mounting
- **HTS-cSL-BT**
  Heatspreader for cExpress-SL with through hole standoffs for top mounting

Passive Heatsinks

- **THS-cSL-B**
  Low profile heatsink for cExpress-SL with threaded standoffs for bottom mounting
- **THS-cSL-BT**
  Low profile heatsink for cExpress-SL with through hole standoffs for top mounting
- **THSH-cSL-B**
  High profile heatsink for cExpress-SL with threaded standoffs for bottom mounting

Active Heatsink

- **THSF-cSL-B**
  High profile heatsink with Fan for cExpress-SL with threaded standoffs for bottom mounting

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