cExpress-SL

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

NEW

Features

- 6th Generation Intel® Core™ and Celeron® Processors
- Up to 32GB Dual Channel non-ECC DDR4 at 1867/2133MHz
- Two DDI channels, one LVDS (opt. 4 lanes eDP), supports up to 3 independent displays
- Five PCIe x1 Gen2 (configurable to x2, x4), GbE
- Four 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 (optional)

Specifications

Core System

CPU	6th Generation Intel® Core™ and Celeron® Processors - Mobile 14nm process (formerly "Skylake-U")
	Core™ i7 (2C/GT3e) Core™ i7-6600U 2.6/3.4GHz (Turbo), 4M, 15/7.5W (cTDP) (2C/GT2) Core™ i5 (2C/GT3e) Core™ i5-6300U 2.4/3.0GHz (Turbo), 3M, 15/7.5W (cTDP) (2C/GT2) Core™ i3-6100U 2.3GHz, 3M, 15/7.5W (cTDP) (2C/GT2) Celeron® 15/10W (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, Celeron® TBD
Expansion Busses	5 PCI Express x1 Gen3 (AB): Lanes 0/1/2/3/4 (configurable to x2, x4)
	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 optional, 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 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	Four ports SATA 6Gb/s (SATA0,1,2,3)
Serial	2 UART ports with console redirection
GPIO	4 GPO and 4 GPI from BMC (GPI with interrupt TBD)

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 = 8.5-20 V / 5Vsb ±5% or AT = 8.5-20V
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

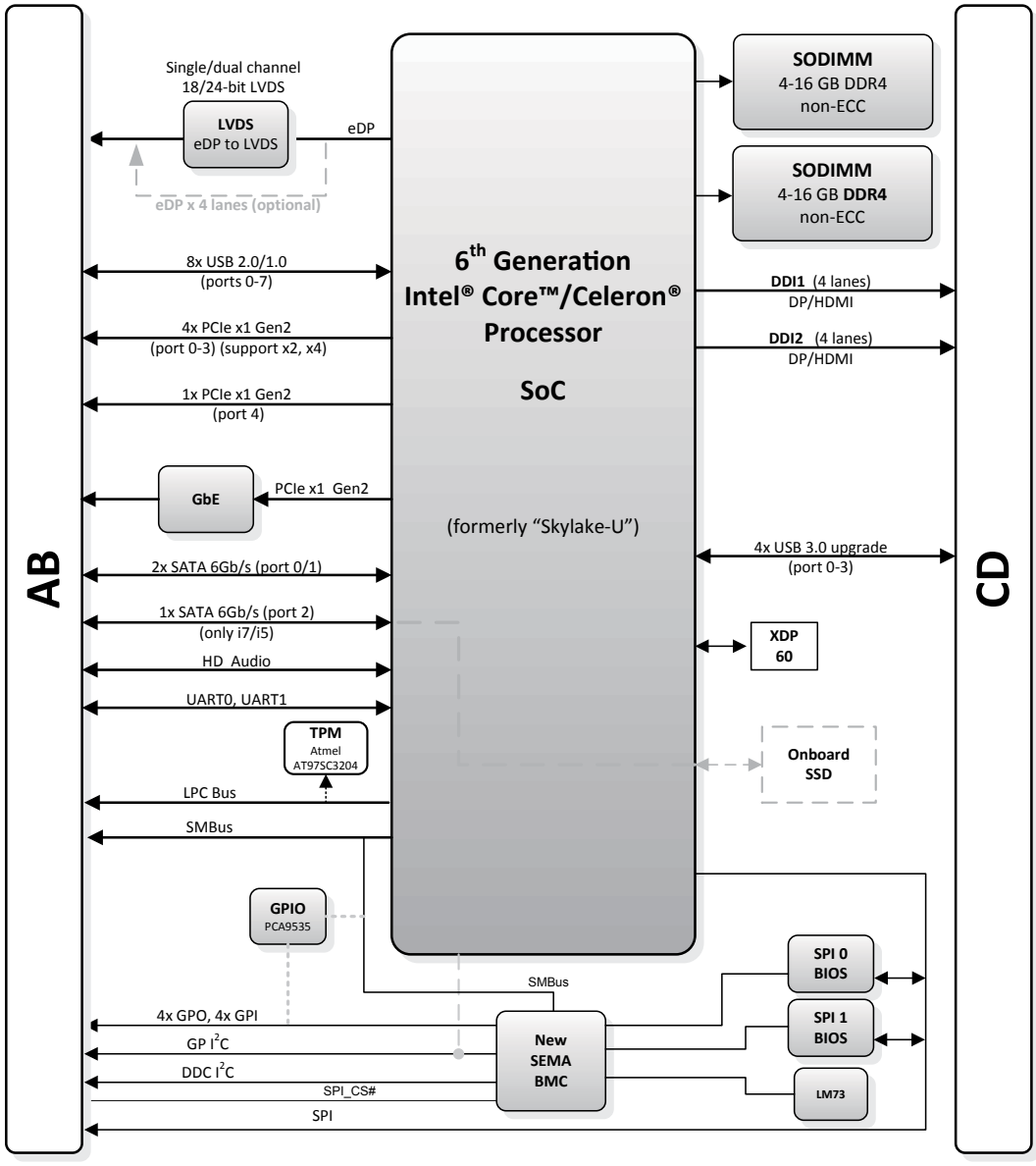
Mechanical and Environmental

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™: -45°C to +85°C (optional)
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 32/64-bit, Windows 8.1 64-bit, Linux 64-bit
Extended Support (BSP)	WES7 32/64-bit, WEI8.1 64-bit, Linux 64-bit

Functional Diagram



Ordering Information

Modules

Model Number	Description/Configuration
cExpress-SL-i7-6600U	Compact COM Express® Type 6 module with Intel® Core™ i7-6600U with GT2 level graphics
cExpress-SL-i5-6300U	Compact COM Express® Type 6 module with Intel® Core™ i5-6300U with GT2 level graphics
cExpress-SL-i3-6100U	Compact COM Express® Type 6 module with Intel® Core™ i3-6100U with GT2 level graphics

Starter Kit

Model Number	Description/Configuration
COM Express Type 6 Starter Kit Plus	Starter kit for cExpress-SL

Accessories

Model Number	Description/Configuration
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 top mounting
Active Heatsink	
THSF-cSL-B	High profile heatsink with Fan for cExpress-SL with threaded standoffs for bottom mounting

Note: All specifications are subject to change without further notice.