Express-SL/SLE

COM Express Basic Size Type 6 Module with 6th Gen Intel® Core™, Intel® Xeon® and Celeron® Processor

Features

- 6th Gen Intel® Core™, Intel® Xeon® and Celeron® Processor
- Up to 32 GB Dual Channel DDR4 at 1867/2133 MHz (supports both ECC and non-ECC memory)
- 3x DDI channels, 1x LVDS (or 4 lanes eDP) supports up to 3 independent displays
- 8x PCIe x1 (Gen3) and 1x PCIe x16 (Gen3)
- GbE, 4x SATA 6 Gb/s, 4x USB 3.0 and 4x 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
    - Mobile Intel® Xeon®, Core™ and Celeron® Processors - 14nm
    - Xeon® E3-1515M v5 2.8/3.7GHz (Turbo), 45W (4C/GT4e)
    - Xeon® E3-1505M v5 2.8/3.7GHz (Turbo), 45W (4C/GT2)
    - Xeon® E3-1505L v5 2.0/2.8GHz (Turbo), 25W (4C/GT2)
    - Core™ i7-6820EQ 2.8/3.5GHz (Turbo), 45W (4C/GT2)
    - Core™ i7-6822EQ 2.0/2.8GHz (Turbo), 25W (4C/GT2)
    - Core™ i5-6440EQ 2.7/3.4GHz (Turbo), 45W (4C/GT2)
    - Core™ i3-6100E 2.7GHz (no Turbo), 35W (2C/GT2)
    - Celeron® G3900E 2.4GHz (no Turbo), 35W (2C/GT1)
  - Note: Availability of the features may vary between processor SKUs.

- **Memory**
  - Dual channel 1867/2133 MHz DDR4 memory up to 32GB in dual SODIMM sockets (ECC/non-ECC support dependent on selected CPU/PCH)

- **Embedded BIOS**
  - AMI EFI with CMOS backup in 16MB SPI BIOS with Intel® AMT 11.0 support

- **Cache**
  - 8MB for Xeon® and Core™ i7, 6MB for Core™ i5, 3MB for Core™ i3, 2MB for Celeron®

- **PCH**
  - CM236 (supports ECC memory, Intel® AMT)
  - QM170 (supports non-ECC, Intel® AMT)
  - HM170 (supports non-ECC, no Intel® AMT support)

- **Expansion Busses**
  - PCIe x16 or 2 PCIe x8 or 1 PCIe x8 with 2 PCIe x4 (Gen3)
  - 6 PCI Express x1 (Gen3); AB connector, Lanes 0/1/2/3/4/5
  - 2 PCI Express x2 (Gen3); CD connector, Lanes 6/7
  - LPC bus, SMBus (system), I2C (user)

- **Debug Headers**
  - 40-pin 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 4.4/4.3 and ES 2.0 support
  - OpenCL 2.1, 2.0/1.2 support

- **Digital Display Interface**
  - DDI1/2/3 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 chipset
  - **Audio Codec**
    - located on carrier Express-BASE6 (ALC886 standard supported)

- **Ethernet**
  - Intel® MAC/PHY: i219LM/V (LM with AMT 11.0 support)
  - Interface: 10/100/1000 GbE connection

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.
Specifications

- **I/O Interfaces**
  - USB: 4x USB v. 3.0 (USB 0,1,2,3) and 4x USB 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

- **Super I/O**
  Supported on carrier if needed (standard support for W83627DHG-P)

- **TPM**
  - Chipset: Atmel AT97SC3204
  - Type: TPM1.2/2.0 (TPM 2.0 support with project basis)

- **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 (Standard temp. only)
  - Management: ACPI 5.0 compliant, Smart Battery support
  - Power States: C1-C6, S0, S1, S3, S4, SS, SS ECO mode (Wake-on-USB S3/S4, WOL S3/S4/SS)
  - ECO mode: Supports deep SS mode for power saving

- **Operating Systems**
  - **Standard Support**
    - Windows 10/8.1 64-bit, Windows 7 32/64-bit, Linux 64-bit, VxWorks
  - **Extended Support (BSP)**
    - WES 7 32/64-bit, Linux 64-bit, VxWorks

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- **Mechanical and Environmental**
  - Form Factor: PICMG COM.0, Rev 2.1 Type 6
  - Dimension: Basic size, 125 mm x 95 mm

- **Operating Temperature**
  - Standard: 0°C to 60°C
  - Extreme Rugged: -40°C to +85°C (build option for Core™ & Celeron® 25W TDP SKUs)

- **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

- **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)
Ordering Information

- **Express-SLE-E3-1515M v5**
  Basic COM Express Type 6 module with Intel® Xeon® E3-1515M v5 and GT4e level graphics, CM236 chipset, support ECC

- **Express-SLE-E3-1505M v5**
  Basic COM Express Type 6 module with Intel® Xeon® E3-1505M v5 and GT2 level graphics, CM236 chipset, support ECC

- **Express-SLE-E3-1505L v5**
  Basic COM Express Type 6 module with Intel® Xeon® E3-1505L v5 and GT2 level graphics, CM236 chipset, support ECC

- **Express-SL-i7-6820EQ**
  Basic COM Express Type 6 module with Intel® Core™ i7-6820EQ and GT2 level graphics, QM170 chipset

- **Express-SL-i7-6822EQ**
  Basic COM Express Type 6 module with Intel® Core™ i7-6822EQ and GT2 level graphics, QM170 chipset

- **Express-SL-i5-6440EQ**
  Basic COM Express Type 6 module with Intel® Core™ i5-6440EQ and GT2 level graphics, QM170 chipset

- **Express-SL-i5-6442EQ**
  Basic COM Express Type 6 module with Intel® Core™ i5-6442EQ and GT2 level graphics, QM170 chipset

- **Express-SL-i3-6100E**
  Basic COM Express Type 6 module with Intel® Core™ i3-6100E and GT2 level graphics, HM170 chipset

- **Express-SL-i3-6102E**
  Basic COM Express Type 6 module with Intel® Core™ i3-6102E and GT2 level graphics, HM170 chipset

- **Express-SL-G3900E**
  Basic COM Express Type 6 module with Intel® Celeron® G3900E and GT1 level graphics, HM170 chipset

Accessories

**Heat Spreaders**

- **HTS-SL-B**
  Heatspreader for Express-SL with threaded standoffs for bottom mounting

- **HTS-SL-BT**
  Heatspreader for Express-SL with through hole standoffs for top mounting

**Passive Heatsinks**

- **THS-SL-BL**
  Low profile heatsink for Express-SL with threaded standoffs for bottom mounting

- **THS-SL-BT**
  Low profile heatsink for Express-SL with through hole standoffs for top mounting

- **THSH-SL-BL**
  High profile heatsink for Express-SL with threaded standoffs for bottom mounting

**Active Heatsink**

- **THSF-SL-BL**
  High profile heatsink with fan for Express-SL with threaded standoffs for bottom mounting

**Starter Kit**

- **Starterkit-COM Express 6 PLUS**
  COM Express formfactor starter kit with Express-BASE6 board, power supply, and accessory kit