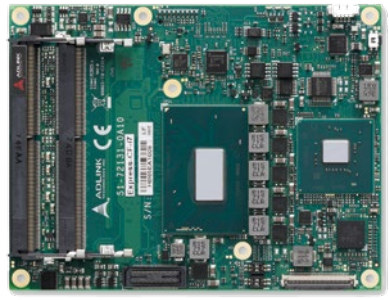
Express-CF/CFE

COM Express® Basic Size Type 6 Module with Hexacore Mobile 8th Gen Intel® Xeon® and Core™ Processors

Features



- PICMG COM.0 R3.0 Type 6 module with hexacore and quad-core Intel® processors
- Up to 48GB Dual Channel DDR4 at 2133/2400MHz
- Three DDI channels, one LVDS (or 4 lanes eDP), supports up to 3 independent displays
- One PCIe x16 Gen3, eight PCIe x1 Gen3 (NVMe SSD & Intel® Optane™ Memory Technology support)
- GbE, four SATA 6 Gb/s, four USB 3.1 and four USB 2.0
- Supports Smart Embedded Management Agent (SEMA) functions

Specifications

Core System

CPU

Mobile 8th Generation Intel Xeon® and Core™ Processors - 14nm process

- Xeon® E-2176M, 2.7 (4.4)GHz, 12MB. 45W (35W cTDP), 6C/GT2
- Core™ i7-8850H, 2.6 (4.3)GHz, 9MB, 45W (35W cTDP), 6C/GT2
- Core™ i5-8400H, 2.5 (4.2)GHz, 8MB, 45W (35W cTDP), 4C/GT2
- Core™ i3-8100H, 3.0GHz, 6MB, 45W (35W cTDP), 4C/GT2

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 the features may vary between processor SKUs.

Memory

2133/2400 MHz DDR4 memory up to 48GB in three SODIMM sockets
(Xeon® paired with CM246 supports both ECC and non-ECC memory)
(48GB is build support)

Embedded BIOS

AMI EFI with CMOS backup in 32MB SPI BIOS with Intel® AMT 12.0 support

Cache

12MB for Xeon®, 9MB for Core™ i7, 8MB for Core™ i5
6MB for Core™ i3

Chipset

- CM246 (supports ECC memory and Intel® AMT)
- QM370 (supports Intel® AMT)
- HM370 (no support for Intel® AMT)

Expansion Busses

- PCIe x16, 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 x1 (Gen3); CD connector, Lane 6/7
- 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 (or VGA), LVDS or eDP outputs

- Hardware encode/transcode HD content (including HEVC 10-bit)
- DirectX 12, DirectX 11.2, DirectX 11.1, DirectX 11, DirectX 10.1, DirectX 10,DirectX 9 support
- OpenGL 4.5 support
- OpenCL 2.1, 2.0/1.2 support

Digital Display Interface

DDI1/2/3 supporting DisplayPort 1.2, HDMI 1.4, DVI

Notes:
DP1.2: max. resolution is 4096x2304 @ 60Hz, 24bpp
HDMI1.4: max. resolution is 4096x2160 @ 24Hz, 24bpp

VGA

VGA support, in place of DDI3 channel (build option, max. resolution 1920x1200@60Hz)

LVDS

Single/dual channel 18/24-bit LVDS from eDP-to-LVDS IC (max. resolution 1920x1200@60Hz in dual mode)

eDP

4 lane support optional, in place of LVDS (build option, max. resolution 4096x2304 @60Hz, 24bpp)

Audio

Chipset: Intel® HD Audio integrated in chipset
Audio Codec:located on carrier Express-BASE6 (ALC886 standard supported)

Ethernet

Intel® I219LM/V with AMT 12.0 support (only LM version support AMT)
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

Multi I/O and Storage

USB: 4x USB 3.1 (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/SD: 4 GPO and 4 GPI (GPI with interrupt)
SD/GPIO muxed design, switched by BIOS setting
SD functions as storage device only
Note: USB 3.1 Gen2 support dependent on carrier design

Super I/O

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

TPM

Chipset: Infineon
Type: TPM 2.0

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: Supports deep S5 mode for power saving

Operating Systems

Standard Support

Windows® 10 64-bit, Linux 64-bit

Extended Support (BSP)

Linux 64-bit

Mechanical and Environmental

Form Factor: PICMG COM.0, Rev 3.0 Type 6
Dimension: Basic size: 125 mm x 95 mm

Operating Temperature

Standard: 0°C to 60°C

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

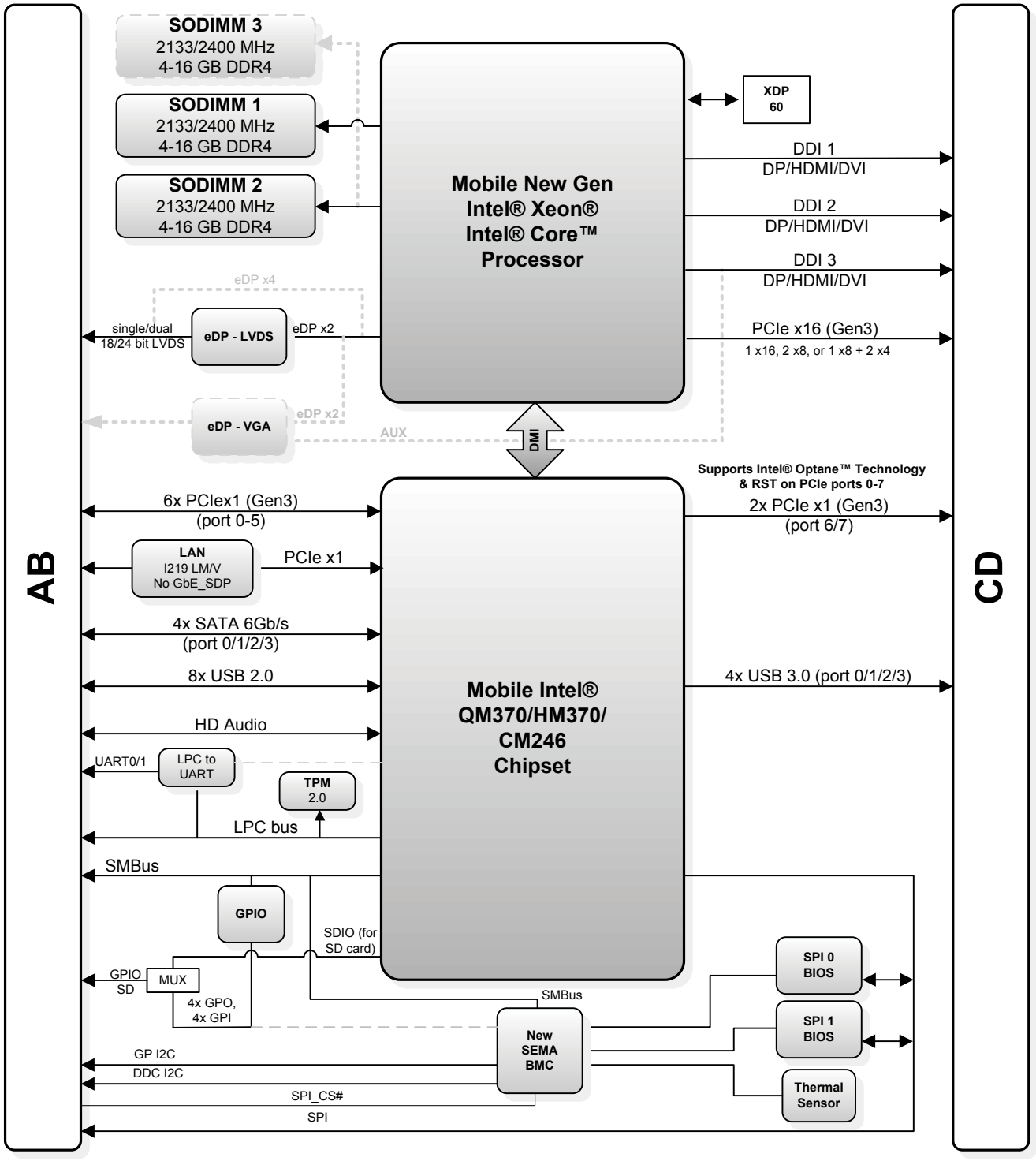
Thermal Stress, Vibration Stress, Thermal Shock and Combined Test

Notes:

* All specifications are subject to change without further notice.

* For CPU and chipset combinations not listed, please contact your ADLINK representative for availability.

Functional Diagram



Ordering Information

- **Express-CFE-E-2176M**
  Basic COM Express Type 6 module with Intel® Xeon® E-2176M (6C/GT2), CM246 chipset, supports ECC/non-ECC
- **Express-CF-i7-8850H**
  Basic COM Express Type 6 module with Intel® Core™ i7-8850H (6C/GT2), QM370 chipset
- **Express-CF-i5-8400H**
  Basic COM Express Type 6 module with Intel® Core™ i5-8400H (4C/GT2), QM370 chipset
- **Express-CF-i3-8100H**
  Basic COM Express Type 6 module with Intel® Core™ i3-8100H (4C/GT2), HM370 chipset

Accessories

Heat Spreaders

- **HTS-CF-B**
  Heatspreader for Express-CF/CFE with threaded standoffs for bottom mounting
- **HTS-CF-BT**
  Heatspreader for Express-CF/CFE with through hole standoffs for top mounting

Passive Heatsinks

- **THS-CF-BL**
  Low profile heatsink for Express-CF/CFE with threaded standoffs for bottom mounting
- **THS-CF-BT**
  Low profile heatsink for Express-CF/CFE with through hole standoffs for top mounting
- **THSH-CF-BL**
  High profile heatsink for Express-CF/CFE with threaded standoffs for top mounting

Active Heatsink

- **THSF-CF-BL**
  High profile heatsink with Fan for Express-CF/CFE with threaded standoffs for bottom mounting

Starter Kit

- **COM Express Type 6 Starter Kit Plus**
  Starter kit for COM Express Type 6