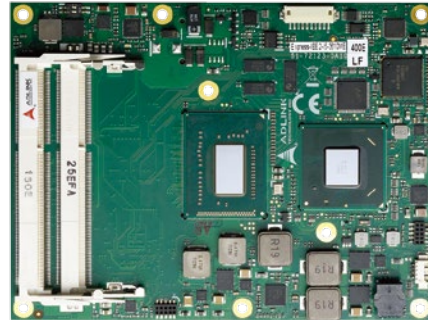# Express-IBE2

COM Express® Basic Size Type 2 Module with Intel® Core™ and Celeron® Processor

Features

- Intel® quad or dual Core™ i7/i5/i3 and Celeron® Processor with Mobile Intel® QM77 Express Chipset
- Up to 16GB Dual Channel DDR3 SDRAM at 1600MHz with ECC
- Single/dual channel 18/24-bit LVDS and SDVO
- Five PCIe x1, one PCIe x16 (Gen3) for graphics (or general purpose x8/4/1)
- GbE, four SATA, one PATA IDE, GbE and eight 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	Intel® "Ivy Bridge" 22nm process, BGA type
	Intel® Core™ i7-3615QE 2.3GHz, 6MB L3 cache, 45W (4C)
	Intel® Core™ i7-3612QE 2.1GHz, 6MB L3 cache, 35W (4C)
	Intel® Core™ i7-3555LE 2.5GHz, 4MB L3 cache, 25W (2C)
	Intel® Core™ i7-3517UE 1.7GHz, 4MB L3 cache, 17W (2C)
	Intel® Core™ i5-3610ME 2.7GHz, 3MB L3 cache, 35W (2C)
	Intel® Core™ i3-3120ME 2.4GHz, 3MB L3 cache, 35W (2C)
	Intel® Core™ i3-3217UE 1.6GHz, 3MB L3 cache, 17W (2C)
	Intel® Celeron® 1020E 2.2 GHz (no Turbo) 35W (2C)
	Intel® Celeron® 1047UE 1.4 GHz (no Turbo) 17W (2C)
	Intel® Celeron® 927UE 1.5 GHz (no Turbo) 17W (1C)
Memory	Dual channel 1333/1600 MHz DDR3 memory with ECC support up to 16GB in dual stacked SODIMM socket
Chipset	Intel® Mobile QM77 Express Chipset
L3 Cache	6MB (i7-3615QE and i7-3612QE), 4MB (i7-3555LE and i7-3517UE), 3MB (i5-3610ME, i3-3120ME and i3-3217UE)
BIOS	AMI EFI with CMOS backup in 16 Mbit SPI flash
Hardware Monitor	Supply voltages and CPU temperature
Debug Interface	XDP SFF-26 extension for ICE debug
Watchdog Timer	Programmable timer range to generate RESET
Expansion Busses	PCI Express x16 (Gen3) bus for discrete graphics solution or general purpose PCI Express (2 x8 or 1 x8 with 2 x4)
	5 PCI Express x1: Lanes 0/1/2/3/4 are free, lane 5 is occupied by PATA, lane 6 is occupied by PCI bus and lane 7 is occupied by GbE
	LPC bus, SMBus (system) , I²C (user)

Video

Integrated in Processor	Intel® HD Graphics 4000 at 650–1200 MHz (depending on processor)
Integrated Video	DirectX 11, OpenGL 3.1, OpenCL 1.1
Feature Support	Intel® Clear Video HD Technology
	Advanced Scheduler 2.0, 1.0, XPDM support
	DirectX Video Acceleration (DXVA) support for full AVC/VC1/MPEG2 hardware decode
VGA	Analog VGA support with 300 MHz DAC
	Analog monitor support up to QXGA (2048 x 1536) and VGA hot plug
LVDS	Single/dual channel 18/24-bit LVDS
SDVO	SDVO multiplexed with PCIe x16 lane 0-7

Audio

Chipset	Integrated in Intel® PCH QM77
Audio Codec	On Express-BASE carrier (ALC886)

SEMA® BMC

Voltage and Current Monitoring, Flat Panel Control, I²C bus 100/200/400, Failsafe Dual BIOS, Module Logistics, Runtime information, User Flash Area, Power Control, and ECO mode support

Ethernet

Chipset	Intel® Gigabit Ethernet PHY WG82579LM
Interface	10/100/1000 Mbps Ethernet

I/O Interfaces

Chipset	Integrated in Mobile Intel® QM77
USB	8 ports USB 2.0 (USB0~7)
SATA	Supports two SATA ports at 6 Gb/s and two ports at 3 Gb/s with support for RAID 0,1,5,10
IDE (PATA)	SATA to PATA bridge on SATA channel 1, Master only

Super I/O

	Connected to LPC bus on carrier if needed

TPM

Chipset	Atmel AT97SC3209
Type	TPM 1.2

Power

Input Power	AT mode (12 V +/- 5%) and ATX mode (12 V and 5 Vsb +/- 5%)
Power States	Supports S0, S1, S3, S4, S5
Smart Battery Support	Yes
Power Consumption	43W with i7-3612QE and 8GB memory typical

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.

Specifications

Mechanical and Environmental

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)
Storage Temperature	-20°C to +80°C
Humidity	90% at +60°C
Shock	15G peak-to-peak, 11ms duration, non-operating
Vibration	Non-operating: 1.88Grms, 5-500Hz, each axis
	Operating: 0.5Grms, 5-500Hz, each axis
Compatibility	COM Express® Type 2
Certification	CE, FCC, HALT

Operating Systems

Standard Support	Windows 7, Linux
Extended Support (BSP)	Embedded XP support package, Linux BSP, VxWorks 6.x, AIDI Library for Windows and Linux

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
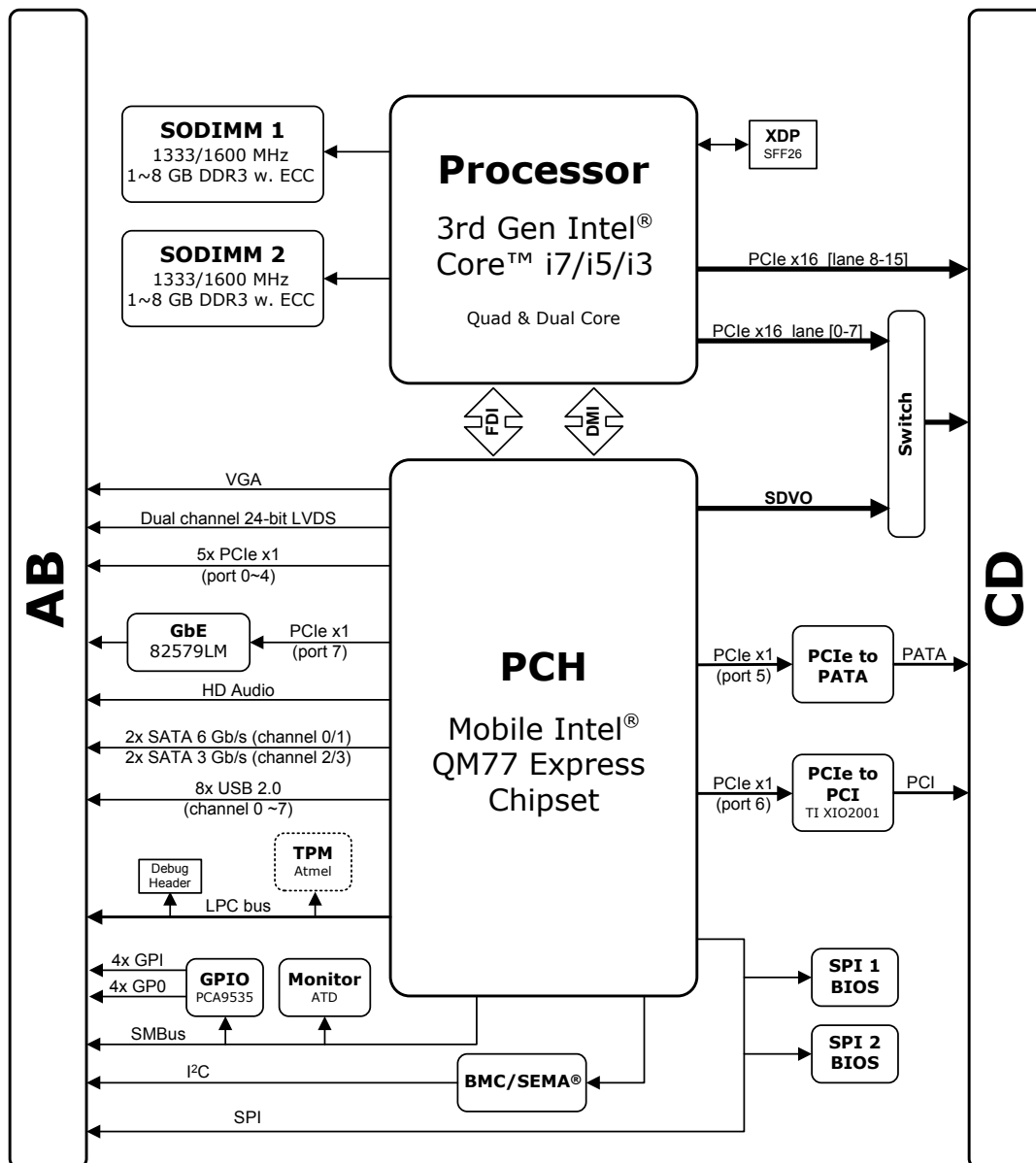
Ordering Information

Modules

Model Number	Description/Configuration
Express-IBE2-i3-3120ME	COM Express® Basic Size Type 2 Module with Intel® Core™ i3-3120ME SV at 2.4 GHz
Express-IBE2-i3-3217UE	COM Express® Basic Size Type 2 Module with Intel® Core™ i3-3217UE ULV at 1.6 GHz
Express-IBE2-i5-3610ME	COM Express® Basic Size Type 2 Module with Intel® Core™ i5-3610ME SV 2.7 GHz
Express-IBE2-i7-3517UE	COM Express® Basic Size Type 2 Module with Intel® Core™ i7-3517UE ULV at 1.7 GHz
Express-IBE2-i7-3555LE	COM Express® Basic Size Type 2 Module with Intel® Core™ i7-3555LE LV at 2.5 GHz
Express-IBE2-i7-3612QE	COM Express® Basic Size Type 2 Module with Intel® Core™ i7-3612QE SV at 2.1 GHz
Express-IBE2-i7-3615QE	COM Express® Basic Size Type 2 Module with Intel® Core™ i7-3615QE SV at 2.3 GHz
Express-IBE2-1020E	COM Express® Basic Size Type 2 Module with Intel® Celeron® 1020E at 2.2GHz
Express-IBE2-1047UE	COM Express® Basic Size Type 2 Module with Intel® Celeron® 1047UE at 1.4GHz
Express-IBE2-927UE	COM Express® Basic Size Type 2 Module with Intel® Celeron® 927UE at 1.5GHz

Accessories

Model Number	Description/Configuration
Heat Spreaders	
HTS-IBE2-B	Heatspreader for Express-IBE2 for bottom mountning
Passive Heatsinks	
THS-IBE2-BL	Low Profile Heatsink for Express-IBE2 for bottom mountning
THSH-IBE2-BL	High Profile Heatsink for Express-IBE2 for bottom mountning
Active Heatsink	
THSD-IBE2-BL	High Performance Heatsink with Fan for Express-IBE2 for bottom mountning

Starter Kit

Model Number	Description/Configuration
COM Express Type 2 Starter Kit Plus	COM Express formfactor starter kit with Express-BASE board, power supply, and accessory kit

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