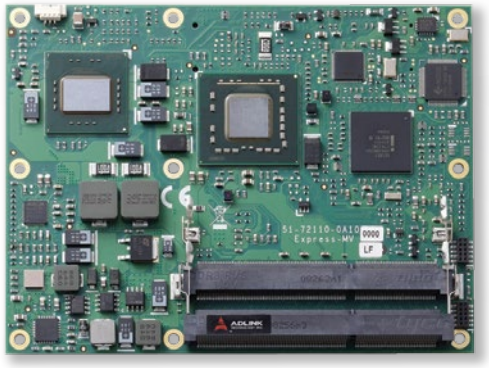
Express-MV

COM Express® Module with Intel® Core™2 Duo Processor and GS45 / ICH9M-SFF Chipset



Features

- Intel® Core™2 Duo processor (up to 2.26 GHz)
- Intel® GS45 and ICH9M-SFF chipset
- Dual SODIMM for up to 8 GB DDR3 at 1066 MHz
- Five PCIe x1, one PCIe x16 for graphics (or general purpose x8, x4 or x1)
- Single/dual channel 18/24-bit LVDS and TV-out (SDTV and HDTV)
- SATA 3 Gb/s, IDE (PATA), Gigabit LAN, USB 2.0

Specifications

Core System

CPU	**Penryn SFF BGA type**
	Intel® Core™2 Duo SP9300, FSB 1066, 2.26 GHz with 6MB L2 cache, 25 Watt
	Intel® Core™2 Duo SL9400, FSB 1066, LV 1.86 GHz with 6MB L2 cache, 17 Watt
	Intel® Core™2 Duo SU9300, FSB 800, ULV 1.2 GHz with 3MB L2 cache, 10 Watt
	Intel® Celeron® M 722, FSB 800, ULV 1.2GHz with 1MB L2 cache, 5.5 Watt
Memory	Dual stacked SODIMM sockets supporting dual channel memory, up to 8 GB of non-ECC, 800/1066 MHz DDR3
Chipset	Intel® GS45 Express Graphics Memory Controller Hub SFF (Small Form Factor) and Intel® I/O Controller Hub ICH9M-SFF
BIOS	AMIBIOS®8 with CMOS backup in 16 Mbit SPI flash
Hardware Monitor	Supply voltages and CPU temperature
Watchdog Timer	Programmable timer ranges to generate RESET
Expansion Busses	Graphics PCI Express x16 bus for SDVO/HDMI/DisplayPort or general purpose PCI Express (x8 / x4 / x1)
	6 PCI Express x1: 0/1/2/3/4 are free, 5 is occupied by GbE; 0/1/2/3 x1 can be optionally configured as 1 x4
	32-bit PCI 2.3 at 33MHz, supporting 4 bus masters
	LPC, SMBus, I²C

Video

Chipset	GS45 GMCH integrated Mobile Intel® Graphics Media Accelerator 4500MHD with core render clock 533 MHz @ 1.05-V core voltage or 266 MHz @ 1.025 L.P. Mode
Integrated Video Feature Support	Intel® Dynamic Video Memory Technology (Intel® DVMT 5.0)
	Video capture via x1 concurrent PCI Express port
	PAVP (Protected Audio-Video Path) support for Protected Intel® HD Audio Playback
	High performance MPEG-2 decoding
	WMV9 (VC-1) and H.264 (AVC) support
	Hardware acceleration for MPEG2 VLD/iDCT
	Microsoft DirectX 10 support
	Blu-ray support @ 40 Mb/s
	Hardware motion compensation
	Intermediate Z in classic rendering
VGA Interface	Analog VGA support by 300MHz DAC
	Analog monitor support up to QXGA, supports VGA hot plug
LVDS Interface	Single / Dual channel 18/24-bit at 25~112 MHz
TV-out	NTSC/PAL up to 1024x768 resolution supported HDTV 480p/720p/1080i/1080p modes supported (without Macrovision)

Audio

Chipset	Integrated on Intel® ICH9M
Audio Codec	HDA codec on carrier
HDMI	Audio routed to HDMI interface

LAN

Chipset	Integrated on Intel® ICH9M with Intel® 82567LM PHY
Interface	10/100/1000 Mbps Ethernet

Multi I/O

Chipset	Integrated on Intel® ICH9M
USB	Supports up to eight ports USB v. 2.0
SATA	Four ports SATA 3 Gb/s with (optional) support for RAID 0,1,5,10
PATA	SATA to PATA JM20330 controller on SATA channel 3, Master only

Super I/O

	Connected to LPC bus on carrier if needed

TPM

Chipset	Infineon SLB9635TT1.2 (optional)
Type	TPM 1.2

Power Specifications

Input Power	AT mode (12 V +/- 5%) and ATX mode (12 V and 5 Vsb +/- 5%)
Power States	Supports S0, S1, S3, S4, S5
Power Consumption	18 W (with Core™2 Duo SU9300 at 1.2 GHz and 2 GB memory typical)

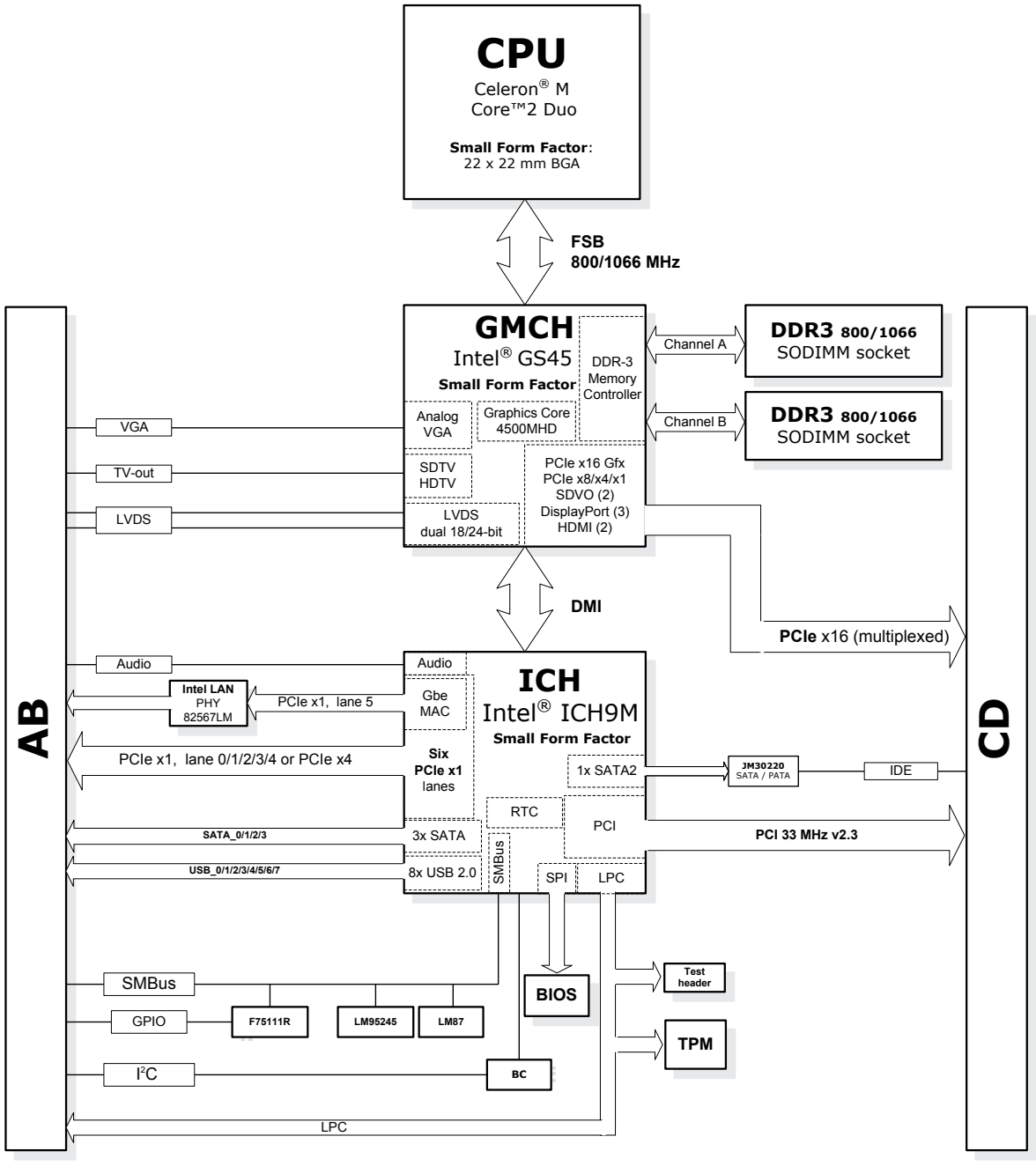
Mechanical and Environmental

Operating Temp.	Standard: 0°C to 60°C
Storage Temp.	-20°C to 80°C
Humidity	90% at 60°C
Shock	15G peak-to-peak, 11ms duration, non-operation
Vibration	Non-operating: 1.88 Grms, 5-500 Hz, each axis Operating: 0.5 Grms, 5-500 Hz, each axis
Form Factor	COM Express® Type 2, Basic form factor, 95 mm x 125 mm
Certifications	CE, FCC

Operating Systems

Standard Support	Windows® XP 32/64-bit
	Windows® Vista 32/64-bit
	Windows® Server 2003/2008
	Linux® 2.6.x
Extended Support	Embedded XP BSP
	Linux® 2.6.x BSP
	WinCE 6.0 BSP
	AIDI Library for Win32, WinCE and Linux®

Functional Diagram



Ordering Information

Modules

Model Number	Description/Configuration
Express-MV-SP9300	COM Express® Module with Intel® Core™2 Duo processor SP9300 at 2.26 GHz
Express-MV-SL9400	COM Express® Module with LV Intel® Core™2 Duo processor SL9400 at 1.86 GHz
Express-MV-SU9300	COM Express® Module with ULV Intel® Core™2 Duo processor SU9300 at 1.20 GHz
Express-MV-722	COM Express® Module with ULV Intel® Celeron® M processor 722 at 1.20 GHz

Accessories

Model Number	Description/Configuration
Heat Spreaders	
HTS-MV-B	Heatspreader for Express-MV (BGA CPU) with threaded standoffs
Passive Heatsinks	
THS-MV-BL	Low Profile Heatsink for Express-MV (BGA CPU) with threaded standoffs for bottom mounting with long cooling fins (incl screws for 5 and 8 mm btb)
Heatsink with Active Cooling	
THSF-MV-B	High Performance Heatsink with Fan for Express-MV (BGA CPU) with threaded standoffs