COM Express® Basic Module

Small-Footprint Mobile Performance

conga-BS45

Intel® Core 2 Duo up to 2.26

up to 8 GByte DRAM

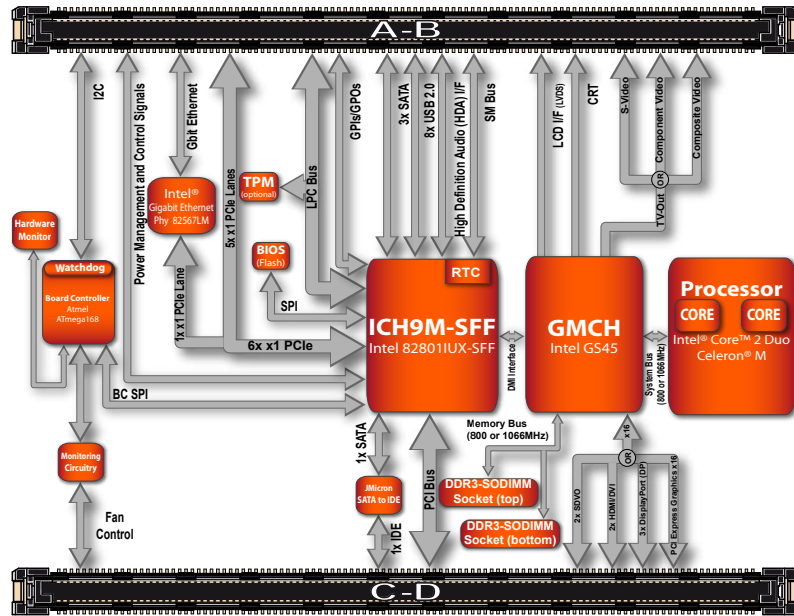Intel® Graphics Media Accelerator 4500MHD

COM Express®

Formfactor	**COM Express™ Basic, (95 x 125 mm), Type II Connector Layout**
CPU	Intel® Core™ 2 Duo SU9300, 1.20 GHz (3M cache, 800 MHz FSB, TDP 10W) Intel® Core™ 2 Duo SP9300, 2.26 GHz (6M cache, 1066 MHz FSB, TDP 25W) Intel® Core™ 2 Duo SL9400, 1.86 GHz (6M cache, 1066 MHz FSB, TDP 17W) Intel® Celeron® M ULV 723, 1.20 GHz (1M cache, 800 MHz FSB, TDP 10W)
DRAM	2 Sockets, SO-DIMM DDR3 1067 MHz, up to 8 GByte
Chipset	Graphics & Memory Controller Hub: Intel® GS45 I/O Controller Hub: Intel® 82801lUX (ICH9ME-SFF)
Ethernet	Intel® 82567LM Gigabit Ethernet Phy
I/O Interfaces	5x PCI Express™ lanes, PCI Express Graphics (PEG x16), 3x Serial ATA® (AHCI) supporting RAID 0/1, 1x EIDE (UDMA-66/100) optional, 2x ExpressCard® (uses 2x USB & 2x PCI Express), 8x USB 2.0 (EHCI), PCI bus 33 MHz Rev. 2.3, LPC bus, I²C bus (fast mode, 400 kHz, multi-master)
Sound	Digital High Definition Audio Interface with support for multiple audio codecs
Graphics	Mobile Intel® Graphics Media Accelerator 4500MHD, graphics core speeds up to 533 MHz, improved graphics and 3D rendering performance, Intel® Dynamic Video Memory Technology (Intel® DVMT 5.0), OpenGL 2.0 and DirectX10 support, Two independent pipelines for full dual view support, High performance hardware MPEG-2 decoding, WMV9 (VC-1) and H.264 (AVC) support Blu-ray support @ 40 Mb/s, hardware motion compensation
LVDS	Dual channel 112 MHz LVDS transmitter, Supports flat panels with 1x18, 2x18, 1x24, 2x24 bit interface, VESA mappings, resolutions from 640x480 up to 1920x1200, Automatic Panel Detection via EDID/EPI
DisplayPort (DP)	Supports two DisplayPorts multiplexed with the PCI Express Graphics interface 1.62 Gb/s and 2.7 Gb/s, 1/2/4 data lanes, 8B10B-coding, Hot-Plug detect support
HDMI	Single TMDS Link, only support for RGB, Video support for CEA modes 480i/p, 576i/p, 720p, 1080i/p and PC modes via dot clock
CRT Interface	300 MHz RAMDAC, resolutions up to QXGA
AUX Output	Supports two SDVO Ports multiplexed with the PCI Express Graphics interface
TV Out	Onboard TV encoder, supports HDTV (420p, 720p and 1080i), supports component and S-video
congatec Board Controller	Multi Stage Watchdog, non-volatile User Data Storage, Manufacturing and Board Information, Board Statistics, BIOS Setup Data Backup, I²C bus (fast mode, 400 kHz, multi-master), Power Loss Control
Embedded BIOS Features	OEM Logo, OEM CMOS Defaults, LCD Control, Display Auto Detection, Backlight Control, Flash Update, Based on AMIBIOS8®
Security	The conga-BS45 can be optionally equipped with a discrete "Trusted Platform Module" (TPM). It is capable of calculating efficient hash and RSA algorithms with key lengths up to 2,048 bits and includes a real random number generator. Security sensitive applications such as gaming and e commerce will benefit also with improved authentication, integrity and confidence levels.
Power Management	ACPI 3.0 with battery support
Operating Systems	Microsoft® Windows8, Microsoft® Windows7, Microsoft® Windows XP, Microsoft® Windows® embedded Standard, Linux
Power Consumption	Typ. application: TBD W @ 12V, see manual for full details, CMOS Battery Backup
Temperature	Operating: 0 .. +60°C Storage: -20 .. +80°C
Humidity	Operating: 10 - 90% r. H. non cond. Storage: 5 - 95% r. H. non cond.
Size	95 x 125 mm (3.74" x 4.92")

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Block Diagram conga-BS45

Order Information conga-BS45

A - B

I2C · Power Management and Control Signals · Gbit Ethernet · 5x x1 PCIe Lanes · GPIs/GPOs · 3x SATA · 8x USB 2.0 · High Definition Audio (HDA) I/F · SM Bus · LCD I/F (LVDS) · CRT · S-Video · Component Video · Composite Video · TVOut (OR) · LPC Bus

Hardware Monitor

Intel® Gigabit Ethernet Phy 82567LM

TPM (optional)

BIOS (Flash)

RTC

Watchdog

Board Controller Atmel ATmega168

1x x1 PCIe Lane

SPI

6x x1 PCIe

BC SPI

Monitoring Circuitry

Fan Control

1x SATA

1x IDE

JMicron SATA to IDE

DDR3-SODIMM Socket (top)

DDR3-SODIMM Socket (bottom)

PCI Bus

Memory Bus (800 or 1066MHz)

ICH9M-SFF Intel 82801IUX-SFF

DMI Interface

GMCH Intel GS45

System Bus (800 or 1066 MHz)

Processor CORE CORE Intel® Core™ 2 Duo Celeron® M

2x SDVO · 2x HDMI/DVI · 3 DisplayPort (DP) · PCI Express Graphics x16 · x16 (OR)

C - D

Article	PN	Description
conga-BS45/SL9400	040004	Intel® Core 2 Duo 1.86GHz Penryn CPU SL9400, 6MB L2 cache, 1066MHz FSB.
conga-BS45/SP9300	040003	Intel® Core 2 Duo 2,26GHz Penryn CPU SP9300, 6MB L2 cache, 1066MHz FSB
conga-BS45/SU9300	040002	Intel® Core 2 Duo 1.2GHz Penryn CPU SU9300, 3MB L2 cache, 800MHz FSB.
conga-BS45/723	040001	Intel® Celeron® M Processor 723 with 1.2GHz, 1MB L2 cache, 800MHz FSB.
conga-BS45/HSP-B	040010	Heatspreader , Standoff with 2.7mm bore hole
conga-BS45/HSP-T	040011	Heatspreader , Standoff with 2.5mm thread
DDR3-SODIMM-1066 (1GB)	068750	DDR3 SODIMM memory module with 1066 MT/s and 1GB RAM
DDR3-SODIMM-1066 (2GB)	068760	DDR3 SODIMM memory module with 1066 MT/s and 2GB RAM
DDR3-SODIMM-1066 (4GB)	068765	DDR3 SODIMM memory module with 1066 MT/s and 4GB RAM

Engineering Tools / Accessories for COM Express®		
conga-CEVAL	065749	Evaluation carrier board for COM-Express-modules
conga-Cdebug	047854	COM-Express debugging platform. Including cable for COM, PS/2 and VGA.
conga-CKIT	064714	COM-Express-Starterkit, incl. conga-CEVAL, conga-CDEBUG, conga-FPA1 (PN: 024241), Dual DVI-D ADD2 card, Power supply, USB-Stick, ... Without COM Express-module
conga-LDVI/EPI	011115	LVDS to DVI converter board for digital flat panels with onboard EEPROM
conga-HDMI/Display Port adapter	500014	The conga-HDMI/DisplayPort adapter is used fo convert the chipset graphic ports Port-B, Port-C and Port-D to the HDMI or DisplayPort Interface
Single DVI-D ADD2 Card	058500	ADD2 display adapter card with single DVI-D digital output. Suitable for all Intel based platforms that support Serial Digital Display Outputs (SDVO) on the standard, x16 PCI Express Graphics (PEG) port.
Dual DVI-D ADD2 Card	013226	ADD2 display adapter card with dual independent DVI-D output. Suitable for all Intel based platforms that support Serial Digital Display Outputs (SDVO) on the standard, x16 PCI Express Graphics (PEG) port.
conga-FPA2	047250	Flatpanel prototype adapter to develop your own flatpanel adapter Including cables set.
COM-Express-carrierboard-Socket-5	400007	Connector for COM-Express carrier boards, height 5mm, packing unit 4 pieces
COM-Express-carrierboard-Socket-8	400004	Connector for COM-Express carrier boards, height 8mm, packing unit 4 pieces

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