

# COM Express® Compact Module

## Superior Graphics Performance

### conga-CS45

#### High Graphics Performance

Features Intel® Core™ 2 Duo processor based on 45nm structure

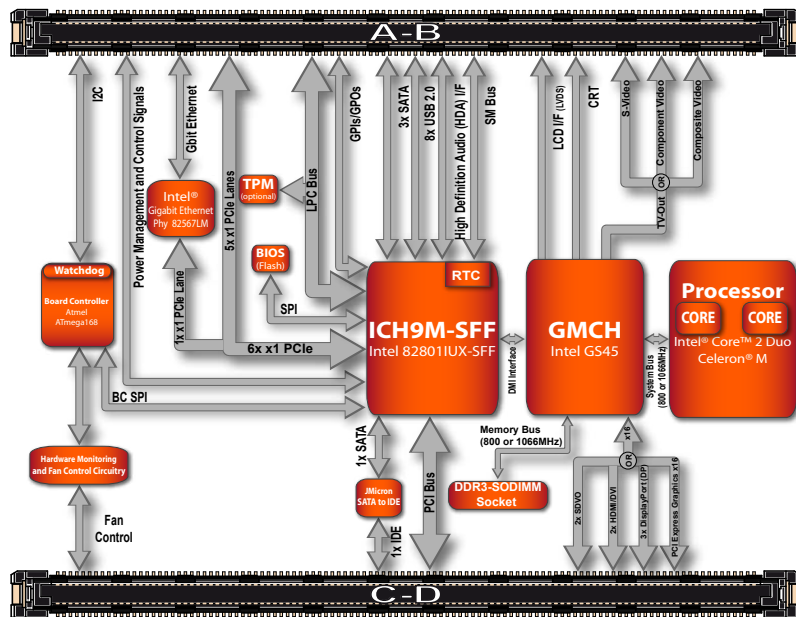
Single channel DDR3 memory up to 4GB with 1067MHz



<b>Formfactor</b>	<b>COM Express™ Compact, (95 x 95 mm), Type II Connector Layout</b>
<b>CPU</b>	Intel® Core™ 2 Duo SU9300, 1.20 GHz (3M cache, 800 MHz FSB, TDP 10W) Intel® Core™ 2 Duo SL9400, 1.86 GHz (6M cache, 1066 MHz FSB, TDP 17W) Intel® Celeron® M ULV 722, 1.20 GHz (1M cache, 800 MHz FSB, TDP 5.5W) Intel® Celeron® M ULV 723, 1.20 GHz (1M cache, 800 MHz FSB, TDP 10W)
<b>DRAM</b>	SO-DIMM DDR3 1067/800 MHz, up to 4 GByte
<b>Chipset</b>	Graphics & Memory Controller Hub: Intel® GS45 I/O Controller Hub: Intel® 82801IUX (ICH9ME-SFF)
<b>Ethernet</b>	Intel® 82567LM Gigabit Ethernet Phy
<b>I/O Interfaces</b>	5x PCI Express™ lanes, PCI Express Graphics (PEG x16), 3x Serial ATA® (AHCI) supporting RAID 0/1, 1x EIDE (UDMA-66/100) optional, 2x Express-Card® (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)
<b>Sound</b>	Digital High Definition Audio Interface with support for multiple audio codecs
<b>Graphics</b>	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® DVM 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
<b>LVDS</b>	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
<b>DisplayPort (DP)</b>	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
<b>HDMI</b>	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
<b>CRT Interface</b>	300 MHz RAMDAC, resolutions up to QXGA
<b>AUX Output</b>	Supports two SDVO Ports multiplexed with the PCI Express Graphics interface
<b>TV Out</b>	Onboard TV encoder, supports HDTV (420p, 720p and 1080i), supports component and S-video
<b>congatec Board Controller</b>	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
<b>Embedded BIOS Features</b>	OEM Logo, OEM CMOS Defaults, LCD Control, Display Auto Detection, Backlight Control, Flash Update, Based on AMIBIOS®
<b>Security</b>	The conga-CS45 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.
<b>Power Management</b>	ACPI 3.0 with battery support
<b>Operating Systems</b>	Microsoft® Windows7, Microsoft® Windows XP, Microsoft® Windows® embedded Standard, Linux 2.6, QNX 6.x
<b>Power Consumption</b>	Typ. application: TBD W @ 12V, see manual for full details, CMOS Battery Backup
<b>Temperature</b>	Operating: 0 .. +60°C Storage: -20 .. +80°C
<b>Humidity</b>	Operating: 10 - 90% r. H. non cond. Storage: 5 - 95% r. H. non cond.
<b>Size</b>	95 x 95 mm (3.74" x 3.74")

# Block Diagram conga-CS45

# Order Information conga-CS45



Article	PN	Description
conga-CS45/SL9400	055520	Intel Core2Duo SL9400, CPU with 1.86GHz, 6 MB L2-Cache and 1066 MHz FSB
conga-CS45/SU9300	055535	Intel Core2Duo SU9300, CPU with 1.2 GHz, 3 MB L2-Cache and 800 MHz FSB.
conga-CS45/723	055524	Intel Celeron M 723, ULV-CPU with 1.2 GHz, 1 MB L2-Cache and 800 MHz FSB.
conga-CS45/722	055525	Intel Celeron M 722, ULV-CPU with 1.2 GHz, 1 MB L2-Cache and 800 MHz FSB
conga-CS45/HSP-B	055530	Heatspreader, Standoff with 2.7mm bore hole.
conga-CS45/HSP-T	055540	Heatspreader, Standoff with M2.5mm thread
DDR3-SODIMM-1066 (1GB)	068750	DDR3-SODIMM memory module with 1 GB RAM (1066 MT/s)
DDR3-SODIMM-1066 (2GB)	068760	DDR3-SODIMM memory module with 2 GB RAM (1066 MT/s)
DDR3-SODIMM-1066 (4GB)	068765	DDR3-SODIMM memory module with 4 GB RAM (1066 MT/s)

## 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-MCB/COM Express	020715	Mini Carrier Board for COM Express with smart battery manager interface for mobile applications.
conga-MCB/COM Express Cable Kit	14000040	Complete cable kit for the COM Express mini carrier board
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 to convert the chipset graphic ports Port-B, Port-C and Port-D to the HDMI or DisplayPort Interface
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