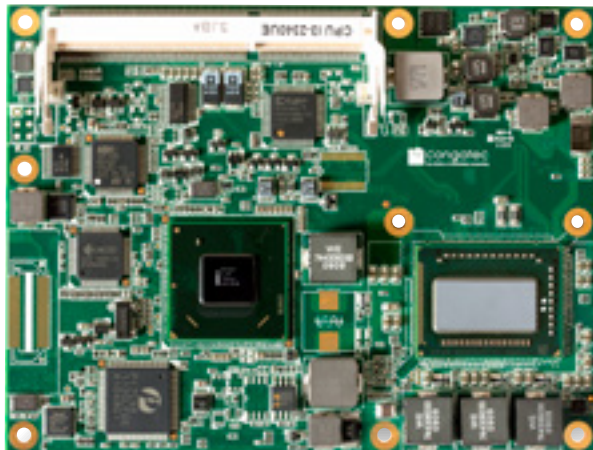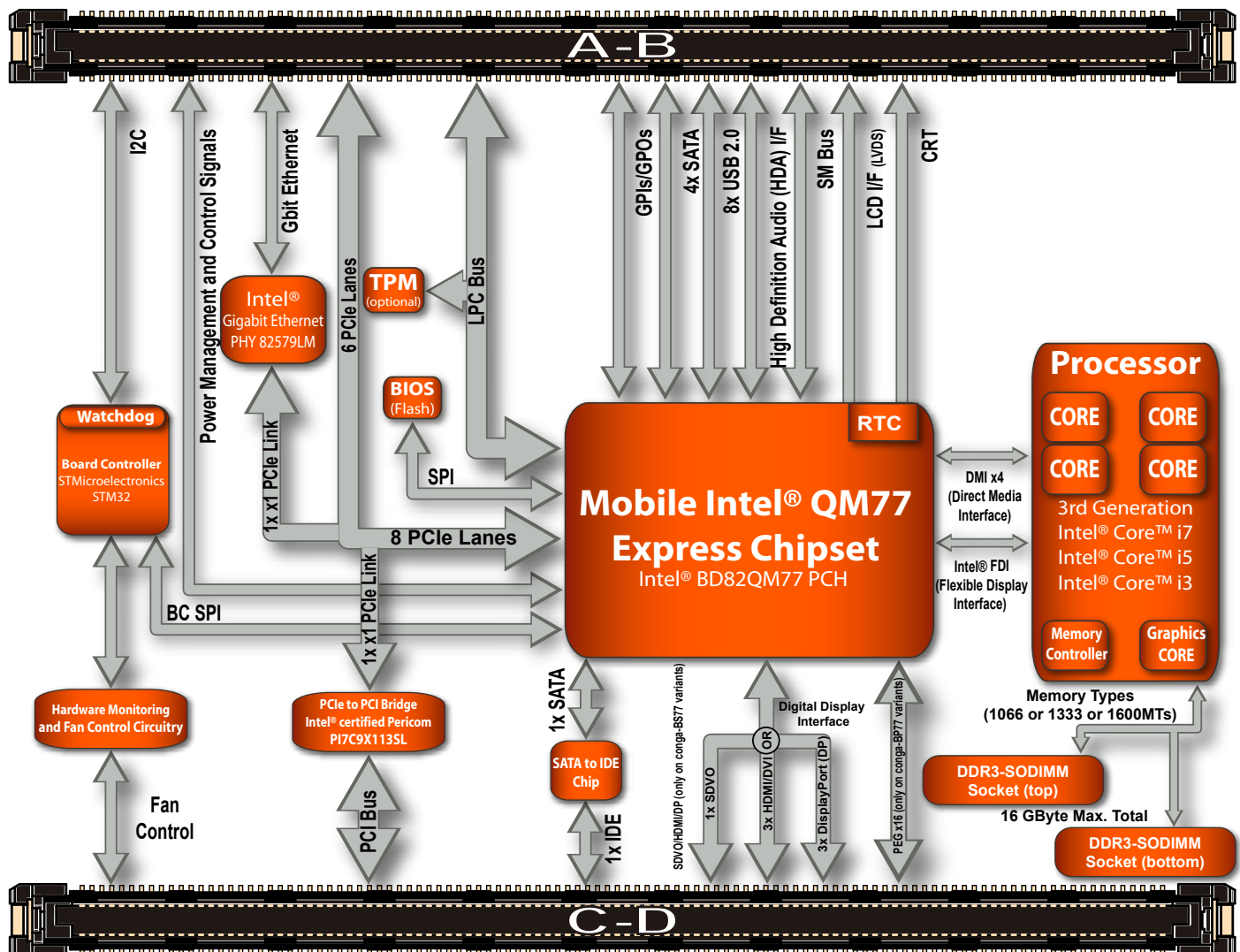# conga-BS77

- Highest Performance COM Express Type 2
- 3rd Generation Intel® Core™ processor-based platform
- Better transcode HD-HD, HD Video Conferencing
- Improved Graphics Performance, DirectX®11

Formfactor	COM Express™ Basic | (95 x 125 mm) | Type II Connector Layout
CPU	Intel® Core™ i7-3615QE 4x 2.3 GHz 6MB L2 cache TDP 45W Intel® Core™ i7-3612QE 4x 2.1 GHz 6MB L2 cache TDP 35W Intel® Core™ i7-3555LE 2x 2.5 GHz 4MB L2 cache TDP 25W Intel® Core™ i7-3517UE 2x 1.7 GHz 4MB L2 cache TDP 17W Intel® Core™ i5-3610ME 2x 2.7 GHz 3MB L2 cache TDP 35W Intel® Core™ i3-3120ME 2x 2.4 GHz 3MB L2 Cache TDP 35W Intel® Core™ i3-3217UE 2x 1.6 GHz 3MB L2 Cache TDP 17W Intel® Celeron® 1020E 2x 2.2 GHz 2 MB Cache TDP 35W Intel® Celeron® 1047UE 2x 1.4 GHz 2 MB Cache TDP 17W Intel® Celeron® 927UE 1x 1.5 GHz 1 MB Cache TDP 17W Integrated dual channel memory controller | up to 25,6 GByte/sec. memory bandwidth | Integrated Intel® HD Graphics with dynamic frequency up to 1100 MHz | Intel® Clear Video HD Technology
DRAM	2 Sockets | SO-DIMM DDR3 1600 MHz | up to 16 GByte
Chipset	Mobile Intel® 7 Series Chipset: Intel® QM77/ HM76
Ethernet	Intel® 82579 GbE LAN Controller with AMT 8.0 support (optional)
I/O Interfaces	6x PCI Express™ GEN 2.0 lanes | 4x Serial ATA® (AHCI) with RAID support | 1x EIDE (UDMA-66/100) optional | 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	Intel® Flexible Display Interface (FDI) | OpenGL 3.1 and DirectX11 support | Three simultaneous independet displays. High performance hardware MPEG-2 decoding | WMV9 (VC-1) and H.264 (AVC) support Blu-ray support @ 40 MBit/s | hardware motion compensation
LVDS	Dual channel LVDS transmitter | supports flat panels 2x24 Bit interface | VESA mappings | resolutions up to 1920x1200 | Automatic Panel | Detection via EDID/EPI
DisplayPort	3x DisplayPorts 1.1 | max. resolution 2560x1600
HDMI or DVI	3x ports shared with Display Port
CRT Interface	340.4 MHz RAMDAC | resolutions up to QXGA (2048x1536)
SDVO	1 x Intel compliant SDVO ports with 200MPixel/sec. Supports external DVI
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	AMI Aptio® UEFI 2.x firmware | 8 MByte serial SPI firmware flash
Security	The conga-BS77 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® Windows 8 | Microsoft® Windows 7 | Microsoft® Windows® embedded Standard | Microsoft® Windows XP | Linux
Power Consumption	Typ. application: Processor TDP: 17 .. 25 W | see manual for full details
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″)

conga-BS77 | Block diagram

A–B

I2C

Power Management and Control Signals

Gbit Ethernet

6 PCIe Lanes

LPC Bus

GPIs/GPOs

4x SATA

8x USB 2.0

High Definition Audio (HDA) I/F

SM Bus

LCD I/F (LVDS)

CRT

Intel®
Gigabit Ethernet
PHY 82579LM

TPM
(optional)

BIOS
(Flash)

Watchdog

Board Controller
STMicroelectronics
STM32

SPI

1x x1 PCIe Link

8 PCIe Lanes

BC SPI

1x x1 PCIe Link

RTC

Mobile Intel® QM77
Express Chipset
Intel® BD82QM77 PCH

DMI x4
(Direct Media
Interface)

Intel® FDI
(Flexible Display
Interface)

Processor

CORE   CORE

CORE   CORE

3rd Generation
Intel® Core™ i7
Intel® Core™ i5
Intel® Core™ i3

Memory
Controller

Graphics
CORE

Memory Types
(1066 or 1333 or 1600MTs)

Hardware Monitoring
and Fan Control Circuitry

PCIe to PCI Bridge
Intel® certified Pericom
PI7C9X113SL

Fan
Control

PCI Bus

1x SATA

SATA to IDE
Chip

1x IDE

SDVO/HDMI/DP (only on conga-BS77 variants)

1x SDVO

3x HDMI/DVI (OR)

Digital Display
Interface

3x DisplayPort (DP)

PEG x16 (only on conga-BP77 variants)

DDR3-SODIMM
Socket (top)

16 GByte Max. Total

DDR3-SODIMM
Socket (bottom)

C–D

congatec

www.congatec.com

Article	PN	Description
conga-BS77/i7-3612QE	046601	Intel® Core™ i7-3612QE quad core processor with 2.1GHz | 6MB L3 cache and 1600MT/s dual channel DDR3 memory interface
conga-BS77/i7-3555LE	046602	Intel® Core™ i7-3555LE dual core processor with 2.5GHz | 4MB L3 cache and 1600MT/s dual channel DDR3 memory interface
conga-BS77/i7-3517UE	046603	Intel® Core™ i7-3517UE dual core processor with 1.7GHz | 4MB L3 cache and 1600MT/s dual channel DDR3 memory interface
conga-BS77/i5-3610ME	046604	Intel® Core™ i5-3610ME dual core processor with 2.7GHz | 3MB L3 cache and 1600MT/s dual channel DDR3 memory interface
conga-BS77/i3-3217UE	046605	Intel® Core™ i3-3217UE dual core processor with 1.6GHz | 3MB L3 cache and 1600MT/s dual channel DDR3 memory interface
conga-BS77/i7-3615QE	046606	Intel® Core™ i7-3615QE quad core processor with 2.3GHz | 6MB L3 cache and 1600MT/s dual channel DDR3 memory interface
conga-BS77/i3-3120ME	046607	Intel® Core™ i3-3120ME dual core processor with 2.4GHz | 3MB L3 cache and 1600MT/s dual channel DDR3 memory interface
conga-BS77/1047UE	046608	Intel® Celeron™ 1047UE dual core processor with 1.4GHz | 2MB L3 cache and 1333MT/s dual channel DDR3 memory interface
conga-BS77/927UE	046609	Intel® Celeron™ 927UE single core processor with 1.5GHz | 1MB L3 cache and 1333MT/s dual channel DDR3 memory interface
conga-BS77/1020E	046610	Intel® Celeron™ 1020E dual core processor with 2.2GHz | 2MB L3 cache and 1333MT/s dual channel DDR3 memory interface
conga-BS67/HSP-HP-B	046170	Standard heatspreader for high performance COM Express modules conga-BS67 | BS77 and BP77 with integrated heat pipes. All standoffs are with 2.7mm bore hole
conga-BS67/HSP-HP-T	046171	Standard heatspreader for high performance COM Express modules conga-BS67 | BS77 and BP77 with integrated heat pipes. All standoffs are M2.5mm thread
conga-BS67/CSP-HP-B	046172	Standard passive cooling solution for high performance COM Express modules conga-BS67 | BS77 and BP77 with integrated heat pipes | 15mm silver fins and 20mm overall heat sink height. All standoffs are with 2.7mm bore hole
conga-BS67/CSP-HP-T	046173	Standard passive cooling solution for high performance COM Express modules conga-BS67 | BS77 and BP77 with integrated heat pipes | 15mm silver fins and 20mm overall heat sink height. All standoffs are M2.5mm thread
conga-BS67/CSA-HP-B	046174	Standard active cooling solution for high performance COM Express modules conga-BS67 | BS77 and BP77 with integrated heat pipes 15mm silver fins | 20mm overall heat sink height and integrated 12V fan. All standoffs are with 2.7mm bore hole
conga-BS67/CSA-HP-T	046175	Standard active cooling solution for high performance COM Express module conga-BS67 | BS77 and BP77 with integrated heat pipes 15mm silver fins | 20mm overall heat sink height and integrated 12V fan. All standoffs are M2.5mm thread
DDR3L-SODIMM-1600 (2GB)	068755	DDR3L SODIMM memory module with 1600 MT/s (PC3L-12800S) and 2GB RAM
DDR3L-SODIMM-1600 (4GB)	068756	DDR3L SODIMM memory module with 1600 MT/s (PC3L-12800S) and 4GB RAM
DDR3L-SODIMM-1600 (8GB)	068757	DDR3L SODIMM memory module with 1600 MT/s (PC3L-12800S) and 8GB RAM

Accessories

Article	PN	Description
conga-CEVAL	065749	Evaluation Carrier Board for COM Express Type 2 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