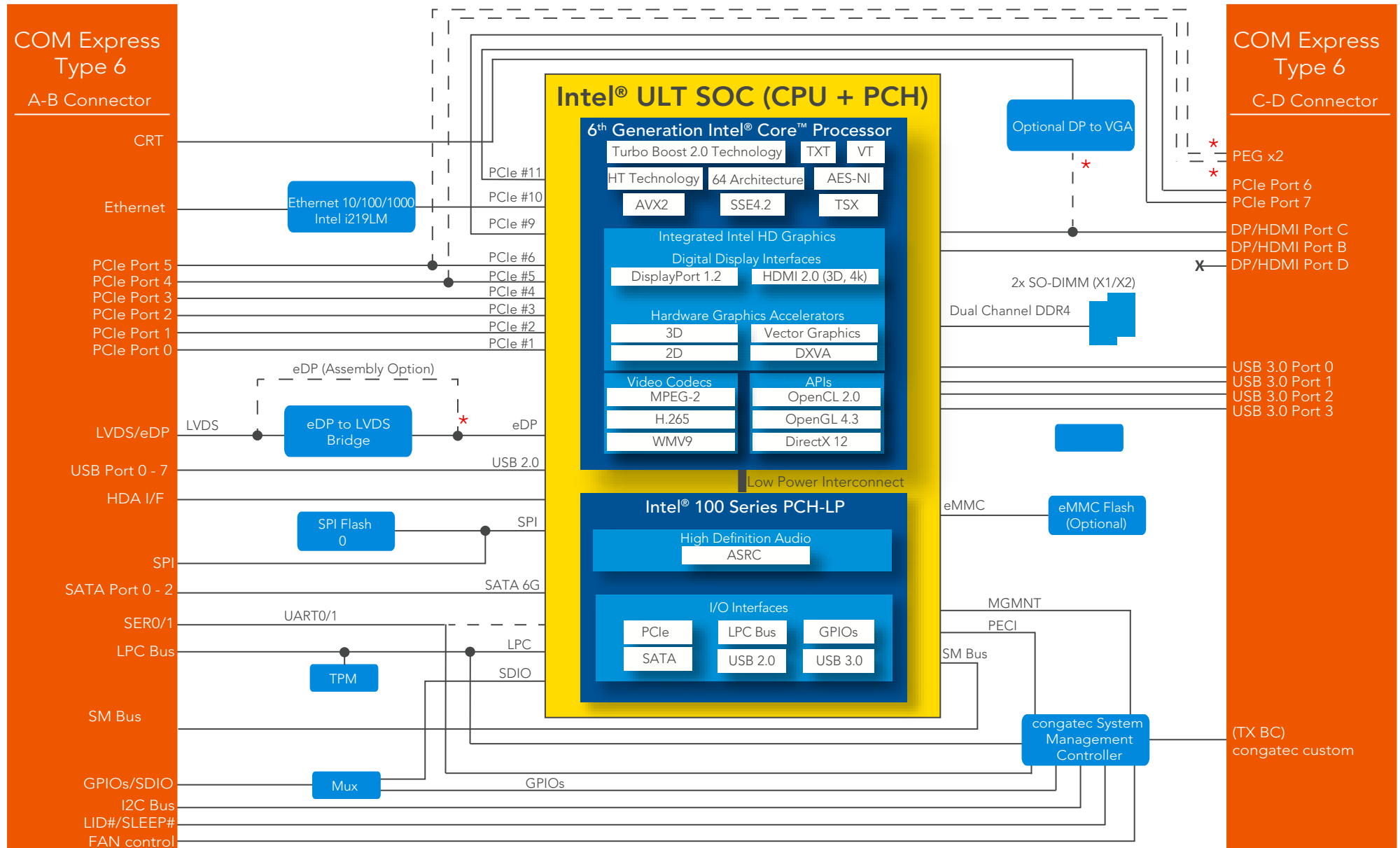# FAST AND COMPACT
conga-TC170

- 6th Generation Intel® Core™ SOC processor

- Intel® Gen9 HD Graphics with HEVC (H.265) support

- Low power consumption (TDP 15W, cTDP 8.5W)

- Up to 32 GByte dual channel DDR4 memory

- COM Express Compact Type 6 module 95x95 mm²

COM Express®

Formfactor	COM Express® Compact, (95 x 95 mm), Type 6 Connector Pinout					
CPU	Intel® Core™ i7-6600U	2.6 GHz Dual Core	Turbo Boost 3.4 GHz	4 MB Cache	TDP 15W	GT2
	Intel® Core™ i5-6300U	2.4 GHz Dual Core	Turbo Boost 3.0 GHz	3 MB Cache	TDP 15W	GT2
	Intel® Core™ i3-6100U	2.3 GHz Dual Core		3 MB Cache	TDP 15W	GT2
	Intel® Celeron® 3955U	2.0 GHz Dual Core		2 MB Cache	TDP 15W	GT1

	Intel® Turbo Boost Technology	Intel® Hyper-Threading Technology (HT)	Intel® Advanced Vector Extensions 2.0 (AVX2) Intel® Advanced Encryption Standard New Instructions (AES-NI)	Integrated dual channel memory controller up to 34,1 GByte/sec. memory bandwidth	Integrated Intel® Gen9 HD Graphics with frequency up to 1.05 GHz	Intel® Clear Video HD Technology	Intel® Virtualization Technology (VT)	Intel® Trusted Execution Technology (TXT)	Intel® Secure Key
DRAM	2 Sockets, SO-DIMM DDR4 up to 2133 MT/s and 32 GByte dual channel
Chipset	Integrated PCH-LP
Ethernet	Intel® i219-LM GbE LAN Controller with AMT 11 support
I/O Interfaces	8x PCI Express GEN. 3.0 lanes	3x Serial ATA® Gen 3 (can be config. as RAID)	4x USB 3.0 (XHCI)	8x USB 2.0 (XHCI)	LPC bus (no DMA) I²C bus (fast mode, 400 kHz, multi-master)	2x UART
Sound	Digital High Definition Audio Interface with support for multiple audio codecs
Graphics	Intel® Gen9 HD Graphics Engine with OpenCL 2.0, OpenGL 4.3 and DirectX12 (for Windows 10) support	up to three independent displays: HDMI 1.4a / DisplayPort 1.2 / eDP 1.3	High performance hardware MPEG-2 decoding	WMV9 (VC-1) and H.265 (HEVC) support Blu-ray support @ 40 MBit/s	HEVC, VP8, VP9 and VDENC encoding
LVDS (eDP optional)	Dual channel LVDS transmitter, Supports flat panels 2x24 Bit interface	VESA and openLDI colour mappings	resolutions up to 1920x1200 Automatic Panel Detection via EDID/EPI
Digital Display Interface (DDI)	2x TMDS (HDMI) / DisplayPort 1.2 with support for Multi-Stream Transport (MST)	resolutions up to 4k	VGA (optional)
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	8/16 MByte serial SPI firmware flash
Security	The conga-TC170 can be optionally equipped with a discrete "Trusted Platform Module" (TPM 1.2 / 2.0). 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 4.0 with battery support
Operating Systems	Microsoft® Windows 10	Microsoft® Windows 10 IoT Enterprise	Microsoft® Windows 8	Microsoft® Windows 7	Linux	Microsoft® Windows embedded Standard
Power Consumption	See User's Guide 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 95 mm (3.74" x 3.74")

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conga-TC170 | Block diagram

COM Express Type 6 — A-B Connector

- CRT
- Ethernet
- PCIe Port 5
- PCIe Port 4
- PCIe Port 3
- PCIe Port 2
- PCIe Port 1
- PCIe Port 0
- LVDS/eDP
- USB Port 0 - 7
- HDA I/F
- SPI
- SATA Port 0 - 2
- SER0/1
- LPC Bus
- SM Bus
- GPIOs/SDIO
- I2C Bus
- LID#/SLEEP#
- FAN control

Ethernet 10/100/1000 Intel i219LM

eDP to LVDS Bridge

eDP (Assembly Option)

LVDS   eDP   *

SPI Flash 0

TPM

Mux

Intel® ULT SOC (CPU + PCH)

6th Generation Intel® Core™ Processor

- Turbo Boost 2.0 Technology | TXT | VT
- HT Technology | 64 Architecture | AES-NI
- AVX2 | SSE4.2 | TSX

Integrated Intel HD Graphics

Digital Display Interfaces
- DisplayPort 1.2 | HDMI 2.0 (3D, 4k)

Hardware Graphics Accelerators
- 3D | Vector Graphics
- 2D | DXVA

Video Codecs
- MPEG-2
- H.265
- WMV9

APIs
- OpenCL 2.0
- OpenGL 4.3
- DirectX 12

Low Power Interconnect

Intel® 100 Series PCH-LP

High Definition Audio
- ASRC

I/O Interfaces
- PCIe | LPC Bus | GPIOs
- SATA | USB 2.0 | USB 3.0

PCIe #11
PCIe #10
PCIe #9
PCIe #6
PCIe #5
PCIe #4
PCIe #3
PCIe #2
PCIe #1

USB 2.0
SPI
SATA 6G
UART0/1
LPC
SDIO

eMMC

GPIOs

Optional DP to VGA

*

2x SO-DIMM (X1/X2)
Dual Channel DDR4

eMMC Flash (Optional)

MGMNT
PECI
SM Bus

congatec System Management Controller

COM Express Type 6 — C-D Connector

- *
- PEG x2
- *
- PCIe Port 6
- PCIe Port 7
- DP/HDMI Port C
- DP/HDMI Port B
- X DP/HDMI Port D
- USB 3.0 Port 0
- USB 3.0 Port 1
- USB 3.0 Port 2
- USB 3.0 Port 3
- (TX BC) congatec custom

Note:

* Not supported by default. Only available as assembly option.

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conga-TC170 | Order Information

Article	PN	Description
conga-TC170/i7-6600U	045200	COM Express Type 6 Compact module with Intel® Core™ i7-6600U dual core processor with 2.6GHz, 4MB L2 cache, 2133MT/s dual channel DDR4 memory interface
conga-TC170/i5-6300U	045201	COM Express Type 6 Compact module with Intel® Core™ i5-6300U dual core processor with 2.4GHz, 3MB L2 cache, 2133MT/s dual channel DDR4 memory interface
conga-TC170/i3-6100U	045202	COM Express Type 6 Compact module with Intel® Core™ i3-6100U dual core processor with 2.3GHz, 3MB L2 cache , 2133MT/s dual channel DDR4 memory interface
conga-TC170/i7-6600U VGA	045208	COM Express Type 6 Compact module with Intel® Core™ i7-6600U dual core processor with 2.6GHz up to 3.4GHz, 4MB Intel® Smart Cache , GT2 graphics and 2133MT/s dual channel DDR4 memory interface (Intel Skylake-U). Integrated DisplayPort to VGA converter.
conga-TC170/3955U	045203	COM Express Type 6 Compact module with Intel® Celeron® 3955U dual core processor with 2.0GHz, 2MB L2 cache, 2133MT/s dual channel DDR4 memory interface
conga-TC170/HSP-B	045230	Standard heatspreader for COM Express modules conga-TC97, TC170 and TC175. All standoffs are with 2.7mm bore hole.
conga-TC170/HSP-T	045231	Standard heatspreader for COM Express modules conga-TC97, TC170 and TC175. All standoffs are M 2.5 threaded.
conga-TC170/CSP-B	045232	Standard passive cooling solution for COM Express modules conga-TC97, TC170 and TC175. All standoffs are with 2.7mm bore hole.
conga-TC170/CSP-T	045233	Standard passive cooling solution for COM Express modules conga-TC97, TC170 and TC175. All standoffs are M 2.5 threaded
conga-TC170/CSA-B	045234	Standard active cooling solution for COM Express modules conga-TC97, TC170 and TC175. All standoffs are with 2.7mm bore hole, 15mm fins, 18mm overall heat sink height and integrated 12V fan.
conga-TC170/CSA-T	045235	Standard active cooling solution for COM Express modules conga-TC97, TC170 and TC175. All standoffs are M 2.5 threaded, 15mm fins, 18mm overall heat sink height and integrated 12V fan.
DDR4-SODIMM-2400 (4GB)	068790	4 GByte DDR4 SODIMM memory module with 2400 MT/s
DDR4-SODIMM-2400 (8GB)	068791	8 GByte DDR4 SODIMM memory module with 2400 MT/s
DDR4-SODIMM-2400 (16GB)	068792	16 GByte DDR4 SODIMM memory module with 2400 MT/s

Article	PN	Description
conga-TEVAL	065800	Evaluation carrier board for Type 6 COM Express modules
conga-LDVI/EPI	011115	LVDS to DVI converter board for digital flat panels with onboard EEPROM
COMe-carrier-socket-5	400007	Connector for COM-Express carrier boards, height 5mm, packing unit 4 pieces
COMe-carrier-socket-8	400004	Connector for COM-Express carrier boards, height 8mm, packing unit 4 pieces

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