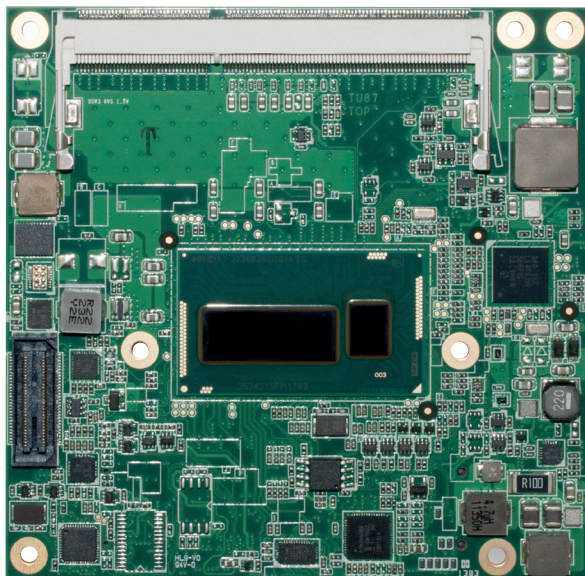


# FAST AND COMPACT

## conga-TC87

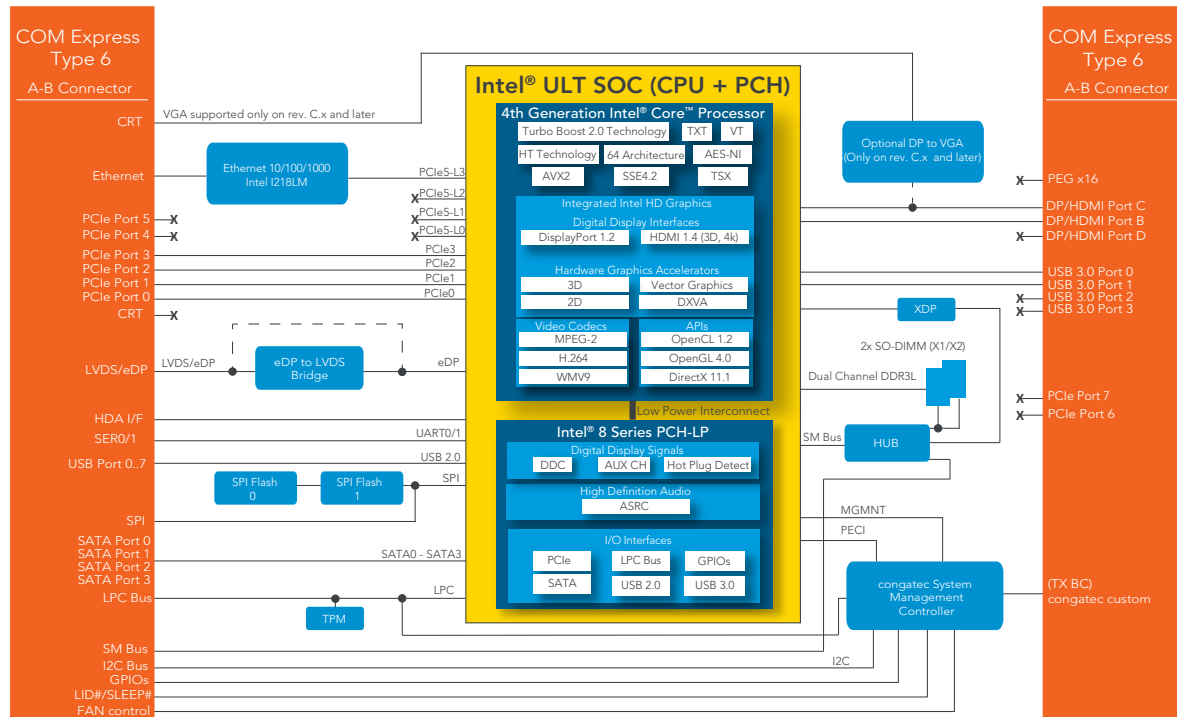


- 4<sup>th</sup> Gen. Intel® Core™ i7 dual core processor
- 3x DisplayPort 1.2, up to 4k resolution
- Intel® AVX 2.0 Vector extension for improved floating point computing
- COM Express Compact Type 6 module

**COM**  **Express®**

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                     |                     |           |                                                           |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------------------|-----------|-----------------------------------------------------------|
| Formfactor                      | COM Express® Compact, (95 x 95 mm), Type 6 Connector Layout                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                     |                     |           |                                                           |
| CPU                             | Intel® Core™ i7-4650U                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1.7 GHz Dual Core   | Turbo Boost 3.3 GHz | cache 4MB | 15W TDP configurable to 11.5W, AES-NI, AVX2, AMT 9.5, TXT |
|                                 | Intel® Core™ i5-4300U                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1.9 GHz Dual Core   | Turbo Boost 2.9 GHz | cache 3MB | 15W TDP configurable to 11.5W, AES-NI, AVX2, AMT 9.5, TXT |
|                                 | Intel® Core™ i3-4010U                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1.7 GHz Single Core |                     | cache 3MB | 15W TDP AES-NI, AVX2                                      |
|                                 | Intel® Celeron® 2980U                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1.6 GHz Single Core |                     | cache 3MB | 15W TDP                                                   |
|                                 | Intel® Turbo Boost Technology, Intel® Hyper-Threading Technology (Intel® HT Technology), Intel® Advanced Vector Extensions 2.0 (Intel® AVX2), Intel® Advanced Encryption Standard New Instructions (Intel® AES-NI), Integrated dual channel memory controller, up to 25.6 GByte/sec. memory bandwidth, Integrated Intel® HD Graphics 5000 series with dynamic frequency up to xxGHz, Intel® Clear Video HD Technology, Intel® Virtualization Technology (Intel® VT), Intel® Trusted Execution Technology (Intel® TXT), Intel® Streaming SIMD Extensions 4.2 (Intel® SSE4.2), PCLMULQDQ Instruction, Intel® Secure Key, Intel® Transactional Synchronization Extensions (Intel® TSX) |                     |                     |           |                                                           |
| DRAM                            | 2 Sockets, SO-DIMM DDR3L@1.35V up to 1600MT/s and 16GByte                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                     |                     |           |                                                           |
| Chipset                         | Integrated mobile Intel® 8 Series Chipset: Intel® QM87 / HM86 @ planned Celeron variants                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                     |                     |           |                                                           |
| Ethernet                        | Intel® I218-LM GbE LAN Controller with AMT 9.5 support                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                     |                     |           |                                                           |
| I/O Interfaces                  | 4x PCI Express™ GEN. 2.0 lanes, 4x Serial ATA® RAID 0/1/5/10 support, 2x ExpressCard®, 2x USB 3.0 (XHCI), 8x USB 2.0 (EHCI), LPC bus, I²C bus (fast mode, 400 kHz, multi-master)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                     |                     |           |                                                           |
| Sound                           | Digital High Definition Audio Interface with support for multiple audio codecs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                     |                     |           |                                                           |
| Graphics                        | Next Generation Intel® HD Graphics with OpenCL 1.2, OpenGL 4.0 and DirectX11.1 support; up to three independent displays: HDMI 1.4, DVI, DisplayPort 1.2; High performance hardware MPEG-2 decoding, WMV9 (VC-1) and H.264 (AVC) support Blu-ray support @ 40 MBit/s                                                                                                                                                                                                                                                                                                                                                                                                                |                     |                     |           |                                                           |
| LVDS (eDP optional)             | Dual channel LVDS transmitter, Supports flat panels 2x24 Bit interface, VESA mappings, resolutions up to 1920x1200, Automatic Panel Detection via EDID/EPI                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                     |                     |           |                                                           |
| Digital Display Interface (DDI) | 2x TMDS (HDMI) / DisplayPort 1.2a with daisy chaining, resolutions up to 4k                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                     |                     |           |                                                           |
| 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-TC87 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 4.0 with battery support                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                     |                     |           |                                                           |
| Operating Systems               | Microsoft® Windows 8, Microsoft® Windows 7, Linux, Microsoft® Windows embedded Standard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                     |                     |           |                                                           |
| Power Consumption               | Typ. application: tbd., see User's Guide for full details, CMOS Battery Backup<br>Ultra low standby power, support for CPU power states up to C10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                     |                     |           |                                                           |
| 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")                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                     |                     |           |                                                           |

# conga-TC87 | Block diagram



# conga-TC87 | Order Information

| Article                            | PN     | Description                                                                                                                                                                                                   |
|------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| conga-TC87/i7-4650U                | 046901 | COM Express Type 6 Compact module with Intel® Core™ i7-4650U dual core processor with 1.7GHz, 4MB L2 cache and 1600MT/s dual channel DDR3L memory interface.                                                  |
| conga-TC87/i5-4300U                | 046902 | COM Express Type 6 Compact module with Intel® Core™ i5-4300U dual core processor with 1.9GHz, 3MB L2 cache and 1600MT/s dual channel DDR3L memory interface.                                                  |
| conga-TC87/i3-4010U                | 046903 | COM Express Type 6 Compact module with Intel® Core™ i3-4010U dual core processor with 1.7GHz, 3MB L2 cache and 1600MT/s dual channel DDR3L memory interface.                                                  |
| conga-TC87/2980U                   | 046904 | COM Express Type 6 Compact module with Intel® Celeron® Processor 2980U dual core processor with 1.6GHz, 2MB L2 cache and 1600MT/s dual channel DDR3L memory interface.                                        |
| conga-TC87/i5-4300U VGA            | 046906 | COM Express Type 6 Compact module with Intel® Core™ i5-4300U dual core processor with 1.9GHz, 3MB L2 cache and 1600MT/s dual channel DDR3L memory interface. Features legacy VGA display interface.           |
| conga-TC87/i3-4010U VGA            | 046907 | COM Express Type 6 Compact module with Intel® Core™ i3-4010U dual core processor with 1.7GHz, 3MB L2 cache and 1600MT/s dual channel DDR3L memory interface. Features legacy VGA display interface.           |
| conga-TC87/2980U VGA               | 046908 | COM Express Type 6 Compact module with Intel® Celeron® Processor 2980U dual core processor with 1.6GHz, 2MB L2 cache and 1600MT/s dual channel DDR3L memory interface. Features legacy VGA display interface. |
| TC87/HSP-B                         | 046953 | Standard heatspreader for COM Express module conga-TC87. All standoffs are with 2.7mm bore hole.                                                                                                              |
| TC87/HSP-T                         | 046954 | Standard heatspreader for COM Express module conga-TC87. All standoffs are M 2.5 threaded.                                                                                                                    |
| TC87/CSP-B                         | 046951 | Standard passive cooling solution for COM Express module conga-TC87. All standoffs are with 2.7mm bore hole.                                                                                                  |
| TC87/CSP-T                         | 046952 | Standard passive cooling solution for COM Express module conga-TC87. All standoffs are M 2.5 threaded                                                                                                         |
| 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                                                                                                                                           |
| <b>Accessories</b>                 |        |                                                                                                                                                                                                               |
| 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                                                                                                                                       |
| COM-Express-carrier-board-Socket-5 | 400007 | Connector for COM-Express carrier boards, height 5mm, packing unit 4 pieces                                                                                                                                   |
| COM-Express-carrier-board-Socket-8 | 400004 | Connector for COM-Express carrier boards, height 8mm, packing unit 4 pieces                                                                                                                                   |

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