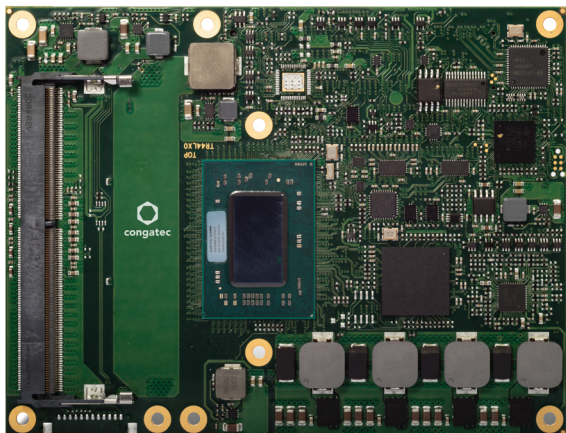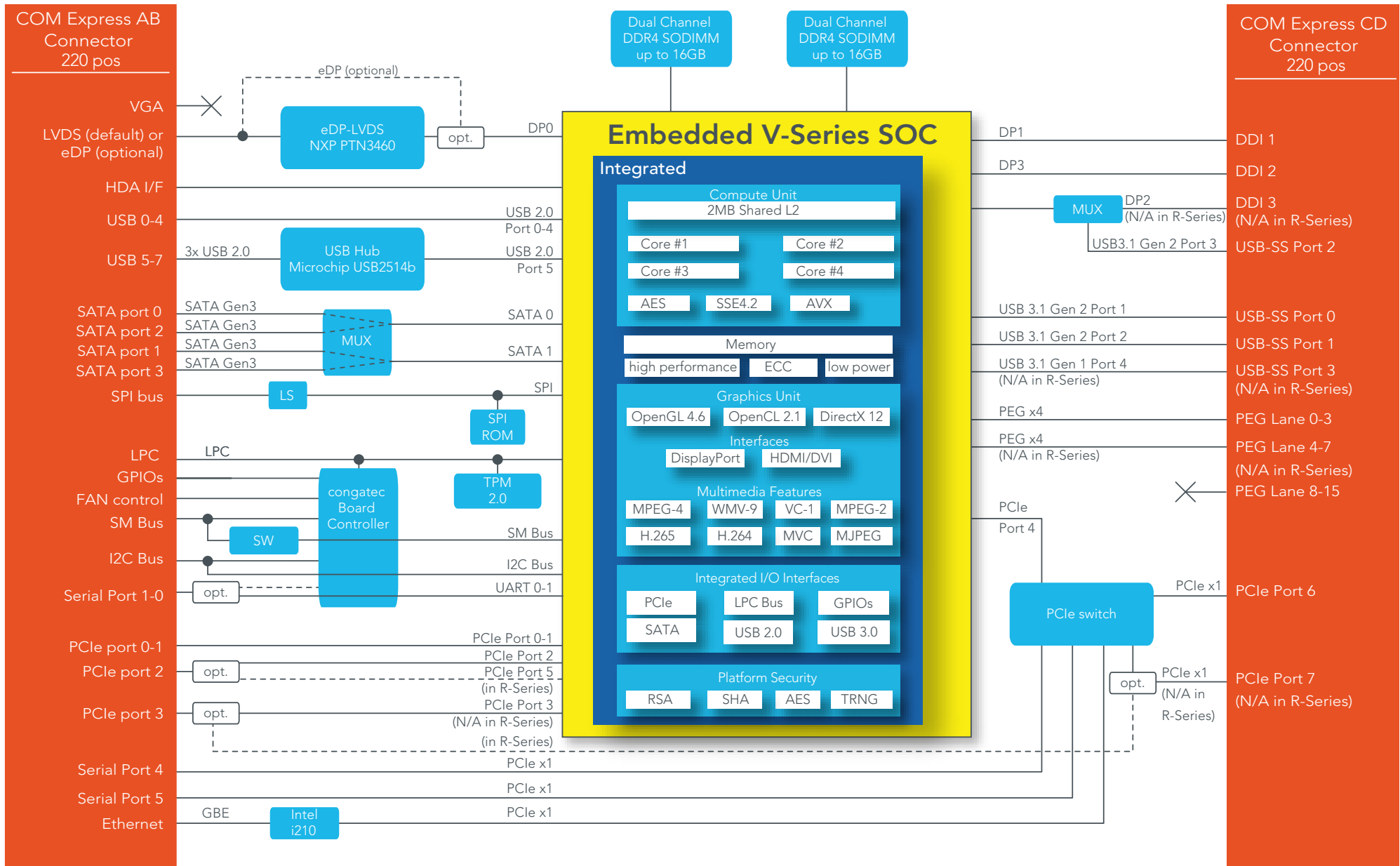# HIGH SPEED GRAPHICS
conga-TR4

- AMD's Next Gen V1000 processor Series
- "Zen" core architecture with up to 4 cores
- Improved graphic performance with "Vega" GPU
- Up to 32GByte dual channel DDR4 3200MT/s memory
- TDP scalable down to 12W
- up to 4 x 4K DP / eDP

COM ✦ Express®

Formfactor	COM Express® Basic | (95 x 125 mm) | Type 6 Connector Layout
CPU	AMD V1000 processor variants

CPU				
AMD V1807B	4x 3.35 .. 3.75 GHz	L2 cache 2MB shared	AMD Radeon™ Vega with 11 CU	TDP 35 W, conf. to 54 W
AMD V1756B	4x 3.25 .. 3.6 GHz	L2 cache 2MB shared	AMD Radeon™ Vega with 8 CU	TDP 35 W, conf. to 54 W
AMD V1605B	4x 2.0 .. 3.6 GHz	L2 cache 2MB shared	AMD Radeon™ Vega with 8 CU	TDP 12 W, conf. to 25W
AMD V1202B	2x 2.5 .. 3.4 GHz	L2 cache 1MB shared	AMD Radeon™ Vega with 3 CU	TDP 12 W, conf. to 25 W
AMD V1404I	TBD	L2 cache 2MB shared	AMD Radeon™ Vega with 6 CU	TDP 15 W

DRAM	2 Sockets, SO-DIMM DDR4 up to 32 GByte with ECC
Chipset	Integrated in SOC (single-chip)
Ethernet	Gigabit Ethernet
I/O Interfaces	4x PCI Express™ 3.0 lanes | 4x PCI Express™ 2.0 lanes | 1x PEG 3.0 x8 | 3x USB 3.1 Gen2 | 1x USB 3.1 Gen1 | 8x USB 2.0 2x SATA® 6 Gb/s | I²C bus (fast mode, 400 kHz, multi-master) |SD | LPC Bus | SPI | SM-Bus | 2x UART
Sound	High Definition Audio Interface
Graphics	Integrated AMD Radeon™ Graphics supports DirectX 12 | OpenGL 4.6 and OpenCL™ 2.1 | up to 3 Simultaneous Displays Unified Video Decoder 6 (H.265, H.264, MVC, MPEG4, MPEG2, VC-1, WMV and MJPEG) Video Compression Engine 3.1 (dual, H.264, SVC)
LVDS / eDP	18/24-bit Single/Dual Channel LVDS Interface (default) or 1x eDP (optional) | Resolutions up to 1920X1200@60Hz | VESA standard or JEIDA data mapping | Automatic Panel Detection via EDID/EPI
Digital Display Interface	3x DisplayPort 1.2/ HDMI 2.0 supporting 4K @60Hz
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 | Backlight
Embedded BIOS Features	AMI AptioV® UEFI 2.x firmware | 8 MByte serial SPI firmware flash
Security	The conga-TR4 offers a discrete TPM 2.0 (Infineon SLB9665). This TPM includes coprocessors to calculate efficient hash and RSA algorithms with key lengths up to 2048 bits as well as a real random number generator. Security sensitive applications like gaming and e-commerce will benefit also with improved authentication, integrity and confidence levels. The conga-TR4 also offers AMD Secure Processor™.
Power Management	ACPI 5.0 with battery support
Operating Systems	Microsoft® Windows 10 | Microsoft® Windows 10 IoT Enterprise | Microsoft® Windows 10 Core Pro | Linux | Yocto | opt. Microsoft® Windows 7
Temperature	Commercial : Operating: 0 to +60°C | Operating industrial: -40 .. +85°C | Storage: -20 to +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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conga-TR4 | Block diagram

COM Express AB Connector 220 pos

- VGA
- LVDS (default) or eDP (optional)
- HDA I/F
- USB 0-4
- USB 5-7
- SATA port 0
- SATA port 2
- SATA port 1
- SATA port 3
- SPI bus
- LPC
- GPIOs
- FAN control
- SM Bus
- I2C Bus
- Serial Port 1-0
- PCIe port 0-1
- PCIe port 2
- PCIe port 3
- Serial Port 4
- Serial Port 5
- Ethernet

eDP (optional)

eDP-LVDS NXP PTN3460

opt.

DP0

USB Hub Microchip USB2514b

3x USB 2.0

USB 2.0 Port 0-4

USB 2.0 Port 5

SATA Gen3
SATA Gen3
SATA Gen3
SATA Gen3

MUX

SATA 0

SATA 1

LS

SPI

SPI ROM

LPC

congatec Board Controller

TPM 2.0

SW

SM Bus

I2C Bus

UART 0-1

opt.

PCIe Port 0-1
PCIe Port 2
PCIe Port 5 (in R-Series)
PCIe Port 3 (N/A in R-Series)
(in R-Series)

opt.

opt.

PCIe x1
PCIe x1
PCIe x1

GBE

Intel i210

Dual Channel DDR4 SODIMM up to 16GB

Dual Channel DDR4 SODIMM up to 16GB

Embedded V-Series SOC

Integrated

Compute Unit
2MB Shared L2

| Core #1 | Core #2 |
| Core #3 | Core #4 |

AES | SSE4.2 | AVX

Memory
high performance | ECC | low power

Graphics Unit
OpenGL 4.6 | OpenCL 2.1 | DirectX 12

Interfaces
DisplayPort | HDMI/DVI

Multimedia Features
MPEG-4 | WMV-9 | VC-1 | MPEG-2
H.265 | H.264 | MVC | MJPEG

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

Platform Security
RSA | SHA | AES | TRNG

MUX

PCIe switch

opt.

COM Express CD Connector 220 pos

- DP1 → DDI 1
- DP3 → DDI 2
- DP2 (N/A in R-Series) → DDI 3 (N/A in R-Series)
- USB3.1 Gen 2 Port 3 → USB-SS Port 2
- USB 3.1 Gen 2 Port 1 → USB-SS Port 0
- USB 3.1 Gen 2 Port 2 → USB-SS Port 1
- USB 3.1 Gen 1 Port 4 (N/A in R-Series) → USB-SS Port 3 (N/A in R-Series)
- PEG x4 → PEG Lane 0-3
- PEG x4 (N/A in R-Series) → PEG Lane 4-7 (N/A in R-Series)
- PEG Lane 8-15
- PCIe Port 4
- PCIe x1 → PCIe Port 6
- PCIe x1 (N/A in R-Series) → PCIe Port 7 (N/A in R-Series)

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conga-TR4 | Order Information

Article	PN	Description
conga-TR4/V1807B	041600	COM Express Type 6 Basic module with AMD embedded V-Series V1807B (Great Horned Owl) quad core processor with 3.35 GHz up to 3.75 GHz core frequency, 2MB L2 cache and 3200MT/s DDR4 SODIMM memory interface for up to 32GB. Features AMD Radeon™ Vega integrated graphics core with 11 CU. TDP 35-54W.
conga-TR4/V1756B	041601	COM Express Type 6 Basic module with AMD embedded V-Series V1756B (Great Horned Owl) quad core processor with 3.25 GHz up to 3.6 GHz core frequency, 2MB L2 cache and 3200MT/s DDR4 SODIMM memory interface for up to 32GB. Features AMD Radeon™ Vega integrated graphics core with 8 CU. TDP 35-54W.
conga-TR4/V1605B	041602	COM Express Type 6 Basic module with AMD embedded V-Series V1605B (Great Horned Owl) quad core processor with 2.0 GHz up to 3.6 GHz core frequency, 2MB L2 cache and 2400MT/s DDR4 SODIMM memory interface for up to 32GB. Features AMD Radeon™ Vega integrated graphics core with 8 CU. TDP 12-25W.
conga-TR4/V1202B	041603	COM Express Type 6 Basic module with AMD embedded V-Series V1202B (Great Horned Owl) dual core processor with 2.5 GHz up to 3.4 GHz core frequency, 1MB L2 cache and 2400MT/s DDR4 SODIMM memory interface for up to 32GB. Features AMD Radeon™ Vega integrated graphics core with 3 CU. TDP 12-25W.
conga-TR4/i-V1404I	041610	COM Express Type 6 Basic module with AMD embedded V-Series V1404I (Great Horned Owl) quad core processor with TBD GHz up to TBD GHz core frequency, 2MB L2 cache and 2400MT/s DDR4 SODIMM memory interface for up to 32GB. Features AMD Radeon™ Vega integrated graphics core with 6 CU. Industrial temperature range from -40°C to 85°C. TDP 15W.

Accessories

Article	PN	Description
TR4/HSP-HP-B	041651	Standard heatspreader for high performance COM Express module conga-TR4 with integrated heat pipes. All standoffs are with 2.7mm bore hole.
TR4/HSP-HP-T	041652	Standard heatspreader for high performance COM Express module conga-TR4 with integrated heat pipes. All standoffs are M2.5mm thread.
TR4/CSP-HP-B	041653	Standard passive cooling solution for high performance COM Express module conga-TR4 with integrated heat pipes, 15mm fins and 20mm overall heat sink height. All standoffs are with 2.7mm bore hole.
TR4/CSP-HP-T	041654	Standard passive cooling solution for high performance COM Express module conga-TR4 with integrated heat pipes, 15mm fins and 20mm overall heat sink height. All standoffs are M2.5mm thread.
TR4/CSA-HP-B	041655	Standard active cooling solution for high performance COM Express module conga-TR4 with integrated heat pipes, 15mm fins, 20mm overall heat sink height and integrated 12V fan. All standoffs are with 2.7mm bore hole.
TR4/CSA-HP-T	041656	Standard active cooling solution for high performance COM Express module conga-TR4 with integrated heat pipes, 15mm fins, 20mm overall heat sink height and integrated 12V fan. All standoffs are M2.5mm thread.
DDR4-SODIMM-2400 (4GB)	068790	4 GByte DDR4 SODIMM memory module	2400 MT/s
DDR4-SODIMM-2400 (8GB)	068791	8 GByte DDR4 SODIMM memory module	2400 MT/s
DDR4-SODIMM-2400 (16GB)	068792	16 GByte DDR4 SODIMM memory module	2400 MT/s
DDR4-SODIMM-2400 ECC (4GB)	068795	4 GByte ECC DDR4 SODIMM memory module	2400 MT/s (PC4-2400)	260 pin	supply voltage 1,2V
DDR4-SODIMM-2400 ECC (8GB)	068796	8 GByte ECC DDR4 SODIMM memory module	2400 MT/s (PC4-2400)	260 pin	supply voltage 1,2V
DDR4-SODIMM-2400 ECC (16GB)	068797	16 GByte ECC DDR4 SODIMM memory module	2400 MT/s (PC4-2400)	260 pin	supply voltage 1,2V
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-Socket-5	400007	Connector for COM Express carrier boards	height 5mm	packing unit 4 pieces
COM-Express-Carrier-Socket-8	400004	Connector for COM Express carrier boards	height 8mm	packing unit 4 pieces

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