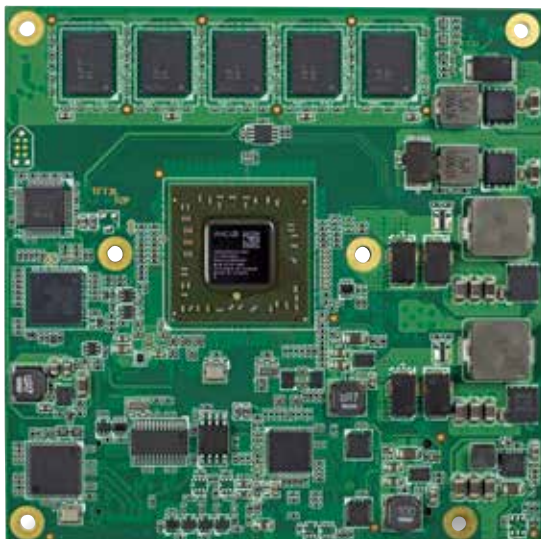


# ERROR PROTECTED RAM

## conga-TCG

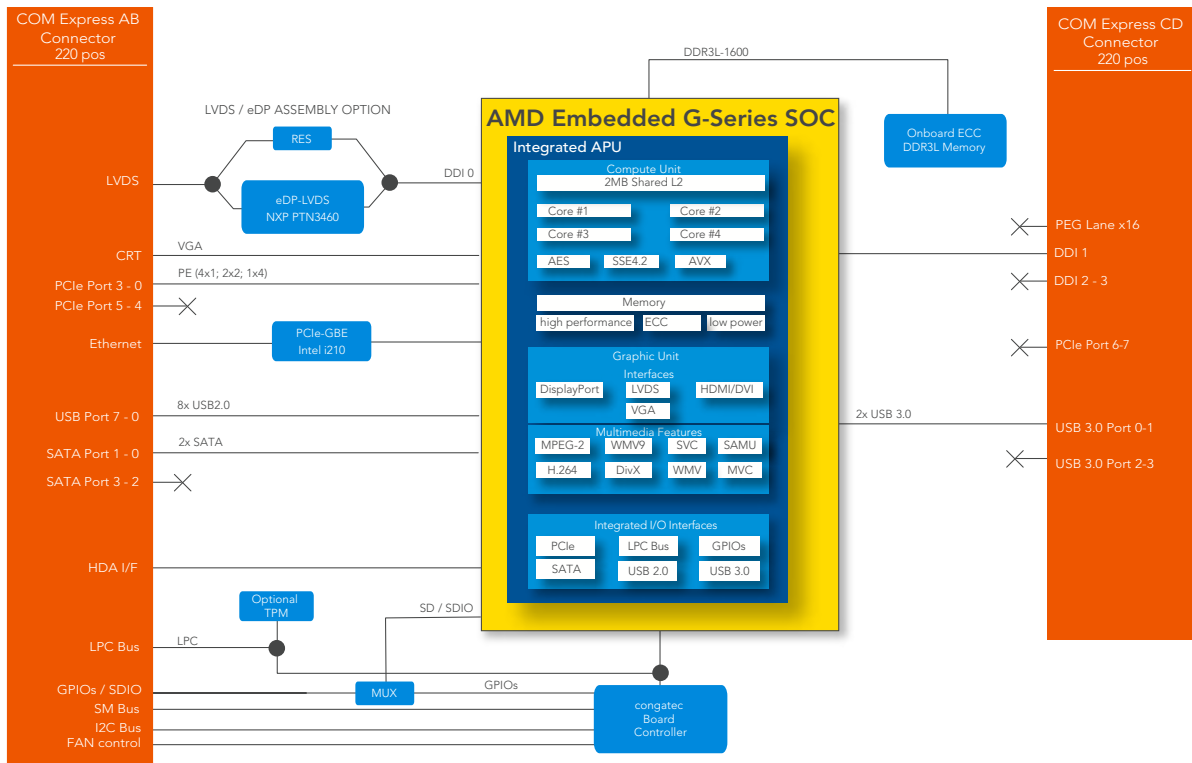


- AMD Embedded G-Series SOC APU
- Power saving „Steppe Eagle“ processors
- ECC protected memory up to 8 GByte
- High performance integrated graphics
- Extended longevity, min. 10 years

**COM**  **Express**<sup>®</sup>

Formfactor	COM Express <sup>®</sup> Compact   (95 x 95 mm)   Type 6 Connector Layout																																																										
CPU	<p>AMD Embedded G-Series SOC</p> <table border="1"> <thead> <tr> <th>Model</th> <th>Frequency</th> <th>Core</th> <th>L2 cache</th> <th>TDP</th> </tr> </thead> <tbody> <tr> <td>AMD Embedded GX-420CA</td> <td>2.0 GHz</td> <td>Quad Core</td> <td>L2 cache 2MB shared</td> <td>25W TDP</td> </tr> <tr> <td>AMD Embedded GX-415GA</td> <td>1.5 GHz</td> <td>Quad Core</td> <td>L2 cache 2MB shared</td> <td>15W TDP</td> </tr> <tr> <td>AMD Embedded GX-217GA</td> <td>1.65 GHz</td> <td>Dual Core</td> <td>L2 cache 1MB shared</td> <td>15W TDP</td> </tr> <tr> <td>AMD Embedded GX-209HA*</td> <td>1.0 GHz</td> <td>Dual Core</td> <td>L2 cache 1MB shared</td> <td>9W TDP</td> </tr> <tr> <td>AMD Embedded GX-210HA</td> <td>1.0 GHz</td> <td>Dual Core</td> <td>L2 cache 1MB shared</td> <td>9W TDP</td> </tr> <tr> <td>AMD Embedded GX-424CC</td> <td>2.4 GHz</td> <td>Quad Core</td> <td>L2 cache 2MB shared</td> <td>25W TDP</td> </tr> <tr> <td>AMD Embedded GX-411GA*</td> <td>1.1 GHz</td> <td>Quad Core</td> <td>L2 cache 2MB shared</td> <td>15W TDP</td> </tr> <tr> <td>AMD Embedded GX-412HC</td> <td>1.2 GHz   1.6 GHz (Boost)</td> <td>Quad Core</td> <td>L2 cache 2MB shared</td> <td>7W TDP</td> </tr> <tr> <td>AMD Embedded GX-212JC</td> <td>1.2 GHz   1.4 GHz (Boost)</td> <td>Dual Core</td> <td>L2 cache 1MB shared</td> <td>6W TDP</td> </tr> <tr> <td>AMD Embedded GX-222GC</td> <td>2.2 GHz   2.4 GHz (Boost)</td> <td>Dual Core</td> <td>L2 cache 1MB shared</td> <td>15W TDP</td> </tr> </tbody> </table> <p>*Industrial Temperature Version</p>				Model	Frequency	Core	L2 cache	TDP	AMD Embedded GX-420CA	2.0 GHz	Quad Core	L2 cache 2MB shared	25W TDP	AMD Embedded GX-415GA	1.5 GHz	Quad Core	L2 cache 2MB shared	15W TDP	AMD Embedded GX-217GA	1.65 GHz	Dual Core	L2 cache 1MB shared	15W TDP	AMD Embedded GX-209HA*	1.0 GHz	Dual Core	L2 cache 1MB shared	9W TDP	AMD Embedded GX-210HA	1.0 GHz	Dual Core	L2 cache 1MB shared	9W TDP	AMD Embedded GX-424CC	2.4 GHz	Quad Core	L2 cache 2MB shared	25W TDP	AMD Embedded GX-411GA*	1.1 GHz	Quad Core	L2 cache 2MB shared	15W TDP	AMD Embedded GX-412HC	1.2 GHz   1.6 GHz (Boost)	Quad Core	L2 cache 2MB shared	7W TDP	AMD Embedded GX-212JC	1.2 GHz   1.4 GHz (Boost)	Dual Core	L2 cache 1MB shared	6W TDP	AMD Embedded GX-222GC	2.2 GHz   2.4 GHz (Boost)	Dual Core	L2 cache 1MB shared	15W TDP
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DRAM	Up to 8 GByte DDR3L-1600 with ECC protection																																																										
Chipset	Integrated in SOC (single-chip)																																																										
Ethernet	Gigabit Ethernet																																																										
I/O Interfaces	4x PCI Express <sup>™</sup> 2.0 lanes   2x SATA <sup>®</sup> 3Gb/s   2x USB 3.0   8x USB 2.0   LPC bus   I <sup>2</sup> C bus (fast mode, 400 kHz, multi-master)   SD   SPI   SM-Bus																																																										
Sound	High Definition Audio Interface																																																										
Graphics	Integrated AMD Radeon <sup>™</sup> HD 8000E Graphics supports DirectX 11.1   OpenGL 4.2 and OpenCL <sup>™</sup> 1.2; up to two simultaneous displays   Unified Video Decoder 4.2 (H.264, MPEG-2, VC-1, MPEG4 and WMV)   Video Compression Engine 2.0 (Video conferencing, wireless display, H.264, SVC). Security Asset Management Unit 2.1 (DRM offloaded from CPU, HDCP2)   VGA																																																										
LVDS	18/24-bit Single/Dual Channel LVDS Interface   Resolutions up to 1920X1200@60Hz   VESA standard or JEIDA data mapping   Automatic Panel Detection via EDID/EPI																																																										
Digital Display Interface	One DisplayPort 1.2 / HDMI 1.4a																																																										
congatec Board Controller	Multi Stage Watchdog   non-volatile User Data Storage   Manufacturing and Board Information   Board Statistics   BIOS Setup Data Backup   I <sup>2</sup> C bus (fast mode, 400 kHz, multi-master)   Power Loss Control   Backlight																																																										
Embedded BIOS Features	AMI Aptio <sup>®</sup> UEFI 2.x firmware   8 MByte serial SPI firmware flash																																																										
Security	The conga-TCG 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 <sup>®</sup> Windows 8   Microsoft <sup>®</sup> Windows 7   Linux   Microsoft <sup>®</sup> Windows <sup>®</sup> 7/8 Embedded Standard   Microsoft <sup>®</sup> Windows <sup>®</sup> 7 Embedded Compact																																																										
Temperature	Commercial : Operating: 0 to +60°C   Storage: -20 to +80°C Industrial : Operating: -40 to +85°C   Storage: -45 to +85°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-TCG | Block diagram



# conga-TCG | Order Information

Article	PN	Description
conga-TCG/GX-420CA-2GECC	042000	AMD Embedded G-Series GX-420CA quad core processor with 2.0GHz   2MB L2 cache and 2GB 1600MT/s ECC DDR3L onboard memory. Features AMD Radeon™ HD 8400E Graphics with 600MHz GPU frequency.
conga-TCG/GX-415GA-2GECC	042001	AMD Embedded G-Series GX-415GA quad core processor with 1.5GHz   2MB L2 cache and 2GB 1600MT/s ECC DDR3L onboard memory. Features AMD Radeon™ HD 8330E Graphics with 500MHz GPU frequency.
conga-TCG/GX-217GA-2GECC	042002	AMD Embedded G-Series GX-217GA dual core processor with 1.65GHz   1MB L2 cache and 2GB 1600MT/s ECC DDR3L onboard memory. Features AMD Radeon™ HD 8280E Graphics with 450MHz GPU frequency.
conga-TCG/GX-210HA-2GECC	042003	AMD Embedded G-Series GX-210HA dual core processor with 1.0GHz   1MB L2 cache and 2GB 1333MT/s ECC DDR3L onboard memory. Features AMD Radeon™ HD 8210E Graphics with 300MHz GPU frequency.
conga-TCG/420CA-4GECC	042004	AMD Embedded G-Series GX-420CA quad core processor with 2.0GHz   2MB L2 cache and 4GB 1600MT/s ECC DDR3L onboard memory. Features AMD Radeon™ HD 8400E Graphics with 600MHz GPU frequency.
conga-TCG/i-411GA-2GECC	042010	AMD Embedded G-Series GX-411GA quad core processor with 1.1GHz   2MB L2 cache and 2GB 1600MT/s ECC DDR3L onboard memory. Features AMD Radeon™ HD 8210E Graphics with 300MHz GPU frequency. Industrial grade temperature
conga-TCG/i-209HA-2GECC	042011	AMD Embedded G-Series GX-209HA dual core processor with 1.0GHz   1MB L2 cache and 2GB 1066MT/s ECC DDR3L onboard memory. Features AMD Radeon™ HD 8000E Graphics with 225MHz GPU frequency. Industrial grade temperature
conga-TCG/424CC-4GECC	042020	AMD Embedded G-Series GX-424CC quad core processor with 2.4GHz   25W TDP   2MB L2 cache and 4GB 1600MT/s ECC DDR3L onboard memory. Features AMD Radeon™ HD 8000E Graphics with 497MHz GPU frequency.
conga-TCG/412HC-4GECC	042021	AMD Embedded G-Series GX-412HC quad core processor with 1.2GHz/1.6GHz   7W TDP   2MB L2 cache and 4GB 1333MT/s ECC DDR3L onboard memory. Features AMD Radeon™ HD 8000E Graphics with 300MHz GPU frequency.
conga-TCG/212JC-2GECC	042022	AMD Embedded G-Series GX-212JC dual core processor with 1.2GHz/1.4GHz, 6W TDP, 1MB L2 cache and 2GB 1333MT/s ECC DDR3L onboard memory. Features AMD Radeon™ HD 8000E Graphics with 300MHz GPU frequency.
conga-TCG/222GC-4GECC	042023	AMD Embedded G-Series GX-222GC dual core processor with 2.2 GHz to 2.4 GHz, 10W to 15 W TDP, 1MB L2 cache and 4GB 1600MT/s ECC DDR3L onboard memory. Features AMD Radeon™ HD 8000E Graphics with 655/800 MHz GPU frequency.
conga-TCG/HSP-B	042051	Standard heatspreader for COM Express module conga-TCG. All standoffs are 2.7mm bore hole
conga-TCG/HSP-T	042052	Standard heatspreader for COM Express module conga-TCG. All standoffs are M2.5 thread.
conga-TCG/CSP-B	042053	Standard passive cooling solution for COM Express module conga-TCG with 20mm overall heat sink height. All standoffs are 2.7mm bore hole.
conga-TCG/CSP-T	042054	Standard passive cooling solution for COM Express module conga-TCG with 20mm overall heat sink height. All standoffs are M2.5mm thread.
<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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- Экспресс доставка в любую точку России;
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- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
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- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

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«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели, кабельные сборки и микроволновые компоненты:

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