

Product Brief

2nd Generation AMD Embedded R-Series APU

The 2nd Generation AMD Embedded R-Series APU (previously codenamed: “Bald Eagle”) boosts processing performance, power efficiency, and multimedia immersion by leveraging Heterogeneous System Architecture.

PRODUCT OVERVIEW

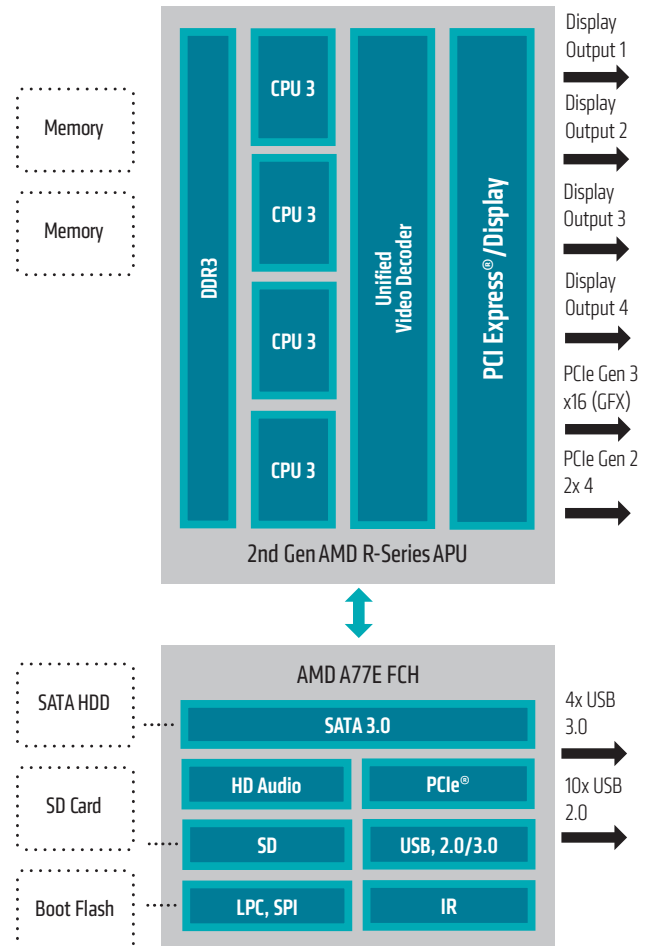
The 2nd Generation AMD Embedded R-Series accelerated processing unit (APU) delivers breakthrough graphics performance and power efficiency for a new generation of embedded systems designed to provide ultra-immersive HD multimedia experiences and parallel processing compute performance. Harnessing the processing power of AMD’s “Steamroller” CPU core and a new graphics core based on the AMD Radeon™ HD 9000 platform, the AMD R-Series APU offers next-generation performance-per-watt compute efficiency in the x86 product category by allowing system designers to take advantage of Heterogeneous System Architecture (HSA).

The high-performance CPU and GPU cores within the 2nd Generation AMD Embedded R-Series APU can be allocated to the best suited compute tasks by utilizing HSA. As noted below, this enables outstanding system performance and multimedia interactivity, superior battery life, and small, sleek system form factors for a wide range of graphics and compute-intensive embedded applications including embedded gaming, digital signage, medical imaging, and more.

SKY HIGH PERFORMANCE AT LOW POWER

2nd Generation AMD R-Series APUs deliver up to 66% more compute performance¹ and up to 55% more 3D graphics performance than previous generation AMD Embedded R-Series APUs.² Compared to Intel Haswell Core-i CPUs with 35W or lower thermal design power (TDP), the new AMD R-Series APUs provide up to 46% more compute performance³, and up to 44% more 3D graphics performance.⁴

Supporting TDPs ranging from 17W to 35W, 2nd Generation AMD Embedded R-Series APUs equip system designers to achieve aggressive performance and energy efficiency profiles while helping to minimize heat dissipation constraints. AMD’s Temperature Smart Turbo CORE technology complemented by the configurable TDP feature enables advanced power management capabilities that allow designers to optimize TDP for their target application by adjusting the clock speed of the underlying CPU and GPU, increasing overall performance-per-watt by up to 12%.⁵



BREATHTAKING GRAPHICS AND MULTIDISPLAY IMMERSION

2nd Generation AMD Embedded R-Series APUs enable stunningly crisp 3D, 4K, and HD video content and offer support for up to four independent displays (4096 x 2160 resolution per display output). The AMD Dual Graphics⁶ configuration allows you to combine the power of the 2nd Generation AMD R-Series APU with an AMD Embedded Radeon™ E8860 discrete GPU to provide up to 64% more 3D graphics performance than a standalone 2nd Generation AMD R-Series APU.⁷ AMD Eyefinity technology allows the AMD R-Series APUs to drive multiple displays simultaneously as a single large surface.⁸

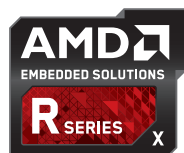
ADDITIONAL KEY BENEFITS

- Available in dual-core and quad-core “Steamroller” CPU configurations with up to 4 MBytes of shared L2 cache.
- Includes support for DirectX® 11.1, OpenGL 4.2, and AMD’s Mantle for the latest game development advancements. Offers dual-channel DDR3 support and error-correction code (ECC) memory support for high integrity applications.
- Features a new audio coprocessor that enables low-latency audio signal processing for crisper sound and audio effects.
- Enables hardware accelerated video encode and decode using Unified Video Decode (UVD) 4.2 and Video Compression Engine (VCE) 2.0.

Model#	OPN	# x86 Cores	# GPU CU	TDP	L2 Cache (MBytes)	CPU Frequency (GHz) Max/Base	GPU (MHz) Max/Base	Memory	Max DDR3 Rate	CTDP Range
RX-427BB	RE427BDGH44JA	4	8	35W	4	3.6/2.7	686/600	DDR3	2133	30W-35W
RX-425BB	RE425BDGH44JA	4	6	35W	4	3.4/2.5	654/576	DDR3	1866	30W-35W
RX-225FB	RE225FECH23JA	2	3	17W	1	3.0/2.2	533/464	DDR3	1600	15W-17W
RX-427NB	RE427NDGH44JA	4	0	35W	4	3.6/2.7	-	DDR3	2133	30W-35W
RX-219NB	RE219NECH23JA	2	0	17W	1	3.0/2.2	-	DDR3	1600	15W-17W

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1. The AMD RX-427BB scored 76.5 and AMD R-Series 464L scored 46.1, when running BasemarkCL 1.0 benchmark. The performance delta of 66% was calculated based on RX-427BB's performance score of 76 and R-464L's performance score of 46. The AMD Bald Eagle RX-427BB used an AMD Ballina motherboard with 8GB DDR3 SO-DIMM memory and 256GB SanDisk HDD. The R-464L used an AMD DB-F51r2 development board with 8GB DDR3 memory and 160GB Hitachi HDD. Both systems ran Windows® 7 Ultimate. EMB-95
2. The AMD RX-427BB scored 2051 and AMD R-Series 464L scored 1326, when running 3DMark® 11P benchmark. The performance delta of 55% was calculated based on RX-427BB's performance score of 2051 and R-464L's performance score of 1326. The AMD Bald Eagle RX-427BB used an AMD Ballina motherboard with 8GB DDR3 SO-DIMM memory and 256GB SanDisk HDD. The R-464L used an AMD DB-F51r2 development board with 8GB DDR3 memory and 160GB Hitachi HDD. Both systems ran Windows® 7 Ultimate. EMB-91
3. The AMD RX-427BB scored 76 and Intel Haswell Core i7-4765T scored 52, when running BasemarkCL 1.0 benchmark. RX-427BB's TDP is 35W and Core i7-4765T's TDP is 35W. The performance delta of 46% was calculated based on RX-427BB's performance score of 76 and Core i7-4765T's performance score of 52. The AMD Bald Eagle RX-427BB used an AMD Ballina motherboard with 8GB DDR3 SO-DIMM memory and 256GB SanDisk HDD. The Core i7-4765T used a Lenovo ThinkCentre M93p with 8GB DDR3 memory and 128GB Crucial M4 HDD. Both systems ran Windows® 7 Ultimate. EMB-94
4. The AMD RX-427BB scored 2051 and Intel Haswell Core i7-4765T scored 1424, when running 3DMark® 11P benchmark. RX-427BB's TDP is 35W and Core i7-4765T's TDP is 35W. The performance delta of 44% was calculated based on RX-427BB's performance score of 2051 and Core i7-4765T's performance score of 1424. The AMD Bald Eagle RX-427BB used an AMD Ballina motherboard with 8GB DDR3 SO-DIMM memory and 256GB SanDisk HDD. The Core i7-4765T used a Lenovo ThinkCentre M93p with 8GB DDR3 memory and 128GB Crucial M4 HDD. Both systems ran Windows® 7 Ultimate. EMB-93
5. The AMD RX-427BB (configured at 35W) scored 2,434 and RX-427BB (configured at 30W) scored 2,332 based on a geometric mean of various industry benchmarks, comprised of 3DMark®06, 3DMark®11P, Passmark v7, Pov-ray v3.7, EEMBC CoreMark MT 1.0, and BasemarkCL 1.0. The performance-per-watt delta was calculated by dividing the configured RX-427BB's performance-per-watt score (2332/30) by the RX-427BB's performance-per-watt score (2434/35). The AMD Bald Eagle RX-427BB used an AMD Ballina motherboard with 8GB DDR3 SO-DIMM memory and 256GB SanDisk HDD. EMB-96
6. AMD Dual Graphics technology combines the 3D graphics rendering resources of the APU's discrete-class graphics processor with the discrete graphics processor to accelerate the Microsoft® DirectX® 10 or DirectX 11 technology.
7. The AMD RX-427BB scored 2,051, and the AMD Radeon™ E8860 paired with RX-427BB at dual-graphics mode scored 3,359 when running 3DMark®11P benchmark. The AMD Bald Eagle RX-427BB used an AMD Ballina motherboard with 8GB DDR3 SO-DIMM memory and 256GB SanDisk HDD. The AMD Radeon E8860 used an AMD DB-F51r2 motherboard with 8GB DDR3 memory, 64GB Crucial M4 HDD, and RX-427BB. The system ran Windows® 7 Ultimate. EMB-97
8. AMD Eyefinity technology works with applications that support non-standard aspect ratios, which is required for panning across multiple displays. AMD Eyefinity technology can support up to 4 displays using a single enabled AMD R-Series APU or up to 6 displays using a single enabled AMD graphics card with Windows Vista or Windows 7 operating systems – the number and type of displays may vary by board design. Some implementations may require DisplayPort 1.2 multi-streaming technologies with compatible monitors and/or hubs. SLS (“Single Large Surface”) functionality requires an identical display resolution on all configured displays.



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