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AMD Achieves High-End Embedded Performance Leadership With New R-Series Processors

New Embedded Single-Chip Offerings Deliver Superior Graphics, First DDR4 Memory Support

SUNNYVALE, CA -- (Marketwired) -- 10/21/15 -- AMD (NASDAQ: AMD) today announced new AMD Embedded R-Series SOC processors that establish performance leadership across a targeted range of embedded application market requirements for digital signage, retail signage, medical imaging, electronic gaming, media storage and communications and networking. Designed for demanding embedded needs, the processors incorporate the newest AMD 64-bit x86 CPU core ("Excavator"), plus third-generation Graphics Core Next GPU architecture, and state-of-the-art power management for reduced energy consumption. Combined, these AMD innovations and technologies provide industry-leading graphics performance and key embedded features for next-generation designs.

The single-chip system-on-chip (SOC) architecture enables simplified, small form factor board and system designs from AMD customers and a number of third party development platform providers, while providing astounding graphics and multimedia performance, including capability for hardware-accelerated decode of 4K video playback. With a robust suite of peripheral support and interface options, high-end AMD Radeon™ graphics, designed for the industry's first Heterogeneous Systems Architecture (HSA) 1.0 certification, and support for the latest DDR4 memory, the new AMD R-Series SOC addresses the needs of a wide range of markets and customers.

"AMD continues its push into x86 embedded platforms and that's paying off with an increasing number of customers and applications," said Jim McGregor, principal analyst, TIRIAS Research. "There is a need for immersive graphics, high-quality visualization, and parallel computing in an increasing number of embedded applications. Across these fronts, the AMD Embedded R-Series SOC is a very compelling solution."

"With so much momentum around immersive experiences, especially for visual and parallel computing, the embedded industry needs a high-performance, low-power and efficient architecture with superior graphics and compute capabilities," said Scott Aylor, corporate vice president and general manager, AMD Embedded Solutions. "Our new AMD Embedded R-Series SOC is a strong match for these needs in a variety of industries including digital signage, retail signage, medical imaging, electronic gaming machines, media storage, and communications and networking. The platform offers a strong value proposition for this next generation of high-performance, low-power embedded designs."

Industry-Leading Graphics

With the latest generation AMD Radeon™ graphics as well as the latest multimedia technology integrated on-chip, the AMD Embedded R-Series SOC provides enhanced GPU performance and support for High Efficiency Video Coding (HEVC)[1] for full 4K decode and DirectX® 12. The new AMD Embedded R-Series SOCs offer 22 percent improved GPU performance when compared to the 2nd Generation AMD Embedded R-Series APU[2] and a 58 percent advantage against the Intel Broadwell Core i7 when running graphics-intensive benchmarks[3]. Specifications for the integrated AMD Radeon™ graphics include:

- Up to eight compute units[4] and two rendering blocks
- GPU clock speeds up to 800MHz resulting in 819 GFLOPS
- DirectX 12 support

Fully HSA Enabled

Customers in several industries such as machine learning, medical imaging and digital signage often need to execute compute intensive, parallel processing algorithms. HSA is a standardized platform design that unlocks the performance and power efficiency of the GPU as a parallel compute engine. It allows developers to more easily and efficiently apply the hardware resources in today's SoCs, enabling applications to run faster and at lower power across a range of computing platforms. The AMD Embedded R-Series platform incorporates a full HSA implementation which balances the performance between the CPU and GPU. Leveraging the heterogeneous Unified Memory Architecture (hUMA) allows for reduced latencies and maximizes memory access to both the CPU and GPU to increase performance.

Designed for Embedded

The AMD Embedded R-Series SOC was architected with embedded customers in mind and includes features such as industrial temperature support, dual-channel DDR3 or DDR4 support with ECC (Error Correction Code), Secure Boot, and a broad range of processor options to meet an array of embedded needs. Additionally, configurable thermal design power (cTDP) allows designers to adjust the TDPs from 12W to 35W in 1W increments for greater flexibility. The AMD Embedded R-Series SOC also has a 35 percent reduced footprint when compared to the 2nd Generation AMD Embedded R-Series APU, making it an excellent choice for small form factor applications.

Key features and specifications include:

- First embedded processor with dual-channel 64-bit DDR4 or DDR3 with Error-Correction Code (ECC), with speeds up to DDR4-2400 and DDR3-2133, and support for 1.2V DDR4 and 1.5V/1.35V DDR3
- Dedicated AMD Secure Processor supports secure boot with AMD Hardware Validated Boot (HVB); initiates trusted boot environment before starting x86 cores
- High-performance Integrated FCH featuring PCIe® Gen3 USB3.0, SATA3, SD, GPIO, SPI, I2S, I2C, UART

The AMD Embedded R-Series SOC provides industry-leading ten-year longevity of supply. The processors support Microsoft® Windows® 7, Windows® Embedded 7 and 8 Standard, Windows® 8.1, Windows® 10, and AMD's all-open Linux® driver including Mentor Embedded Linux from Mentor Graphics and their Sourcery CodeBench IDE development tools.

Supporting Resources

- AMD Embedded Processor product page
- Learn more about the AMD Embedded R-Series SOC
- Become a fan of AMD on Facebook
- Follow AMD Embedded on Twitter

About AMD
For more than 45 years AMD has driven innovation in high-performance computing, graphics, and visualization technologies -- the building blocks for gaming, immersive platforms, and the datacenter. Hundreds of millions of consumers, leading Fortune 500 businesses, and cutting-edge scientific research facilities around the world rely on AMD technology daily to improve how they live, work, and play. AMD employees around the world are focused on building great products that push the boundaries of what is possible. For more information about how AMD is enabling today and inspiring tomorrow, visit the AMD (NASDAQ: AMD) website, blog, Facebook and Twitter pages.

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SUPPLEMENTAL PARTNER QUOTES:

PSM/Seco:

"AMD's technology gives our new G920 Chili an edge over all existing competition, making it the ideal choice for any gaming machine whether it's a new project or a retrofit device," stated Alessandro Santini, PSM Gaming's International Sales Manager.

Website: http://www.seco.com/

Sapphire:

"As AMD's strategic partner for Embedded Solutions, we have worked closely with AMD to build their development platforms and develop early solutions," said Adrian Thompson, VP of marketing for SAPPHIRE Technology. "We are introducing board level and system solutions now for customers to incorporate the new AMD R-Series SOC products quickly and easily into their projects and take advantage of the performance benefits of this new generation."

Website: http://www.sapphiretech.com/Default.asp?lang=eng

Mentor Graphics

"The AMD Embedded R-Series SOC is changing the embedded systems landscape for advanced applications, and Mentor Graphics is excited to support this next generation of devices," stated Scot Morrison, general manager, platforms business unit, Mentor Graphics Embedded Systems Division. "As AMD's embedded Linux partner, our Mentor Embedded runtime software and development tools will allow AMD customers to create feature-rich, high-performance, power-efficient applications and superior graphical user interfaces with greater productivity and ease."

Website: https://www.mentor.com/embedded-software/partners/amd

Heber

"We are delighted to announce that Heber's latest Pluto A400 gaming controller is based upon the new AMD Embedded R-Series SOC. The high performance and superior graphics makes it the perfect choice for our fastest gaming controller to date," said Les Ashton-Smith, managing director, Heber.

Website: http://www.hebergaming.co.uk/

Axiomtek:

"With the AMD Embedded R-Series SOC, Axiomtek will enhance its product price competitiveness, provide higher CPU/GPU performance compared to previous generations and similar processors, and simplify the design footprint," said Clyde Chen, product manager, gaming division, Axiomtech.

Website: http://www.axiomtek.com/

congatec

"The AMD Embedded R-Series SOCs boast rich and vibrant graphics plus broad scalability right down to 12 watts, so they can even be deployed in fanless, completely enclosed, and thus particularly robust designs. This significantly expands the range of applications for our high-end COM Express modules based on this AMD platform," explains Gerhard Edi, CTO of congatec AG.

Website: http://www.congatec.com/en.html

Quixant

Nick Jarmany, chief executive of Quixant PLC, commented, "The AMD Embedded R-Series SOC processor stood out as the ideal choice for our new QMax high-end computing platform designed specifically for gaming applications. The excellent graphics performance combined with hardware H264 and H265 video decode are key benefits that enable Quixant customers to generate the most immersive gaming experiences. The QMax also integrates the recently announced AMD Embedded Radeon(TM) E8870 discrete GPU to provide the highest levels of graphics performance and the ability to drive up to nine high resolution displays including 4K."

Website: http://www.quixant.com/

1 HEVC acceleration is subject to inclusion/installation of compatible HEVC players. GD-8

2 The AMD RX-421BD (35W) processor scored 2720; the RX-427BB (35W) scored 2235. The score for the RX-421BD (2.1 GHz base, 3.4 GHz boost) was measured using an AMD Gardenia motherboard with 8GB of DDR3-2133 memory, a 250GB Samsung EVO 850 solid state drive (SSD), and graphics driver 15.101.0.0. The score for the RX-427BB (2.7 GHz base, 3.6 GHz boost) was measured using an AMD Ballina motherboard with 8GB of DDR3-2133 SO-DIMM memory, a Hitachi 256GB HDD, and graphics driver 13.350.0.0. Both systems ran Windows® 8.1 Professional. EMB-133

3 The AMD RX-421BD processor (configured for 15W TDP) scored 2190 and the Intel Core

i7-5650U (15W) scored 1384. The score for the RX-421BD (2.1 GHz base, 3.4 GHz boost) was measured using an AMD Gardenia motherboard with 8GB of DDR3-2133 memory, a 250GB Samsung EVO 850 solid state drive (SSD), and graphics driver 15.101.0.0. The score for the Core i7-5650U (2.2 GHz) was measured using a Congatec TC97 module with 8GB of DDR3-1600 memory, a 250GB Hitachi HDD, and graphics driver 10.18.14.4139. The Intel system ran Windows® 7 Ultimate. The AMD system ran Windows 8.1 Professional. EMB-134

[4] Discrete AMD Radeon™ and FirePro™ GPUs based on the Graphics Core Next architecture consist of multiple discrete execution engines known as a Compute Unit ("CU"). Each CU contains 64 shaders ("Stream Processors") working in unison. GD-78

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