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# AMD Unveils New Ryzen Mobile Processors Uniting “Zen 3+” core with AMD RDNA 2 Graphics in Powerhouse Design

*— Ryzen 6000 Series processors offer huge generational uplift with up to 11% more single threaded performance, up to 28% more multi-threaded performance, and up to 2x more graphics performance compared to the Ryzen 5000 Series —*

*— New AMD Ryzen 7 5800X3D desktop processors with powerful 3D V-Cache technology elevate gaming performance —*

SANTA CLARA, Calif., Jan. 04, 2022 (GLOBE NEWSWIRE) -- Today, during the 2022 Product Premiere livestream event, AMD (NASDAQ: AMD) announced the full lineup of new AMD Ryzen™ 6000 Series processors for laptops, bringing the new, highly-efficient and extremely powerful, “Zen 3+” core architecture together with all-new AMD RDNA™ 2 architecture-based on-chip graphics. The new AMD Ryzen 6000 Series processors are built using TSMC’s 6nm process technology and deliver unprecedented levels of built-in graphics performance, offering revolutionary 1080p AAA gaming, along with cutting-edge features and superb battery life. AMD also announced the new Ryzen™ 7 5800X3D desktop processor with AMD 3D V-Cache™ technology for elite-level gaming performance that dominates the competition[1], and previewed the new Ryzen™ 7000 Series CPU powered by “Zen 4” architecture and using the new AMD Socket AM5.

“AMD is at the forefront of innovation in the PC industry, delivering unmatched experiences for creators, professionals and gamers,” said Saeid Moshkelani, senior vice president and general manager, Client business unit, AMD. “The new AMD Ryzen 6000 Series processors bring remarkable efficiency for impressive battery life, unbeatable built-in graphics and optimized performance to deliver the best AMD has to offer to every type of notebook user.”

**AMD Ryzen 6000 Series Processors**
It all starts with “Zen” architecture, and AMD Ryzen 6000 Series processors are built on the updated AMD “Zen 3+” core, optimized to deliver amazing performance-per-watt. These are the fastest AMD Ryzen processors yet, with up-to 5 GHz clock speeds[2], up to 1.3 times faster processing speeds, and up to 2.1 times faster graphics then the 5000 Series.[3]

The “Zen 3+” core delivers power and efficiency, through new adaptive power management features that adjust speed quickly, and new deep sleep states that help save on power. Compared to last-generation AMD Ryzen processors, the AMD Ryzen 6000 Series processors can use up to 30% less power for video conferencing.[4] This results in incredible battery life with Ryzen 6000 Series processors achieving up to 24 hours of movie playback on a single charge[5], all in a cool, quiet laptop.

Featuring up to eight high-performance cores, each one capable of handling multiple tasks at the same time to deliver 16 threads of processing power, AMD Ryzen 6000 Series processors bring ultimate performance to ultrathin laptop PCs, with up to 11% more single-threaded performance and up to 28% faster multithreaded performance over the previous generation.[6]

**AMD RDNA 2 Architecture-Based Graphics**
AMD Ryzen 6000 Series processors are also the first mobile processors to feature RDNA™ 2 architecture-based built-in graphics. With a graphics performance up to twice as fast as the last gen[3], it's the world's first on-chip graphics that can smoothly play the vast majority of PC games in full HD.[7] Ryzen 6000 Series processors have an all-new integrated display engine, allowing for ultra-high resolutions and refresh rates. AMD Ryzen 6000 Series enables up to 70% faster AAA gaming compared to the competition.[8][8,9]9 Dynamic HDR displays are supported, and AMD FreeSync™ technology keeps things smooth.

**New Platform; New Features**
To complement the power, efficiency, and amazing graphics, the AMD Ryzen 6000 Series processors are built on an all-new platform and offer the most innovative technologies and features available.

- Advanced DDR5 memory for faster mobile computing.
- Upgraded peripherals support with PCIe® 4.0 and USB4®.[10]
- AI noise cancellation to filter background noise.[10]
- Powerful Wi-Fi™ 6E solutions from relationships with Qualcomm and MediaTek.

AMD Ryzen 6000 Series processors are the first x86 processors to fully support advanced Windows 11 security features with the integrated Microsoft Pluton security processor[11], offering a secure system, enabling true chip-to-cloud security. Combined with other leading security features from AMD, such as AMD Secure Processor and AMD Memory Guard, this makes AMD Ryzen 6000 Series processors the world's most innovative x86 processor.

**Product Specification: AMD Ryzen Mobile Processors 2022 Consumer Lineup**
At the top of the product stack, the AMD Ryzen HX-Series processors provide optimal performance in a thin and lightweight form factor with incredible graphics power. For mainstream consumers looking for performance on-the-go, the AMD Ryzen 6000 U-Series processors offer the perfect blend of performance and efficiency.

A reinvigorated line-up of AMD Ryzen 5000 Mobile Series processors, improving performance with the incorporation of "Zen 3" processor technology, is also available for 2022.

| Model | Cores/Threads | Boost Frequency[2] | Cache | TDP |
|---|---|---|---|---|
| AMD Ryzen 9 6980HX | 8C/16T | Up to 5.0GHz | 20MB | 45W+ |
| AMD Ryzen 9 6980HS | 8C/16T | Up to 5.0GHz | 20MB | 35W |
| AMD Ryzen 9 6900HX | 8C/16T | Up to 4.9GHz | 20MB | 45W+ |
| AMD Ryzen 9 6900HS | 8C/16T | Up to 4.9GHz | 20MB | 35W |
| AMD Ryzen 7 6800H | 8C/16T | Up to 4.7GHz | 20MB | 45W |
| AMD Ryzen 7 6800HS | 8C/16T | Up to 4.7GHz | 20MB | 35W |
| AMD Ryzen 5 6600H | 6C/12T | Up to 4.5GHz | 19MB | 45W |
| AMD Ryzen 5 6600HS | 6C/12T | Up to 4.5GHz | 19MB | 35W |
| AMD Ryzen 7 6800U | 8C/16T | Up to 4.7GHz | 20MB | 15-28W |
| AMD Ryzen 5 6600U | 6C/12T | Up to 4.5GHz | 19MB | 15-28W |
| AMD Ryzen 7 5825U | 8C/16T | Up to 4.5GHz | 20MB | 15W |
| AMD Ryzen 5 5625U | 6C/12T | Up to 4.3GHz | 19MB | 15W |
| AMD Ryzen 3 5425U | 4C/8T | Up to 4.1GHz | 10MB | 15W |

The first laptops powered by AMD Ryzen 6000 Series processors are expected to be available by leading OEM partners, such as Asus, Dell, and HP, beginning in February 2022. Throughout the year, AMD expects broad availability of more than 200 consumer and commercial notebooks based on the 2022 Ryzen portfolio.

**AMD Ryzen PRO 6000 Series Processors**

Also coming early in 2022, AMD Ryzen 6000 PRO Series processors will continue to build on a long line of firsts, delivering new features and technology that drive premium experience on premium platforms. Built on the AMD “Zen 3+” architecture and 6nm process, AMD Ryzen processors with PRO technologies also offer a suite of security features, manageability tools, and the enterprise-grade stability and reliability that businesses and IT decision makers demand.

Together with AMD, Lenovo will introduce the new ThinkPad Z, an ultra-premium business notebook, featuring AMD Ryzen PRO 6000 Series processors, to customers this spring. Lenovo and AMD have collaborated to deliver cutting edge platform design, seamless audio and video performance, maximum responsiveness, enhanced security features from Microsoft Pluton security processor and Lenovo ThinkShield, and a supreme collaboration experience.

**AMD Ryzen 7 5800X3D Desktop Processor with AMD 3D V-Cache Technology**
AMD also announced an upgrade to the award-winning AMD Ryzen™ 5000 Series desktop processors, delivering the first AMD Ryzen processors with AMD 3D V-Cache™ technology to power incredible gaming experiences. Powered by the "Zen 3" core architecture, the Ryzen 7 5800X3D desktop processor is the world's fastest gaming processer, delivering an average of 5**%** faster 1080p gaming across select titles than the competition.[1]

**Product Specification: AMD Ryzen 7 5800X3D**

| Model | Cores/Threads | Boost Frequency[2] | Total Cache (L2+L3) | TDP |
|---|---|---|---|---|
| AMD Ryzen 7 5800X3D | 8C/16T | Up to 4.5GHz | 100MB | 105W |

The AMD Ryzen 7 5800X3D will be available for Socket AM4 later in Spring 2022.

**"Zen 4" Core and Socket AM5**
AMD previewed its Ryzen 7000 Series processors, which will be based on the 5nm "Zen 4" architecture and made available in the second half of 2022. To complement Ryzen "Zen 4" architecture CPUs, AMD will also introduce the all-new AMD Socket AM5 to market.

**Partner Support**
"Acer's partnership with AMD allows us to continue to push boundaries for gamers," said James Lin, General Manger, Notebooks, IT Products Business, Acer Inc. "Powering our systems with the latest processor technologies enhances the gameplay experience by giving customers the performance they need to play – and win."

"We are thrilled to power our laptops with the new AMD Ryzen processors to provide gamers incredible visuals and extraordinary performance," said Shawn Yen, Product Management Director of Gaming Business Unit, ASUS. "Through our partnership with AMD, ASUS strives to offer exceptional user experience and redefine high-performance mobile gaming."

"Through partnership with AMD, we embarked on a journey to push PC gaming forward in innovation. The end result is a category-defining Alienware laptop that pushes the boundary of performance and smart experience," said Vivian Lien, Vice President, Alienware. "With the latest AMD Ryzen processor technology powering our Alienware m17/m15 R5 laptops – which includes the most powerful 17-inch AMD Advantage™ gaming laptop in the world – users can expect the gaming performance and power to meet the demands of all modern game titles."

"Our partnership with AMD strengthens our PC portfolio across segments and helps us to continually deliver more choices of cutting-edge innovations to our customers," said Luca Rossi, President of Intelligent Devices Group (IDG), Lenovo. "With the increased need for high-quality responsiveness on the go and powerful entertainment experiences while at home, Lenovo is working to further our mission of providing smarter technology for all."

"We are proud of our deep collaboration with AMD to create devices that deliver more immersive video conferencing experiences for hybrid work," said Andy Rhodes, global head of commercial systems and displays, HP Inc. "With the latest innovations in processor

technology, people can expect a powerful blend of performance, long-lasting battery life, and enhanced features to help people collaborate and create wherever they are."

"It's clear that remote work is here to stay, making reliable security – from any device all over the world – more critical than ever before," said David Weston, director of enterprise and OS security, Microsoft. "After deep collaboration with AMD, we're proud to have integrated the Microsoft Pluton security processor on AMD Ryzen 6000 Series processors, bringing enhanced security to the core of new Windows 11 PCs."

**Supporting Resources**

- Watch the AMD 2022 Product Premiere video
- Learn more about AMD Ryzen Mobile Processors with Radeon Graphics
- Learn more about AMD Ryzen Desktop Processors
- Become a fan of AMD on Facebook
- Follow AMD on Twitter

**About AMD**
For 50 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.

**Cautionary Statement**
This press release contains forward-looking statements concerning Advanced Micro Devices, Inc. (AMD) such as the features, functionality, performance, availability, timing and expected benefits of AMD products, including AMD Ryzen™ 6000 Series processors, AMD Ryzen 5000 Mobile Series processors incorporating "Zen 3" processor technology, AMD Ryzen PRO Series processors, AMD Ryzen 7 5800X3D Series desktop processors, AMD Ryzen 7000 Series processors based on 5 nanometer AMD "Zen 4" architecture, and AMD Socket AM5, which are made pursuant to the Safe Harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are commonly identified by words such as "would," "may," "expects," "believes," "plans," "intends," "projects" and other terms with similar meaning. Investors are cautioned that the forward-looking statements in this press release are based on current beliefs, assumptions and expectations, speak only as of the date of this presentation and involve risks and uncertainties that could cause actual results to differ materially from current expectations. Such statements are subject to certain known and unknown risks and uncertainties, many of which are difficult to predict and generally beyond AMD's control, that could cause actual results and other future events to differ materially from those expressed in, or implied or projected by, the forward-looking information and statements. Material factors that could cause actual results to differ materially from current expectations include, without limitation, the following: Intel Corporation's dominance of the microprocessor market and its aggressive business practices; global economic uncertainty; loss of a significant customer; impact of the COVID-19 pandemic on AMD's business, financial condition and results of operations; competitive markets in which AMD's products are sold; market conditions of the industries in which AMD products are sold; cyclical nature of the semiconductor industry; quarterly and seasonal sales patterns; AMD's ability to adequately protect its technology or other

intellectual property; unfavorable currency exchange rate fluctuations; ability of third party manufacturers to manufacture AMD's products on a timely basis in sufficient quantities and using competitive technologies; availability of essential equipment, materials, substrates or manufacturing processes; ability to achieve expected manufacturing yields for AMD's products; AMD's ability to introduce products on a timely basis with expected features and performance levels; AMD's ability to generate revenue from its semi-custom SoC products; potential security vulnerabilities; potential security incidents including IT outages, data loss, data breaches and cyber-attacks; uncertainties involving the ordering and shipment of AMD's products; AMD's reliance on third-party intellectual property to design and introduce new products in a timely manner; AMD's reliance on third-party companies for design, manufacture and supply of motherboards, software and other computer platform components; AMD's reliance on Microsoft and other software vendors' support to design and develop software to run on AMD's products; AMD's reliance on third-party distributors and add-in-board partners; impact of modification or interruption of AMD's internal business processes and information systems; compatibility of AMD's products with some or all industry-standard software and hardware; costs related to defective products; efficiency of AMD's supply chain; AMD's ability to rely on third party supply-chain logistics functions; AMD's ability to effectively control sales of its products on the gray market; impact of government actions and regulations such as export administration regulations, tariffs and trade protection measures; AMD's ability to realize its deferred tax assets; potential tax liabilities; current and future claims and litigation; impact of environmental laws, conflict minerals-related provisions and other laws or regulations; impact of acquisitions, joint ventures and/or investments on AMD's business, including the announced acquisition of Xilinx, and ability to integrate acquired businesses; AMD's ability to complete the Xilinx merger; impact of the announcement and pendency of the Xilinx merger on AMD's business; impact of any impairment of the combined company's assets on the combined company's financial position and results of operation; restrictions imposed by agreements governing AMD's notes and the revolving credit facility; AMD's indebtedness; AMD's ability to generate sufficient cash to meet its working capital requirements or generate sufficient revenue and operating cash flow to make all of its planned R&D or strategic investments; political, legal, economic risks and natural disasters; future impairments of goodwill and technology license purchases; AMD's ability to attract and retain qualified personnel; AMD's stock price volatility; and worldwide political conditions. Investors are urged to review in detail the risks and uncertainties in AMD's Securities and Exchange Commission filings, including but not limited to AMD's most recent reports on Forms 10-K and 10-Q.

The information contained herein is for informational purposes only and is subject to change without notice. Timelines, roadmaps, and/or product release dates shown in this press release are plans only and subject to change. "Zen" is a codename for AMD architecture and is not a product name.



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[1] Based on testing by AMD as of 12/14/2021. Performance evaluated with Watch Dogs Legion, Far Cry 6, Gears 5, Final Fantasy XIV, Shadow of the Tomb Raider and CS:GO. All games test at 1920x1080p resolution

with the HIGH in-game quality preset (or equivalent). System configuration: Ryzen 7 5800X3D and AMD Reference Motherboard with 2x8GB DDR4-3600. Core i9-12900K and ROG Maximus Z690 Hero motherboard with BIOS 0702 and 2x16GB DDR5-5200. Both systems configured with GeForce RTX 3080 on driver 472.12, Samsung 980 Pro 1TB, NZXT Kraken X62, Windows 11 28000.282. - R5K-107

[2] Max boost for AMD Ryzen processors is the maximum frequency achievable by a single core on the processor running a bursty single-threaded workload. Max boost will vary based on several factors, including, but not limited to: thermal paste; system cooling; motherboard design and BIOS; the latest AMD chipset driver; and the latest OS updates. - GD-150.

[3] Based on testing by AMD as of 12/14/2021. CPU performance evaluated with a geomean of 9 multi-threaded content creation and CPU tests. GPU performance evaluated with 3DMark® Time Spy. System configuration for Ryzen™ 7 5800U CPU/GPU performance: HP ProBook 635 Aero G8 configured with 2x8GB DDR4-3200 (22-22-22), Windows® 11 22000.282, Samsung 980 Pro 1TB SSD, 15W nominal processor TDP, GPU driver 27.20.21026, BIOS T83. System configuration for Ryzen™ 7 6800U CPU/GPU performance: AMD reference motherboard configured with 4x4GB LPDDR5-6400 (19-15-17), Windows® 11 22000.282, Samsung 980 Pro 1TB SSD, 28W nominal processor TDP, GPU driver 30.0, BIOS TRM0081D. - RMB-13

[4] Based on testing by AMD as of 12/14/2021 using AMD internal power sampling and logging methodologies to capture total system power (TSP) and overall battery life in Microsoft Teams 3x3 teleconferencing, Google Chrome web browsing, and Netflix streaming video playback. System configuration: AMD reference motherboard(s), Ryzen™ 7 5800U @ 15W and 2x8GB LPDDR4, Ryzen™ 7 6800U @ 28W and 2x8GB LPDDR5, 1080p eDP PSR display with Varibright at 150 nits, Samsung 980 Pro 1TB SSD, WLAN enabled and disconnected, Windows 11 22000.282, BIOS 103BRC1 (5800U) and 090RC6INT (6800U). - RMB-17

[5] Based on testing by AMD as of 12/14/2021. Battery life evaluated with hours of continuous 1080p local video playback using the h.264 video codec. Video codec acceleration (including at least the HEVC (H.265), H.264, VP9, and AV1 codecs) is subject to and not operable without inclusion/installation of compatible media players. System configuration: AMD reference motherboard(s), Ryzen™ 7 5800U @ 15W and 2x8GB LPDDR4, Ryzen™ 7 6800U @ 28W and 2x8GB LPDDR5, 1080p eDP PSR display with Varibright at 150 nits, Samsung 980 Pro 1TB SSD, WLAN enabled and disconnected, Windows 11 22000.282, BIOS 103BRC1 (5800U) and 090RC6INT (6800U). Video file: 1920x1080, 23.976 FPS, h.264. – RMB-15

[6] Based on testing by AMD as of 12/14/2021. CPU performance evaluated Cinebench R23 1T, Cinebench R23 nT, and PCMark® 10 Extended. System configuration for Ryzen™ 7 5800U CPU/GPU performance: HP ProBook 635 Aero G8 configured with 2x8GB DDR4-3200 (22-22-22), Windows® 11 22000.282, Samsung 980 Pro 1TB SSD, 15W nominal processor TDP, GPU driver 27.20.21026, BIOS T83. System configuration for Ryzen™ 7 6800U CPU/GPU performance: AMD reference motherboard configured with 4x4GB LPDDR5-6400 (19-15-17), Windows® 11 22000.282, Samsung 980 Pro 1TB SSD, 28W nominal processor TDP, GPU driver 30.0, BIOS TRM0081D. PCMARK is a registered trademark of Futuremark Corporation. – RMB-16

[7] Based on testing by AMD as of 12/14/2021. The integrated graphics performance of Ryzen™ 6000 Series processors can get up to 45 FPS average in the majority of 11 tested PC game titles at 1080p resolution with

low settings, a threshold no other integrated graphics processor has reached before, including Intel Iris Xe graphics, and Ryzen™ 5000 Series graphics. RMB-7

[8] Based on testing by AMD as of 12/14/2021. Performance evaluated with DOOM Eternal (low image quality), CS:GO (ultra image quality), Fortnite (medium image quality + DX11), Watch Dogs: Legion (low image quality), The Witcher 3 (low image quality), and DOTA 2 (ultra image quality + Vulkan). All games test at 1920x1080 resolution. System configuration for Ryzen™ 7 6800U: AMD reference motherboard configured with 4x4GB LPDDR5-6400 (19-15-17), Windows® 11 22000.282, Samsung 980 Pro 1TB SSD, 28W nominal processor TDP, GPU driver 30.0, BIOS TRM0081D. System configuration for Core i7-1165G7: Dell XPS 13 9310 configured with 2x8GB LPDDR4x-4667, Intel graphics driver 30.0.100, Windows 11 22000.282. – RMB-18

[9] Based on testing by AMD as of 12/14/2021. Performance evaluated with DOOM Eternal (low image quality), CS:GO (ultra image quality), Fortnite (medium image quality + DX11), Watch Dogs: Legion (low image quality), The Witcher 3 (low image quality), and DOTA 2 (ultra image quality + Vulkan). All games tested at 1920x1080 resolution. System configuration for Ryzen™ 7 6800U: AMD reference motherboard configured with 4x4GB LPDDR5-6400 (19-15-17), Windows® 11 22000.282, Samsung 980 Pro 1TB SSD, 28W nominal processor TDP, GPU driver 30.0, BIOS TRM0081D. System configuration for GeForce MX450: Dell Inspiron 13 1510 configured with 2x8GB LPDDR4-4667, Core i7-11370H, GeForce MX450 on driver 496.49, Windows 11 22000.282. – RMB-19

[10] Some features like AI-powered noise cancellation and USB4® requires OEM enablement. Please check with your PC manufacturer prior to purchase.

[11] As of January 2022, only AMD Ryzen™ 6000 Series processors include the Microsoft Pluton security processor, while AMD Ryzen™ 5000 Series processors and Intel's latest 11th and 12th Gen processors do not. RMB-24

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