



HOW TO SELL AMD RYZEN™ PROCESSORS

Powering The New Era of High-Performance Computing

August 2017



Who's it for?

- **Ryzen 7:** High-End Prosumers, Content Creators, Enthusiast Gamers
- **Ryzen 5:** Esports & AAA Gamers, Performance Desktop Users
- **Ryzen 3:** Gamers, Workstation, Mainstream Users



Sell it in 5 seconds.

- All multiplier unlocked & configurable¹
- Excellent price-to-performance across the stack
- Incredibly powerful multi-core processing for the ultimate performance
- Lightning fast responsiveness makes new immersive experiences possible
- True artificial intelligence with AMD SenseMI™ technology.



Why it's great.

A new era of computing

- Disruptive price-to-performance for gamers and creators, that brings innovation back to the CPU market
- Every Ryzen™ processor is multiplier unlocked and completely configurable via AMD's Ryzen Master Utility, when paired with select motherboards^{1,2}
- Experience lightning fast responsiveness thanks to massive IPC improvements, DDR4 Memory, and new high-performance L2 & L3 cache³
- Energy efficient 14nm FinFET designed to ensure cool and quiet operation
- Ryzen 7 provides lightning-fast responsiveness with 8 cores and 16 threads, for the ultimate performance and mega-tasking capability
- Ryzen 5 redefines the Prosumer entry point with up to 6 cores and 12 threads for high application performance and smooth gaming experiences⁴
- With a brand-new, true quad-core architecture, AMD Ryzen 3 processors provide the responsiveness and performance you'd expect from a much pricier PC

Performance that thinks

- With AMD SenseMI technology, Ryzen uses true machine intelligence to accelerate performance
- With a brand-new, true quad-core architecture, AMD Ryzen 3 processors provide the responsiveness and performance you'd expect from a much pricier PC

A future-proof platform⁵

- New AM4 Motherboards provide incredible performance, cutting-edge features, and excellent I/O connectivity
- From a single graphics card to dual-graphics, choose the processor that can handle everything you throw at it, and more⁶

Built for enthusiasts

- Cutting edge technology for those who demand incredibly high, multi-threaded performance
- Enable new and powerful tools for content creation with the Ryzen 7, whether it's creating 3D models, editing Ultra HD video, or even computational modeling
- Enjoy smoother gaming experiences and high application performance with Ryzen 5, with a system designed for the games of tomorrow
- Take advantage of responsive performance for everything you do with Ryzen 3 processors, whether you're playing games, watching entertainment, or being productive^{7,8}

AMD SenseMI Technologies



Pure Power

More than 100 embedded sensors enable optimal efficiency with minimal energy consumption.



Precision Boost

Hundreds of networked smart sensors gather information every millisecond to tune frequencies with fine 25MHz granularity.



Extended Frequency Range

Automatically lifts the maximum precision boost frequency beyond the ordinary limits in the presence of premium system and processor cooling.⁹



Neural Net Prediction

A true AI predicts the next steps of your workflow to increase efficiency.



Smart Prefetch

Enjoy fast and responsive computing with sophisticated learning algorithms that understand the inner workings of your applications.



How we stack up:

AMD Ryzen™ 7		AMD Ryzen™ 7 1800X	Intel® Core™ i7 6900K ⁸	AMD Ryzen™ 7 1700X	Intel® Core™ i7 6800K ⁸	AMD Ryzen™ 7 1700	Intel® Core™ i7 7700K ⁸
# of CPU Cores		8	8	8	6	8	4
# of Threads		16	16	16	12	16	8
TDP		95	140	95	140	65	65

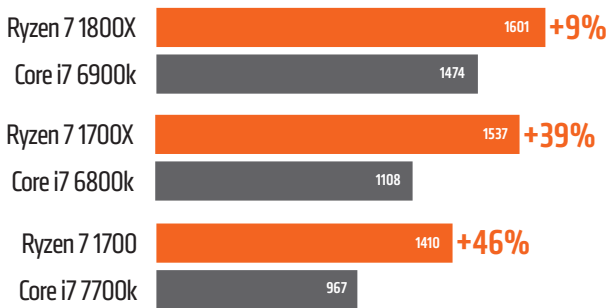
AMD Ryzen™ 5		AMD Ryzen™ 5 1600X	Intel® Core™ i5 7600K ⁸	AMD Ryzen™ 5 1600	Intel® Core™ i5 7600 ⁸	AMD Ryzen™ 5 1500X	Intel® Core™ i5 7500 ⁸	AMD Ryzen™ 5 1400	Intel® Core™ i5 7400 ⁸
# of CPU Cores		6	4	6	4	4	4	4	4
# of Threads		12	4	12	4	8	4	8	4
TDP		95	91	65	65	65	65	65	65

AMD Ryzen™ 3		AMD Ryzen™ 3 1300X	Intel® Core™ i3 7350K ⁸	AMD Ryzen™ 3 1200	Intel® Core™ i3 7100K ⁸
# of CPU Cores		4	2	4	2
# of Threads		4	4	4	4
TDP		65	60	65	51

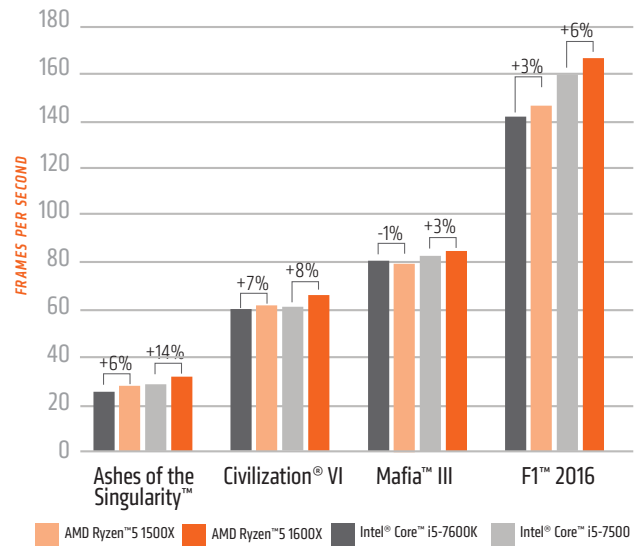
Competitive Benchmarks

AMD Ryzen 7 4K Gaming Performance⁴

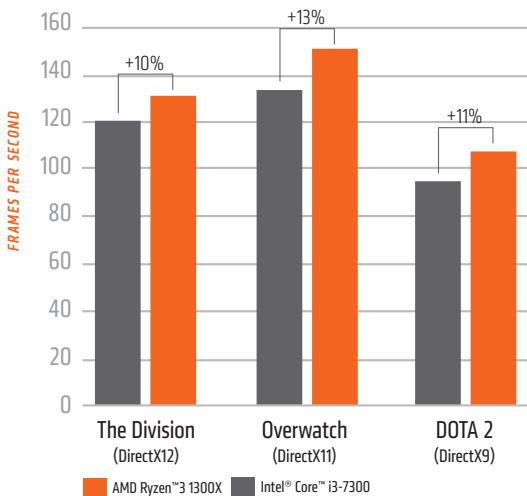
(Cinebench R15 nT)



AMD Ryzen 5 1080p Gaming Performance¹⁰



AMD Ryzen 3 1080p Gaming Performance⁸



Tech Trends

- The widespread of multi-threaded applications for VR, DirectX® 12 game titles, 3D modeling, and UltraHD video editing is pushing the boundaries of how a processor must perform.
- Why it matters to you** - Customers demand premium hardware to support these intensive workloads. AMD Ryzen processors feature a brand new architecture designed with these new applications in mind.

PC Trends

- The PC Gaming Industry is expected to grow 20% from \$30B in 2016 to 2019.⁹
- Why it matters to you** - As this market continues to grow, Ryzen will be able to support your customers for years to come.⁴

For more information, please visit partner.amd.com, your source for tools, training, news, reviews, and much more! To find out more about AMD Ryzen Processors, please visit www.amd.com

Additional hardware (e.g. Discrete Graphics Card) and/or software (e.g. multimedia applications) are required for the full enablement of some features. Not all features may be supported on all components or systems – check with your component or system manufacturer for specific model capabilities and supported technologies.

1. AMD's product warranty does not cover damages caused by overclocking, even when overclocking is enabled via AMD hardware and/or software. GD-26
2. AMD Ryzen features and benefits depend on system configuration and may require enabled hardware, software or service activation. Performance varies depending on system configuration. Check with your motherboard and system manufacturer. RZN-8
3. Based on internal AMD estimates for "Zen" x86 CPU core compared to "Excavator" x86 CPU core.
4. Testing by AMD Performance labs. PC manufacturers may vary configurations yielding different results. Cinebench R15 multi-threaded performance used to represent multi-threaded performance. The Ryzen 7 1800X (8c/16t, \$499 SEP) achieved a score of 1601.4 in the multi-thread test; The Core i7-6900K (8c/16t, \$1089 SEP) achieved a score of 1473.8 in the multi-thread test; resulting in a 9% multi-threaded performance disadvantage. The Ryzen 7 1700X (8c/16t, \$399 SEP) achieved a score of 1536.6 in the multi-thread test; The Core i7-6800K (6c/12t, \$441 SEP) achieved a score of 1108.2 in the multi-thread test; resulting in a 39% multi-threaded performance disadvantage. The Ryzen 7 1700 (8c/16t, \$339 SEP) achieved a score of 1410.6 in the multi-thread test; The Core i7-7700K (4c/8t, \$349 SEP) achieved a score of 966.7 in the multi-thread test; resulting in a 46% multi-threaded performance disadvantage. RZN-13
5. Statement of "future-proof" refers to support of current and upcoming technology standards including 14nm FinFET process technology, DirectX®12 and Vulkan™ API support, new I/O technology including DDR4, USB 2.1 Gen 2, and NVMe, and experiences such as VR. "Future-proof" statement is not meant to serve as a warranty or indicate that users will never have to upgrade their graphics technology again. Support of current and upcoming technology standards described above has the potential to reduce frequency of CPU upgrades for some users. GD-104
6. Including planned PCIe® 3.0, NVMe, and USB 3.1 Gen 2 connectivity
7. Testing by AMD Performance labs as of July 10, 2017 on the following systems: Socket AM4: Ryzen™ 3 1300X processor, Ryzen™ 3 1200 processor, B350 Gaming K4 motherboard, with NVIDIA GTX 1080 Ti 8 GB graphics adapter 16GB (2 x 8GB) DDR4-3200 RAM, Windows 10 RS2operating system, Graphics driver 382.53 :: 07/10/2017 Socket 1151: Z270 SLI, Core i3-7300 processor, Core i3-7100 processor, B250 Gaming M3 motherboard, with NVIDIA GeForce GTX 1080 Ti 8GB graphics adapter, 16GB (2 x 8GB) DDR4-2400 RAM, Windows 10 RS2operating system, Graphics driver 382.53 :: 07/10/2017. Cinebench nt benchmark scores for the following processors are: Core i3-7300: 433.8 Ryzen 3 1300X: 561, up to 29% faster than the Core i3-7300 (561/433.8= 129%) Core i3-7100: 416.4 Ryzen 3 1200: 486, up to 17% faster than the Core i3-7100 (486/416.4= 117%). PC manufacturers may vary configurations yielding different results. Results may vary based on driver versions used. RZN-61
8. Testing by AMD Performance labs as of July 10, 2017 on the following systems. PC manufacturers may vary configurations yielding different results. Socket AM4: Ryzen™ 3 1300X processor, B350 Gaming K4 motherboard, with NVIDIA GTX 1080 Ti 8 GB graphics adapter 16GB (2 x 8GB) DDR4-3200 RAM, Windows 10 RS2operating system, Graphics driver 382.53 :: 07/10/2017. Socket 1151: Z270 SLI, Core i3-7300 processor, B250 Gaming M3 motherboard, with NVIDIA GeForce GTX 1080 Ti 8GB graphics adapter, 16GB (2 x 8GB) DDR4-2400 RAM, Windows 10 RS2operating system, Graphics driver 382.53 :: 07/10/2017. 1080p Gaming Performance: The Core i3-7300 achieved an average frame rate of 120 in The Division; 134 in Overwatch; and 96 in DOTA2. The Ryzen 3 1300X achieved an average frame rate of 131 in The Division (131/120=10% faster than the i3-7300); 151 in Overwatch (151/134=13% faster than the i3-7300); 106 in DOTA2 (106/96=11% faster than the i3-7300); PC manufacturers may vary configurations yielding different results. Results may vary based on driver versions used. RZN-62
9. AMD defines premium processor cooling as a combination of ambient temperature and thermal solution that results in processor temperatures below 60 degrees Celsius while the CPU is processing the system workload. WTH-5
10. The Core i5-7600K (4c/8t, \$240 on Newegg.com as of March 3/2017) achieved 27.6 FPS in the Ashes of the Singularity CPU benchmark; 64.7 FPS in the Civilization VI benchmark; 83.9 FPS in the Mafia 3 benchmark; and 157.5 in the F1 2016 benchmark. The Ryzen 5 1600X (6c/12t, \$249 SEP) achieved 31.6 FPS in the Ashes of the Singularity CPU benchmark; 70 FPS in the Civilization VI benchmark; 86.4 FPS in the Mafia 3 benchmark; and 166.6 in the F1 2016 benchmark. The Core i5-7500 (4c/8t, \$205 on Newegg.com as of March 3/2017) achieved 24.8 FPS in the Ashes of the Singularity CPU benchmark; 60.7 FPS in the Civilization VI benchmark; 81.1 FPS in the Mafia 3 benchmark; and 144.3 in the F1 2016 benchmark. The Ryzen 5 1500X (4c/8t, \$189 SEP) achieved 26.2 FPS in the Ashes of the Singularity CPU benchmark; 65 FPS in the Civilization VI benchmark; 79.9 FPS in the Mafia 3 benchmark; and 148.9 in the F1 2016 benchmark. PC manufacturers may vary configurations yielding different results. RZN-26
11. Intel model specifications for Intel® Core™ i7 6900K, Intel® Core™ i7 6800K, Intel® Core™ i7 7700K, Intel® Core™ i5 7600K, Intel® Core™ i5 7600, Intel® Core™ i5 7500, and Intel® Core™ i5 7400 gathered from <https://ark.intel.com> on February 3, 2017
12. Stats taken from JPR PC gaming hardware report on February 14, 2017
13. Esports gaming trends gathered from <https://newzoo.com/insights/markets/esports/> on February 13, 2017

© 2017 Advanced Micro Devices, Inc. All rights reserved. AMD, the AMD Arrow logo, AMD Ryzen™, AMD CrossFire, Radeon and combinations thereof are trademarks of Advanced Micro Devices. August 2017. PID 1710990-D