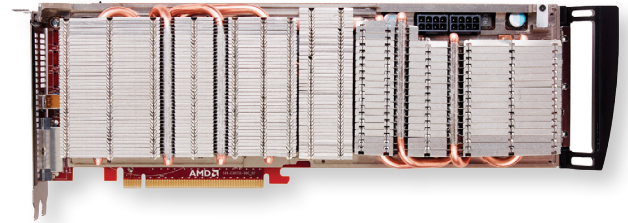# AMD FirePro™ S10000

HIGH DENSITY, HIGH PERFORMANCE
SERVER GRAPHICS

The Most Powerful Server Graphics Card Ever Created[1].

Key Features:

→ Two powerful GPUs

→ Dual-slot form factor

→ Passive or active thermal design

→ 6GB GDDR5 memory, 480 GB/s memory bandwidth

→ 375W maximum power

→ Support for SMBus temperature reporting at boot up

→ Support for Citrix® and VMware® direct GPU pass-through

→ Support for Microsoft® RemoteFX

→ PCIe® 3.0 compliant

→ Support for industry standard APIs

→ Designed, built and thoroughly tested by AMD

→ Planned minimum two year lifecycle

→ Three year warranty

Data center and IT managers are faced with many challenges: doing more with less resources, configuring computing solutions to meet a variety of end user needs, flat power budgets, reigning in time spent on system support and maintenance, preventing data leakage, and supporting multiple operating systems and application versions. AMD FirePro™ technology is designed to help managers meet these challenges and more. AMD FirePro™ S10000 server graphics deployed in the data center can help to reduce operating costs and time spent on servicing individual systems, increase asset utilization density, and maximize processing power within the same power budget.

Additionally, AMD FirePro™ S10000, and the current family of AMD FirePro™ server graphic products, supports key industry-standard APIs, including OpenCL™ and DirectX® for writing programs that execute across heterogeneous platforms consisting of CPUs, GPUs and other processors.

High Density Supercomputing

AMD FirePro™ S10000 server graphics are designed to meet the most demanding performance and reliability requirements. For deployments requiring intense processing and accuracy, like Computational Fluid Dynamics, Structural Mechanics, Numerical Analytics and Genetic Sequencing, AMD FirePro™ S10000 is a GPU compute powerhouse, delivering record-breaking peak single and double precision floating point performance in a high density dual-GPU form factor[2], and Error Code Correcting memory support.

Generating an impressive 1.48 TFLOPS of peak double precision floating point performance—up to 7.8 times the competing solution[3]—AMD FirePro™ S10000 is capable of tackling the most demanding compute-intensive, data-parallel tasks. With 6GB of GDDR5 memory, 480 GB/s of memory bandwidth and 5.91 TFLOPS of peak single precision floating point performance, AMD FirePro S10000 is the most powerful server graphics card ever created[1].

Tackling Graphics and Compute-Heavy Workflows

As traditional workstation graphics applications evolved, they required more graphics processing performance to help professionals create and render more complex 3D models, designs and animations. Today, applications used by the Aerospace, Automotive, Design and Engineering, and Pharmaceutical industries now require significantly more compute performance to calculate the algorithms behind the complex visualizations being rendered.

While some graphics vendors recommend one graphics card for rendering and a second for handling the computation, AMD FirePro™ S10000 server graphics are capable of handling both rendering and computation simultaneously. It's based on the world's first 28nm GPU architecture, AMD's new Graphics Core Next, that is purpose-built for for high utilization, high throughput and multitasking. In fact, each GPU core is designed to handle two compute and one graphics operation at the same time, enabling independent

AMD FirePro™ S10000

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FEATURES	BENEFITS
28nm Graphics Core Next Architecture	Enables unprecedented floating-point peak performance across a wide range of computing applications: → 1.48 TFLOPS Peak Double Precision → 5.91 TFLOPS Peak Single Precision
High Performance Per Watt	Delivers the highest peak double precision performance per watt – up to 4.7 times the competing solution[4]: → 3.94 GFLOPS/Watt Peak Double Precision → 15.76 GFLOPS/Watt Peak Single Precision
AMD PowerTune Technology[5]	Helps to deliver higher performance optimized to the thermal limits of the GPU by dynamically adjusting the clock during runtime based on an internally calculated GPU power assessment. Improves the mechanism to deal with applications that would otherwise exceed a GPU's TDP.
Unified Driver	One driver spans the entire family of AMD FirePro™ technology, helping to simplify maintenance and system administration.
Application Optimization	AMD FirePro™ technology is optimized for workstation graphics applications and supports applications built on key industry standards.
ECC Memory Support	Helps to ensure the accuracy of computations by correcting single or double bit errors as a result of naturally occurring background radiation.
AMD Eyefinity Technology	Industry-leading multi-display technology enabling a highly immersive and unrivaled multi-tasking experience across up to five displays[6], powered by a single actively cooled AMD FirePro™ S10000 server graphics card.

scheduling and work item dispatch for more efficient multi-tasking. With AMD FirePro™ S10000 server graphics, there is only one card IT and data center managers need to purchase for graphics and/or compute-intensive workloads.

The Leading Edge of Graphics Virtualization

AMD FirePro technology supports leading virtualization technologies from Citrix®, VMware® and Microsoft® that enable the delivery of graphically accelerated virtual machines. With RemoteFX, a single AMD FirePro™ S10000 server graphics card installed in the data center can power a large number of remote concurrent user computing sessions. With RemoteFX, all users need to connect is a PC client device or a zero client portal. No special hardware is required at each end user's workspace—just a network connection, display, keyboard and mouse. Users have the ability to work seamlessly with business productivity applications, video, graphically rich OS interfaces, as well as entry level CAD and Media & Entertainment applications.

AMD FirePro™ S10000 server graphics also support Citrix XenServer™ and VMware ESXi/ESX with direct GPU pass-through support. A server outfitted with multiple GPUs can power multiple virtual desktops from the data center (one S10000 can support up to two virtual desktops). With an AMD FirePro™ S10000 and these leading virtualization technologies, multiple end users can be supported with one server or expansion chassis and without sacrificing graphics performance.

AMD FirePro™ is capable of meeting the most demanding centralized computing needs. Coupled with a single unified driver, AMD FirePro™ S10000 server graphics offer IT and data center managers a powerful, flexible and scalable solution capable of supporting Remote Graphics and Virtual Desktop Infrastructure (VDI) deployments, rendering farms and Supercomputing clusters.

For more information, visit
www.amd.com/firepro

PRODUCT DETAILS

Ordering Information
→ OPN: 100-505803 AMD FirePro™ S10000 Passive (heatsink)
→ OPN: 100-505779 AMD FirePro™ S10000 (active fan)

Memory and Bandwidth
→ 6GB GDDR5 (3GB per GPU)
→ 384-bit, 480 GB/s (240 GB/s per GPU)

Output Connectivity
→ Passive Option: 1x Mini DisplayPort and 1x DVI outputs
→ Active Fan Option: 4x Mini DisplayPort and 1x DVI outputs; also ships with 1x Mini Display Port to dual-link DVI (active) adapter
→ AMD Eyefinity multi-display technology is only enabled on S10000 with active fan

API and OS Support
→ OpenGL 4.2
→ DirectX® 11.1 (including DirectCompute)
→ OpenCL™1.2 [7]
→ Microsoft® Windows® 7, Windows® 8, Microsoft Windows Server® 2008 R2 and Linux® (32-bit or 64-bit)[8]

Power Consumption and Form Factor
→ Max Power / TDP: 375W
→ Dual-slot, PCIe® 3.0 x16 bus interface
→ Full height / full length form factor

System Requirements
→ 2GB of system memory
→ 35 CFM airflow cooling (for passively cooled option only)
→ 750W or greater PSU with two (2) 150W PCIe® AUX 8-pin power connectors
→ Available PCIe® x16 slots (2)
→ Microsoft® Windows® 7, Windows® 8, Microsoft Windows Server® 2008 R2 and Linux® (32-bit or 64-bit)[8]

AMD Warranty and Support
→ Three year limited product repair / replacement warranty
→ Direct toll free phone and email access to dedicated AMD workstation technical support team[9]
→ Advanced parts replacement option

Regulatory Compliance
→ FCC, CE, C-Tick, BSMI, KCC, UL, VCCI, RoHS and WEEE

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[1] AMD FirePro™ S10000 delivers 1.48 TFLOPS peak double precision floating point performance, and Nvidia's highest performing card in the market as of January 14, 2013 is the Tesla K20X with 1.31 TFLOPS peak double precision. Visit http://www.nvidia.com/object/tesla-servers.html for Nvidia product specs. FP-71

[2] AMD FirePro™ S10000 delivers up to 5.91 TFLOPs of peak single precision and 1.48 TFLOPs of peak double precision floating point performance, compared to Nvidia Tesla K10 that is capable of up to 4.58 TFLOPS of peak single precision and 190 GFLOPs double precision peak floating point performance. Visit http://www.nvidia.com/object/tesla-servers.html for Nvidia product specs. Comparison as of 10/31/12. FP-65

[3] AMD FirePro™ S10000 delivers 1.48 TFLOPs of peak double precision floating point performance, compared to Nvidia Tesla K10 that is capable of 190 GFLOPs double precision peak floating point performance. Visit http://www.nvidia.com/object/tesla-servers.html for Nvidia product specs. FP-63

[4] Based on comparison as of 10/31/12 between AMD FirePro S10000 with 1.48 TFLOPS peak double precision, max board power of 375W and 3.94 GFLOPS double precision per watt performance. Compared to the dual-GPU Nvidia Tesla K10 with 190 GFLOPS peak double precision, 225W max board power, and less than 1 GFLOP per watt double precision performance (0.84). Nvidia Tesla K10 product specs found here http://www.nvidia.com/content/PDF/kepler/Tesla_K10_BD-06280-001_v05.pdf FP-68

[5] AMD PowerTune and technology is offered on certain AMD FirePro™ products. Not all products feature all technologies – check with your component or system manufacturer for specific model capabilities.

[6] AMD Eyefinity technology supports up to six DisplayPort displays using an enabled AMD graphics card and up to four using an enabled APU. Number and type of displays and resolution varies by model and board design; confirm specifications with manufacturer before purchase. Configurations with up to two active adapters supported. To enable more than two displays, DisplayPort™ displays are recommended. Additional hardware may be required. Up to four displays from each DisplayPort output are supported utilizing DisplayPort 1.2 Multi-Stream-enabled displays, connectors and/or hubs; total limit six displays per graphics card or four per APU. Microsoft® Windows® 7, Windows Vista®, or Linux® required to support more than 2 displays; Windows XP no longer supported. Applications must support non-standard aspect ratios to pan across multiple displays. SLS ("Single Large Surface") functionality requires identical display resolutions. See www.amd.com for full details.

[7] OpenCL 1.2 conformance expected.

[8] Support for Windows Server® 2012 planned for a future driver release.

[9] Toll free available in the U.S. and Canada only, email access is global.