Breaking the TERAFLOPS BARRIER

Top Technology Needs
1. Double Precision Floating Point
2. High Performance per Watt
3. Open Systems Architecture
4. Scalable Solutions

ATI Stream Computing Raises the HPC Bar
The AMD FireStream™ 9250 compute accelerator is specifically designed to accelerate critical algorithms in high performance computing (HPC), mainstream, and consumer applications.

The single PCI slot, one TFLOPS AMD FireStream 9250 includes 1GB GDDR3 memory enabling developers to handle large, complex problems. It delivers performance of up to 8 GFLOPS per watt single precision and more than 200 GFLOPS raw double-precision performance.

The second-generation AMD FireStream 9250 builds upon the capabilities of the earlier AMD FireStream™ 9170, the industry’s first GP-GPU with double precision floating point support in hardware.

The AMD FireStream 9250’s compact size makes it ideal for small 1U servers as well as most desktop systems, workstations and larger servers.

How ATI Stream Computing Helps
ATI Stream computing provides industry-leading performance and support so that you can tackle the hardest of HPC applications.

• **Up to 8 GFLOPS per watt** with one TFLOPS of raw performance at under 120 watts
• **Commodity GPU technology** for affordable TFLOPS performance
• **Multiple software development paths** from high level languages and libraries to low level performance tuning via the ATI Stream SDK
• **Solution scalability** through combinations of AMD CPUs and GPUs matching specific problem needs
• **Support from AMD engineers and partners** throughout your development process*

### Technology Need | AMD FireStream Solution
---|---
Double precision floating point | • Industry-leading AMD GPU with double precision floating point in hardware
High performance per watt | • Over 8 GFLOPS per watt single slot solution
Open systems architecture | • Familiar 32- and 64-bit Linux and Microsoft® Windows® environments
| • OpenCL®-ready technology
| • High level tools from multiple third party developers
Scalable solutions | • ATI Stream software supports multiple AMD FireStream 9250s per system

AMD FireStream™ 9250 compute accelerator

- Compact single slot form factor
- Double precision floating point in hardware
- 1GB GDDR3 memory
- Under 120 watts peak

AMD’s ATI Stream computing group utilizes mainstream GPU technology developed for the gaming community and repurposes it for high performance computing needs. The result is a standard PCIe plug-in board using established commodity components for a low cost, reliable compute engine for the HPC community.
AMD FireStream™ 9250 computer accelerator

Industries and Applications

Financial Analytics
Increase Black-Scholes speed-to-results through the highly parallel architecture of the Stream process

Energy, Oil and Gas
Seismic analysis on larger or more granular geographies to help quickly identify regions of high discovery probability

Life Sciences
Protein folding, sequencing and alignment investigations, combinatorial chemistry, Hidden Markov Models, and more, are ideal problems for the highly parallel ATI Stream computing architecture

Computer Aided Engineering (CFD, FEA etc.)
Fast results with existing model DOF or higher number of variables (finer mesh) within existing calculation time frames

Consumer
High definition video and gaming benefit from the integration of GPU and CPU from AMD

How to Purchase
AMD has worldwide channel support from many system vendors and retailers/retailers. For easy purchase links and instructions about how to buy AMD FireStream products, visit www.amd.com/stream.

Developer Support
Visit our ATI Stream developer forum, www.amd.com/streamdevforum

ATI Stream SDK
An open systems approach

ATI Stream SDK leverages open systems technology to provide a C-like development environment on 32/64-bit Linux (RHEL 5.1 and SUSE 10 SP1) and 32/64-bit Microsoft® Windows®.

Developers can begin with Brook+, an AMD-enhanced and supported implementation of Brook, the popular open-source C-level language and compiler. Math functions can be implemented using a new release of AMD Core Math Library for the GPU [ACML-GPU]. Tools like GPU Shader Analyzer and AMD Code Analyst help identify and correct performance issues.

AMD’s Compute Abstraction Layer (CAL) provides low level access to the GPU for development and performance tuning. AMD’s open systems approach allows developers access to all key APIs and specifications, enabling performance tuning at the lowest level and development of third party tools.

ATI Stream SDK Technical Specification

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tbody>
<tr>
<td>Number of GPUs</td>
<td>1</td>
</tr>
<tr>
<td>Number of stream processor cores</td>
<td>800</td>
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<tr>
<td>On-board memory</td>
<td>1GB GDDR3</td>
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<tr>
<td>Memory speed</td>
<td>933 MHz</td>
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<tr>
<td>Memory interface</td>
<td>256-bit</td>
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<tr>
<td>Memory bandwidth (peak)</td>
<td>63.5 GB/s</td>
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<tr>
<td>Single precision floating point</td>
<td>1 TFLOPS</td>
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<tr>
<td>Double precision floating point</td>
<td>200 GFLOPS</td>
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<tr>
<td>Floating point precision</td>
<td>IEEE 754 single and double precision floating point</td>
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<tr>
<td>Power consumption</td>
<td>120 watts peak, 90 watts typical</td>
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<tr>
<td>System interface</td>
<td>PCIe Express x16 Generation 2</td>
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<tr>
<td>Auxiliary power connectors</td>
<td>One 5pin</td>
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<tr>
<td>Thermal solution</td>
<td>Vapor chamber fan sink</td>
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<tr>
<td>Form factor</td>
<td>4.376” x 9.2” (111.5mm x 233.68mm), single slot</td>
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<tr>
<td>Programming environment</td>
<td>ATI Stream SDK</td>
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</tbody>
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AMD FireStream™ 9250
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63.5 GB/s
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200 GFLOPS
IEEE 754 single and double precision floating point
120 watts peak, 90 watts typical
PCI Express x16 Generation 2
One 5pin
Vapor chamber fan sink
4.376” x 9.2” (111.5mm x 233.68mm), single slot
ATI Stream SDK