

# Quad-Core AMD Opteron™ Processors

## Fast Facts

Generations  
Ahead



AMD Opteron™ processors enabled by Direct Connect Architecture – introduced by AMD to the x86 market in 2003 – ignites next-generation technologies that help put your business generations ahead.

### NAME

Third-Generation  
AMD Opteron™ processor or  
Quad-Core AMD Opteron™ processor

### SOUNDBITE

Simplifies your business, giving you flexibility for today and scalability for the future.

### QUICK FEATURES

- Native Quad-Core
- AMD64 technology
- Direct Connect Architecture
  - Integrated memory controller
  - HyperTransport™ technology
- AMD Virtualization™ (AMD-V™) with Rapid Virtualization Indexing
- Enhanced AMD PowerNow!™ technology
  - Independent Dynamic Core Technology
  - Dual Dynamic Power Management™
- AMD CoolCore™ Technology
- AMD Smart Fetch Technology
- AMD Memory Optimizer Technology
- AMD Balanced Smart Cache
- AMD Wide Floating-Point Accelerator
- DDR2 memory
- Optimized Platform Management Architecture (OPMA)
- Enhanced Virus Protection

### EXAMPLE MODEL NUMBER

8380<sup>1</sup>

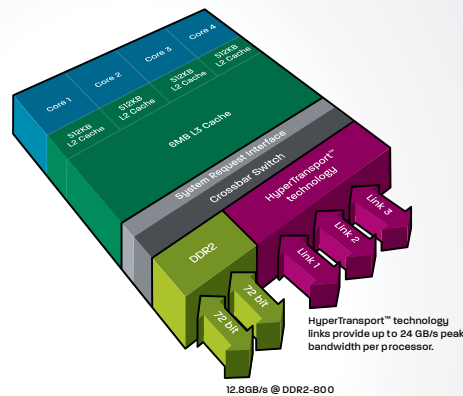
<sup>1</sup>This model number indicates relative performance among Third-Generation AMD Opteron™ processors. Model number 8380 is used in this document for illustration purposes only. Other model numbers can be used interchangeably. For a list of current AMD model numbers log on to [www.amd.com/opteronmodels](http://www.amd.com/opteronmodels) or contact your AMD sales representative.

## Offering Industry-Leading Performance-Per-Watt and Superior Virtualization Capabilities

**OPTIMAL VIRTUALIZATION** AMD Virtualization™ (AMD-V™) technology with Rapid Virtualization Indexing provides a balanced approach to improve virtualization efficiency, enabling more virtual machines to run per server for greater server consolidation and improved manageability.

**INDUSTRY LEADING POWER EFFICIENCY** Enhanced AMD PowerNow!™ technology in AMD Opteron™ processors provides you with performance-on-demand capabilities for optimum performance-per-watt and power savings.

**SUPERIOR INVESTMENT PROTECTION** Stable roadmap and product transitions provide a long product lifecycle to match true enterprise environments.



### BALANCED PERFORMANCE WITH DIRECT CONNECT ARCHITECTURE

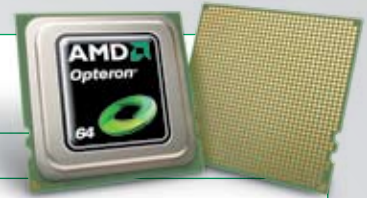
**DIRECT CONNECT ARCHITECTURE** Direct Connect Architecture eliminates the bottlenecks inherent in traditional front-side bus architectures providing increased throughput for the best system scaling. It's designed for multi-threaded and multitasking environments and can be deployed on a single platform for simplified manageability and lower TCO with industry-leading processor performance.

## Product Features and Benefits

- **RAPID VIRTUALIZATION INDEXING** helps improve virtualization performance, enabling more virtual machines to run per server.
- **ENHANCED AMD POWERNOW!™ TECHNOLOGY** works with the operating system to provide performance-on-demand capabilities for precise power management, power savings and lower TCO.
- **INDEPENDENT DYNAMIC CORE TECHNOLOGY** can vary clock frequency per core based on workload for reduced power consumption and thermal output.
- **AMD COOLCORE™ TECHNOLOGY** automatically turns off blocks of logic when they are not in use for reduced power consumption.
- **AMD SMART FETCH TECHNOLOGY** allows core to enter "halt" state and draw less power; reducing CPU power consumption.
- **DUAL DYNAMIC POWER MANAGEMENT™** allows for greater application performance while providing more opportunities to save system power with AMD PowerNow!™ technology.
- **AMD WIDE FLOATING POINT ACCELERATOR** for significantly improved performance on HPC, scientific and workstation applications.
- **AMD MEMORY OPTIMIZER TECHNOLOGY** to increase memory throughput and support quad-core technology.
- **AMD BALANCED SMART CACHE** offers better support for multi-threaded environments with a highly efficient cache structure that helps reduce latency to main memory.

## Quad-Core AMD Opteron™ Processor Specifications

Cache Size	L1 Cache: 64KB (Data) + 64KB (Instruction) per core L2 Cache: 512KB per core L3 Cache: 6MB
Process Technology	45-nanometer SOI (silicon-on-insulator) technology
HyperTransport™ Technology Links	Three 16-bit/16-bit links @ up to 1000MHz full duplex for Socket F (1207)
Memory	Integrated DDR2 memory controller—up to 10.7 GB/s memory bandwidth per CPU for Socket F (1207)
Types of Memory	Registered ECC DDR2-400, DDR2-533, DDR2-800 for Socket F (1207)
Chipsets	Solutions are available from Broadcom, NVIDIA and AMD
Packaging	Socket F (1207)—1207-pin organic Land Grid Array (LGA)



## Understanding AMD Opteron™ Processor Model Numbers

Quad-Core AMD Opteron™ processors are offered in two series: 2300 Series (up to 2P/8 cores), and the 8300 Series (up to 8P/32 cores). The 2300 Series and 8300 Series are built on AMD's Socket F (1207).

## Quad-Core AMD Opteron™ Processor Model Comparison

MODEL NUMBER	CORE FREQUENCY	I/O BUS FREQUENCY*	MAX I/O BANDWIDTH	SOCKET	CMOS TECH	L2 CACHE	L3 CACHE	ACP**
8384	2.7 GHz	1000 MHz	24 GB/s	F (1207)	45 nm SOI	512 KB/core	6 MB	105W
8382	2.6 GHz	1000 MHz	24 GB/s	F (1207)	45 nm SOI	512 KB/core	6 MB	75W
8380	2.5 GHz	1000 MHz	24 GB/s	F (1207)	45 nm SOI	512 KB/core	6 MB	75W
8378	2.4 GHz	1000 MHz	24 GB/s	F (1207)	45 nm SOI	512 KB/core	6 MB	75W
2384	2.7 GHz	1000 MHz	24 GB/s	F (1207)	45 nm SOI	512 KB/core	6 MB	75W
2382	2.6 GHz	1000 MHz	24 GB/s	F (1207)	45 nm SOI	512 KB/core	6 MB	75W
2380	2.5 GHz	1000 MHz	24 GB/s	F (1207)	45 nm SOI	512 KB/core	6 MB	75W
2378	2.4 GHz	1000 MHz	24 GB/s	F (1207)	45 nm SOI	512 KB/core	6 MB	75W
2376	2.3 GHz	1000 MHz	24 GB/s	F (1207)	45 nm SOI	512 KB/core	6 MB	75W

\* Using HyperTransport™ Technology

\*\* ACP stands for Average CPU power. See [www.amd.com/ACP](http://www.amd.com/ACP)

