

# AMD Athlon™ 64 X2 Dual-Core Processors

High performance and true multi-tasking capability with AMD64 technology



## NAME

AMD Athlon™ 64 X2 Dual-Core Processor

## SOUNDBITE

Do more in less time with an AMD Athlon™ 64 X2 dual-core processor

## FEATURES

- AMD64 technology
- Dual-core technology
- Energy Efficient
- AMD Virtualization™
- HyperTransport™ technology
- Cool'n'Quiet™ technology
- Enhanced Virus Protection\*
- AMD Digital Media Xpress™

## EXAMPLE MODEL NUMBER

5000+<sup>1</sup>

<sup>1</sup>This model number indicates relative software performance among AMD Athlon 64 X2 processors. Model number 5000+ 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](http://www.amd.com) or contact your AMD sales representative.



## End User Benefits

### ■ WELCOME TO TRUE MULTI-TASKING.

Multi-tasking has become a way of life, but sometimes your PC just can't keep up with everything you want to do on it at the same time. AMD Athlon™ 64 X2 dual-core processors enable TRUE multi-tasking — to take computing to an all-new level.

### ■ DO MORE IN LESS TIME.

You've got better things to do than stare at your PC as it "thinks" the moment you try to work on more than one thing at a time. AMD Athlon™ 64 X2 dual-core processors can increase computing performance by as much as 80%<sup>\*\*</sup> over similar single-core processors, because dual-core technology is like having two processors working together — each one taking care of different applications. Now you can do more in less time: simultaneously burn a CD, check e-mail, print a digital photo, and run a virus scan without compromising performance.

### ■ SATISFYING YOUR DEMAND FOR MORE DIGITAL MEDIA.

Usher in the next generation of power hungry digital media software for amazing high-definition video and photo editing, content creation, and audio mixing. With AMD Athlon™ 64 X2 dual-core processors, you can experience up to an 80% increase in performance<sup>\*\*</sup> over similar single-core processors.

### ■ YOU'VE DONE WHAT YOU CAN TO MAKE YOUR COMPUTER SAFE. NOW MAKE IT FAST AGAIN.

To protect your computer, you've installed all the latest virus protection and firewall software. The result? Your PC may be safer but slower. Upgrade to a computer powered by an AMD Athlon™ 64 X2 dual-core processor — dual-core technology is like having one processor running protection programs in the background while a second runs the applications you want to work on, making computing fast again.

## Product Features

AMD Athlon 64™ X2 dual-core processors provide the same level of system features customers have grown to expect with the AMD Athlon™ 64 product family. It now includes additional features available on the socket AM2 processor parts:

- Select **energy efficient** processors can provide energy savings and enable small form factor PCs
- **AMD Virtualization™** — chip-based virtualization technology helps virtualization software run more securely and efficiently
- **HyperTransport™ technology** can help provide increased overall system performance with up to a 2000MHz bi-directional system bus
- **Cool'n'Quiet™ technology** helps reduce heat and noise for a better working environment
- **Enhanced Virus Protection\* (EVP)** can help protect against certain viruses, worms, and other malicious attacks
- **AMD Digital Media Xpress™** enables stellar performance and playback quality on digital entertainment

## Operating System Compatibility

The AMD Athlon™ 64 X2 dual-core processor is designed to be compatible with Microsoft Windows® XP Professional x64 Edition, Windows XP Professional, Windows XP Home Edition, Windows 98, Windows ME, Windows XP Media Center Edition, Windows NT®, Windows 2000, Linux®, and other PC operating systems, including Microsoft Windows Vista™. For more information, **visit [www.amd.com](http://www.amd.com)**.

## Understanding AMD Model Numbers

AMD processor model numbers provide a simple, accurate representation of the relative performance among an AMD processor family. They're based on industry-standard benchmarks on a wide range of popular software. The "+" at the end of each model number indicates the added performance benefits your customers get from AMD's innovative processor designs.

\*Enhanced Virus Protection (EVP) is only enabled by certain operating systems including the current versions of Microsoft Windows, Linux®, Solaris™, and BSD Unix. After properly installing the appropriate operating system release, users must enable the protection of their applications and associated files from buffer overrun attacks. Consult your OS documentation for information on enabling EVP. Contact your application software vendor for information regarding use of the application in conjunction with EVP. AMD strongly recommends that users continue to use third-party anti-virus software as part of their security strategy.

\*\*[http://www.amd.com/us-en/Processors/ProductInformation/0,30\\_118\\_9485\\_13041-13077-14670,00.html](http://www.amd.com/us-en/Processors/ProductInformation/0,30_118_9485_13041-13077-14670,00.html)

## AMD Athlon™ 64 X2 Dual-Core Processor Product Specifications

Cache Size	L1 Cache (Instruction + Data): 128KB + 128KB (64KB + 64KB for each core) L2 Cache: (Total dedicated) 1MB or 2MB
Process Technology	90-nanometer SOI (silicon-on-insulator) technology 65-nanometer SOI (silicon-on-insulator) technology
HyperTransport™ Technology Links	One 16-bit/16-bit link @ up to 2000MHz full duplex
Memory	Integrated DDR2 memory controller — up to 12.8GB/sec dual channel memory bandwidth
Types of Memory	PC2 6400 (DDR2-800); PC2 5300 (DDR2-667); PC2 4200 (DDR2-533); PC2 3200 (DDR2-400) DDR2 unbuffered
Die Size	90nm = 219.9 mm <sup>2</sup> to 173.9 mm <sup>2</sup> 65nm = 118 mm <sup>2</sup>
Transistors	90nm = 164 to 243 million (depending on cache size) 65nm = 221 million
Chipsets	Solutions are now available from AMD (ATI), NVIDIA, SiS, and Via
Packaging	Socket AM2 — 940-pin organic micro Pin Grid Array (micro-PGA)

## AMD Athlon™ 64 X2 Dual-Core Processor Product Model Comparison

MODEL NUMBER	CLOCK FREQUENCY	SYSTEM BUS	PACKAGE PROFILE	CMOS TECH	TOTAL DEDICATED L2 CACHE	TDP	VOLTAGE	MAX TEMP
6000+	3000MHz	2000MHz	Socket AM2	90nm SOI	2MB	125W	1.35-1.40V	55-63°C
5600+	2800MHz	2000MHz	Socket AM2	90nm SOI	2MB	89W	1.30-1.35V	55-70°C
5400+	2800MHz	2000MHz	Socket AM2	90nm SOI	1MB	89W	1.30-1.35V	55-70°C
5200+	2600MHz	2000MHz	Socket AM2	90nm SOI	2MB	89W	1.30-1.35V	55-70°C
						65W	1.20-1.25V	55-72°C
5000+	2600MHz	2000MHz	Socket AM2	90nm SOI	1MB	89W	1.30-1.35V	55-70°C
						65W	1.20-1.25V	55-72°C
5000+	2600MHz	2000MHz	Socket AM2	65nm SOI	1MB	65W	1.25-1.35V	55-72°C
4800+	2500MHz	2000MHz	Socket AM2	65nm SOI	1MB	65W	1.25-1.35V	55-72°C
4600+	2400MHz	2000MHz	Socket AM2	90nm SOI	1MB	89W	1.30-1.35V	55-70°C
						65W	1.20-1.25V	55-72°C
4400+	2300MHz	2000MHz	Socket AM2	65nm SOI	1MB	65W	1.25-1.35V	55-72°C
4200+	2200MHz	2000MHz	Socket AM2	90nm SOI	1MB	89W	1.30-1.35V	55-70°C
						65W	1.20-1.25V	55-72°C
4000+	2100MHz	2000MHz	Socket AM2	65nm SOI	1MB	65W	1.25-1.325V	55-72°C
3800+	2000MHz	2000MHz	Socket AM2	90nm SOI	1MB	89W	1.30-1.35V	55-70°C
						65W	1.20-1.25V	55-72°C
3600+	1900MHz	2000MHz	Socket AM2	65nm SOI	1MB	65W	1.25-1.35V	55-72°C