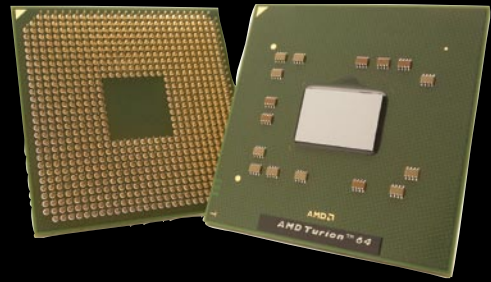


# Mobile AMD Turion™ processors for embedded applications



## Product overview

AMD Turion™ 64 X2 dual-core mobile technology is the most advanced family of dual-core processors made for mobility — uniquely optimized to deliver better multi-tasking performance in embedded systems. The AMD Turion 64 X2 is packaged in a small-footprint, socket S1 compatible, lidless 638-pin micro PGA. This enables small form factor and rugged designs to be created with optimal thermal dissipation utilizing a socket suitable for up to 50G shock and 7G vibration. The AMD Turion 64 X2 is well suited for designs in the gaming, medical, transportation, industrial control, communications, and retail markets with specific models supporting extended longevity.\*

## Product features and benefits

- **AMD PowerNow!™ technology**, the first dynamic power management technology in the industry, delivers performance on demand and can reduce the TDP of the already low-power AMD Turion 64 X2 by up to 73%, with TDP options as low as 9.4W
- Featuring AMD's innovative **Direct Connect Architecture** for leading-edge dual-core performance by providing separate, dedicated high-speed links between processor and memory, processor and I/O, and I/O to memory, to enable predictability in real-time applications
- **HyperTransport™ technology** boosts overall system performance through a dedicated high-speed, low-latency I/O interface
- Socket and electrically compatible with the single-core **Mobile AMD Sempron™ processor** to enable single- or dual-core solutions with the same platform providing a unique, scalable, power and performance solution
- AMD Turion 64 X2 dual-core mobile technology featuring **AMD Digital Media Xpress™** delivers a rich experience on today's multimedia-enhanced software, taking 3-D and graphics to new levels for medical imaging, gaming, kiosk, and point-of-sale applications
- **Simultaneous 32- and 64-bit performance**, designed to be compatible with the next generation 64-bit Windows® operating system, Microsoft® Windows Vista®
- **Enhanced Virus Protection** to increase the reliability of your network-connected applications\*\*

## Rich choices

- Offering rich choices for embedded solutions of all kinds by enabling low power, scalable performance, and feature differentiation.
- Renowned industry innovator AMD collaborates with industry-leading technology companies, including Microsoft, Sun, IBM, HP, and many other innovative technology leaders, to bring you powerful embedded solutions with the exceptional performance and low power you expect
  - Designers can select extended longevity chipsets from AMD, Broadcom, SiS, as well as many other commercially available industry-standard chipsets, allowing them to choose the best in connectivity, graphics, and security to meet their application needs
  - AMD is an industry leader that is dedicated to the real-world needs of our customers, enabling you to get the right platform to market

AMD has long been recognized by many of the industry's top publications, organizations, and high-tech experts as an innovative leader.

\* This document generally references all AMD Turion 64 X2 Mobile Technology available in socket S1. Please refer to the AMD Embedded Product Selection Guide for specific AMD Turion models with extended availability.

\*\*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 include third-party antivirus software as part of their security strategy.

# AMD Turion™ 64 X2 Dual-Core Mobile Technology

## Key Architecture Features

### Dual-core processing

- Two CPU cores in one monolithic package delivering leading-edge power and performance
- Ultra low latency memory access accelerates performance of multi-tasking or multi-threaded software applications

### The AMD64 core provides leading-edge 32-bit performance, seamless 32- to 64-bit migration, and investment protection

- AMD64 technology features uncompromising 64- and 32-bit performance
- Vastly expands memory addressability with 40-bit physical addresses, 48-bit virtual addresses
- Doubles the number of internal registers with eight additional (16 total) 64-bit integer registers and eight additional (16 total) 128-bit SSE/SSE2/SSE3 registers
- AMD Digital Media Xpress™ provides support for SSE, SSE2, SSE3, and MMX™ instructions

### Ultra low latency HyperTransport™ technology for high-speed I/O communication

- HyperTransport technology helps increase overall system performance by helping to reduce traditional system bottlenecks, increase I/O bandwidth, and reduce I/O latency to improve overall system performance
- One 16-bit link supporting up to 1600MHz
- Up to 6.4GB/s peak HyperTransport I/O bandwidth

### High-bandwidth, low-latency integrated DDR2 memory controller

- Designed to boost performance by directly connecting the processor to the memory, thus significantly reducing memory latency
- Supports 2nd-generation DDR2 memory, which improves overall memory performance through increased data rates and larger densities
- Supports industry-standard, widely available PC2-3200 (DDR2-400), PC2-4200 (DDR2-533), PC2-4300 (DDR2-533), PC2-5300 (DDR2-667), and PC2-6400 (DDR2-800) unbuffered SO-DIMMs
- Dual channel, 128-bit interface
- Up to 10.7GB/s memory bandwidth

### Large high-performance on-chip cache

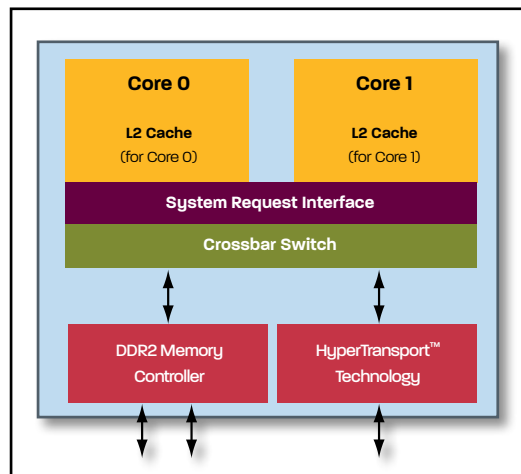
- 64KB Level 1 instruction cache, cache per core
- 64KB Level 1 data cache, cache per core
- Up to 512KB Level 2 cache, cache per core

### AMD PowerNow!™ technology

- Reduces power consumption by dynamically switching the performance states (processor core voltage and operating frequency) based on processor performance requirements
- Allows the processor to dissipate less heat under normal operating conditions
- Provides performance on demand when required by the application
- Operates automatically in the background

### AMD Virtualization™ technology

- Enhancements designed to improve the performance, reliability, and security of existing and future virtualization environments
- Get the most out of your hardware by “co-locating” legacy and modern operating systems or installing trusted and untrusted partitions on the same hard disk



## [www.amd.com/embedded](http://www.amd.com/embedded)

### ABOUT AMD

AMD (NYSE:AMD) designs and produces innovative microprocessors and low-power processor solutions for the computer, communications, and consumer electronics industries. AMD is dedicated to delivering standards-based, customer-focused solutions for technology users, ranging from enterprises and governments to individual consumers.

### WWW.AMD.COM

One AMD Place  
P.O. Box 3453  
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Europe & UK: +44-0-1276-803299  
Europe & UK Fax: +44-0-1276-803298  
France: 0800-908-621  
Germany: +49-89-450-53199  
Italy: 800-877224  
Europe E-mail: [euro.tech@amd.com](mailto:euro.tech@amd.com)

China Fax: 86-10-8518-1777  
Hong Kong Fax: 852-2956-0588  
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