

Low-Power Solution for Small Form Factors



Introduction

The AMD Geode™ GX 533@1.IW processor* is designed to provide the exceptional combination of low power, excellent performance and small size for applications that require a small form factor and minimal processor support. The GX 533@1.IW processor is intended for high-performance and low-power applications including digital set-top boxes, personal access devices, thin client applications, and other uses that leverage low-power consumption with optimized processor performance.

The AMD Geode GX 533@1.IW processor features 32KB of level I cache, DDR SDRAM support and integrated display controller, all in a 32-bit low-power x86 architecture. With typical power consumption of 1.IW and no heat sink, the GX 533@1.IW processor can help enable long battery life and efficient performance for mobile applications.

AMD Geode™ Solutions have received new model numbers to better reflect total performance beyond just megahertz. This presentation of attributes gives designers greater understanding of the capabilities of AMD Geode Solutions.

Product overview

Together with its AMD Geode™ CS5535 or CS5536 companion device, the AMD Geode GX 533@1.IW processor delivers the optimum balance between power consumption and performance. The GX 533@1.IW processor is powered by a new x86 core with support for MMX® and 3DNow!™ technology extensions. Built around the AMD GeodeLink™ architecture with an on-chip bandwidth of up to 6Gbps, the GX 533@1.IW processor supports high-quality Internet applications.

Main components

- x86 CPU with integrated graphics, DDR memory controller and FPU
- Integrated DACs
- High-performance GeodeLink architecture
- 32-bit PCI-66 interface (up to 3 masters)
- ACPI and APM compliant
- <1.5W typical power consumption
- Two package options
 - BGD368 (CRT or TFT pin-out)
 - BGU396 (CRT/TFT pin-out)
- 0.15 micron process; 1.5V core voltage



Outstanding features

- 32-bit low-power x86 processor with support for MMX and 3DNow!™ technology extensions
- 32KB of level I cache, 16KB instruction and 16KB data
- High-performance patented GeodeLink architecture
- Integrated display controller
 - Integrated video DACs and integrated TFT interface for flexible output options: CRT or TFT (bond-out option or strap selectable depending on package)
- PCI 66MHz bus
 - Industry standard PCI 2.2 specification compliant
 - Write gathering and write posting of inbound write requests
 - Supports fast back-to-back transactions
- 64-bit DDR memory controller
- Integrated thermal diode
- Optimized Unified Memory Architecture (UMA) with patented compression technology
- BGD368 or BGU396 package

CPU core

- x86-compatible CPU core
- Single issue/eight stage integer pipeline
- Split I/D cache:
 - 16KB instruction
 - 16KB data
 - Efficient prefetch
- 256 entry TLB
- Integrated FPU that supports the MMX and 3DNow! instruction sets
- Fully pipelined single precision hardware with microcode support for higher precisions
- Branch performance enhanced with Branch Target Buffer (BTB) and return stack
- Standard test and scan interface
- Standard diagnostic signals
- Full scan for debug
- Also available: AMD Geode GX 466@0.9W (300MHz) processor and AMD Geode GX 500@1.0W (366MHz) processor

*This processor operates at 400MHz. Model numbers reflect performance as described here: <http://www.amd.com/connectivitysolutions/geodegxbenchmark>.

GeodeLink™ architecture

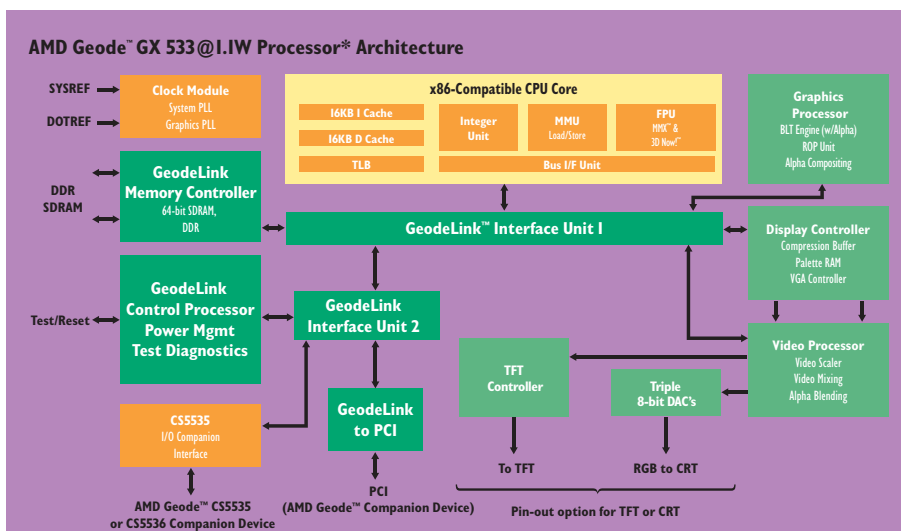
- High-bandwidth interface unit that can handle up to 6Gbps of data transfer
- Pipelining of multiple read and/or write requests from various devices (up to 31 pipelined transactions)
- Peer-to-peer communication
- Power management
 - 3.4W max. @ 333MHz (CRT)
 - Block level gating
 - Active hardware power management
 - Software power management
 - Low power I/O

GeodeLink™ control processor

- JTAG interface:
 - ATPG, full scan, BIST on all arrays
 - I149.1 boundary scan compliant
- ICE interface
- Reset and clock control
- Designed for improved software debug methods and performance analysis

Memory controller

- Integrated memory controller for low latency to CPU and on-chip peripherals
- 64-bit wide SDRAM bus



Graphics processor

- High-performance 2D graphics controller
- Alpha BLT
- Integrated dot clock PLL

Display controller

- Supports up to 1600 x 1200 x 16 BPP and 1280 x 1024 x 24 bpp @ 85Hz (CRT)
- Hardware-based VGA
- Hardware video up/down scaler
- Graphics/video alpha blending
- TFT or CRT interface
- Integrated CRT DACs

*This processor operates at 400MHz. Model numbers reflect performance as described here: <http://www.amd.com/connectivitysolutions/geodegbenchmark>.

About AMD

AMD (NYSE:AMD) designs and produces microprocessors, Flash memory devices and system-on-chip solutions for the computer, communications and consumer

electronics industries. AMD is dedicated to helping its customers deliver standards-based, customer-focused solutions for technology users, ranging from enterprises to government agencies and individual

consumers. Founded in 1969, AMD is a Standard & Poor's 500 company with global operations and manufacturing facilities in the United States, Europe, Japan and Asia.

For more information, please visit: www.amd.com/connectivitysolutions/geodegx



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