

RADEON™ 7500

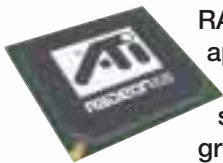


FIRST LOOKS

AT A GLANCE:

- Featuring CHARISMA ENGINE™ for cutting edge character animation features
- PIXEL TAPESTRY™ supports advanced multi-texturing and new 3D effects with eye-popping photorealistic impact and smooth frame rates
- Dual Independent Display Support
- DVI-ready for the digital flat panel revolution
- Supports up to 230MHz DDR memory
- HYPER Z™ technology to boost effective memory bandwidth by more than 20% (8.8 GB/sec)

EXCELLENT 3D & 2D PERFORMANCE



RADEON™ 7500 provides professional quality 3D, 2D, and multimedia graphics performance for today's applications in full 32-bit color. Its architecture includes award-winning technologies that enable new advanced features in popular applications, without compromising performance. With flexible memory support, RADEON™ 7500 allows for implementations targeted at a wide range of home and business graphic solutions.

CHARISMA ENGINE™

- Features CHARISMA ENGINE™, a geometry processing unit
- First to incorporate acceleration for advanced character animation features
- Includes 4-matrix skinning and keyframe animation
- Enables game characters to display life-like facial expressions and to achieve fluid movement and motion

PIXEL TAPESTRY™ ARCHITECTURE

- Fast 32-bit color rendering engine
- Supports three-way multitexturing and 3D effects without compromising speed
- Process up to 3 textures per pixel in a single clock cycle, bringing 3D worlds to life with incredible detail and realism
- Deal easily with complex elements such as metals, liquids and wood and their interactions with lights and shadows

FLEXIBLE, HIGH PERFORMANCE MEMORY SUPPORT

- Incorporates support for double data rate SDRAM/SGRAM at up to 230MHz
- Features HYPER Z™ technology to boost effective memory bandwidth by over 20% (8.8 GB/sec)

DUAL MONITOR SUPPORT

- Leading-edge technology supports multiple combinations of traditional CRT monitors, flat panel displays and TV
- Dual DAC (digital-to-analog converter) at 350MHz for cost-effective dual independent display support at maximum resolutions
- Integrated TMDS transmitter with ratiometric expander for digital flat panel monitor resolutions of up to 1600x1200

VIDEO IMMERSION™

- Industry leading digital video features, including advanced de-interlacing algorithms for unprecedented video quality and integrated digital TV decode capability
- Combined with a tuner and demodulator, RADEON™ 7500 provides an all-format DTV/HDTV solution, even including the 1920 pixel wide 1080i format. Coupled with the RAGE THEATER™ analog encoder/decoder chip, RADEON™ provides a complete convergence solution

GENERAL FEATURES

- Comprehensive AGP support including 3.3 Volt (AGP 2X) and 1.5 Volt (AGP 4X) mode operation, Sideband Addressing, AGP Texturing (Direct Memory Execution), and support for AGP reads and writes
- Fully compliant with expected PC 2001 requirements
- Full ACPI 1.0b, OnNow, and IAPC (Instantly Available PC) power management, including PCI Power Management registers
- Bi-Endian support for compliance on a variety of processor platforms
- Unique enhanced TCA (Triple-Cache Architecture) incorporates texture, pixel, and vertex caches to maximize effective memory bandwidth
- CCE high-speed pull architecture software interface optimized for Pentium III and Athlon systems:
 - Bus mastering of 2D & 3D display lists
 - Direct walk of Direct3D®/OpenGL™ vertex list
 - Ultra-thin driver layer
 - Maximizes concurrency between RADEON™ 7500 and host
- Optimized for Intel Pentium® 4 SSE2 and AMD Athlon 3DNow!™ processor instructions
- Triple 10-bit palette DAC supports pixel rates to 350MHz
- DVI-compliant integrated 165MHz TMDS transmitter
 - Up to UXGA (1600x1200) resolution
 - Supports VESA proposed reduced blanking timings
 - Ratiometric expansion
- DDC1 and DDC2ci for plug and play monitors
- YPrPb output for direct drive of HDTV monitors
- Supports optional RAGE THEATER™ companion chip for NTSC/PAL TV out and NTSC/PAL/SECAM analog video capture
- Flexible memory support
 - SGRAM or SDRAM
 - SDR or DDR
 - DDR support for both system memory SDRAM and graphics SGRAM devices
 - 16MB to 128MB

- High performance memory interface
 - 8.8 GB/sec with 230MHz DDR
 - 4.4 GB/sec with 230MHz DDR
 - Dual independent channels maximize memory efficiency
 - HYPER Z™ technology dramatically improves performance by maximizing Z-buffer efficiency
- Integrated hardware diagnostic tests performed automatically upon initialization
- High quality components through at-speed testing, built-in Scan, Iddq, CRC, chip diagnostics, and NAND tree
- Single chip solution in .15 micron and 696 BGA package
- Comprehensive HDKs, SDKs and utilities augmented by full engineering support
- Complete local language support (contact ATI for current list)

2D ACCELERATION

- Highly optimized 128-bit 2D engine
- Hardware acceleration of BitBLT, Line Draw, Polygon/Rectangle Fill, Bit Masking, Monochrome Expansion, Panning/Scrolling, Scissoring, and full ROP support
- Extensive DirectDraw® support: Double Buffering, Virtual Sprites, Transparent BLT, and Masked BLT
- Support for new Windows® 2000 GDI extensions: Alpha BLT, Transparent BLT, Gradient Fill
- Acceleration in 8/16/32 bpp modes
- Hardware cursor (up to 64x64x32bpp), with alpha channel for direct support of Windows® 2000 alpha cursor

GEOMETRY FEATURES

- Dedicated geometry acceleration for Direct3D® and OpenGL™
- Up to 40 million transformed triangles per second
- Comprehensive feature set:
 - Transform, Clipping, and Lighting
 - 4-matrix skinning for skeletal animation
 - Keyframe Interpolation
 - Texture transformations

- Clipping of points, lines and triangles
- View volume clipping and up to six user defined clip planes
- Up to 8 infinite lights or local lights
- Local or infinite viewer

RENDERING FEATURES

- Second generation dual pipeline SuperScalar Rendering architecture provides top 3D performance
- Optimized for full performance in true color triple buffered 32bpp acceleration modes
- On-chip texture cache dramatically improves large triangle performance
- On-chip vertex cache eliminates unnecessary vertex reads
- Complete 3D primitive support: points, lines, triangles, lists, strips and quadrilaterals
- Comprehensive enhanced 3D feature set:
 - Full screen or window double or triple buffering for smooth animation
 - Full scene order-independent spatial anti-aliasing
 - Line and Edge anti-aliasing
 - Gouraud and specular shaded polygons
 - Vertex, table, and range-based fog
 - Complete source and destination alpha blending
 - Hidden surface removal using 16, 24, or 32-bit Z-buffering, 16 or 32-bit W-buffering
 - 8-bit stencil buffer
 - Priority buffers
 - Motion blur and depth of field effects
- Advanced texture mapping support
 - Single cycle multi-texturing at full performance with up to three textures per pixel, allowing effects such as:
 - Light and gloss maps
 - Detail maps
 - Reflections, shadows, spotlights, and texture morphing
 - Perspectively correct mip-mapped texturing with LOD biasing and chroma-key support

- Point sampled, bilinear, trilinear and 16:1 anisotropic filtering
- 3D (volume) texturing and volume texture compression
- Texture coordinate transformation
- Texture coordinate generation for spherical, dual-paraboloid and cubic environment mapping
- Full texture compression support for DirectX® and OpenGL™
- Comprehensive bump mapping support: emboss, dot-product, and environment mapped (perturbation) bump maps
- Projected textures
- Video textures
- Support for Microsoft's next generation GDI+ user interface
- Off axis 3D text readability improvement with anisotropic filtering
- Arbitrary texture sizes up to 2048x2048
- Extensive 3D mode support:
 - Draw in RGBA32, RGBA16, and RGB16
 - Texture map modes: RGBA32, RGBA16, RGB16, RGB8, ARGB4444, YUV444
 - Compressed texture modes: YUV422, CLUT4 (CI4), CLUT8 (CI8) and DirectX® 6 texture compression

- Enhanced back-end scaler delivers top quality playback
 - 4-tap horizontal and vertical filtering
 - Upscaling and downscaling
 - Filtered scaling of all supported YUV formats, RGB32, and RGB15/16
 - Filtered display of images up to 1920 pixels wide
- Unique per-pixel Adaptive De-interlacing feature combines the best elements of the "Bob" and "Add-field" (Weave) techniques
- Hardware mirroring for flipping video images in video conferencing systems
- Supports 8-bit alpha blending and video keying for effective overlay of video and graphics
- Ability to genlock to any video signal eliminates synchronization problems
- Front end scaler supports additional video streams for video conferencing and other applications

SOFTWARE FEATURES

- Register-compatible with VGA standards, BIOS-compatible with VESA Super VGA
- Full Open Firmware (IEEE 1275) support
- Supports corporate manageability requirements such as DMI
- 'Instantly Available' support
- Full Write Combining support for maximum performance on advanced processors such as Pentium® 4 and Athlon™
- Full-featured, yet simple Windows® utilities:
 - Calibration utility for WYSIWYG color
 - Independent brightness control of desktop and overlay
 - End user diagnostics
- SGI level III OpenGL™ licensee
- Drivers meet Microsoft® rigorous WHQL criteria and are suitable for systems with the "Designed for Windows® 98" and "Designed for Windows® 2000" logos

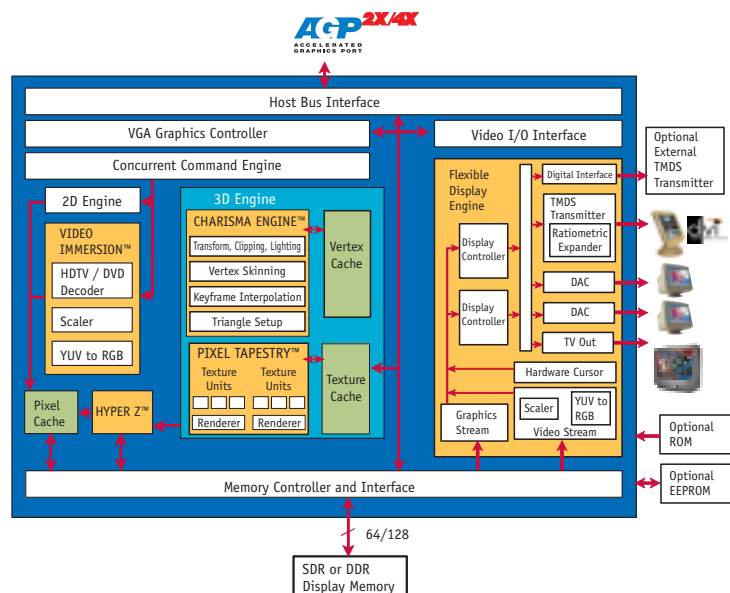
VIDEO PORT

- 2-bit VIP host port
- VIP 2.0 compliant 8-bit capture port
 - Operation at up to 75MHz
 - Compatible with RAGE THEATER™ video decoder
- Transport stream capture

VIDEO FEATURES

- Integrated MPEG-2 decode including iDCT and motion compensation:
 - All format DTV/HDTV decode
 - Top quality DVD with lowest CPU usage
- Hardware sub-picture decoder with interpolating scaler and alpha compositor provide optimal DVD quality
- Enhanced YUV to RGB color space conversion
 - Packed and planar YUV support (YUV422, YUV410, YUV420)
 - Increased user control over color characteristics
 - Improved precision and gamma correction for brighter, richer color

RADEON™ 7500 Block Diagram



SPECIFICATIONS

SOFTWARE SUPPORT

SOFTWARE SUPPORT

| | WINDOWS® 98 SE | WINDOWS® ME | WINDOWS® NT 4.0 | WINDOWS® 2000 | WINDOWS® XP* | MAC® OS |
|---|-------------------|----------------|--------------------|------------------|-----------------|---------|
| 2D Software Support | | | | | | |
| Accelerated driver support | • | • | • | • | • | • |
| Video Software Support | | | | | | |
| Microsoft® DirectDraw® | • | • | • | • | • | |
| Microsoft® ActiveMovie®/ DirectShow® | • | • | | • | • | |
| MPEG-1 software playback | • | • | • | • | • | • |
| DVD/MPEG-2 software playback | • | • | | • | • | • |
| QuickTime™ acceleration | | | | | | • |
| 3D Software Support | | | | | | |
| Microsoft® Direct3D® | • | • | | • | • | |
| QuickDraw® 3D RAVE | | | | | | • |
| OpenGL™ ICD | • | • | • | • | • | • |
| OS support for AGP Memory | • | • | • ¹ | • | • | • |

¹NT Service Pack 3 supports AGP devices, but does not provide support for AGP Texturing *when available

2D DISPLAY MODES AND REFRESH RATES*

| | 640x480 | 800x600 | 1024x768 | 1152x864 | 1280x1024 | 1600x1200 | 1920x1200 | 2048x1536 |
|-------------------------|---------|---------|----------|----------|-----------|-----------|-----------|-----------|
| 256 colors | 200 | 200 | 200 | 200 | 160 | 120 | 85 | 75 |
| 65K colors | 200 | 200 | 200 | 200 | 160 | 120 | 85 | 75 |
| 16.7M colors (32bpp) | 200 | 200 | 200 | 200 | 160 | 120 | 85 | 75 |

*Note: Lower maximum refresh rates at some resolutions when using lower bandwidth memory configurations

3D DISPLAY MODES*

| Resolution | Color / Z Buffer depth (bits) | Required Frame Buffer Memory(triple buffered) | Memory Available for Texture & Vertex Storage | |
|------------|----------------------------------|--|---|-------------------------------|
| | | | 32MB Performance Configuration | 64MB Premium Configuration |
| 1024x768 | 32 / 32 | 12MB | 20MB | 52MB |
| 1280x1024 | 32 / 32 | 20MB | 12MB | 44MB |
| 1600x1200 | 32 / 32 | 29.3MB | 2.7MB | 34.7MB |
| 1920x1200 | 32 / 32 | 35.2MB | | 28.8MB |
| 2048x1536 | 32 / 32 | 48MB | | 16MB |

*Other modes also available



ATI TECHNOLOGIES INC.
33 Commerce Valley Drive East
Markham, Ontario, Canada L3T 7N6
Telephone: (905) 882-2600
Facsimile: (905) 882-2620
www.ati.com

**ATI TECHNOLOGIES
SYSTEMS CORP.**
2805 Bowers Avenue
Santa Clara, CA 95051-0917
Telephone: (408) 845-6500
Facsimile: (408) 845-6301

**ATI TECHNOLOGIES
(EUROPE) GMBH**
Kelttenring 13
D-82041 Oberhaching, Germany
Telephone: +49 89 665 15 -0
Facsimile: +49 89 665 15 -300

**ATI TECHNOLOGIES
(JAPAN) INC.**
Kojimachi Nakata Bldg 4F
5-3 Kojimachi, Chiyoda-Ku
Tokyo 102-0083, Japan
Telephone: +81 35275-2241
Facsimile: +81 35275-2242

**OFFICIAL ATI REP.
AMI TECHNOLOGIES CORP.**
8F, 148, Sec. 1, Hsin Sheng S. Rd.
Taipei, Taiwan, R.O.C.
Telephone: 886-2-2396-7711
Facsimile: 886-2-2351-3030