

RADEON™ 8500

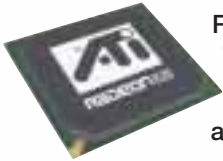


FIRST LOOKS

AT A GLANCE:

- Revolutionary new TRUFORM™ technology makes 3D characters and objects look more life-like
- Exclusive support for SMARTSHADER™ technology taking programmable pixel shaders to the next level
- Second generation HYPER Z™ II technology increases memory bandwidth up to 12 GB/sec
- SMOOTHVISION™ eliminates distracting visual artifacts for smoother looking images without seriously compromising performance
- Full DTV decode and display capability allows cost-effective all-format DTV/HDTV support
- Leading edge Dual Display Support
- DVI-ready for the digital flat panel revolution

UNSURPASSED GRAPHICS PERFORMANCE



RADEON™ 8500 provides the fastest and most advanced 2D, 3D and multimedia graphics performance¹ for the latest applications and enables the use of the progressive new features in upcoming applications - without compromising performance. ATI's comprehensive support of DirectX® 8.1 features, highly optimized OpenGL® support, and flexible memory configurations allow implementations targeted at both gaming, enthusiast and workstation platforms.

• TRUFORM™ TECHNOLOGY

- Converts flat triangles to curved surfaces, providing a massive improvement in the appearance of 3D characters and objects
- Hardware acceleration means this feature can be enabled without compromising performance
- Allows more natural, organic characters and objects with complex curvature, all animated and lit properly in real-time
- Backward compatible with existing 3D model art to provide easier implementation and widespread game support

• SMARTSHADER™ TECHNOLOGY

- Provides complete hardware-accelerated support for the new DirectX® 8.1 programmable shader model, enabling more complex and realistic texture and lighting effects than ever before
- Significant improvement over first-generation shaders introduced in DirectX® 8.0, with a much more powerful and intuitive instruction set
- Offers full support for this feature in OpenGL® 1.3 applications.

• SMOOTHVISION™

- The most flexible and efficient anti-aliasing implementation available to date
- Eliminates "jaggies" on the edges of objects, shimmering pixels on distant surfaces, and other visual artifacts for smoother-looking images
- Unique adaptive process can select from up to 16 different anti-aliasing patterns for each pixel, rather than relying on a fixed pattern for the whole image
- Better visual quality with minimal performance degradation
- Supports DirectX® 8 multi-sampling and related effects, including motion blur and depth-of-field

• HIGH PERFORMANCE

• MEMORY SUPPORT

- Incorporates support for single or double data rate SDRAM/SGRAM at up to 300MHz, giving memory bandwidth of up to 12 GB/sec
- Features ATI's second generation HYPER Z™ II technology that conserves memory bandwidth for improved performance in demanding applications
- Boosts effective memory bandwidth by over 20%

• DUAL DISPLAY SUPPORT

- Leading-edge technology, fully optimized with HydraVision™, flexibly supports multiple combinations of traditional CRT monitors, flat panel displays and TV
- Features Dual-Link DVI support
- 165 MHz integrated TMDs transmitter supports panels up to UXGA (1600x1200) resolution
- Improved RAMDAC speed of 400MHz

• OTHER ADVANCED FEATURES

- CHARISMA ENGINE™ II supports full hardware Transformation, Clipping and Lighting (T&L) acceleration at 75 million triangles/second peak processing capability, as well as programmable vertex shader programs
- PIXEL TAPESTRY™ II, the RADEON™ 8500 3D rendering engine, utilizes 4 parallel pipelines each capable of handling up to 6 textures in a single pass, delivering an incredible 2.4 Gigatexels per second fill rate for maximum 32 bit color performance at the highest resolutions
- VIDEO IMMERSION™ II technology allows integration of industry leading digital video features, including advanced de-interlacing and frame rate conversion algorithms for unprecedented video quality and integrated digital TV decode capability. Includes programmable, independent gamma control for the video overlay.

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 2002 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
- Optimized for Pentium® 4's SSE2 and AMD Athlon's™ 3DNow! processor instructions
- Triple 10-bit palette DAC supports pixel rates to 400MHz
- 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
 - 16MB to 256MB
- High performance memory interface
 - 9.6 GB/s with up to 300MHz DDR
 - Dual independent channels maximize memory efficiency
 - HYPER Z™ II technology dramatically improves performance by maximizing Z-buffer efficiency with hierarchical Z-buffer, lossless compression and fast clear capability
- 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 0.15 micron
- Comprehensive HDKs, SDKs and utilities augmented by full engineering support
- Complete local language support (contact ATI for current list).

2D ACCELERATION

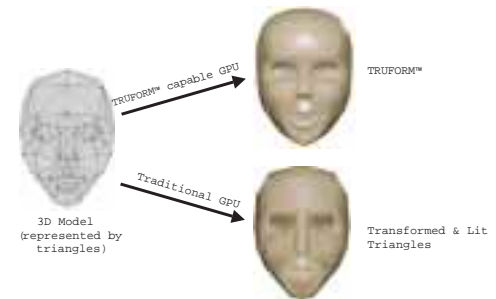
- Highly optimized 128-bit 2D engine
- Hardware acceleration of BitBLT, Line Draw, Polygon/Rectangle Fill, Bit Masking, Monochrome Expansion, Panning/Scrolling, Scissoring, and full ROP support
- Extensive DirectDraw® support: Double Buffering, Virtual Sprites, Transparent BLT, and Masked BLT
- Support for new Windows® XP 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® XP alpha cursor

GEOMETRY FEATURES

- TRUFORM™ technology provides hardware acceleration for N-Patch higher order surfaces
 - Supports variable tessellation levels per polygon for dynamic LOD
 - Linear and quadratic normal generation for adjustable lighting quality
- Hardware DirectX® 8.1 Programmable Vertex Shader acceleration (1.1 Vertex Shaders)
 - Vertex programs up to 128 instructions
 - Enable advanced effects such as procedural deformation, geometry compression, morphing, and fur rendering
- Dedicated geometry acceleration for Direct3D® and OpenGL® 1.3
- Up to 75 million transformed triangles per second
- Comprehensive feature set:
 - Transform, Clipping, and Lighting
 - Matrix palette 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

TRUFORM™ A backward-compatible graphics upgrade



RENDERING FEATURES

- SMOOTHVISION™ anti-aliasing
 - 16 programmable sample modes, selectable on a per pixel basis
 - up to 8 samples per pixel
 - fully compatible with DirectX® 8.1 multisample buffers
- SMARTSHADER™
 - Fully DirectX® 8.1 compliant
 - Up to 6 texture inputs per pass
 - Enables advanced per-pixel effects such as reflective bump mapping, anisotropic lighting and Phong shading
- Quad pipeline SuperScalar Rendering architecture provides top 3D performance
- Optimized for full performance in true color triple buffered 32bpp acceleration modes
- 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
 - 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 six 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® 1.3
 - 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 (C14), CLUT8 (C18) and DirectX® Texture Compression (DXTC)

VIDEO FEATURES

- Integrated MPEG-2 decode including iDCT and motion compensation:
 - All format DTV/HTDV decode
 - Top quality DVD with lowest CPU usage

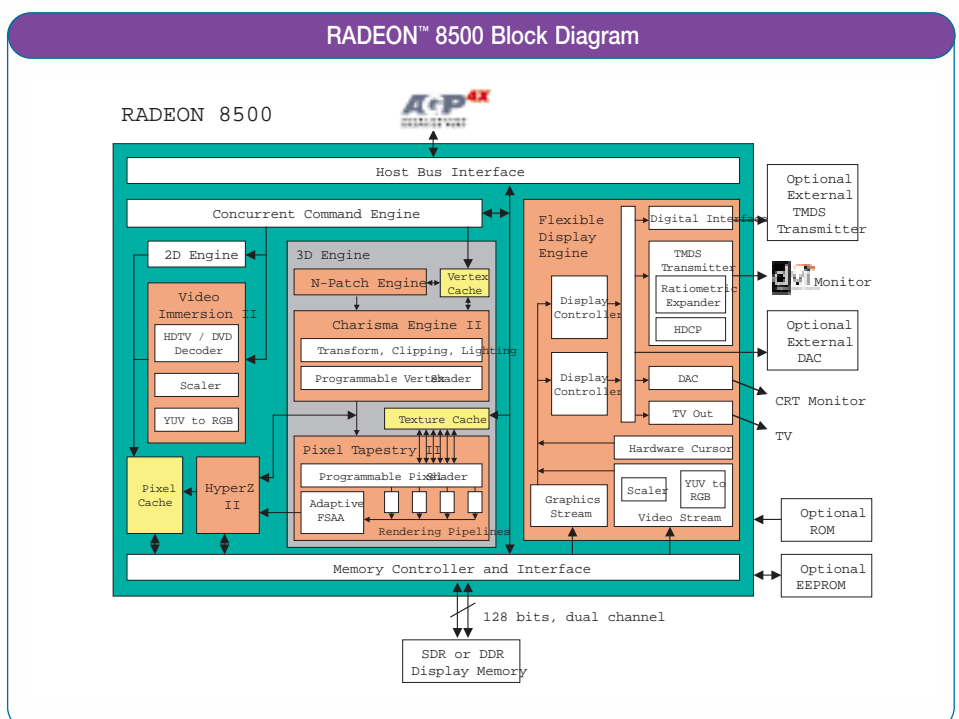
- Hardware sub-picture decoder with interpolating scaler and alpha compositor provide optimal DVD quality
- YUV to RGB color space conversion
- Back-end scaler delivers top quality playback
 - 4-tap horizontal and vertical filtering
 - Upscaling and downscaling
 - Filtered scaling of all supported YUV 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
- Improved programmable video scaler gamma correction
- 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 AMD™ 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® 1.3 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



SPECIFICATIONS

SOFTWARE SUPPORT

SOFTWARE SUPPORT

	WINDOWS® 98 SE	WINDOWS® ME	WINDOWS® XP*	WINDOWS® NT 4.0	WINDOWS® 2000	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	•	•	•	• ²	•	•

*NT 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	90	85
65K colors	200	200	200	200	160	120	90	85
16.7M colors (32bpp)	200	200	200	200	160	120	90	85

*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



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