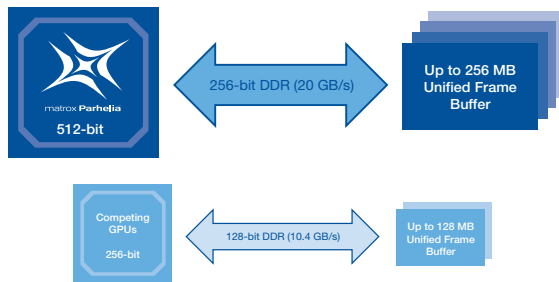


Under NDA until May 14, 2002

Matrox Parhelia™ - 512 Feature Summary



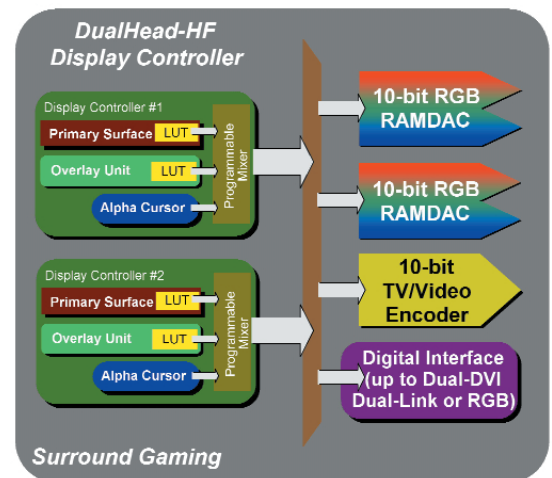
General features and characteristics

- World's first 512-bit GPU
- 80 million transistors in 0.15μ process
- 256-bit DDR memory interface
 - Up to 20 GB/s memory bandwidth
- Up to 256MB DDR unified frame buffer
- 10-bit Gigacolor Technology
 - 10-bit per channel RGB rendering and output
 - Over one billion simultaneously displayed colors
 - 10-bit precision for 2D, 3D, DVD and video
 - 10-bit frame buffer mode for ARGB (2:10:10:10)
 - 10-bit RAMDACs with full gamma correction
- AGP host interface designed for up to AGP 8X bandwidths
 - AGP Fast Writes support
- 8-way parallel DMA streaming engine
- OpenGL 1.3 and DirectX® 8.1 compliant 3D engine

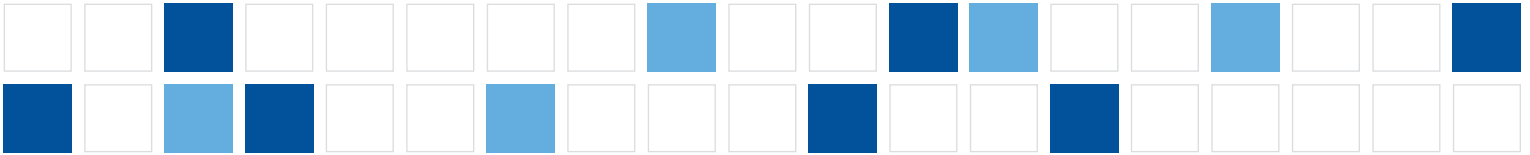
High fidelity display engine

- DualHead®-HF Display Technology
 - Fourth-generation DualHead
 - Dual integrated 400MHz 10-bit RAMDACs
 - Dual independent RGB outputs
 - Up to 2048 x 1536 @ 32bpp on each RGB output

- Support for two digital TMDs transmitters
 - Dual independent DVI outputs
 - Up to 1920 x 1200 on each output **
 - Single dual-link DVI output
 - Up to 2560 x 2048
- Integrated 10-bit high-fidelity TV/video encoder
 - NTSC/PAL output
 - Direct encoding of native interlaced YUV
 - Perfect full-screen DVD playback via DVDMax
- TripleHead Desktop
 - Support for 3rd RGB output
 - Three display desktop at up to 3840 x 1024 @ 32bpp
- 10-bit gamma correction
 - Per-layer gamma and color correction at full speed
- Dual independent, gamma correctable hardware overlays
- Support for true multi-display under Microsoft® Windows® 2000 and Windows XP
- Hardware accelerated multi-screen OpenGL support



*Chip specifications only; Actual board-level products and/or drivers may not enable or support all features. Feature support may vary across different board-level products. **With reduced blanking support.

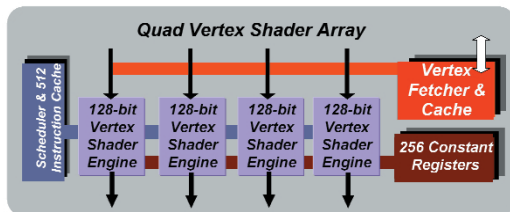


Matrox Parhelia™ -512 Feature Summary

- UltraSharp Display Output Technology
 - Highest-quality analog, digital and TV output
 - Ultra-crisp display quality at high frequencies
 - Highest-quality design, electronics and filters
 - 5th-order output filters
 - Highest-fidelity frequency and transient response for optimal signal quality
 - High signal-to-noise ratio (SNR) with super-low PLL Jitter

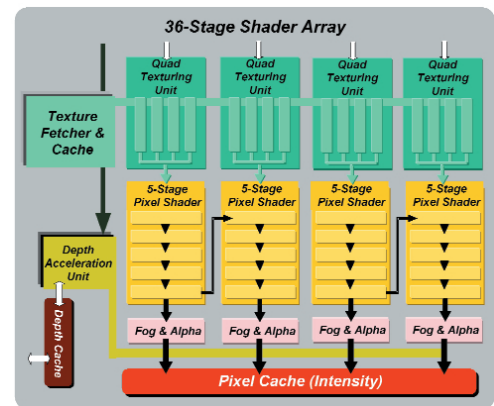
High fidelity 3D engine

- Quad Vertex Shader Array
 - Four vertex shader units (DirectX 8.1 and beyond)
 - Highest sustained complex vertex shader performance
 - Parallel processing of up to 16 vertices
 - 512 instruction on-chip cache
 - 256 constant registers



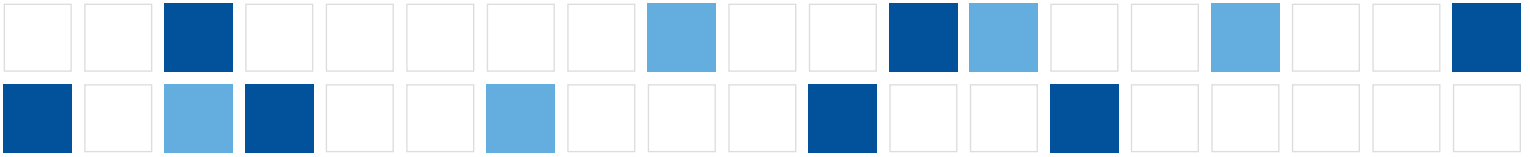
- Quad texturing per pixel, per clock cycle
- 64 Super Sample Texture Filtering
 - Highest quality trilinear and anisotropic filtering
 - Sustained performance
 - Dynamic allocation of texture units
 - 8-sample anisotropic and trilinear filtering on 4 dual-textured pixels/clock
 - 16-sample anisotropic filtering on 4 single-textured pixels/clock
- 36-Stage Shader Array
 - Most complex rendering engine ever built
 - 4 pixel pipes
 - 4 texturing units per pixel pipe
 - 5 pixel shader stages per pixel pipe

- Support for up to 10 pixel stages per pass
- 4 pixels/clock throughput with quad texturing and 5 pixel shader operations



- Hardware Displacement Mapping
 - Compact encoding of high-resolution geometry data
 - Patent-pending Depth-Adaptive Tessellation for continuous level of detail (LOD) geometry
 - Vertex Texturing for dynamic generation of geometry using texture maps
 - Support for Bezier curves and N-patch (PN-triangle) evaluation
- Surround Gaming
 - Support for games rendered across three displays
 - Ultra-wide field of view (FOV)
 - Side displays for peripheral vision
- GigaColor Gaming
 - 10-bit source texture support and precision
 - High-precision ARGB (2:10:10:10) frame buffer
- 16x Fragment Antialiasing (FAA-16x)
 - 16x supersampling quality on edge pixels only
 - Avoids blurring of internal pixels
 - Low performance overhead
 - Support for Full Scene Antialiasing (FSAA)

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Matrox Parhelia™ -512 Feature Summary

■ Texturing Support

- Support for all texture formats including:
 - 32-bit source textures
 - 10-bit per channel texture support
 - All DXTC formats
 - 2D, 3D (volume) and cubic textures
 - Non-square and non-power-of-2 textures
 - Planar and packed YUV textures
- Up to 2K by 2K source textures
- Support for projected textures
- Support for texture swizzling
- Render-to-texture support

■ Other 3D features include:

- Depth acceleration unit for advanced Z processing
- 32-matrix Matrix Palette Skinning (MPS)
- Particle acceleration
- Full sub-pixel and sub-textel precision
- Environment Mapped Bump Mapping (EMBM) and DOT Product-3
- Planar, cubic and spherical environment mapping
- Fogging, alpha blending and specular highlighting
- Flat and gouraud shading
- Independent intensity, Z and texture depths
- Antialiased 3D vector support

High fidelity 2D engine

■ Fastest and highest quality 2D display engine ever built

■ GigaColor Desktop

- All drawing operations at extended 30-bit color (10:10:10)
- 10-bit per channel frame buffer
- High-quality dithering for lower bit depth output

■ Glyph Antialiasing

- Hardware accelerated text antialiasing
- Programmable gamma correction

■ Full acceleration of Windows XP GDI and DirectDraw functions

■ GDI+ v2.0 ready

■ Programmable, ultra-fast bliter at up to 16 pixels/clock

■ True-color full-screen overlay plane with 8-bit alpha

■ Alpha cursor support

■ 32-bit ultra-fast VGA core

High fidelity video engine

■ PC Theater DVD Playback

- 10-bit DVD playback
- 10-bit advanced filtering and scaling
- 10-bit DVD output via TV encoder
- Independent gamma and proc-amp controls
- Full quality output using DVDMMax

■ Programmable overlay processor

- Video overlay with programmable proc-amp and independent gamma correction
- Video mixing engine in overlay processor

■ High-quality horizontal and vertical scaling

- Up to 4x4 filter kernel with programmable filtering coefficients
- Full-speed bi-cubic filter
- Fully VMR-compliant front-end scaling

■ Advanced de-interlacing with sub-pixel positioning

■ VIP2.0 compliant video input port

Industry compliance

■ Operating Systems

- Microsoft® Windows®
- Linux®

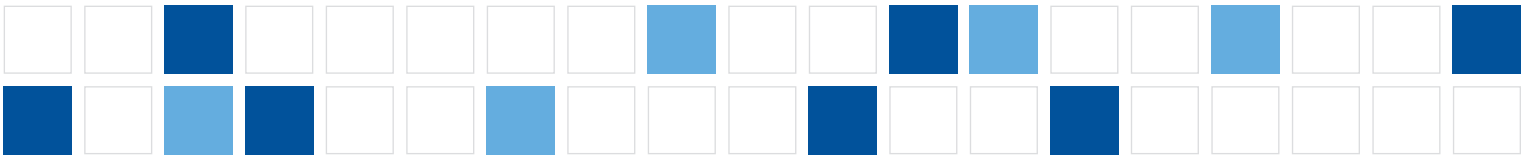
■ Platforms

- X86, X86-64 and IA-64™ compatible
- AMD® 3Dnow!™, MMX™, Intel® SSE™ & SSE2™ optimized
- AGP 8X, 4X, 2X and 1X

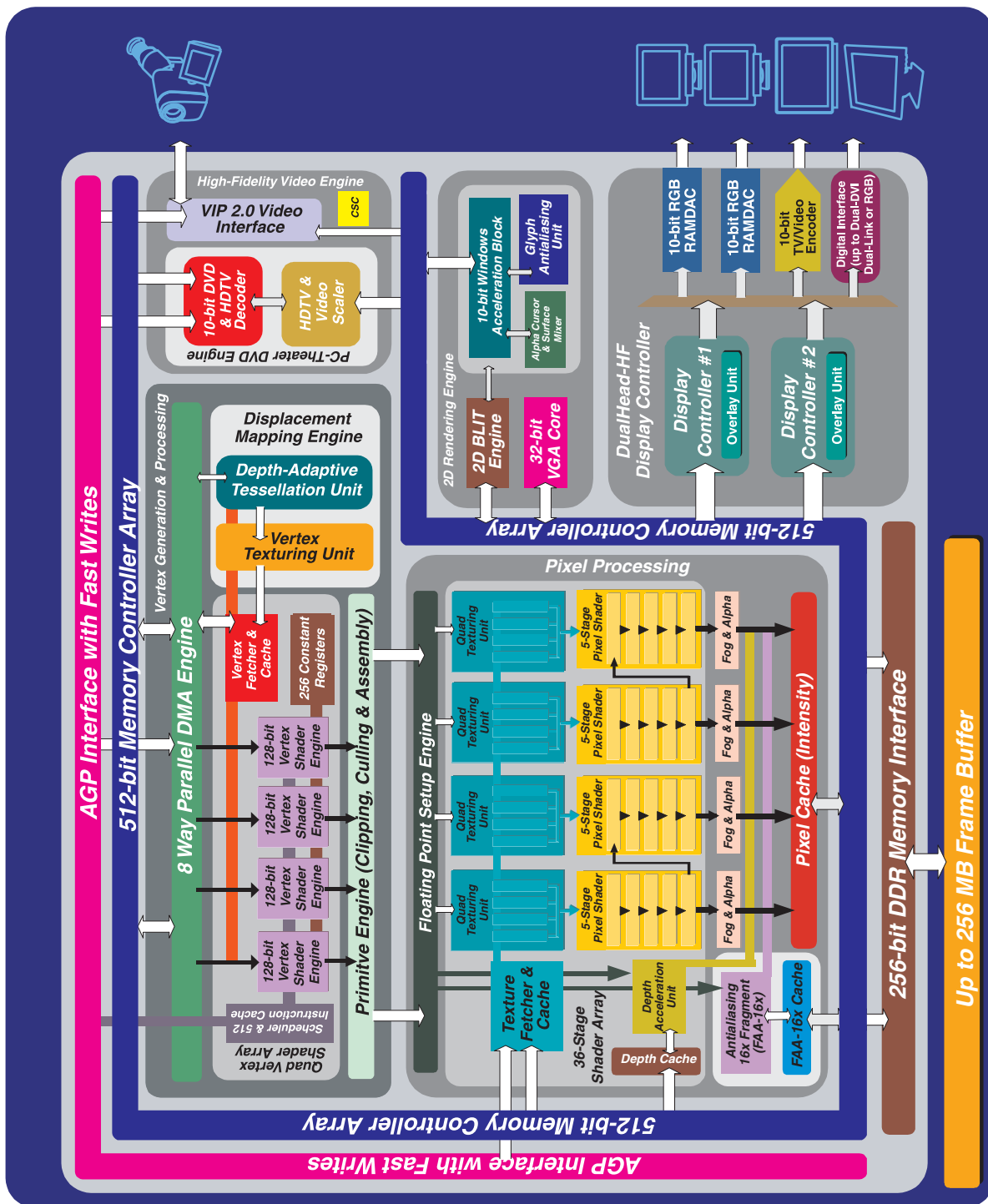
■ Compliance

- PCI 2.2, AGP 2.0 and AGP 3.0
- PCI Bus Power Management 1.1
- ACPI
- DirectX 8.1, PS1.3, VS1.1, VS2.0
- OpenGL 1.3
- DirectX VA, VMR, WDM

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