Matrox Parhelia™- 512 Technology Brief

Quality

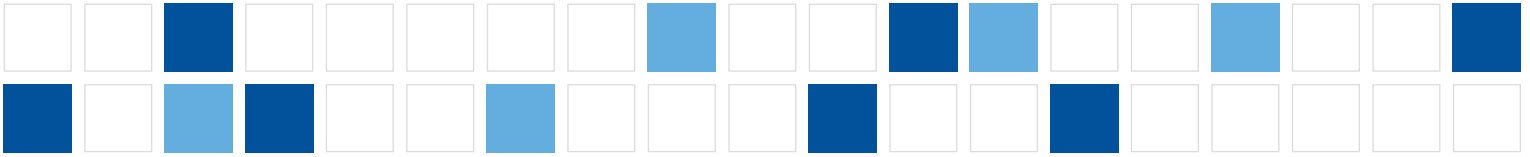| Feature	Description	Benefit
10-bit GigaColor Technology	A technology that enables the simultaneous display of over one billion colors. Full 10-bit per channel precision is maintained throughout the graphics pipeline including 10-bit RGB frame buffers, dual 10-bit gamma correctable RAMDACs and a 10-bit TV encoder.	■ Higher color precision for graphics operations, rendering and output ■ No banding artifacts on color gradients ■ Vibrant Windows® desktop, rich colors and the sharpest in-game graphics ■ Enhances desktop publishing, image editing, 2D CAD, 3D CAD, 3D gaming, and video
UltraSharp Display Output Technology	A display output subsystem with a sophisticated new design that combines high-precision RAMDACs, highly developed electronics and filters, and advanced design techniques to ensure that signal quality is maintained, even at the highest frequency desktop settings.	■ Highest-fidelity RGB, DVI and TV outputs ■ Flicker-free, ultra-crisp displays ■ No pixel ghosting, sparkling or shadowing artifacts ■ Reduction of user eye strain
64 Super Sample Texture Filtering	A highly advanced and flexible texture filtering subsystem that allows for the dynamic allocation of up to 64 texture samples per clock.	■ Highest-quality texture filtering ■ Minimal performance impact ■ Anisotropic filtering quality at trilinear filtering levels of performance ■ Trilinear filtering quality at bilinear filtering levels of performance
Glyph Antialiasing	Hardware acceleration for text and glyph antialiasing with full user programmable gamma correction.	■ Smooth, crisp and more readable text ■ No system performance penalty ■ User customizable for personal preferences
16x Fragment Antialiasing (FAA-16x)	An antialiasing algorithm developed by Matrox that intelligently antialiases only edge pixels of triangles with 16x supersample quality.	■ Highest-quality antialiasing for edges ■ Low performance penalty ■ No blurring of internal textures

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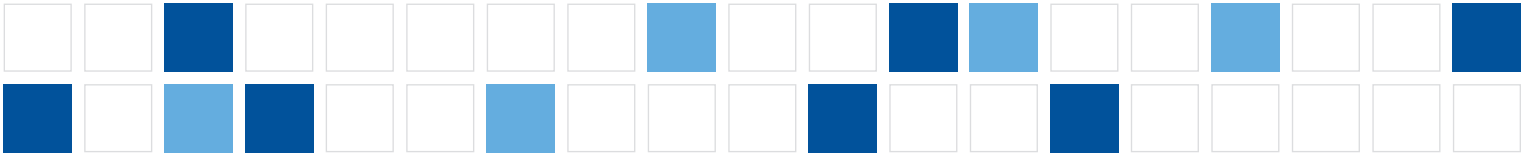
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Performance

Feature	Description	Benefit
512-bit GPU and 256-bit DDR memory interface	512-bit wide internal chip architecture with a 256-bit DDR interface to memory that delivers an unprecedented 20 GB/sec memory bandwidth and forms the backbone for the display and rendering engine.	■ Highest performance for 2D, 3D, DVD and video applications ■ Sustained performance for high-resolution and multi-display computing ■ Sustained performance for the most complex rendering scenarios
Quad Vertex Shader Array	A T&L subsystem that integrates four full vertex shader units into a single vertex-processing array along with a 512-instruction cache, 256 constant registers and a sophisticated control unit.	■ Extremely high vertex throughput ■ Sustained performance for complex vertex shader programs ■ Sustained performance for high detail 3D geometry ■ Dramatically realistic lighting and animation effects
Quad Texturing	Support for single-pass quad texturing with four pixels-per-clock throughout.	■ Maximum texel throughput ■ Sustained performance for quad texturing ■ Highest quality 3D texturing without performance penalty
36-Stage Shader Array	A rendering subsystem that integrates four programmable texture stages and five programmable pixel shader stages in each of its four pixel pipelines, boasting the most powerful and complex pixel rendering subsystem built to date.	■ Extremely high pixel throughput ■ Sustained performance for the most complex pixel shading and rendering operations ■ Ultra-realistic 3D scene rendering

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Features

Feature	Description	Benefit
Hardware Displacement Mapping	A powerful new method of representing and rendering complex 3D geometry using a simple and compact data representation. Underlying Depth-Adaptive Tessellation and Vertex Texturing technologies combine a base mesh with a displacement map in real-time to generate high detail geometry.	■ Unprecedented levels of detail and realism in 3D scenes ■ Maximum scalability and efficiency ■ Real geometric extrusions ■ Compatible with static, dynamic and skinned geometry
Surround Gaming	A technology that enables the rendering of supported 3D games across three displays with an ultra-wide field of view (FOV).	■ The IMAX® experience of 3D gaming ■ Engages gamer's peripheral vision on side displays ■ Bridges the gap between virtual reality and reality ■ Provides competitive edge with a wider view of interactive scenes ■ Out-of-box support for a wide variety of popular games
DualHead®-High Fidelity (HF)	A display output subsystem that provides fully symmetric capabilities and performance on each of the two display outputs. These include dual high-precision RAMDACs, dual high-resolution DVI outputs, dual gamma correctable hardware overlays and dual hardware cursors.	■ High performance for dual-display computing ■ Symmetric capabilities on each output ■ Up to 2048 x 1536 @ 32bpp on each analog display ■ Up to 1920 x 1200 @ 32bpp on each digital display
TripleHead Desktop Mode	Support for an ultra-wide rectangular Windows desktop across three displays.	■ Maximum real estate for maximum productivity ■ Up to 3840 x 1024 @ 32bpp analog resolution
PC-Theatre DVD Playback	An advanced DVD playback system that provides Matrox-pioneered DVDMax and 10-bit precision during decoding, scaling, filtering and output of MPEG-2 video streams.	■ DVD playback with home-theatre quality on the PC ■ Full quality, unscaled output of full-screen DVD on a TV
Matrox PowerDesk-High Fidelity (HF)	The most advanced Graphics User Interface (GUI) and tools for graphics hardware configuration and desktop management. Includes a full DualHead-HF setup, advanced multiple desktop management software, and a user-friendly configuration wizard and tour.	■ Powerful, yet simple control of hardware and software features ■ Intuitive Windows XP-style user interface ■ Advanced tools for increased productivity ■ Easy control over display and color settings ■ Easy creation, configuration and management of multiple independent desktops

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