Matrox G450

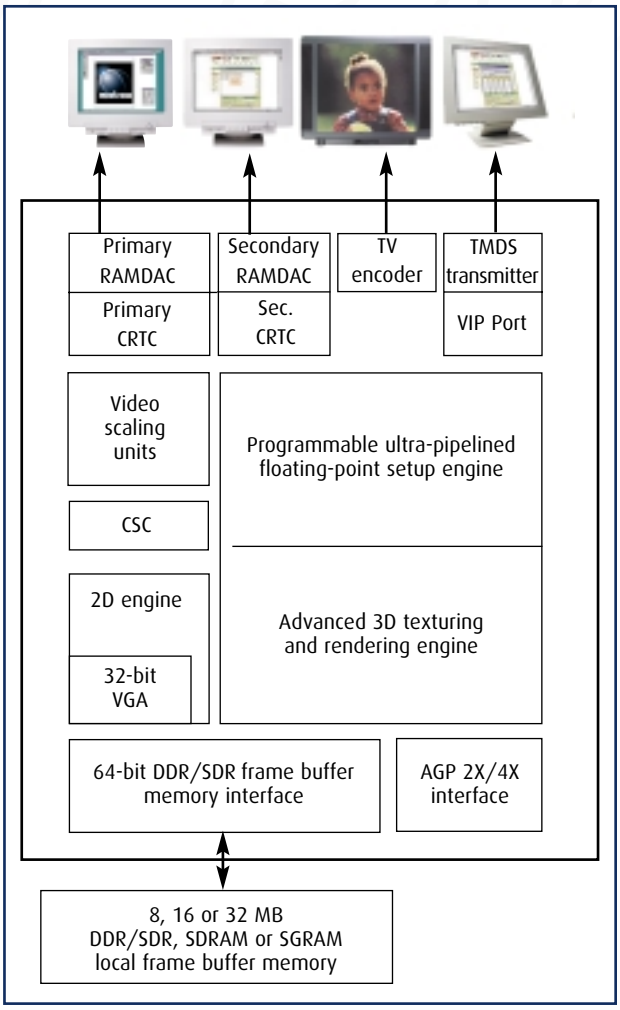
Chip specifications

Performance characteristics and key features

- 0.18-micron technology
- 256-bit DualBus architecture
- 64-bit Double Data Rate (DDR)/Single Data Rate (SDR) external bus to frame buffer memory
- Full AGP 4X device with multi-threaded bus mastering
- Support for AGP 1X, 2X and 4X
- Integrated second RAMDAC
- Integrated Transmission-Minimized Differential Signaling (TMDS) transmitter
- Integrated TV encoder
- 3D Rendering Array Process architecture
- 8 to 32 MB frame buffer configurations supported
- Matrox's DualHead Display technology allows a single AGP card to independently support any two of the following displays:
  - monitor
  - TV
  - analog flat panel
  - digital flat panel
- Vibrant Color Quality^2 (VCQ^2) rendering
- 32-bit internal precision specially enhanced for multi-texturing using 32-bit source textures
- 32-bit Z-buffer including 8-bit stencil buffer
- Symmetric Rendering Architecture
- High speed, integrated primary RAMDAC (up to 360 MHz) with UltraSharp RAMDAC technology
- Flicker-free display up to 2048 x 1536 @ 32-bpp on the primary display
- Industry-leading 3D feature set and performance
- Hardware accelerated Microsoft® DirectX® Environment-Mapped Bump Mapping
- Bilinear, trilinear and anisotropic filtering
- DirectX, PC 98/99, Broadcast PC, Microsoft DirectShow®, and OpenGL® compatible

2D drawing engine

- Benchmark-winning 2D performance optimized for true color operation at high resolution
- UltraSharp RAMDAC technology for the highest quality analog output
- Full acceleration of all GDI and DirectDraw® functions
- Linear frame buffer
- Programmable, transparent bit-block transfer (BLTter)
- Linear packed-pixel frame buffer
- 32-bit ultra-fast VGA core



3D rendering engine

- Floating point 3D setup engine with dynamically re-allocatable resources:
  - Ultra-pipelined floating point and culling engines
  - Optimized support for Direct3D® and OpenGL triangles, strips, fans and vectors
  - Flexible vertex format natively supported
  - Vertex buffers natively supported
  - Full sub-pixel precision
  - 3D Rendering Array Process architecture
  - Single-cycle dual-texturing
  - DirectX Environment-Mapped Bump Mapping
  - Vertex and table fogging

Chip specifications only. All features are not necessarily enabled in board-level products.

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- Specular highlighting (any color)
- True color RGB flat and Gouraud shading
- Vibrant Color Quality^2 (VCQ^2) rendering
  - 32-bit precision internal rendering for single and multi-texturing
  - 32-bit source textures
  - 32-bit output
  - 16-bit dithering down from a 32-bit palette for the highest quality 16-bit output
  - Full sub-pixel and sub-texel correction
  - 8-bit precision for filter co-efficients
  - Highly saturated and separated analog color output
- Texturing support:
  - Texture sizes up to 2048 x 2048
  - All texture formats are supported
  - Perspective-correct texture mapping
  - Texturing from local and AGP memory
  - Single-cycle multi-texturing
  - Opaque texture surfaces
  - Alpha in texture palettes
  - 11-level mip-mapping support
  - Texture transparency
- Unique Motion Video Rendering (MVR) architecture
  - Native support for non power-of-2 textures
  - Allows support of 16:9 aspect ratio to be preserved when texture mapping video streams
  - Mip-map non power-of-2 textures
  - Multiple YUV source texture formats for video stream texture mapping
  - Full subpicture-blended DVD as a texture source
- Filtering support:
  - Bilinear filtering
  - 8-sample-per-pixel trilinear filtering
  - Anisotropic filtering
- Alpha blending:
  - All blend modes under DirectX and OpenGL
  - Supports all permutations of passes including light maps, environment maps, reflection maps, etc.
- Z-buffer support:
  - 16-bit
  - 32-bit
  - 24-bit plus 8-bit stencil buffer used for shadows, overlays and special rendering effects
- Guard band clipping
- Single, double or triple buffering
- 3D image effects combined with no exclusion conditions
- Sort independent anti-aliasing
- Vector/edge anti-aliasing
- Hardware dithering including dithering of look-up table (LUT) textures

Video and multimedia features

- Planar YUV support
- Multiple YUV pixel formats
- Independent front- and back-end scalars
- Full hardware subpicture support and blending for high quality DVD playback
  - Aspect ratio conversion supported for proper display of 4:3 and 16:9 content
  - Full-screen output to TV independent of primary VGA display
  - AGP 4X bus mastering of video data
- Support for unlimited number of simultaneous video windows and sprites
- HD0 format support for HDTV
  - 720 p or 1280 x 720 resolution as video input and output
- Second CRTC supports RGB and YUV packed and planar data in interlaced and non-interlaced rasters for PC graphics and video display to a TV or monitor
- TV output up to 1024 x 768 in 32-bit color
- Video editing architecture enables real-time A/B roll capability
- Enhanced alpha-blended overlay modes support DVD/video subpicture information as well as WebTV® user interfaces
- Full DirectShow and Broadcast PC compliant

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