VisionTek®

Radeon® X1650 Pro Graphics Technology - GPU Specifications

Features

- Dual-link DVI * x2
- Twelve pixel shader processors
- Five vertex shader processors
- 128-bit 4-channel DDR2 memory interface
- Native PCI Express x16 bus interface
- AGP 8x configurations also supported with AGP-PCI-E external bridge chip

Ring Bus Memory Controller

- 256-bit internal ring bus for memory reads
- Programmable intelligent arbitration logic
- Fully associative texture, color, and Z/stencil cache designs
- Hierarchical Z-buffer with Early Z test
- Lossless Z Compression (up to 48:1)
- Fast Z-Buffer Clear
- Z/stencil cache optimized for real-time shadow rendering

Ultra-Threaded Shader Engine

- Support for Microsoft® DirectX® 9.0 Shader Model 3.0 programmable vertex and pixel shaders in hardware
- Full speed 128-bit floating point processing for all shader operations
- Up to 128 simultaneous pixel threads
- Dedicated branch execution units for high performance dynamic branching and flow control
- Dedicated texture address units for improved efficiency
- 3Dc+ texture compression
- High quality 4:1 compression for normal maps and two-channel data formats
- High quality 2:1 compression for luminance maps and single-channel data formats
- Multiple Render Target (MRT) support
- Render to vertex buffer support
- Complete feature set also supported in OpenGL® 2.0

CrossFire™ (x16 PCI Express models only)

- Multi-GPU technology
- Inter-GPU communication over PCI Express (no interlink hardware required)
- Four modes of operation:
  1. Alternate Frame Rendering (maximum performance)
  2. Supertiling (optimal load-balancing)
  3. Scissor (compatibility)
  4. Super AA 8x/10x/12x/14x (maximum image quality)

HDCP not enabled on all cards
Dual Link DVI support N/A on HDMI output

Advanced Image Quality Features

- 64-bit floating point HDR rendering supported throughout the pipeline
- Includes support for blending and multi-sample anti-aliasing
- 32-bit integer HDR (10:10:10:2) format supported throughout the pipeline
- Includes support for blending and multi-sample anti-aliasing
- 2x/4x/6x Anti-Aliasing modes
- Multi-sample algorithm with gamma correction, programmable sparse sample patterns, and centroid sampling
- New Adaptive Anti-Aliasing feature with Performance and Quality modes
- Temporal Anti-Aliasing mode
- Lossless Color Compression (up to 6:1) at all resolutions, including widescreen HDTV resolutions
- 2x/4x/8x/16x Anisotropic Filtering modes
- Up to 128-tap texture filtering
- Adaptive algorithm with Performance and Quality options
- High resolution texture support (up to 4k x 4k)

Avivo™ Video and Display Platform

- High performance programmable video processor
- Accelerated MPEG-2, MPEG-4, DivX, WMV9, VC-1, and H.264 decoding and transcoding
- DXVA support
- De-blocking and noise reduction filtering
- Motion compensation, IDCT, DCT and color space conversion
- Vector adaptive per-pixel de-interlacing
- 3:2 pulldown (frame rate conversion)
- Seamless integration of pixel shaders with video in real time
- HDR tone mapping acceleration
- Maps any input format to 10 bit per channel output
- Flexible display support
- Dual integrated dual-link DVI transmitters
- DVI 1.0 compliant / HDMI interoperable
- Dual integrated 10 bit per channel 400 MHz DACs
- 16 bit per channel floating point HDR and 10 bit per channel DVI output
- Programmable piecewise linear gamma correction, color correction, and color space conversion (10 bits per color)
- Complete, independent color controls and video overlays for each display
- High quality pre- and post-scaling engines, with underscan support for all outputs
- Content-adaptive de-flicker filtering for interlaced displays
- Xilleon™ TV encoder for high quality analog output
- YPrPb component output for direct drive of HDTV displays
- Spatial/temporal dithering enables 10-bit color quality on 8-bit and 6-bit displays
- Fast, glitch-free mode switching
- VGA mode support on all outputs
- Drive two displays simultaneously with independent resolutions and refresh rates
- Compatible with ATI TV/Video encoder products, including Theater 650/550