

ATI Radeon™ HD 3800 Series - GPU Specifications

- 666 million transistors on 55nm fabrication process
- PCI Express 2.0 x16 bus interface⁵
- 256-bit GDDR3/GDDR4 memory interface
- Ring Bus Memory Controller
 - Fully distributed design with 512-bit internal ring bus for memory reads and writes
- Microsoft® DirectX® 10.1 support
 - Shader Model 4.1
 - 32-bit floating point texture filtering
 - Indexed cube map arrays
 - Independent blend modes per render target
 - Pixel coverage sample masking
 - Read/write multi-sample surfaces with shaders
 - Gather4 texture fetching
- Unified Superscalar Shader Architecture
 - 320 stream processing units
 - Dynamic load balancing and resource allocation for vertex, geometry, and pixel shaders
 - Common instruction set and texture unit access supported for all types of shaders
 - Dedicated branch execution units and texture address processors
 - 128-bit floating point precision for all operations
 - Command processor for reduced CPU overhead
 - Shader instruction and constant caches
 - Up to 80 texture fetches per clock cycle
 - Up to 128 textures per pixel
 - Fully associative multi-level texture cache design
 - DXTC and 3Dc+ texture compression
 - High resolution texture support (up to 8192 x 8192)
 - Fully associative texture Z/stencil cache designs
 - Double-sided hierarchical Z/stencil buffer
 - Early Z test, Re-Z, Z Range optimization, and Fast Z Clear
 - Lossless Z & stencil compression (up to 128:1)
 - Lossless color compression (up to 8:1)
 - 8 render targets (MRTs) with anti-aliasing support
 - Physics processing support
- Dynamic Geometry Acceleration
 - High performance vertex cache
 - Programmable tessellation unit
 - Accelerated geometry shader path for geometry amplification
 - Memory read/write cache for improved stream output performance
- Anti-aliasing features
 - Multi-sample anti-aliasing (2, 4, or 8 samples per pixel)
 - Up to 24x Custom Filter Anti-Aliasing (CFAA) for improved quality
 - Adaptive super-sampling and multi-sampling
 - Temporal anti-aliasing
 - Gamma correct
 - Super AA (ATI CrossFire™ configurations only)
 - All anti-aliasing features compatible with HDR rendering
- Texture filtering features
 - 2x/4x/8x/16x high quality adaptive anisotropic filtering modes (up to 128 taps per pixel)
 - 128-bit floating point HDR texture filtering
 - Bicubic filtering
 - sRGB filtering (gamma/degamma)
 - Percentage Closer Filtering (PCF)
 - Depth & stencil texture (DST) format support
 - Shared exponent HDR (RGBE 9:9:9:5) texture format support
- OpenGL 2.0 support
- ATI Avivo™ HD Video and Display Platform
 - Dedicated unified video decoder (UVD) for H.264/AVC and VC-1 video formats
 - High definition (HD) playback of both Blu-ray and HD DVD formats
 - Hardware MPEG-1, MPEG-2, and DivX video decode acceleration
 - Motion compensation and IDCT
 - ATI Avivo Video Post Processor
 - Color space conversion
 - Chroma subsampling format conversion
 - Horizontal and vertical scaling
 - Gamma correction
 - Advanced vector adaptive per-pixel de-interlacing

- De-blocking and noise reduction filtering
- Detail enhancement
- Inverse telecine (2:2 and 3:2 pull-down correction)
- Bad edit correction
- Two independent display controllers
 - Drive two displays simultaneously with independent resolutions, refresh rates, color controls and video overlays for each display
 - Full 30-bit display processing
 - Programmable piecewise linear gamma correction, color correction, and color space conversion
 - Spatial/temporal dithering provides 30-bit color quality on 24-bit and 18-bit displays
 - High quality pre- and post-scaling engines, with underscan support for all display outputs
 - Content-adaptive de-flicker filtering for interlaced displays
 - Fast, glitch-free mode switching
 - Hardware cursor
- Two integrated dual-link DVI display outputs
 - Each supports 18-, 24-, and 30-bit digital displays at all resolutions up to 1920x1200 (single-link DVI) or 2560x1600 (dual-link DVI)²
 - Each includes a dual-link HDCP encoder with on-chip key storage for high resolution playback of protected content³
- Two integrated 400 MHz 30-bit RAMDACs
 - Each supports analog displays connected by VGA at all resolutions up to 2048x1536²
- DisplayPort output support⁴
 - Supports 24- and 30-bit displays at all resolutions up to 2560x1600²
- HDMI output support
 - Supports all display resolutions up to 1920x1080²
 - Integrated HD audio controller with multi-channel (5.1) AC3 support, enabling a plug-and-play cable-less audio solution
- Integrated AMD Xilleon™ HDTV encoder
 - Provides high quality analog TV output (component/S-video/composite)
 - Supports SDTV and HDTV resolutions
 - Underscan and overscan compensation
- MPEG-2, MPEG-4, DivX, WMV9, VC-1, and H.264/AVC encoding and transcoding
- Seamless integration of pixel shaders with video in real time
- VGA mode support on all display outputs
- ATI PowerPlay™
 - Advanced power management technology for optimal performance and power savings
 - Performance-on-Demand
 - Constantly monitors GPU activity, dynamically adjusting clocks and voltage based on user scenario
 - Clock and memory speed throttling
 - Voltage switching
 - Dynamic clock gating
 - Central thermal management – on-chip sensor monitors GPU temperature and triggers thermal actions as required
- ATI CrossFireX™ Multi-GPU Technology
 - Scale up rendering performance and image quality with two, three, or four GPUs
 - Integrated compositing engine
 - High performance dual channel bridge interconnect¹

1 Dual channel interconnect is not required for ATI CrossFire, and may not be included in all product configurations

2 Some custom resolutions require user configuration

3 HDCP support for playback of protected content requires connection to a HDCP capable display

4 Requires external DisplayPort transmitter

5 ATI Radeon HD 3870 GPUs support PCIe 2.0. Some board configurations may not fully comply with complete PCIe 2.0 specification and operate at PCIe 1.1 specifications on motherboards that support PCIe 2.0. Please consult with board manufacturer if this is an important feature for you.

ATI Radeon™ HD graphics chips have numerous features integrated into the processor itself (e.g., HDCP, HDMI, etc.). Third parties manufacturing products based on, or incorporating ATI Radeon HD graphics chips, may choose to enable some or all of these features. If a particular feature is important to you, please inquire of the manufacturer if a particular product supports this feature. In addition, some features or technologies may require you to purchase additional components in order to make full use of them (e.g. a Blu-Ray or HD-DVD drive, HDCP-ready monitor, etc.).