



## NVIDIA GEFORCE 6800 SPECIFICATIONS

### CINEFX 3.0 SHADING ARCHITECTURE

- Vertex Shaders
  - Support for Microsoft DirectX 9.0 Vertex Shader 3.0
  - Displacement mapping
  - Vertex frequency stream divider
  - Infinite length vertex programs\*
- Pixel Shaders
  - Support for DirectX 9.0 Pixel Shader 3.0
  - Full pixel branching support
  - Support for Multiple Render Targets (MRTs)
  - Infinite length pixel programs\*
- Next-Generation Texture Engine
  - Up to 16 textures per rendering pass
  - Support for 16-bit floating point format and 32-bit floating point format
  - Support for non-power of two textures
  - Support for sRGB texture format for gamma textures
  - DirectX and S3TC texture compression
- Full 128-bit studio-quality floating point precision through the entire rendering pipeline with native hardware support for 32bpp, 64bpp, and 128bpp rendering modes

### NVIDIA HIGH-PRECISION DYNAMIC-RANGE (HPDR) TECHNOLOGY

- Full floating point support throughout entire pipeline
- Floating point filtering improves the quality of images in motion
- Floating point texturing drives new levels of clarity and image detail
- Floating point frame buffer blending gives detail to special effects like motion blur and explosions
- New rotated-grid antialiasing removes jagged edges for incredible edge quality

### INTELLISAMPLE 3.0 TECHNOLOGY

- Advanced 16x anisotropic filtering
- Blistering-fast antialiasing and compression performance
- Support for advanced lossless compression algorithms for color, texture, and z-data at even higher resolutions and frame rates
- Fast z-clear
- High-resolution compression technology (HCT) increases performance at higher resolutions through advances in compression technology

### ULTRASHADOW II TECHNOLOGY

- Designed to enhance the performance of shadow-intensive games, like id Software's *Doom III*

### ADVANCED ENGINEERING

- Over 220m transistors
- Designed for PCI Express x16
- Supports PCI Express high-speed interconnect (HSI) technology for bidirectional interconnect protocol conversion
- Full support of AGP 8X including Fast Writes and sideband addressing
- Support for the industry's fastest GDDR3 memory
- 256-bit advanced memory interface
- 0.13 micron process technology
- Advanced thermal management and thermal monitoring
- 40 mmx40 mm, BGA flip-chip package

### ADVANCED VIDEO AND DISPLAY FUNCTIONALITY

- Dedicated on-chip video processor
- MPEG video encode and decode
- WMV9 decode acceleration
- Advanced adaptive de-interlacing
- High-quality video scaling and filtering

- Integrated NTSC/PAL TV encoder supporting resolutions up to 1024x768 without the need for panning with built-in Macrovision copy protection
- DVD and HDTV-ready MPEG-2 decoding up to 1920x1080i resolutions
- Dual integrated 400 MHz RAMDACs for display resolutions up to and including 2048x1536 at 85Hz.
- Dual DVO ports for interfacing to external TMDS transmitters and external TV encoders
- Microsoft® Video Mixing Renderer (VMR) supports multiple video windows with full video quality and features in each window
- VIP 1.1 interface support for video-in function
- Full NVIDIA® nView™ multi-display technology capability

### NVIDIA® DIGITAL VIBRANCE CONTROL™ (DVC) 3.0

- DVC color controls
- DVC image sharpening controls

### OPERATING SYSTEMS

- Windows XP
- Windows ME
- Windows 2000
- Windows 9X
- Macintosh OS, including OS X
- Linux

### API SUPPORT

- Complete DirectX support, including the latest version of Microsoft DirectX 9.0
- Full OpenGL, including OpenGL 1.5

\* The operating system or APIs can impose limits, but the hardware does not limit shader program length.



## GRAPHICS TO DRENCH YOUR SENSES

Get ready for the most vibrant, lifelike, and elegant graphics ever experienced on a PC. The groundbreaking new **NVIDIA® GeForce™ 6800** graphics processing units (GPUs) and their revolutionary technologies power worlds where reality and fantasy meet; worlds in which new standards are set for visual realism and quality, performance, and video functionality. The GeForce 6800 GPUs deliver powerful, elegant graphics to drench your senses, immersing you in unparalleled worlds of visual effects for the ultimate PC experience.



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## GRAPHICS TO DRENCH YOUR SENSES

### SUPERCHARGING GAME PERFORMANCE

The GeForce 6800 GPUs supercharge PC game performance. Featuring groundbreaking technology innovations such as the industry's first superscalar 16-pipe architecture and support for the world's fastest DDR3 memory, these revolutionary GPUs arm you with everything you need to tear through your favorite games at unbelievable frame rates. With 8x the floating-point shader power and 2x the vertex processing power over previous-generation GPUs, the GeForce 6800 GPUs raise the bar for 3D graphics performance. The GeForce 6800 GPUs also feature NVIDIA® UltraShadow™ II technology. Designed to enhance the performance of shadow-intensive games, like id™ Software's *Doom III*, the second-generation UltraShadow technology delivers 4x the shadow processing power of previous-generation products.

### ULTRA-REALISTIC GAMES

Built for today's hottest ultra-realistic games, like Valve's *Half-Life 2* and GSC Games' *S.T.A.L.K.E.R.: Shadow of Chernobyl*, the GeForce 6800 GPUs are the industry's first and only GPUs to feature unique support for Microsoft® DirectX® 9.0 Shader Model 3.0. Powered by the proven NVIDIA® CineFX™ 3.0 engine, these advanced GPUs enable unlimited programmability and infinite program length,



Battlefield Vietnam™/EA Games



Far Cry™/Ubisoft/Crytec

allowing developers to create a new class of advanced visuals and effects. In addition, features such as displacement mapping enable the creation of unique 3D characters and objects, allowing developers to alter a 3D model's appearance on an individual vertex basis. Through this technique, developers can create ultra-realistic models that fully interact with the unique lighting of a particular environment. In addition, through Shader Model 3.0 and the advanced CineFX 3.0 engine, game developers can create complex lifelike effects like skin, hair, and shadows that fool the eye of even the most discriminating gaming enthusiast. These incredible effects can all be experienced in real-time—without compromising performance—thanks to the power of the GeForce 6800 GPUs.

### BRINGING FILM RENDERING TECHNIQUES TO GAMES

The GeForce 6800 GPUs are the first to implement NVIDIA High-Precision Dynamic-Range (HPDR) technology, taking 3D graphics one step closer to film quality. Based on the OpenEXR technology used by Industrial Light & Magic, NVIDIA HPDR technology



Lord of the Rings™: The Battle for Middle-earth™/EA Games

brings professional film rendering techniques to today's games. NVIDIA HPDR technology delivers full floating point support throughout the entire pipeline—including floating point filtering, floating point texturing, and floating point blending—the GeForce 6800 GPUs raise the bar for image quality, clarity, and detail. Additionally, the new rotated-grid antialiasing technique removes jagged edges from images by providing more subsample coverage values in both the vertical and horizontal direction. Further, 16x anisotropic filtering adds clarity to extreme geometry, allowing more texture samples to be applied to each pixel of an extreme polygon.

### UNMATCHED VIDEO FUNCTIONALITY

Watching TV, DVDs, and high-definition video on a PC is quickly becoming commonplace amongst PC users. In addition to providing the horsepower and advanced features for an amazing gaming experience, the GeForce 6800 GPUs also deliver unmatched video features and functionality through the industry's first on-chip video processor. This dedicated unit on the GPU handles the lion's share of the video processing load, freeing up the CPU for other tasks. The video processor delivers MPEG support for encoding and decoding of both analog and digital video content, as well as high-quality video scaling and filtering for impeccable playback quality at any window size. An integrated TV encoder allows you to connect your PC to a TV for direct to TV playback, and advanced adaptive de-interlacing technology provides smooth playback on progressive displays. In anticipation of the most significant bus



NVIDIA Timbury demo



transition in PC history, the GeForce 6800 GPUs were designed for the new PCI Express standard. Doubling the bandwidth of AGP 8X, PCI Express delivers over 4GB per second in both upstream and downstream data transfers, accelerating applications such as video editing.

### A NO-COMPROMISE EXPERIENCE

The GeForce 6800 GPUs leverage the NVIDIA® ForceWare™ unified software environment (USE) to unleash the full potential of your PC graphics experience while delivering industry-renowned stability and reliability. Boasting a cutting-edge software feature set, ForceWare delivers advanced graphics features—including application profiles for creating custom image quality and performance settings for games and applications, and an auto-overclocking tool for safely pushing the GPU's performance limits. Built on the foundation of the industry-renowned NVIDIA Unified Driver Architecture (UDA), ForceWare delivers unmatched compatibility with the widest range of games and applications for the ultimate "install-and-play" experience. Equip yourself with an NVIDIA GeForce 6800 GPU so you can play your game the way it's meant to be played.

