



## THE INFINITE EFFECTS GPU

The NVIDIA® GeForce3™ Graphics Processing Unit (GPU) shakes up the gaming industry with unprecedented visual effects and sizzling frame rates—injecting life into the previously artificial world of computer-generated graphics. Powered by the new NVIDIA nfiniteFX™ Engine and the Lightspeed Memory Architecture™, the GeForce3 GPU enables users to look into a rich environment instead of just a computer screen. 3D scenes have ambiance with GeForce3 because textures appear photo realistic and custom lighting heightens the drama. Characters and living creatures have organic imperfections and unique expressions—you can see their personality. Programmability and performance have been combined to provide the catalyst for this graphics revolution

### PROGRAMMABILITY: THE NFINITEFX ENGINE

The GeForce3 GPU's nfiniteFX Engine gives developers the ability to program a virtually infinite number of special effects and custom looks. Instead of every developer choosing from the same hard-coded palette of effects and ending up with the same generic look and feel, developers can specify personalized combinations of graphics operations and create their own custom effects. Games and other graphics-intensive applications offer more exciting and stylized visual effects. Two patented architectural advancements enable the nfiniteFX Engine's programmability and its multitude of effects: Vertex Shaders and Pixel Shaders.

**Vertex Shaders** inject personality into characters and environments. Motion invades the entire scene, not just the focal points. The vertex processing capabilities allow characters to move and show facial emotion, materials to stretch, and the scene to come alive. By customizing the



skinning and motion effects, developers can create a personality, intensifying the impact of the visualization or animation.

**Pixel Shaders** create ambiance with materials and surfaces that mimic reality. A virtually infinite number of material effects replace the artificial, computerized look with high-impact organic surfaces.



Characters now have facial hair and blemishes, golf balls have dimples, a red chair gains a subtle leather look, and wood exhibits texture and grain. By altering the lighting and surface effects, artists are able to manipulate colors, textures, or shapes to generate complex, realistic scenes.

### PERFORMANCE: LIGHTSPEED MEMORY ARCHITECTURE

The Lightspeed Memory Architecture brings power to the GeForce3, delivering earth-shattering performance and fluid motion for even the most complex scenes. NVIDIA's patented technology delivers AA samples at nearly four times the rate of the GeForce2 Ultra™, enabling high-resolution antialiasing (HRAA) with fluid frame rates. The GeForce3 delivers more than 800 billion operations per second (BOPS)—more than twice the raw performance available to consumers in today's GPUs. For more complex scenes and visuals, the GeForce3 advantage grows to as much as a seven-fold increase in delivered performance.

Combine the personality and ambiance enabled by the nfiniteFX Engine and the power of the Lightspeed Memory Architecture, and the results are superior visual effects and game play. No other graphics processor provides as much functionality. That's why the NVIDIA GeForce3 is the reference platform of choice for the Microsoft® DirectX® 8 application programming interface (API) and the technology foundation for the Microsoft next-generation Xbox™ game console. GeForce3 delivers the most visually compelling and the most complete graphics experience available today.



## GeForce3 FEATURES

- nfiniteFX™ engine for full programmability
- Lightspeed Memory Architecture for unmatched performance
- Surface engine for high-order surfaces and patches
- Programmable Vertex Shaders
  - Procedural deformations
  - Programmable matrix palette skinning
  - Keyframe animation interpolation
  - Morphing
  - Fog effects: Radial, Elevation, Non-linear
  - Lens effects: Fish eye, Wide angle, Fresnel effects, Water refraction
- Programmable Pixel Shader
  - Phong-style lighting for per-pixel accuracy
  - Dot3 bump mapping
  - Environmental bump mapping (EMBM)
  - Procedural textures
  - Per-pixel reflections
- HRAA—high-resolution antialiasing
  - Featuring Quincunx AA mode
- Integrated hardware transform engine
- Integrated hardware lighting engine
- DirectX® and S3TC® texture compression
- Dual cube environment mapping capability
  - Reflection maps
  - Accurate, real-time environment reflections
- Hardware accelerated real-time shadows
- True, reflective bump mapping
  - Z-correct bump mapping
  - Phong-style lighting effects on bump maps with reflections
- High-performance 2D rendering engine
  - Optimized for 32-, 24-, 16-, 15- and 8-bpp modes
  - True-color hardware cursor with alpha
  - Multi-buffering (double, triple or quad) for smooth animation and video playback
- High-quality HDTV/DVD playback
- High-definition video processor (HDVP) for full-screen, full-frame video playback of HDTV and DVD content
  - Independent hardware color controls for video overlay
  - Hardware color-space conversion (YUV 4:2:2 and 4:2:0)
  - Motion compensation
  - 5-tap horizontal by 3-tap vertical filtering
  - 8:1 up/down scaling
  - Per-pixel color keying
  - Multiple video windows supported for CSC and filtering
  - DVD sub-picture alpha-blended compositing
- Operating systems
  - Windows® 2000
  - Windows NT® (all)
  - Windows 98, Windows 95
  - Linux™ Compatible
  - Mac® OS Compatible
  - API support
  - OpenGL® 1.2 and lower
  - DirectX 8.0 Version 1.1 and lower

## PERFORMANCE

- 3.2 billion AA samples per second fill rate
- 7.36GB/sec memory bandwidth
- Lightspeed Memory Architecture amplifies memory bandwidth

## COMPATIBILITY

- NVIDIA Unified Driver Architecture (UDA)
- Fully-compliant professional OpenGL 1.2 support for all Linux and Windows operating systems
- WHQL-certified for Windows 2000, Windows NT, and Windows 98
- Complete Linux drivers
- Mac OS



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