

NVIDIA 3D GRAPHIC ACCELERATORS

User Manual

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CARD FEATURES

NVIDIA GeForce FX 5800

Rocket Science For a System-Level Solution

- 0.13u process technology for higher levels of integration and higher operating clock speeds
- Advanced thermal monitoring and thermal management
- World's fastest memory with speeds up to 1.0GHz DDR2
- AGP 8X including fast writes and sideband addressing
- Flip-chip BGA packaging

CineFX Shading Architecture

- Support for Direct X 9.0 Pixel/Vertex Shader 2.0+
- Very long pixel programs up to 1024 instructions
- Very long vertex programs with up to 256 static instructions and up to 65536 instructions executed before termination
- Looping and subroutines with up to 256 loops per vertex program
- Subroutines in shader programs
- Dynamic flow control
- Conditional write masking
- Conditional execution

- Procedural shading
- Full instruction set for vertex and pixel programs
- Z-correct bump-mapping
- Hardware-accelerated shadow effects with shadow buffers
- Programmable matrix palette skinning
- Key frame animation
- Custom lens effects: fish eye, wide angle, fresnel effects, water refraction

High-Performance, High-Precision, 3D Rendering Engine

- 8 pixels per clock rendering engine
- 128-bit, studio-quality floating point precision through the entire graphics pipeline
- Native support for 128-bit floating point, 64-bit floating point and
- 32-bit integer rendering modes
- Up to 16 textures per pass
- Support for sRGB texture format for gamma textures
- DirectX and S3TC texture compression

High-Performance 2D Rendering Engine

- Optimized for 32-, 24-, 16-, 15- and 8-bpp modes
- True-color, 64x64 hardware cursor with alpha
- Multi-buffering (double, triple or quad) for smooth animation and video playback
- True-color, 64x64 hardware cursor with alpha

Advanced Display Pipeline with Full nView Capabilities

- Dual, 400MHz RAMDACs for display resolutions up to and including 2048x1536@85Hz
- Integrated NTSC/PAL TV encoder support resolutions up to 1024x768 without the need for panning with built-in Macrovision copy protection
- Video Mixing Renderer (VMR) supports multiple video windows with full quality and features in each window
- DVD and HDTV-ready MPEG-2 decoding up to 1920x1080i resolutions
- Support for dual-link DVI for compatibility with next-generation flat panel displays with resolutions greater than 1600x1200 without the need for reduced blanking

Intellisample Technology

Digital Vibrance control (DVC) 3.0

NVIDIA GeForce FX 5600

Rocket Science for a system-level solution

- 0.13u process technology for higher levels of integration and higher operating clock speeds
- Copper vias and wiring
- Advanced thermal monitoring and thermal management
- AGP 8X including Fast Writes and sideband addressing

CineFX Shading Architecture

- Support for DX 9.0 Pixel/Vertex Shader 2.0+
- Very long pixel programs up to 1024 instructions
- Very long vertex programs with up to 256 static instructions and up to 65536 instructions executed before termination
- Looping and subroutines with up to 256 loops per vertex program
- Subroutines in shader programs
- Dynamic flow control
- Conditional write masking
- Conditional execution
- Procedural shading
- Full instruction set for vertex and pixel programs
- Z-correct bump-mapping
- Hardware-accelerated shadow effects with shadow buffers
- Two-sided stencil
- Programmable matrix palette skinning
- Keyframe animation
- Custom lens effects: fish eye, wide angle, fresnel effects, water refraction

High-Performance, High-Precision, 3D Rendering Engine

- 8 pixels per clock rendering engine
- 128-bit, studio-quality floating point precision through the entire graphics pipeline
- Native support for 128-bit floating point, 64-bit floating point and 32-bit integer rendering modes
- Up to 16 textures per pass
- Support for sRGB texture format for gamma textures
- DirectX and S3TC texture compression

High-Performance 2D Rendering Engine

- Optimized for 32-, 24-, 16-, 15- and 8-bpp modes
- True-color, 64x64 hardware cursor with alpha
- Multi-buffering (double, triple or quad) for smooth animation and video playback
- True-color, 64x64 hardware cursor with alpha

Advanced Display Pipeline with Full nView Capabilities

- Dual, 400MHz RAMDACs for display resolutions up to and including 2048x1536@85Hz
- Integrated NTSC/PAL TV encoder support resolutions up to 1024x768 without the need for panning with built-in Macrovision copy protection
- Video Mixing Renderer (VMR) supports multiple video windows with full quality and features in each window
- DVD and HDTV-ready MPEG-2 decoding up to 1920x1080i resolutions
- Dual DVO ports for interfacing to external TMDS transmitters and external HDTV encoders
- Support for dual-link DVI for compatibility with next-generation flat panel displays with resolutions greater than 1600x1200 without the need for reduced blanking

Intellisample Technology

Digital Vibrance control (DVC) 3.0

NVIDIA GeForce FX 5200

CineFX Shading Architecture

- Support for DX 9.0 Pixel/Vertex Shader 2.0+
- Very long pixel programs up to 1024 instructions
- Very long vertex programs with up to 256 static instructions and up to 65536 instructions executed before termination
- Looping and subroutines with up to 256 loops per vertex program
- Subroutines in shader programs
- Dynamic flow control
- Conditional write masking
- Conditional execution
- Procedural shading
- Full instruction set for vertex and pixel programs
- Z-correct bump-mapping
- Hardware-accelerated shadow effects with shadow buffers
- Two-sided stencil
- Programmable matrix palette skinning

- Keyframe animation
- Custom lens effects: fish eye, wide angle, fresnel effects, water refraction

High-Performance, High-Precision, 3D Rendering Engine

- 4 pixels per clock rendering engine
- 128-bit, studio-quality floating point precision through the entire graphics pipeline
- Native support for 128-bit floating point, 64-bit floating point and 32-bit integer rendering modes
- Up to 16 textures per pass
- Support for sRGB texture format for gamma textures
- DirectX and S3TC texture compression

High-Performance 2D Rendering Engine

- Optimized for 32-, 24-, 16-, 15- and 8-bpp modes
- True-color, 64x64 hardware cursor with alpha
- Multi-buffering (double, triple or quad) for smooth animation and video playback
- True-color, 64x64 hardware cursor with alpha

Advanced Display Pipeline with Full nView Capabilities

- Dual, 400MHz RAMDACs for display resolutions up to and including 2048x1536@85Hz
- Integrated NTSC/PAL TV encoder support resolutions up to 1024x768 without the need for panning with built-in Macrovision copy protection
- Video Mixing Renderer (VMR) supports multiple video windows with full quality and features in each window
- DVD and HDTV-ready MPEG-2 decoding up to 1920x1080i resolutions
- Dual DVO ports for interfacing to external TMDS transmitters and external HDTV encoders
- Support for dual-link DVI for compatibility with next-generation flat panel displays with resolutions greater than 1600x1200 without the need for reduced blanking

Digital Vibrance control (DVC) 3.0

NVIDIA GeForce 4 Ti4200 (NV28)

- The nVIDIA nfiniteFX II Engine enable a virtually infinite number of special effects that deliver the next leap in realism to 3D graphics
- Dual programmable Vertex Shaders
- Advanced programmable Pixel Shaders
- nVIDIA Lightspeed Memory Architecture™ II
- nVIDIA Accuview™ Antialiasing
- 3D Textures
- Shadow Buffers
- 4 dual-rendering pipelines
- 8 texels per clock cycle

- Dual cube environment mapping
- High-Definition Video Processor (HDVP)
- AGP 8X with texturing and fast writes
- 32-bit color with 32-bit Z/stencil buffer
- Z-correct true, reflective bump mapping
- High-performance 2D rendering engine
- Hardware accelerated real-time shadows
- True-color hardware cursor
- Integrated hardware transform engine
- Integrated hardware lighting engine
- TV-Out or Video Modules (Video In & Video Out)
- Multibuffering (double, triple, quad) for smooth animation and video playback
- Microsoft DirectX® and S3TC® texture compression
- nVIDIA Unified Driver Architecture (UDA)
- Up to 8.0 GB/sec. memory bandwidth
- 113 million triangles/sec. setup engine
- 4.0 billion AA sample/sec. fill rate
- 1.03 trillion operations/sec.

NVIDIA GeForce 4 MX440 (NV18)

- 256-bit 3D and 2D graphics accelerator
- Integrated second-generation Transform and Lighting engines
- 34 million triangles/ sec setup engine with Z-cull and Z-clear
- 1.1billion texels per second and 540million pixel per second fill rate
- NVIDIA Shading Rasterizer with 24 of 26 DX8 pixel shading functions and full set of OpenGL 1.3 pixel combiner operations
- 32-bit color with 32-bit z/stencil
- Up to 6.4GB/second memory bandwidth
- AGP 8X with texturing and fast writes
- Cube environment mapping DirectX® and S3TC® texture compression
- Digital Vibrance Control
- Enhanced TwinView dual-display architecture supporting any combination of notebook LCD, desktop VGA monitor, DVI display or TV set
- Dual CRT/ Simultaneous Dual Display (same or different surfaces)
- Integrated dual LVDS Transmitter supporting LCD panels up to 2048x1536
- Integrated 350 MHz Palette-DAC for analog VGA monitors up to 2048x1536
- Integrated NTSC/PAL TV encoder supporting resolutions up to 1024x768
- Integrated TMDS transmitter for Digital Visual Interface support with scaling and filtering for flat panels up to 1600x1200

NVIDIA GeForce 4 MX440SE

- 256-bit 3D and 2D graphics accelerator
- Integrated second-generation Transform and Lighting engines
- 31 million triangles/ sec setup engine with Z-cull and Z-clear
- 1 billion texels per second and 540million pixel per second fill rate
- NVIDIA Shading Rasterizer with 24 of 26 DX8 pixel shading functions and full set of OpenGL 1.3 pixel combiner operations
- 32-bit color with 32-bit z/stencil
- Up to 5.3GB/second memory bandwidth
- AGP 2X/ 4X with texturing and fast writes
- Cube environment mapping DirectX® and S3TC® texture compression
- Digital Vibrance Control
- Enhanced TwinView dual-display architecture supporting any combination of notebook LCD, desktop VGA monitor, DVI display or TV set
- Dual CRT/ Simultaneous Dual Display (same or different surfaces)
- Integrated dual LVDS Transmitter supporting LCD panels up to 2048x1536
- Integrated 350 MHz Palette-DAC for analog VGA monitors up to 2048x1536
- Integrated NTSC/PAL TV encoder supporting resolutions up to 1024x768
- Integrated TMDs transmitter for Digital Visual Interface support with scaling and filtering for flat panels up to 1600x1200

NVIDIA GeForce 2 MX400

- nVIDIA 2nd - Generation 256-bit GPU with new T & L
- nVIDIA 2nd- Generation T&L Engine
- Hardware 256-bit 2-Pipe Rendering Engine
- Hardware 256-bit 2 Texture/Pixel 3D Engine
- 2.7GB/second memory bandwidth
- 800M-texels Fill Rate
- 25M Triangles/sec through T&L and Setup Engine
- nVIDIA Shading Rasterizer
- Per Pixel Shading in a single pass
- 4 texels per clock
- Cube Environment Mapping
- Order Independent full Scene Multi-sample Anti-aliasing
- Single pass multi-texturing
- 32-bit Z/Stencil Buffer (floating point or integer)
- High Performance Hardware Anti-Aliasing
- 32-bit ARGB rendering with destination alpha
- High Quality Texture Filtering, including Anisotropic
- Alpha-Blending and Specular Highlights
- Advance per-pixel, perspective-correct texturing

- 32 bits true color Texture Mapping
- DirectX and S3TC texture compression

NVIDIA TNT2 M64

- High performance 128-bit 2D / GUI / DirectDraw Acceleration
- 3D Feature Set- Peak fill rate of 284 million bilinear filtered, multi-textured pixels per second
- Over 9 million triangles per second at peak rate- 2.65GB/sec total memory bandwidth
- 100% hardware triangle setup
- 128bit Twin- Texel (TXT) architecture
- 32bit 3D rendering pipeline
- 2 texture-mapped, lit pixels per clock cycle
- Single pass multi-texturing support (DirectX 7.0 and OpenGL ICD)
- Video acceleration for DirectShow®, MPEG-1, MPEG-2 and Indeo® 250MHz Palette-DAC / 300MHz Palette-DAC for TNT2 M64
- NTSC and PAL digital output port supporting external digital TV encoders

COMPATIBILITY**MODEL:**

- **NVIDIA GeForce FX 5800**
- **NVIDIA GeForce FX 5600**
- **NVIDIA GeForce FX 5200**
- **NVIDIA GeForce 4 Ti4200 (NV28)**

- Windows® 98, ME, 2000, NT and XP Display Drivers
- OpenGL 1.3 or lower ICD support for Windows® 98/ME/NT4.0/2000 and XP
- Linux® compatible
- Mac® OS compatible
- Supports Microsoft® DirectX® 8.0, 7.0, 6.0, and 5.0 (IDCT)
- Fully PC00, PC99 and PC99a compliant

MODEL:

- **NVIDIA GeForce 4 Ti4200 (NV18)**
- **NVIDIA GeForce 4 MX440SE**
- **NVIDIA GeForce 2 MX400**

- Windows® 98, ME, 2000, NT and XP Display Drivers
- OpenGL 1.2 ICD support for Windows® 98/ME/NT4.0/2000 and XP
- Linux® compatible
- Mac® OS compatible
- Supports Microsoft® DirectX® 8.0, 7.0, 6.0, and 5.0 (IDCT)

MODEL:**- NVIDIA TNT2 M64**

- Windows® 98, ME, 2000, NT and XP Display Drivers
- OpenGL ICD support for Windows® 98/ME/NT4.0/2000 and XP
- Linux® compatible
- Mac® OS compatible

SYSTEM REQUIREMENT**MODEL:****- NVIDIA GeForce FX 5800****- NVIDIA GeForce FX 5600****- NVIDIA GeForce FX 5200****- NVIDIA GeForce 4 Ti4200 (NV28)****- NVIDIA GeForce 4 MX440 (NV18)**

- Intel® Pentium II base system or compatible system
- AGP 8X slot
- Windows 9x or Windows 2000 OS
- Windows NT with Service Pack 5 or 6
- Linux OS
- 64MB system memory or above

MODEL:**- NVIDIA GeForce 4 MX440SE****- NVIDIA GeForce 2 MX400**

- Intel® Pentium II base system or compatible system
- AGP slot
- Windows 9x or Windows 2000 OS
- Windows NT with Service Pack 5 or 6
- Linux OS
- 64MB system memory or above

MODEL:**- NVIDIA TNT2 M64**

- Intel® Pentium II base system or compatible system
- AGP slot
- Windows® 9x or Windows® 2000 OS
- Windows® NT with Service Pack 5 or 6
- Linux® OS
- 32MB system memory or above

HARDWARE INSTALLATION

Follow the steps below to install the VGA cards:

1. Turn off your computer
2. Remove the computer case
3. Insert the card directly over the AGP slot on the motherboard
4. Secure the card with a bracket screw
5. Replace the cover

SOFTWARE INSTALLATION FOR NVIDIA SERIES***For Windows® 95/ 98/ ME:***

1. Turn on the computer
2. Insert the CD Driver into the CD-ROM drive
3. Click the nVidia folder and then select the Win9x folder
4. Execute the set up file on E:/nVidia/win9x/setup.exe
5. Follow the on screen instructions to complete the installation



6. After finishing the installation, restart the computer as instructed



For Windows® 2000/ XP:

1. Turn on the computer
2. Insert the CD Driver into the CD-ROM drive
3. Click the nVidia folder and then select the Win2kxp folder
4. Execute the set up file on E:/nVidia/win/setup.exe
5. Follow the on screen instructions to complete the installation
6. After finishing the installation, restart the computer as instructed

For Windows® NT

1. Turn on the computer
2. Insert the CD Driver into the CD-ROM drive
3. Click the nVidia folder and then select the Winnt folder
4. Execute the set up file on E:/nVidia/winnt/setup.exe
5. Follow the on screen instructions to complete the installation
6. After finishing the installation, restart the computer as instructed

INSTALLATION OF DIRECTX® X

The installation of Direct X can accelerate hardware performance of the VGA cards. We suggest you to install it after installing the relevant driver.

1. Insert the CD Driver into the CD-ROM drive
2. Execute the set up file on E:/DIRECTX/dxsetup.exe
3. Follow the on screen instructions to complete the installation
4. After finishing the installation, restart the computer as instructed