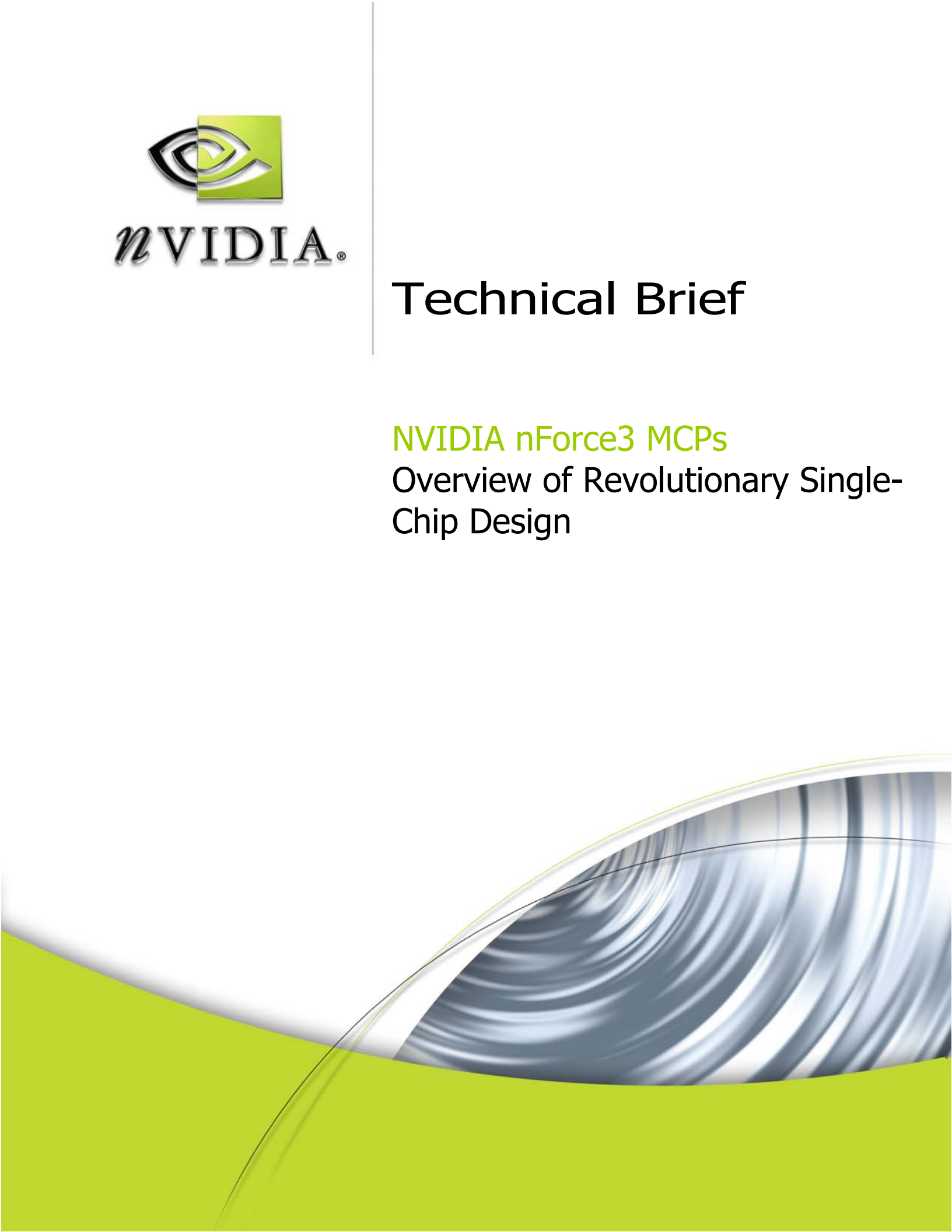

Technical Brief

NVIDIA nForce3 MCPs

Overview of Revolutionary Single-Chip Design

The First Single-Chip Platform Processor for 64-Bit Platforms

The new NVIDIA nForce™3 media and communications processors (MCPs) deliver advanced technology and unmatched performance for performance computing environments, and continue the NVIDIA nForce tradition of industry-leading platform technology. The industry's first single-chip implementation for the new family of 64-bit AMD Opteron™ and Athlon™ 64 processors, NVIDIA nForce3 MCPs are optimized for NVIDIA graphics and the broadest selection of software applications. Plus, they integrate functionality based on current user demand and include enough silicon headroom for a broad range of future capabilities.

These feature-rich NVIDIA nForce3 MCPs deliver high value without compromising performance, enabling a new generation of high performance computers.

Lowered Latencies

The single-chip 64-bit NVIDIA nForce3 architecture provides an inherent performance advantage over dual-chip implementations of the same functionality. Besides reducing overall latency, the NVIDIA nForce3 MCPs significantly boost device throughput. An extremely fast dedicated HyperTransport link lets the NVIDIA nForce3 MCPs communicate with the CPU at up to 8.0GB/sec., a speed that ensures ample bandwidth for future integrated support for AGP, PCI, and other devices. This is especially beneficial for avoiding bottlenecks when multiple devices are active, or for supporting high-bandwidth devices. For example, Gigabit Ethernet can operate at 256MB/sec. (simultaneous transmit-and-receive streams can operate at 128MB/sec. each). This speed would be restricted by the PCI bus (running at 133MB/sec.) if Gigabit Ethernet were not an on-chip function.

Design Efficiency

The NVIDIA single-chip architecture uses 0.15µ process technology. This industry-leading advancement lowers the core voltage, compared with the 0.22µ process used by solutions on the market today.

The NVIDIA leading-edge solution offers unmatched integration of features and functionality, which results in these benefits:

- Simplified board layouts and more room for onboard features and add-on chipsets.
- Lower power consumption and dissipated heat.

- Simplified inventory management and cost efficiencies.
- Ball compatibility so that one board can be designed to support multiple NVIDIA nForce3 MCP variants, which simplifies the processes for producing multiple product offerings.

Advanced Technology Features

The NVIDIA nForce3 MCPs incorporate these features based on popular user demand:

- Gigabit Ethernet
  Select versions of the NVIDIA nForce3 MCPs incorporate a dedicated Gigabit Ethernet port and Media Access Control (MAC) technology. The NVIDIA Gigabit Ethernet port operates at a speed that accommodates the maximum Gigabit Ethernet transfer rate. The optimized port design, combined with other design features that minimize CPU overhead for Gigabit Ethernet transfers, ensure NVIDIA nForce3 MCPs deliver the fastest Gigabit Ethernet desktop solution today.
- Storage
  Advanced disk controller technology includes support for up to four Serial ATA-150 drives and two ATA-133 IDE channels supporting standard programmable input/output (PIO) and Direct Memory Access (DMA). The UltraDMA 33/66/100/133 standard is also supported. Built-in NVIDIA RAID technology delivers optimized disk performance and fault tolerance.
- Networking
  The NVIDIA on-chip 100/10BASE-T Fast Ethernet networking solution provides the fastest network throughput and full networking features.
- Power Management
  Mobile platforms based on NVIDIA nForce3 include support for AMD's PowerNow!™ technology and ACPI 2.0. The single-chip implementation does not incur the ACPI messaging conversion latencies from the Southbridge to the Northbridge.
- Room for Expansion
  NVIDIA nForce3 MCPs support AGP 8X and incorporate an AGP 8X expansion slot for connection to external graphics solutions, such as the latest NVIDIA® GeForce™-based graphics card.

Conclusion

The NVIDIA nForce3 MCPs uphold the NVIDIA tradition of reliability, stability, and compatibility. Adherence to the Company's standards for engineering excellence continues to ensure the success of a growing base of design partners that build systems and solutions with AMD and NVIDIA technology.

The newest NVIDIA nForce3 MCPs deliver

- Maximum value for desktop computing environments.
- Unmatched performance from the industry's first single-chip platform solution for 64-bit platforms.
- Advanced technology solutions spanning storage, networking, audio, graphics, and other functions critical to today's professionals.
- A complete solution complemented by NVIDIA graphics.

For more details about the NVIDIA nForce3 MCPs, please visit the NVIDIA Web site at www.nvidia.com.

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