BROADCOM®

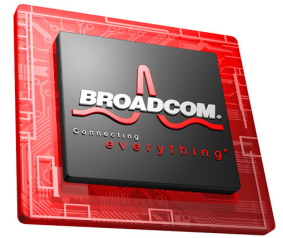Connecting **everything**®

NetX NetXtreme®

BCM57765

PRODUCT Brief

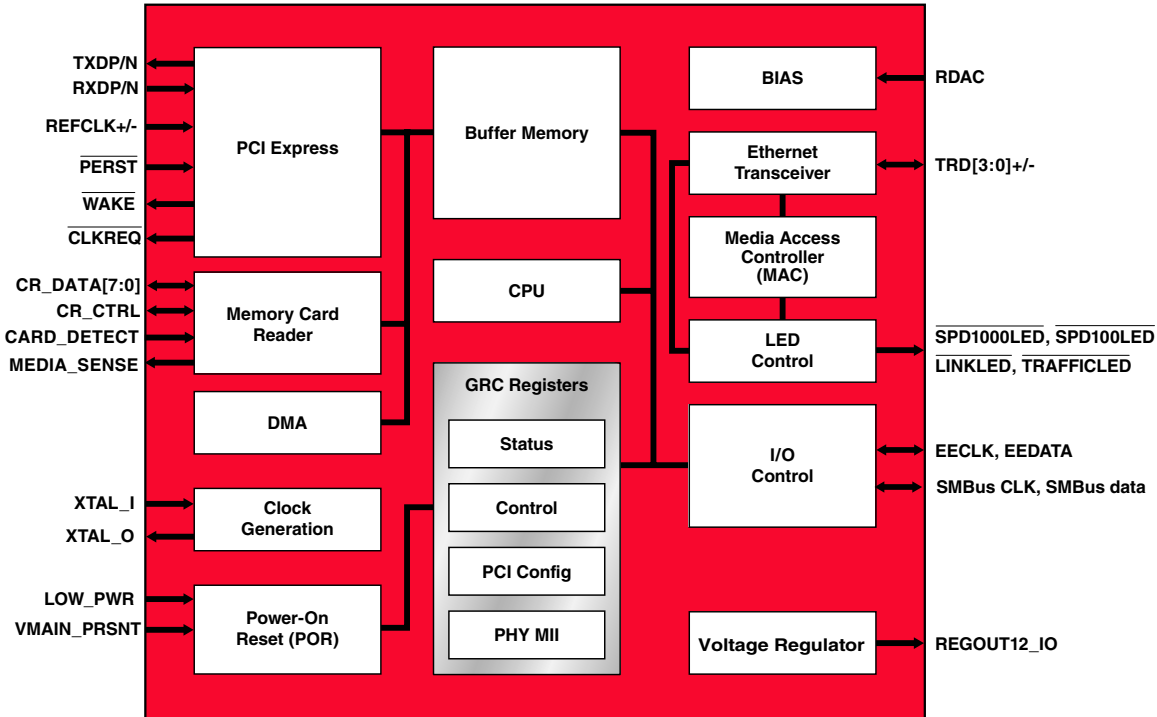# Integrated Gigabit Ethernet and Memory Card Reader Controller

FEATURES

- **Integrated 10/100/1000BASE-T transceiver**
  - 10/100/1000BASE-T triple-speed MAC
  - Compliant with IEEE standards
  - Compliant with IEEE 802.3az draft standard for Energy Efficient Ethernet™ (EEE)
  - State-of-the-art physical layer interface that exceeds IEEE requirements
  - Jumbo frame support with up to 9.6 KB frame size
  - EthernetAV protocols with IEEE 802.1AS, 1588-2008, IEEE P802.1Qat and IEEE P802.1Qav support

- **Integrated 5-in-1 memory card reader**
  - SD Secure Digital®-compliant with specification v3.0 (SD, miniSD™, microSD™, SDHC, miniSDHC, SDXC, and microSDXC)
  - MultiMedia Card-compliant with specification v4.4 (MMC, MMCplus®, MMCmicro®, HS MMC, and MMCmobile®)
  - Memory Stick®-compliant with specification v1.43 and PRO v1.03 (MS, MS PRO, MS PRO Duo, MS PRO-HG, MS PRO-HG Duo, and Micro)
  - xD-Picture[a]-compliant with specification v1.2C (Type-M and Type-H)

- **PCI Express® host interface**
  - x1 PCIe™ v1.1
  - Active State Power Management (ASPM) capability
  - Message Signal Interrupt (MSI)

- **Intelligent power management**
  - Centralized power management enables easy and efficient control of various power modes.
  - Innovative implementation that optimizes power consumption dynamically and transparently, depending on network and system states.

- **Performance features**
  - TCP, IP, and UDP Checksum Offload (CSO)
  - Receive Side Scaling (RSS) for multicore client processors
  - IPV4 and IPV6 Microsoft® Large Send Offload (LSO)
  - Interrupt coalescing
  - Microsoft Windows® 7 WoL and Proxy support

- **Robust ACPI-compliant WOL**

- **Alert Standard Format (ASF) 2.0**

- **On-chip voltage regulation using switching regulator**

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a. xD-Picture is only available on select SKUs.

SUMMARY OF BENEFITS

- **Single-chip solution for LAN and memory card reader on motherboard applications**

- **Proven technology built on twelve generations of controller products**

- **Wirespeed performance increases user performance.**
  - PCI Express provides wirespeed non-blocking throughput.
  - TCP/IP checksum offload significantly reduces CPU usage and increases network throughput for large file download.

- **Extremely low power consumption enables environment-friendly designs**
  - Increases battery life in mobile applications and saves energy in desktop implementations
  - Advanced power management capabilities with ASPM L0s, L1, and PCIe CLKREQ
  - Eliminates false system wake-up with NIC proxy capabilities
  - Enables Energy Star®-compliant platforms

- **Small package enabling smaller and more portable designs**
  - 8 mm x 8 mm, 68-pin QFN package

- **Lower BOM cost and chip cost, reducing overall cost of solution**
  - 65 nm process
  - Fully integrated power regulation with minimal external discrete component
  - On-chip nonvolatile memory that eliminates the need for external memory device
  - On-chip PLLs requiring a single input clock for both LAN and card reader functions

- **iSCSI boot capability**
  - Allows diskless implementations
  - Improved manageability and deployment with remote boot

- **System alerting and power cycling reduces IT costs**
  - ASF 2.0 support for standards-based alerting IT managers receive automatic alerts when PC support issues occur.
  - Remote power-on/off features allow IT managers to power-cycle PCs to address issues and save energy.

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Functional Block Diagram

The BCM57765 is a Broadcom® NetXtreme® highly integrated multifunction controller that integrates a single-port triple-speed 10/100/1000BASE-T Ethernet LAN controller along with a 5-in-1 memory card reader controller that supports the latest Flash™ memory cards for SD, MMC, MS, MS PRO, and xD-Picture types. The device combines a triple-speed IEEE 802.3™-compliant Media Access Controller (MAC) with a triple-speed Ethernet transceiver, x1 PCIe bus interface, memory card interface controller, and on-chip buffer memory in a single device. The BCM57765 is fabricated using a 65 nm CMOS process, providing a low-power system solution.

The device performs all the physical layer functions for 1000BASE-T, 100BASE-T, and 10BASE-T Ethernet on standard Category 5 UTP cable. Based on proven DSP technology, the BCM57765 combines digital adaptive equalizers, ADCs, PLLs, line drivers, echo cancellers, crosstalk cancellers, and all other required support circuitry. A full-featured MAC provides full-duplex/half-duplex capability at all speeds.

The on-chip high-performance processor enables custom frame processing features. For a lower total solution cost and lower power system-level power consumption, the BCM57765 integrates on-chip switching regulators and nonvolatile memory that eliminates the need for an external NVRAM device. The BCM57765 is truly a single-chip solution for Gigabit Ethernet LOM and 5-in-1 memory card reader packaged in a small 68-pin QFN package.

Target applications:
• Desktop and mobile PC LOM and memory card reader

Software drivers available:
• Windows®, 2000, XP, Vista®, and 7
• Linux® 2.4 and 2.6

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