

## INTEGRATED GIGABIT ETHERNET AND MEMORY CARD READER CONTROLLER

### FEATURES

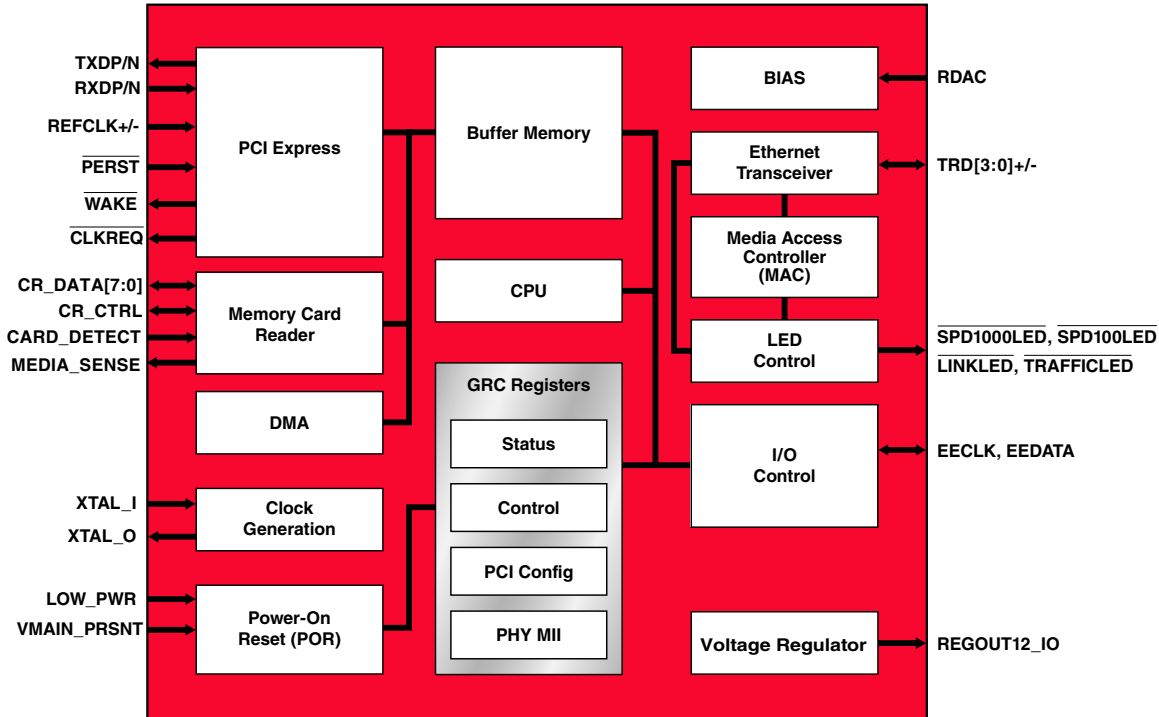
- **Integrated 10/100/1000BASE-T transceiver**
  - 10/100/1000BASE-T triple-speed MAC
  - Compliant with IEEE standards
  - Compliant with IEEE 802.3az draft standard for Energy Efficient Ethernet™ (EEE)
  - State-of-the-art physical layer interface that exceeds IEEE requirements
- **Integrated 5-in-1 memory card reader**
  - SD Secure Digital® compliant with specification SD2.0 (SD, miniSD™, microSD™, SDHC, and miniSDHC)
  - 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<sup>a</sup> 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**
- **On-chip voltage regulation using switching regulator for higher efficiency, lower cost and board space requirements**

### SUMMARY OF BENEFITS

- **Single-chip solution for LAN and memory card reader on Motherboard (LOM) applications**
- **Proven technology built on twelve generations of controller products**
- **Wirespeed performance increases user performance**
  - PCI Express provides wirespeed nonblocking 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 Network Interface Controller (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

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

# OVERVIEW



**Functional Block Diagram**

The BCM57785 is a Broadcom® NetLink® 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 BCM57785 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 BCM57785 combines digital adaptive equalizers, ADCs, PLLs, line drivers, echo cancellers, crosstalk cancellers, and all other required support circuitry. A full-featured MAC provides full-/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 BCM57785 integrates on-chip switching regulators and nonvolatile memory that eliminates the need for an external NVRAM device. The BCM57785 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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