



INTEGRATED GIGABIT ETHERNET CONTROLLER

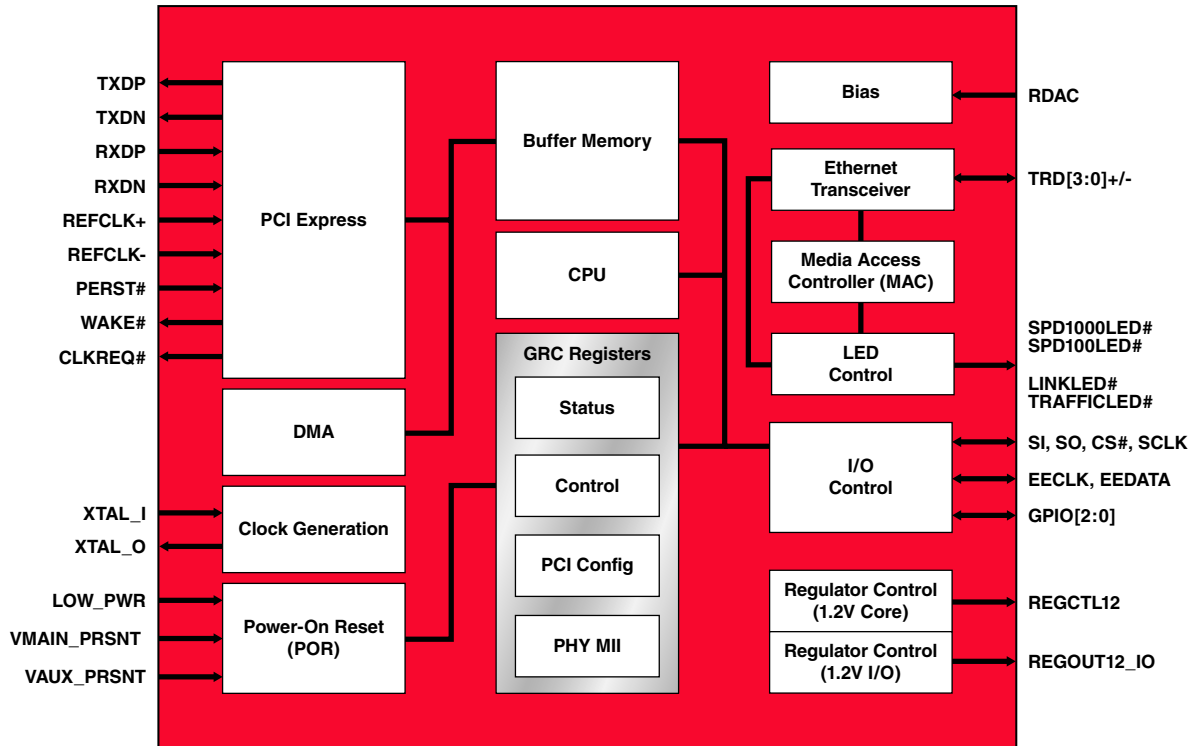
FEATURES

- **Integrated 10/100/1000BASE-T transceiver**
 - 10/100/1000BASE-T triple-speed MAC
 - State-of-the-art physical layer interface that exceeds IEEE requirements
 - SMBus 2.0 controller
 - On-chip voltage regulation
 - Wake-on-LAN (WOL) power switching circuit
- **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
 - Policy-based implementation allows easy system integration and enables OEMs to differentiate
- **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
- **Industry-compliant web services-based manageability**
 - Robust ACPI-compliant WOL
 - IPMI pass-through support
- **Complies with IEEE standards**
 - Statistics for SNMP MIB II, Ethernet-like MIB, and Ethernet MIB (IEEE 802.3z, Clause 30)
 - Complies with IEEE 802.3, 802.3u, 802.3ab, and 802.1p

SUMMARY OF BENEFITS

- **Single-chip device for LAN on Motherboard (LOM) and network interface card (NIC) applications**
- **Proven technology built on ten generations of controller products**
- **Wirespeed performance increases user performance.**
 - PCI Express provides wirespeed non-blocking throughput.
 - TCP/IP offloads significantly reduce CPU usage and increase network throughput for large-file download.
- **Extremely low power consumption enables environment-friendly designs.**
 - Advanced power management capabilities with ASPM L0s, L1, and PCIE CLKREQ
 - ENERGY STAR compliant
- **Industry's smallest GbE form factor enables easier motherboard design.**
 - 10 x 10 mm, 68-pin QFN package
- **Lower BOM cost and chip cost, reducing overall cost of solution**
 - 65 nm process
 - Self-boot feature, utilizing smaller EEPROM size
 - Serial NVRAM interface with Flash autosensing
 - Serial Flash memory support
- **Supports iSCSI boot**
 - Allows for diskless boot
 - Eliminates drives—disk failure is #1 failure for computer systems
 - Storage consolidation
 - Unifies and simplifies management and backup
 - Increases disk capacity utilization
 - Allows easier mirroring of data for disaster recovery (DR)
 - Manageability
 - Easier remote boot
 - Allows for a readily available technical toolbox
- **IPMI pass-through support reduces IT costs.**
 - Support for standards-based manageability allows IT managers to receive automatic alerts when PC support issues occur
 - Remote power-on/off features allow IT managers to power cycle PCs to address issues.

OVERVIEW



Functional Block Diagram

The BCM5723 is an eleventh-generation 10/100/1000-Mbit BASE-T Ethernet LAN controller solution for high-performance network applications. The device combines a triple-speed IEEE 802.3-compliant media access controller (MAC) with a triple-speed Ethernet transceiver, x1 PCIe bus interface, and on-chip buffer memory in a single device. The BCM5723 is fabricated in a 1.2V CMOS process, providing a low-power system solution.

The BCM5723 includes a 10/100/1000-Mbps Ethernet MAC with full-duplex and half-duplex capabilities at all speeds. Support for the following IEEE 802.3™ functions is featured in the MAC:

- VLAN tagging
- Layer 2 priority encoding
- Full-duplex flow control

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 device is a highly integrated solution combining 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.

Target applications:

- Server PC NIC
- Server PC LOM

Software drivers available:

- Windows Server® 2003 and Windows Server 2008
- Linux® 2.4, and 2.6
- NetWare®
- Solaris™ x86
- SCO™ UnixWare® and SCO OpenServer™

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