



10/100/1000BASE-T CONTROLLER WITH INTEGRATED TRANSCEIVER

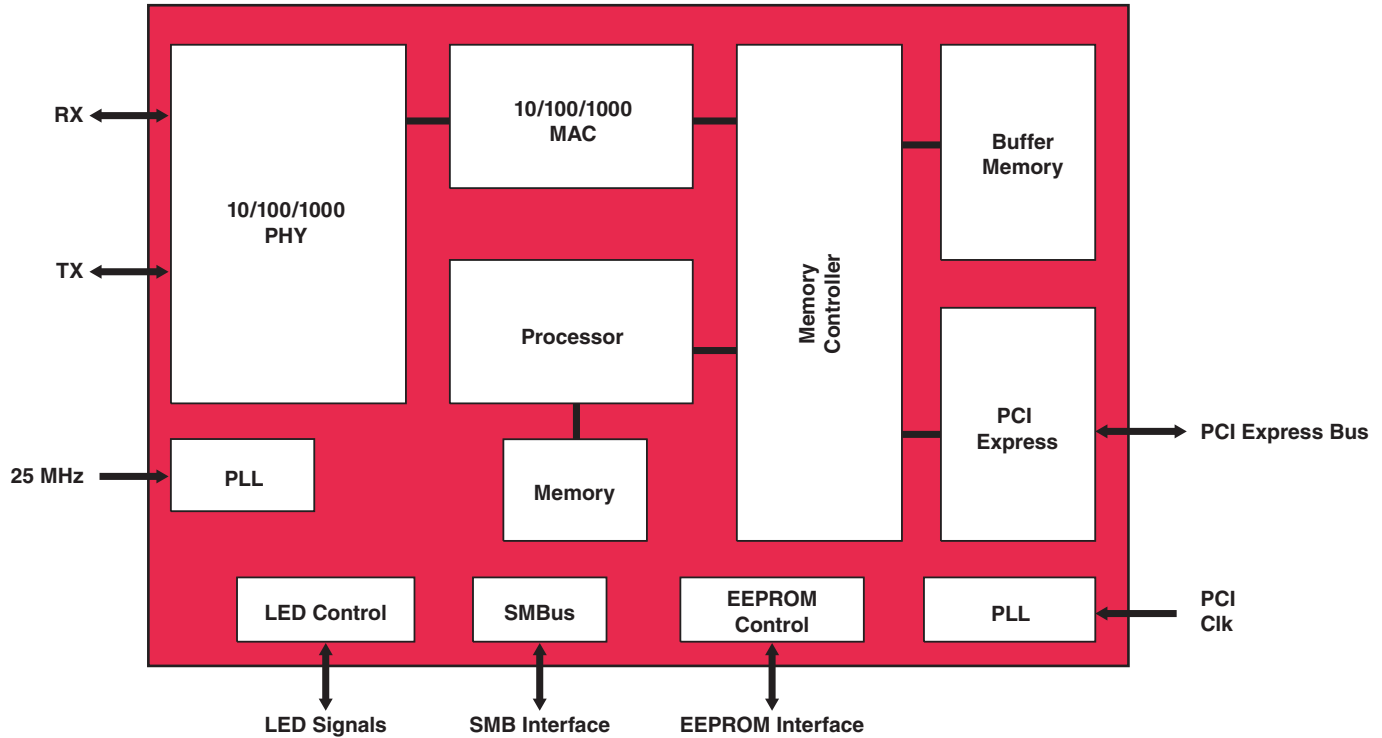
FEATURES

- **Single-chip device for mobile LAN-on-Motherboard (LoM) or network interface card (NIC) applications**
- **Integrated 10/100/1000BASE-T transceiver**
 - 10/100/1000BASE-T triple-speed MAC
 - High-speed RISC core with 32-KB cache
 - SMBus 2.0 controller
 - On-chip voltage regulation
 - Wake-on-LAN power switching circuit
- **PCI Express® v1.1 host interface**
 - 1x lane
 - 4-pin interface
- **Industry-leading power management support to extend system battery life**
 - PCI Power Management Specification, v1.2 compliant
 - Adheres to the PCI Express Active State Power Management specification, v1.1
 - PCI Express CLKREQ support
 - Energy detect/cable sense
 - Super low power mode
- **Performance features**
 - TCP, IP, and UDP checksum
 - Microsoft® Large Send Offload
 - Large burst read
 - Interrupt coalescing
- **Robust Wake on LAN (WoL)**
 - Standards-compliant WoL
 - Innovative out-of-box mode WoL
 - Hardware power switching
 - Comprehensive diagnostic and configuration software suite
- **Industry-compliant alerting features**
 - Alert Standard Format (ASF) 2.0 support
 - Secure power-on and power-off
 - Fast hardware authentication (SHA-1, HMAC, MD5)
 - True hardware random number generation
- **3.3V I/Os**
- **JTAG (fpBGA package only)**

SUMMARY OF BENEFITS

- **Wirespeed performance increases user performance.**
 - PCI Express provides wirespeed non-blocking throughput.
 - TCP/IP stack offloads significantly reduce utilization of CPU.
 - TCP/IP stack offloads significantly increase throughput to enable faster downloads of large files.
- **Industry's smallest GbE form factor enables easier motherboard design.**
 - Innovative design reduces footprint to 67% smaller than competing solutions.
 - 15 x15-mm package, 196-pin fpBGA
 - 10 x10-mm package, 68-pin QFN
 - Integrated WoL switching eliminates external power switching components.
- **Secure alerting and power cycling reduce 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.
 - Hardware-based authentication and random number generation ensure the highest level of security possible.
- **Design flexibility allows feature consistency across SKUs.**
 - Layout compatible with PCI-based BCM5705, enabling one motherboard layout to support both PCI and PCI Express solutions.
 - Single software driver image across PCI and PCI Express platforms.

OVERVIEW



BCM5787M Block Diagram

The BCM5787M is a fully integrated 10/100/1000BASE-T Gigabit Ethernet media access control and physical layer transceiver solution for high-performance network applications. The BCM5787M combines a triple-speed, IEEE 802.3 compliant media access controller (MAC), PCI Express bus interface, on-chip buffer memory, and integrated physical layer transceiver in a single device. It is fabricated in a low-voltage silicon process, providing an ultra-low power solution. By itself, the BCM5787M provides a complete single-chip Gigabit Ethernet NIC or LOM solution.

The BCM5787M includes a 10/100/1000-Mbps Ethernet MAC with full/half-duplex capability at all speeds. Support for the following 802.3 functions is featured in the MAC: VLAN tagging, layer 2 priority encoding, and full-duplex flow control.

The transceiver is fully compatible with the IEEE 802.3 standard for auto-negotiation of speed. Additionally, several plug-and-play enhancements are included to make the device even more user-friendly. A unique integrated cable analyzer feature allows an end user to self-

diagnose any issues with the network cabling that could affect the host machine. A link quality indicator LED and a GUI application give installers an instant visual indication of problems. This includes physical wiring defects or channel conditions, such as excessive cable length, return loss, crosstalk, echo, and noise.

Broadcom's remote cable management and diagnostics software can be used with the device to provide remote management of the cable and a first level of diagnostics and fault isolation.

Target Applications

- Mobile PC NIC
- Mobile PC LOM

Software Drivers Available

- Windows[®] 98 Second Edition, NT, 2000, XP
- SCO[™] UNIX, Solaris[™], and Linux[®]

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