

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

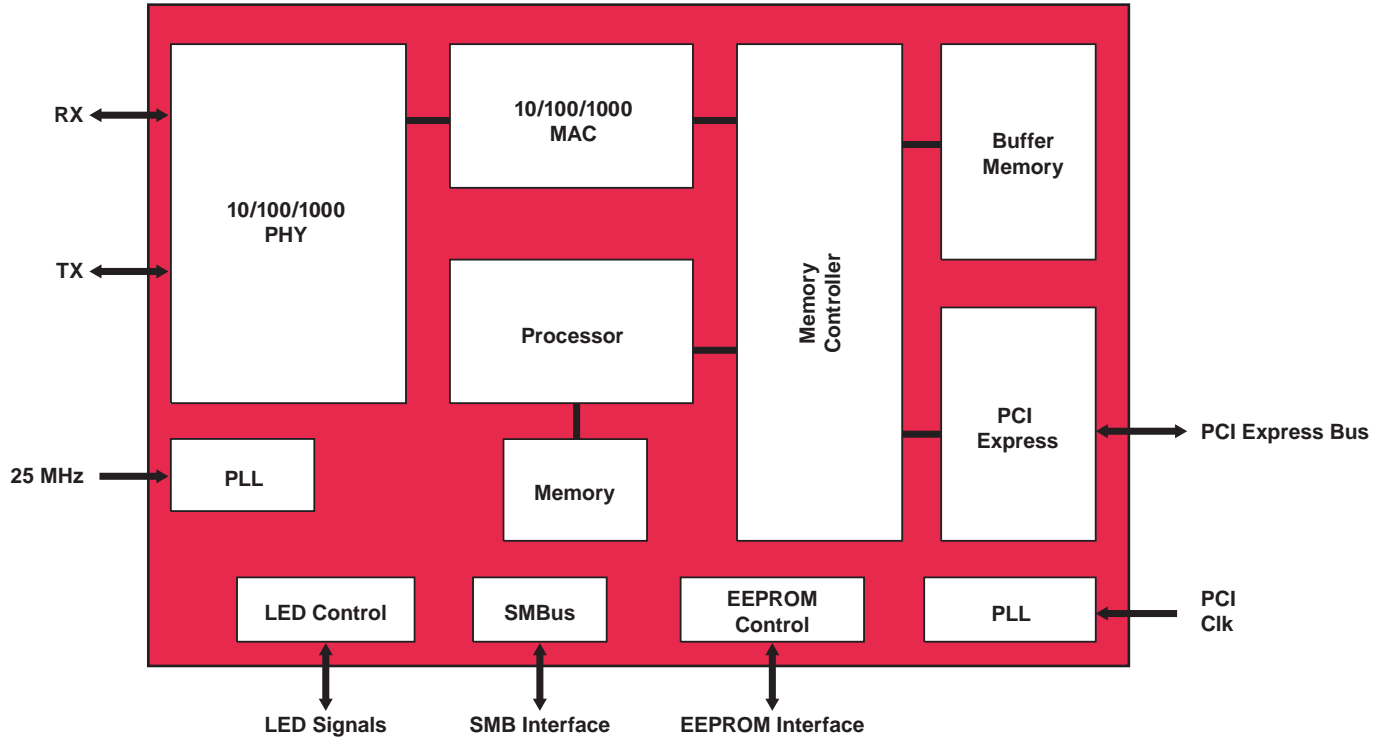
FEATURES

- **Single-chip device for desktop LAN-on-Motherboard (LoM) or network interface card (NIC) applications**
- **Integrated 10/100/1000BASE-T transceiver**
 - 10/100/1000BASE-T triple-speed media access control (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® (PCIe™) v1.1 host interface**
 - 1x lane
 - 4-pin interface
- **Performance features**
 - TCP, IP, and UDP checksum
 - Microsoft® Large Send Offload (LSO)
 - Large burst read
 - Interrupt coalescing
- **Robust Wake-on-LAN**
 - Standards-compliant Wake-on-LAN
 - Innovative out-of-box mode Wake-on-LAN
 - 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.**
 - PCIe 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 Gigabit Ethernet (GbE) form factor enables easier motherboard design.**
 - Innovative design reduces footprint to 67% smaller than competing solutions.
 - 11 mm x 11 mm package, 100-pin fpBGA
 - 10 mm x 10 mm package, 68-pin QFN
 - Integrated Wake-on-LAN switching eliminates external power switching components.
- **Secure 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.
 - 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 PCIe solutions.
 - Single software driver image across PCI and PCIe platforms

OVERVIEW



BCM5754 Block Diagram

The BCM5754 is a Broadcom® NetXtreme® fully integrated 10/100/1000BASE-T GbE MAC and physical layer transceiver solution for high-performance network applications. The BCM5754 combines a triple-speed, IEEE 802.3™-compliant MAC, PCIe 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 ultralow power solution. By itself, the BCM5754 provides a complete single-chip GbE NIC or LoM solution.

The BCM5754 includes a 10/100/1000 Mbps Ethernet MAC with full/half-duplex capability at all speeds. Support for the following IEEE 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 (PnP) 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

- Desktop PC NIC
- Desktop PC LoM

Software Drivers Available

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

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