



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

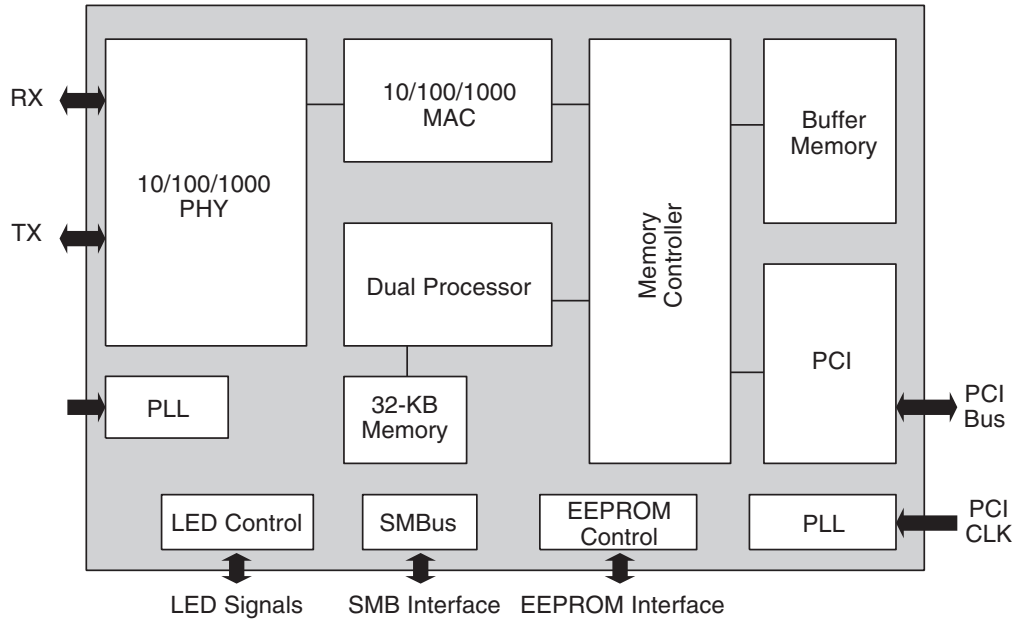
FEATURES

- **Single-chip solution for LAN on Motherboard (LOM) and network interface card (NIC) applications**
 - Integrated 10BASE-T/100BASE-TX/1000BASE-T transceivers
 - 10/100/1000 Mbps triple-speed media access controller (MAC)
 - Host interfaces
 - PCI v2.2, 32/64-bit, 33 MHz
 - Ultra-deep, 96 KB, on-chip packet buffer
 - Dual, high-speed RISC cores with 16 KB caches
 - SMBus controller
 - On-chip power circuit controller and Wake on LAN power switching circuit
- **Performance features**
 - TCP, IP, UDP checksum
 - TCP segmentation
 - CPU task offload
 - Adaptive interrupts
 - Ultra-deep, 96-KB packet buffer
- **Robust manageability**
 - PXE 2.0 remote boot
 - Alert Standard Format (ASF 1.0 support)
 - Wake on LAN
 - Out-of-box Wake on LAN
 - Statistics gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB)
 - Comprehensive diagnostic and configuration software suite
 - ACPI 1.1a compliant (multiple power modes)
- **Advanced network features**
 - Priority queuing (802.1p layer 2 priority encoding; support for four priority queues)
 - Virtual LANs (802.1q VLAN tagging; support for up to 64 VLANs)
 - Jumbo frames (9 KB)
 - 802.3x flow control
- **Advanced server features**
 - Link aggregation (802.3ad, GEC/FEC, Smart Load Balancing™ (supports heterogeneous teams))
 - Heterogeneous, mixed-speed failover
 - Hot-Plug PCI support
- **Low power, 0.13-µm CMOS design**
- **196-pin BGA package**
- **3.3V I/Os (5V tolerant)**
- **JTAG**

SUMMARY OF BENEFITS

- **Industry's smallest 10/100/1000 MAC/PHY solution (power and space optimized for LOM and low profile NIC applications)**
- **Completely backward compatible:**
 - To existing 10/100 network infrastructure
 - To existing PCI-based desktop and server platforms
- **Futureproof**
 - On-chip programmable CPUs, ASF support
- **Performance focused (optimized for throughput and CPU utilization)**
 - Adaptive interrupts
 - Ultra-deep, 96-KB packet buffer lowers CPU utilization and averts PCI congestion
 - CPU task offloads reduces utilization level of CPU
- **Robust and highly manageable**
 - PXE 2.0, ACPI 1.1, Wake on LAN, ASF 1.0, IPMI
 - Integrated cable testing (link quality, length, pair skew, pair polarity, pair swap)
- **Advanced features**
 - VLAN, priority queuing, jumbo frames
 - RISC processors for advanced packet classification
- **Server-class reliability, availability and performance features**
 - Link aggregation and load balancing
 - Switch dependent
 - 802.3ad (LACP), generic trunking (GEC/FEC)
 - Switch and NIC independent
 - Smart Load Balancing™ (unique technology that supports heterogeneous teams, and can operate with any switch)
 - Failover
 - Smart Load Balancing allows heterogeneous failover
 - Hot-Plug PCI support
- **Low power for zero airflow implementations**
 - 0.13-µm CMOS design
 - Advanced power management
- **Space savings for LOM**
 - 196-pin HBGA package
 - No external memory
 - Integrated power circuitry

BCM5702 OVERVIEW



The BCM5702 is a fully-integrated 10/100/1000BASE-T Gigabit Ethernet media access control and physical layer transceiver solution for high-performance network applications. The BCM5702 is a highly-integrated solution combining a triple-speed, IEEE 802.3 compliant media access controller (MAC), PCI bus interfaces, an on-chip buffer memory, and an integrated physical layer transceiver in a single device. The BCM5702 is fabricated in a low-voltage 0.13- μ m CMOS process, providing a low-power system solution. By itself the BCM5702 provides a complete, single-chip, Gigabit Ethernet NIC or LOM solution.

The BCM5702 includes a 10/100/1000-Mbps Ethernet MAC with full/half-duplex capability at all speeds and a 10/100/1000 copper PHY. Support for the following 802.3 functions is featured in the MAC: VLAN tagging, layer 2 priority encoding, link aggregation, and full-duplex flow control.

The BCM5702 provides a PCI v2.2 bus interface. It also provides large on-chip buffer memory for stand-alone operation. Dual, on-chip, high-performance processors enable custom frame processing features, including TCP segmentation.

The transceiver is fully compatible with the IEEE 802.3 standard for auto-negotiation of speed. Additionally, several Plug and Play enhancements have been added to make the device even more user-friendly. A link quality indicator LED gives installers an instant visual indication if there are any issues with the wiring plant supporting

operation at the desired speed, which include 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.

The BCM5702 continually monitors various channel conditions. The optional wirespeed capability allows the BCM5702 to force auto-negotiation to be automatically limited by the speed that the channel can reliably support, rather than by the performance of the end equipment.

Target Applications of the BCM5702

| Network interface card (NIC) designs | | LAN on Motherboard (LOM) designs | |
|--------------------------------------|------------------|----------------------------------|-------------|
| SINGLE/DUAL PORT | | SINGLE/DUAL PORT | |
| 10/100/1000 BASE-T | PCI 2.2 Adapters | 10/100/1000 BASE-T | PCI 2.2 LOM |

Gigabit Ethernet network interface cards (NICs) and LAN on Motherboard (LOM) applications for desktop and mobile PCs

BCM5702 Operating Systems

- Microsoft® Windows® 98, NT 4.0, 2000, XP
- Linux® 2.2, 2.4
- PXE 2.0

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