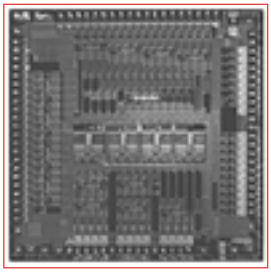
BROADCOM®

BCM5702 PRODUCT Brief



10/100BASE-T CONTROLLER WITH INTEGRATED TRANSCEIVER

BCM5702 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 triple-speed MAC
  - Host interfaces
    - PCI v2.2 – 32 bits, 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 Specification Forum – ASF 1.0 support
  - Wake-on LAN
  - Out-of-Box Wake-on LAN
  - Statistic Gathering (SNMP MIBII, Ethernet like MIB, Ethernet MIB)
  - Comprehensive diagnostic and configuration software suite
  - ACPI 1.1a complaint – 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
  - PCI Hot Plug support
- **Low-power, 0.13-um CMOS design**
- **196-pin BGA package**
- **3.3V I/Os (5V tolerant)**
- **JTAG**

SUMMARY OF BENEFITS

- **Industry's smallest 10/100/1000 MAC and 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
- **Future-proof**
  - 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, avoids 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
  - PCI hot plug
- **Low power for zero airflow implementations**
  - 0.13-um CMOS design
  - Advanced power management
- **Space savings for LOM**
  - 196-pin BGA package
  - No external memory
  - Integrated power circuitry

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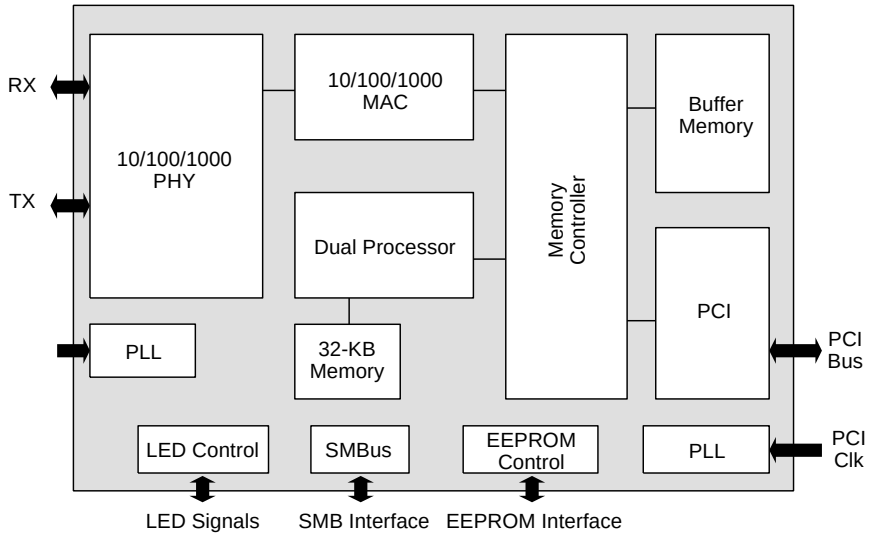

The **BCM5702** is a fully integrated 10/100/1000BASE-T Gigabit Ethernet Media Access Control and Physical Layer Transceiver solution for high performance network applications. The **BCM5702** is a highly integrated solution combining triple-speed, IEEE 802.3 compliant Media Access Controller (MAC), PCI bus interfaces, on-chip buffer memory, and integrated physical layer transceiver in a single device. The **BCM5702** is fabricated in a low-voltage .13um 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 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 device provides a PCI v2.2 bus interface. The **BCM5702** 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. 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. The **BCM5702** continually monitors various channel conditions. The optional wire-speed capability allows the **BCM5702** to force auto-negotiation to be automatically limited by the speed that the channel can reliably support rather than the performance of the end equipment.

Target Applications of the BCM5702

Network Interface Cards (NIC) designs	
SINGLE/DUAL PORT	
10/100/1000 BASE-T	PCI 2.2 Adapters

LAN on Motherboard (LOM) designs	
SINGLE/DUAL PORT	
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 Software Support

- Microsoft® Windows® 98, NT4.0, 2000, XP
- Linux® 2.2, 2.4
- PXE 2.0

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