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BCM5705M
PRODUCT Brief

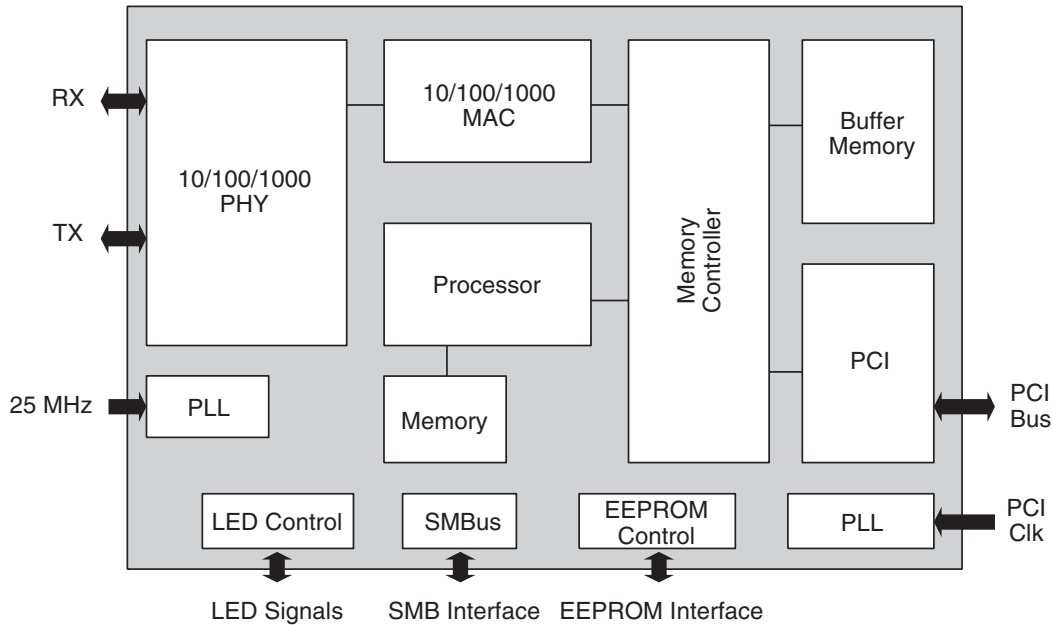# 10/100/1000BASE-T CONTROLLER WITH INTEGRATED TRANSCEIVER

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
  - PCI v2.2, 32-bit/33-MHz host interface
  - High-speed RISC core with 16-KB caches
  - SMBus 2.0 controller
  - On-chip power circuit controller and Wake on LAN power switching circuit
- **Advanced power management**
  - ACPI compliance
  - Situation-sensitive features reduce power consumption
- **Performance features**
  - TCP, IP, UDP checksum
  - Microsoft® large send
  - TCP segmentation
  - CPU task offload
  - Adaptive interrupts
- **Robust manageability**
  - Wake on LAN
  - Out-of-Box mode WOL
  - PXE 2.0 remote boot
  - Alert Specification Forum–ASF 1.0 support
  - Statistic gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30))
  - Comprehensive diagnostic and configuration software suite
  - ACPI 1.1a complaint–multiple power modes
- **Advanced network features**
  - Virtual LANs–802.1q VLAN tagging; supports 64 VLANs
  - 802.3x flow control
- **Advanced network features**
  - Cable analyzer features detect cabling problems
- **3.3V I/Os (5V tolerant)**
- **JTAG**

SUMMARY OF BENEFITS

- **Industry's smallest 10/100/1000 MAC+PHY solution**
  - Optimized for LOM and NIC applications
  - Enables small form factor PCs
- **Ultra-low power and intelligent power management to dramatically extend battery life**
  - 0.13-mm CMOS design allows industry's lowest power
  - Advanced situation-sensitive power management features
  - Power is continually reduced to the minimum needed
  - Adapts to usage model
  - Maximizes battery life and enables smaller mobile PCs
- **Enables desktop PC products for all segments**
  - Pin-compatible with 5705FE, a 10/100 companion chip
  - Allows one board layout for both gigabit and Fast Ethernet applications
- **Completely backward compatible**
  - With existing 10/100 network infrastructure
  - With existing PCI-based desktop and mobile platforms
- **Futureproof with flexible firmware architecture**
  - Flexible firmware adapts to changing standards
  - Wirespeed custom packet filtering via on-board CPUs
- **Power optimized through reduced CPU utilization**
  - Adaptive interrupts minimize the calls to PC's CPU
  - TCP/IP offloads reduce CPU burden significantly
  - Reduces power consumption of PC processor
  - Allows use of lower power/performance PC processor
- **Cable analyzer tests for network cable issues**
  - Customers can field-test using self-diagnostics
  - Reduce customer calls and returns, reducing costs dramatically
- **Robust and highly manageable**
  - PXE 2.0, ACPI 1.1, WOL
  - Integrated cable testing—link quality, length, pair skew, pair polarity, pair swap
  - Flexible ASF 1.0
- **Space savings for LOM**
  - 196-pin HBGA package
  - No external memory
  - Integrated power circuitry reduces BOM costs

The BCM5705M is a fully integrated 10/100/1000BASE-T Gigabit Ethernet media access control and physical layer transceiver solution for high-performance network applications. The BCM5705M combines a triple-speed, IEEE 802.3-compliant media access controller (MAC), PCI bus interface, on-chip buffer memory, and integrated physical layer transceiver in a single device. It is fabricated in a low-voltage 0.13-mm CMOS process, providing an ultra-low power solution. By itself the BCM5705M provides a complete single-chip Gigabit Ethernet NIC or LOM solution.

The BCM5705M 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, link aggregation, and full-duplex flow control.

The device provides three host interfaces for mobile applications: PCI v2.2, MiniPCI, and Cardbus. Also integrated is an on-chip memory buffer for stand-alone operation. An embedded high-performance processor enables 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 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 be affecting the host machine. A link quality indicator LED and a GUI application give installers an instant visual indication of a problem, 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 BCM5705M is also optimized to extend battery life. Several power management enhancements are included that allow minimum usage of battery power.

Target applications of the BCM5705M

- Mobile PC NIC
- Mobile PC LOM

Software drivers available
- Windows® 98, NT, 2000, XP
- Linux® 2.2, 2.4

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