

10/100/1000BASE-T Controller with Integrated Transceiver

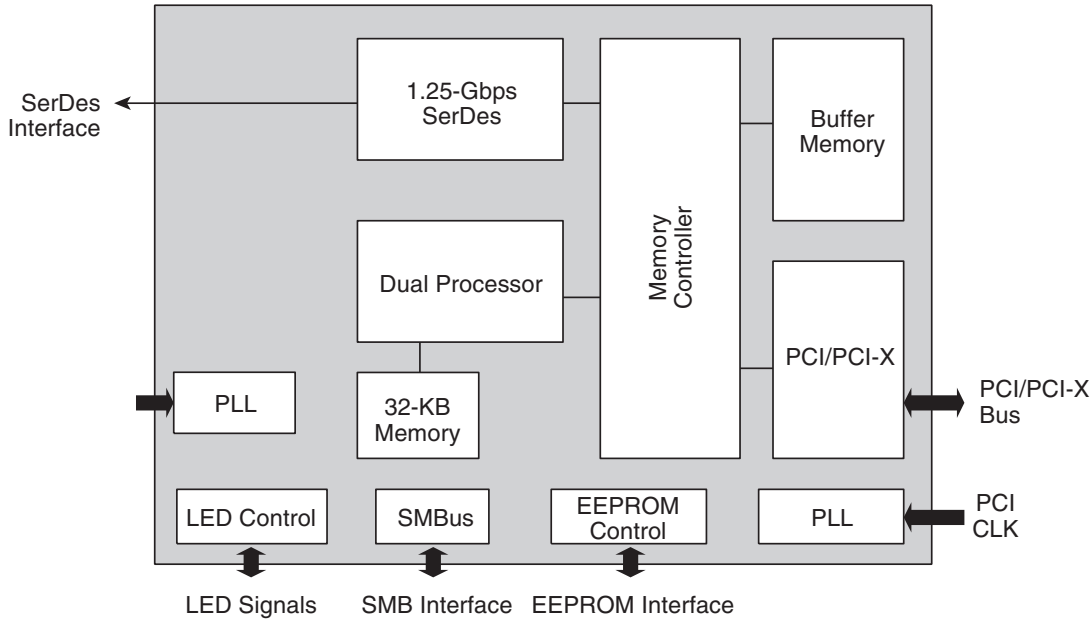
FEATURES

- **Single-chip solution for LAN on Motherboard (LOM) and network interface card (NIC) applications**
 - Integrated SerDes interface
 - 10/100/1000 Mbps triple-speed media access controller (MAC)
 - Host interfaces
 - PCI v2.2, 32/64-bit, 33/66 MHz
 - PCI-X v1.0 64-bit, 66/100/133 MHz
 - Ultra deep 96 KB, on-chip packet buffer
 - Dual high-speed RISC cores with 16-KB caches
- **Programmable, in-line packet classification**
 - 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
 - Statistics gathering: SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, Clause 30)
 - Comprehensive diagnostics 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**
- **300-pin HBGA 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)**
- **Integrated 1.25-Gbps SerDes**
 - IEEE 802.3z compliant
 - For fiber on backplane applications
- **Future-proof**
 - PCI-X interface, on-chip programmable CPUs, ASF support
- **Performance focused (optimized for throughput and CPU utilization)**
 - Adaptive interrupts
 - PCI-X® eliminates PCI bottlenecks
 - Ultra-deep 96-KB packet buffer lowers CPU utilization and averts PCI congestion
 - CPU task offloads reduce CPU utilization level
- **Robust and highly manageable**
 - PXE 2.0, ACPI 1.1, Wake-on-LAN, ASF 1.0, IPMI 1.5
 - Broadcom EyeOpener® adaptive equalization technology (allows longer backplane lengths and robust signal integrity)
- **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**
 - 300-pin HBGA package
 - No external memory
 - Integrated power circuitry

OVERVIEW



BCM5703S Block Diagram

The BCM5703S 10/100/1000BASE-T Gigabit Ethernet media access control and serializer/deserializer (SerDes) is a fully integrated interface solution for high performance network applications. The BCM5703S is a highly-integrated solution combining a triple-speed IEEE 802.3-compliant media access controller (MAC), PCI and PCI-X bus interfaces, an on-chip buffer memory, and an integrated SerDes transceiver in a single device. The BCM5703S is fabricated in a low-voltage 0.13 μm CMOS process, providing a low-power system solution. By itself the BCM5703S provides a complete single-chip Gigabit Ethernet NIC or LOM solution.

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 BCM5703S provides both PCI v2.2 and PCI-X v1.0 bus interfaces. 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.

Along with complying with the IEEE 802.3z specification, several enhancements, such as ultralow jitter technology, have been added to make designs even more robust.

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Target Applications of the BCM5703S

Network Interface Card (NIC) Designs		LAN on Motherboard (LOM) Designs	
Single Port			
1000 BASE-SX	PCI 2.2 Adapters PCI-X v1.0 Adapters	1000 BASE-SX	PCI 2.2 LOM PCI-X v1.0 LOM
1000 BASE-LX	PCI 2.2 Adapters PCI-X v1.0 Adapters	Dual Port	
10/1000 BASE-SX	PCI 2.2 Adapters	1000 BASE-SX	PCI 2.2 LOM PCI-X v1.0 LOM

Gigabit Ethernet Network Interface Cards (NICs) and LAN-on Motherboard (LOM) applications for Desktop and Mobile PCs.

BCM5703S Operating Systems

- Microsoft[®] Windows[®] 98, NT[®]4.0, 2000, XP, NT64
- Linux[®] 2.2, 2.4
- Linux64[®]
- NetWare[®] 4.x, 5.x, 6.x
- PXE 2.0
- Solaris[™] x86
- UnixWare[®] 7.0
- OpenServer[™] 5.0



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