



BCM5708C

PRODUCT Brief



10/100/1000BASE-T TCP Offload Engine, RDMA, iSCSI/iSER and Ethernet Controller with PCI-Express™

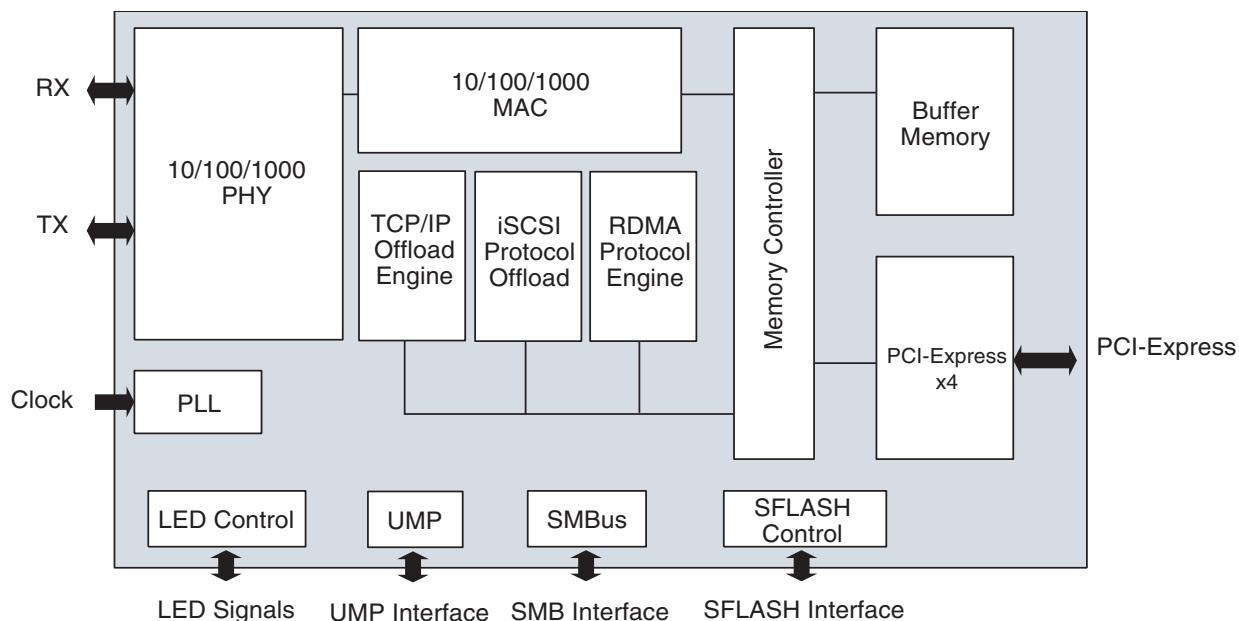
FEATURES

- Single-chip solution for LAN on Motherboard (LOM) and Network Interface Card (NIC) applications
 - Integrated 10BASE-T/100BASE-TX/1000BASE-T transceivers
 - Host interfaces
 - PCI-Express™ x4 Host interface
- TCP offload engine
 - Full "fast Path" TCP offload
 - Compliant with Microsoft's TOE Chimney Architecture
- iSCSI controller
 - iSCSI initiator
 - iSER (iSCSI over RDMA)
- RDMA controller (RNIC)
 - RDMA over TCP (iWARP)—RDMAC 1.0 compliant
 - Hardware-based data placement in application buffers without CPU intervention (User and Kernel modes)
- Other performance features
 - Receive Side Scaling (RSS)
 - TCP, IP checksum
 - TCP segmentation
 - Adaptive interrupts
 - Message Signal Interrupt (MSI) support
- Robust manageability
 - Universal Management Port (UMP)
 - PXE 2.0 remote boot
 - Alert Standard Format (ASF v1.0) support
 - Wake-On LAN
 - IPMI 'pass-through' feature
 - Statistics gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30))
 - Comprehensive diagnostic and configuration software suite
 - ACPI 1.1a compliant power management
- Advanced network features
 - Virtual LANs—802.1q VLAN tagging
 - Jumbo frames (9 KB)
 - 802.3x flow control
- Low-power CMOS design
- On-chip power circuit controller
- 400-ball 21x21 mm FBGA package
- 3.3V I/Os
- JTAG

SUMMARY OF BENEFITS

- Industry's first 10/100/1000 TOE solution—power and space optimized for server blade and low-profile NIC applications.
- Extremely low CPU utilization for TCP/IP applications
 - Host CPU is free to run application code
 - Easy integration with Microsoft's TOE Chimney Architecture
- Accelerated IP-based storage
 - Lower CPU utilization for file-level storage protocols such as CIFS and NFS
 - iSCSI functionality with low CPU utilization
- RDMA support for data placement in application buffers reduces CPU utilization and lowers data transit latencies.
- Future-proof
 - Flexible implementation for TCP, iWARP and iSCSI can accommodate specification changes and interoperability issues.
- Performance-focused – optimized for throughput and CPU utilization
 - Adaptive interrupts
 - RSS reduces CPU utilization on multi-CPU systems.
 - MSI allows interrupt distribution in a multi-CPU host system.
 - PCI-Express host interface allows a low-latency access to CPU and Memory resources.
- Robust and highly manageable
 - UMP enables high bandwidth "out-of-band" system management functionality over shared infrastructure.
 - PXE 2.0, ACPI 1.1, Wake-On LAN, ASF 1.0.
 - IPMI 'pass-through' capability allows on-board management controllers access to the network in OS-present and OS-absent states.
- 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
- Low power for zero airflow implementations
 - Advanced power management
- Minimal real estate—ideal for LOM
 - On-chip power circuit controller

OVERVIEW



The **BCM5708C** provides a fully integrated Layer 4 and Layer 5 solution - TCP/IP, RDMA and iSCSI 1.0/iSER along with a complete 10/100/1000BASE-T Gigabit Ethernet, IEEE 802.3 compliant Media Access Control (MAC) and Physical Layer Transceiver solution for high performance network applications. By itself, the **BCM5708C** provides a complete single-chip Gigabit Ethernet NIC with a TCP/IP Offload Engine, RDMA NIC (RNIC), iSCSI 1.0/iSER HBA or LOM solution.

The **BCM5708C** is different from other network controllers because it can process the TCP/IP and relevant L5 protocols on data directly from the application buffers on the host, therefore relieving the host CPU from these time-consuming operations. On the receive path, the **BCM5708C** processes the frame up to the highest layer supported present in it, e.g., the **BCM5708C** processes the frame for RDMA when the frame is an RDMA frame.

With the appropriate configuration, the **BCM5708C** can simultaneously support any two of the following three functions:

- RDMA Network Interface Controller (RNIC)
- iSCSI or iSER Host Bus Adapter
- TOE Chimney-enabled network accelerator

Target Applications of the BCM5708C

- Gigabit Ethernet NICs and LAN-on Motherboard (LOM)
- iSCSI 1.0 / iSER Host Bus Adapters (HBA)
- RDMA Network Interface Card (RNIC)

Network Interface Cards (NIC) designs	LAN on Motherboard (LOM) designs
10/100/1000 BASE-T	PCI-Express x4 NIC

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