Broadcom BCM5718 Controller Technology

Connecting everything®

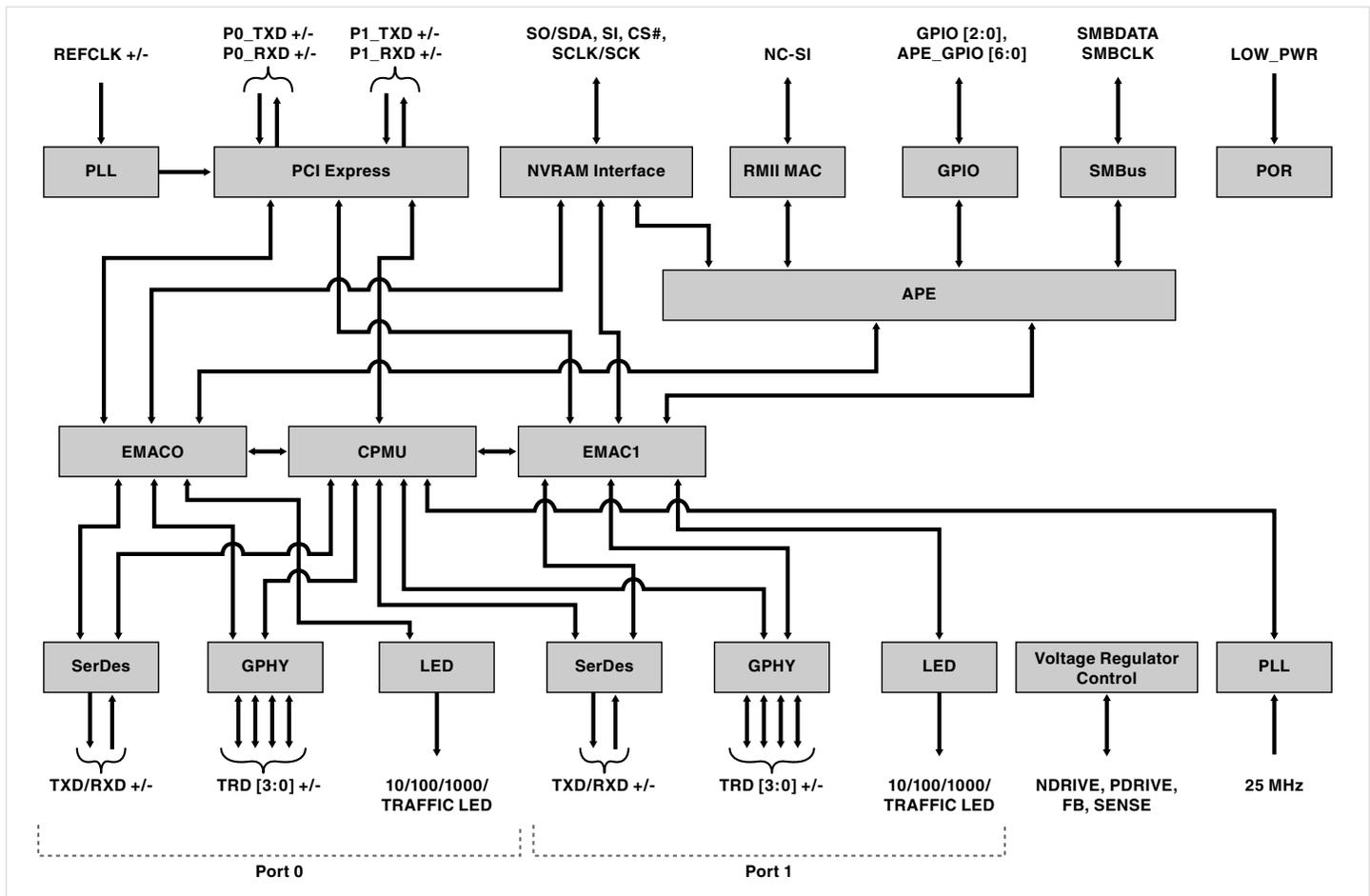## X2 PCI EXPRESS® DUAL-PORT GIGABIT ETHERNET CONTROLLER

Overview

The BCM5718 is a twelfth-generation 10/100/1000BASE-T Ethernet LAN controller solution suitable for high-performance server applications. The BCM5718 combines dual triple-speed IEEE 802.3-compliant Media Access Controllers (MACs) with dual 1000BASE-X/SGMII SerDes transceivers or dual 10/100/1000 Ethernet transceivers (PHYs), selectable individually per port, a Network Controller Sideband Interface (NC-SI) and on-chip memory buffer in a single device. The device provides a PCI Express® v2.0-compliant host interface, which can operate at 5 GTs at x1 link width or at 2.5 GT/s at x2 link width. The PCI Express supports MSI and MSI-X capabilities and Function Level Reset (FLR). The host interface supports a separate PCI Express function for each LAN interface. The BCM5718 includes I/O Virtualization (IOV) features such as 17 receive and 16 transmit queues, 17 MSI-X vectors with flexible vector-to-queue association. These IOV features enable the BCM5718 to support the VMWare® NetQueue and Microsoft® VMQ technologies.

Architectural Features

- Flexible MSI-X vector to transmit/receive queue association
- Function level reset (FLR)
- Receive Side Scaling (RSS) with per queue MSI-X vector support
- Transmit Side Scaling (TSS) and multi-Tx queue with per queue MSI-X vector support
- Jumbo frame support for up to 9600B payload
- Virtual LAN (VLAN) support — IEEE 802.1q VLAN tagging
- TCP, IP, UDP checksum offload
- Large Send Offload (LSO), TCP Segmentation Offload (TSO)
- IEEE 802.3x flow control
- SMBus 2.0 Interface
- Network Controller Sideband Interface (NC-SI)
- Statistics for SNMP MIB II, Ethernet-like MIB and Ethernet MIB (IEEE 802.3z, Clause 30)
- ACPI power management compliance
- Advanced power management by a Central Power Management Unit (CPMU)
- Efficient integrated switching regulator controller
- PCI Express CLKREQ support
- Power Management Offload (PM Offload)
- 65 nm low-power CMOS design
- Serial flash and EEPROM NVRAM support; flash auto-configure
- ECC error detection and correction on internal SRAM
- JTAG boundary scan support
- 169-ball FBGA (1.0 mm pitch)

Highlights

- Integrated dual 10/100/1000BASE-T transceivers.
- Energy Efficient Ethernet™ (EEE)-compliant with IEEE Std 802.3az-2010
- Dual 10/100/1000BASE-T full-duplex/half-duplex MACs
- Dual 1000BASE-X/SGMII full-duplex/half-duplex MACs
- Automatic MDI crossover
- x2 PCI Express® v2.0
- x1 at 5 GT/s
- x2 at 2.5 GT/s
- MSI and MSI-X capabilities - up to 17 MSI-X vectors
- I/O Virtualization support for VMWare® NetQueue®, and Microsoft® VMQ
- 17 receive queues and 16 transmit queues
- 17 MSI-X vectors supporting per queue interrupt to host

	BCM5718
1G	●
10G	
NetXtreme® I	●
NetXtreme® II	
Ports	Dual

◗ Supported   ● Best Choice

Target Applications

- LAN on motherboard (LOM) for servers and workstations
- PCI Express Gigabit Ethernet Add-in NIC

BCM5718 Block Diagram

The BCM5718 is fabricated in a low-voltage 65 nm CMOS process, and integrates an efficient switching voltage regulator controller for core power supplies. Advanced power management features built into the BCM5718 enable minimizing the power consumption of the network controller subsystem by lowering the controller's power consumption under lighter network traffic without compromising performance. The BCM5718 implements Energy Efficient Ethernet-compliant with IEEE Std 802.3az-2010, which further reduces the power consumption with idle 100 Mbit or 1 Gbit GPHY links. These features provide a low system power consumption Ethernet network interface controller solution.

Ordering Information

Package	Ambient Temperature	Part Number
169-ball FBGA (14 mm x 14 mm, lead-free)	0°C to 55°C	BCM5718B0KFBG

About Broadcom

Broadcom Corporation is a major technology innovator and global leader in semiconductors for wired and wireless communications. Broadcom products enable the delivery of voice, video, data and multimedia to and throughout the home, the office and the mobile environment. We provide the industry's broadest portfolio of state-of-the-art system-on-a-chip and software solutions to manufacturers of computing and networking equipment, digital entertainment and broadband access products, and mobile devices.

These solutions support our core mission: Connecting everything®.

Broadcom, one of the world's largest fabless communications semiconductor companies, with 2009 revenue of $4.49 billion, holds more than 4,300 U.S. and 1,800 foreign patents, and has more than 7,900 additional pending patent applications, and one of the broadest intellectual property portfolios addressing both wired and wireless transmission of voice, video, data and multimedia.

A FORTUNE 500® company, Broadcom is headquartered in Irvine, Calif., and has offices and research facilities in North America, Asia and Europe. Broadcom may be contacted at +1.949.926.5000 or at www.broadcom.com.

BROADCOM®

Connecting
e v e r y t h i n g®