

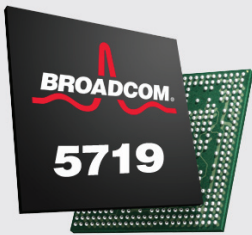
Broadcom BCM5719 Controller Technology

Product
Brief



Connecting
everything®

X4 PCI EXPRESS® QUAD-PORT GIGABIT ETHERNET CONTROLLER



Highlights

The Broadcom® BCM5719 is a thirteenth-generation 10/100/1000BASE-T Ethernet LAN controller solution suitable for high-performance server applications.

The BCM5719 combines quad triple-speed IEEE 802.3™-compliant Media Access Controllers (MACs) with quad 1000BASE-X/SGMII SerDes transceivers or quad 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.

BCM5719	
1G	●
10G	
NetXtreme® I	●
NetXtreme® II	
Ports	Quad

○ Supported

● Best Choice

Overview

Built on proven architecture, the BCM5719 provides a PCI Express® v2.0-compliant host interface, which can operate at 5 GT/s or at 2.5 GT/s at x4 link width. The PCI Express supports MSI and MSI-X capabilities and Function Level Reset (FLR).

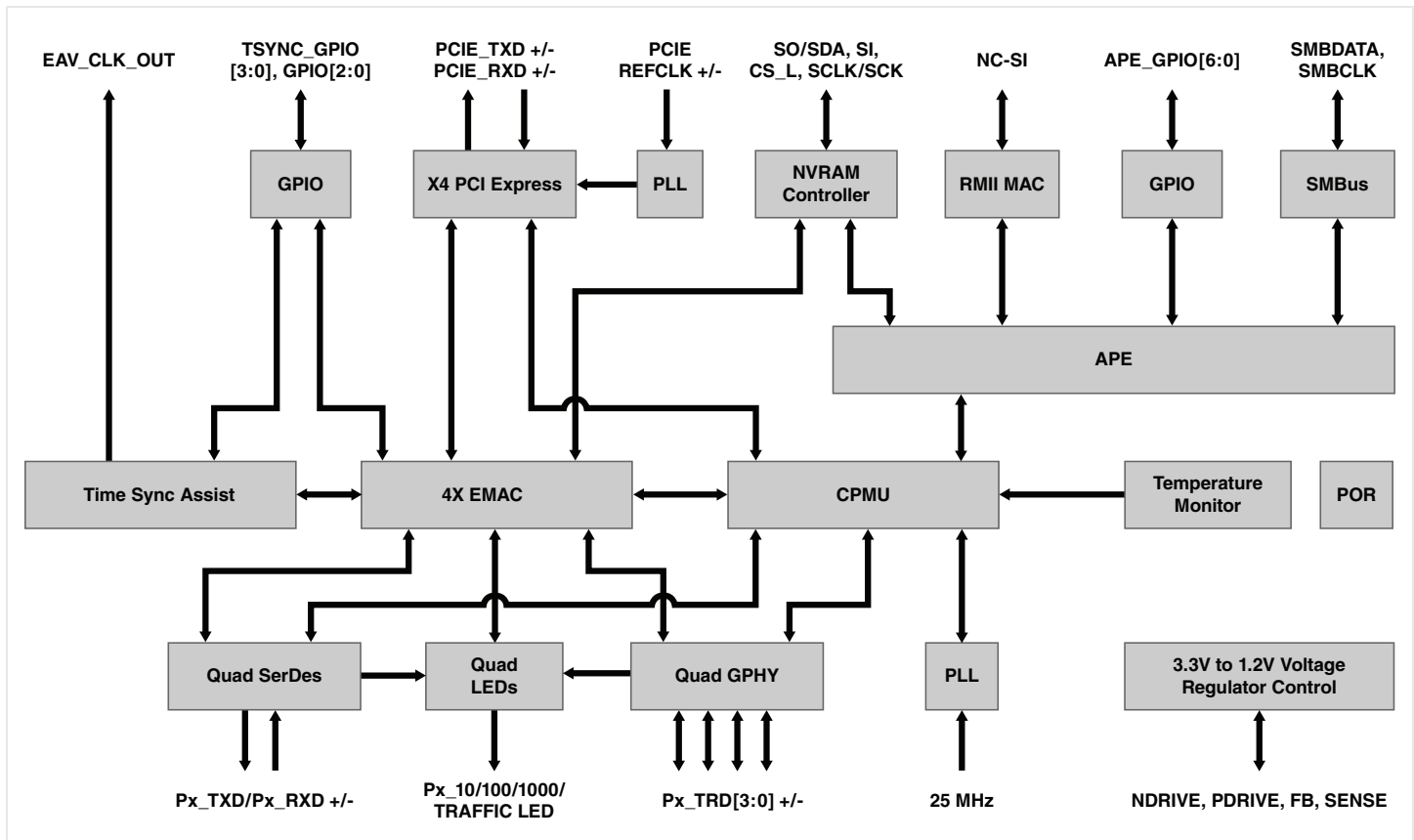
Device Features

- Integrated quad 10/100/1000BASE-T and quad 1000BASE-X/SGMII 1.25 Gbaud SerDes transceivers.
- Energy Efficient Ethernet™ compliant with IEEE Std 802.3az-2010
- IEEE 802.3ap Clause 73 auto-negotiation
- Quad 10/100/1000BASE-T full-duplex/half-duplex MACs
- Quad 1000BASE-X/SGMII full-duplex/half-duplex MACs
- Automatic MDI crossover
- x4 PCI Express v2.0 at 5 GT/s or 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
- Flexible MSI-X vector to transmit/receive queue association
- TLP Processing Hint (TPH) ECN to the PCI Express Base Specification v2.0
- Function Level Reset
- Receive Side Scaling (RSS) with per queue MSI-X vector support and support for UDP RSS hash type
- Transmit Side Scaling (TSS) and multi-Tx queue with per queue MSI-X vector support

- Jumbo frame support for up to 9600-byte payload
- Virtual LAN (VLAN) support — IEEE 802.1q VLAN tagging
- TCP, IP, UDP checksum offload
- Large Send Offload (LSO), TCP Segmentation Offload (TSO)
- Hardware assist for IEEE 1588 and IEEE 802.1AS time synchronization implementations
- IEEE 802.3x flow control
- SMBus 2.0 Interface
- 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
- On-chip temperature monitor
- PCI Express CLKREQ support
- Power Management Offload (PM Offload)
- Serial flash and EEPROM NVRAM support; flash auto-configure
- ECC error detection and correction on internal SRAM
- JTAG boundary scan support
- 256-ball FBGA (1.0 mm pitch)

Target Applications

- LAN on motherboard (LOM) for servers and workstations
- PCI Express Gigabit Ethernet Add-in NIC
- Blade servers with Ethernet over electrical backplane



BCM5719 Block Diagram

The host interface supports a separate PCI Express function for each LAN interface. The BCM5719 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 BCM5719 to support the VMWare® NetQueue and Microsoft® VMQ technologies.

The BCM5719 includes a comprehensive set of hardware features that the system may use to

implement IEEE 1588- or IEEE 802.1AS-based time synchronization. These hardware features include a high-precision clock, timestamp registers for receive/transmit packets, and programmable trigger inputs and watchdog outputs.

The BCM5719 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 BCM5719 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 BCM5719 implements Energy Efficient Ethernet (EEE) compliance with the 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
256-ball FBGA (17 mm x 17 mm, lead-free)	0°C to 55°C	BCM5719A0KFBG

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 is one of the world's largest fabless semiconductor companies, with 2008 revenue of \$4.66 billion, and holds over 3,450 U.S. and over 1,350 foreign patents, more than 7,350 additional pending patent applications, and one of the broadest intellectual property portfolios addressing both wired and wireless transmission of voice, video, data, and multimedia.

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