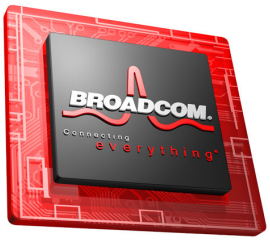
BROADCOM®
Connecting everything®

BCM5387 PRODUCT Brief



5-GbE PORT SWITCH WITH INTEGRATED SerDes

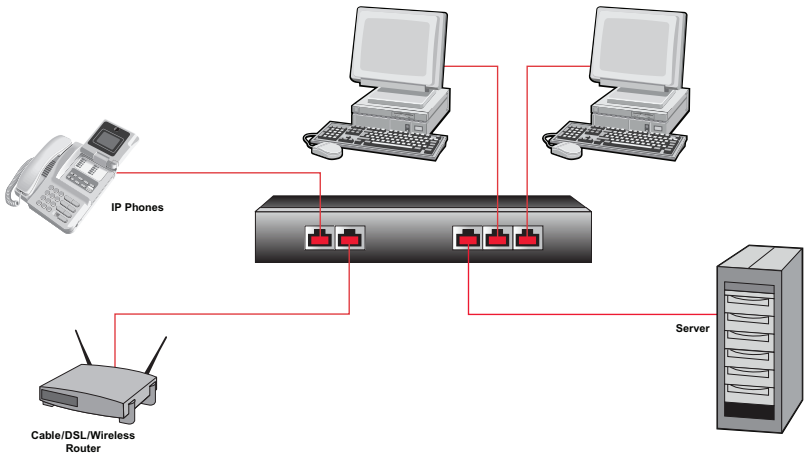
FEATURES

- **Eighth-generation switch on a chip**
- **Integrates**
  - One GMII/RGMII/RvMII interface
  - Five MACs (802.x compliant) with support for 9-KB jumbo frames
  - Five SGMII/SerDes interfaces and 128-KB packet buffer memory
  - Non-blocking 6-Gigabit Ethernet fully integrated switch fabric
  - SPI Interface for easy setup and managed operation
- **Classifies packets using four 802.1p QoS or DiffServ priority queues**
- **VLAN 4k 802.1Q or port-based support**
- **Supports up to 4k unicast MAC addresses**
- **Supports MAC-based port aggregation (trunking)**
- **Flow control**
  - Full-duplex (802.3x) and half-duplex options support
- **Supports automatic address learning and aging**
- **Support for Spanning Tree and Rapid Spanning Tree**
- **Low power 0.13 µm 1.2 V CMOS core: <1.5W Pd.**
- **Fanless operation support**
- **Port-based rate control feature with 64 kbps granularity**
- **256-pin FBGA package (small form factor 17 mm x 17 mm)**

SUMMARY OF BENEFITS

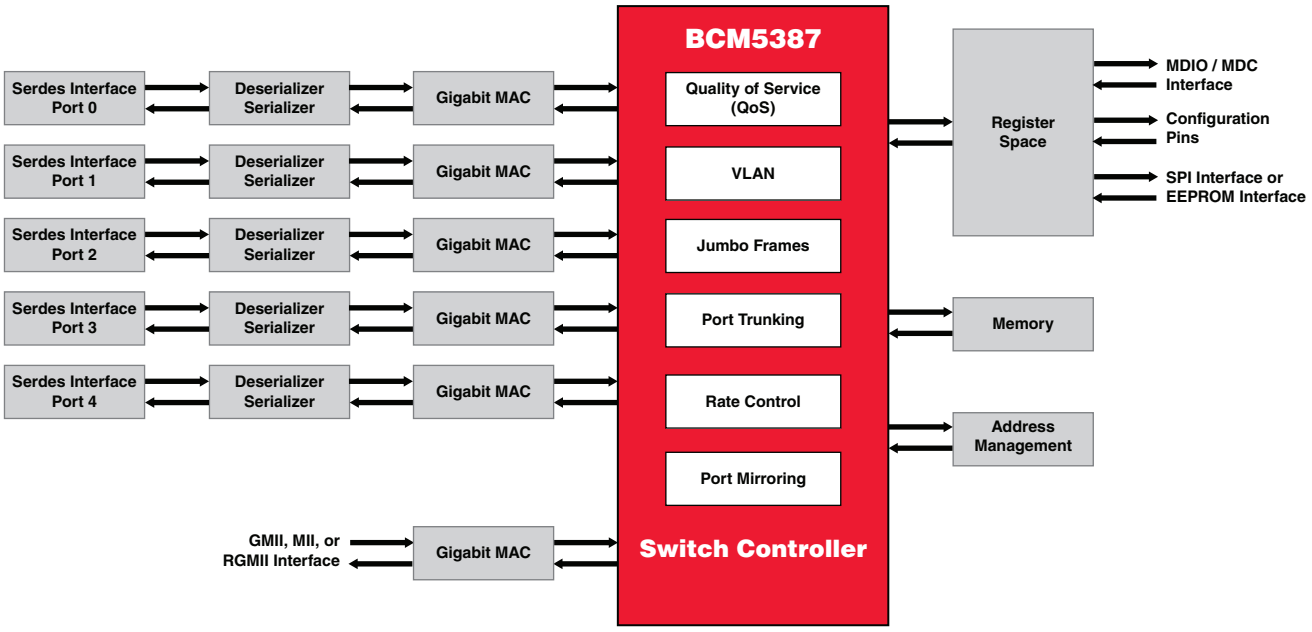
- **Enables a new generation of lower-cost switches with Gigabit Ethernet connectivity and much smaller form factors.**
- **Uses field-proven industry-standard Gigabit Ethernet SerDes which lowers overall system interoperability and reliability risks.**
- **Provides the most cost-effective Gigabit Ethernet connectivity to the desktop and control plane for all remote, branch, and Enterprise needs.**
- **802.1Q tag VLAN, trunking, and 802.1p priority enables the switch to be designed into a wide variety of applications from unmanaged to websmart to managed switch.**
- **Jumbo frame support allows the device to be connected to corporate server farms and networks while maintaining maximum TCP/IP performance.**
- **CPUs are not required to initialize and run in cost-sensitive unmanaged applications, providing true plug-and-play connectivity.**
- **Suitable for fully managed applications due to support for Spanning Tree and integration of full MIB counters**
- **SGMII interfaces ensure superior EMI performance and lowest possible number of required board layers while enabling connections to industry-standard physical layer devices (e.g., BCM5464R)**
- **Lowest possible system cost through minimized number of external components.**
- **Higher system reliability and noise reduction due to elimination of component with lowest MTBF (the fan).**

5-Gigabit Ethernet Ports for SOHO and Subnetwork Applications



BROADCOM®

OVERVIEW



BCM5387 Block Diagram

The Broadcom BCM5387 device is a highly integrated solution ideally suited for standalone Gigabit Ethernet switches and Gigabit Ethernet control plane and backplane applications. It combines all the functions of a high-speed switch system, including packet buffer, SerDes, media access controllers, address management, and a nonblocking switch fabric into a single 0.13 µm CMOS device.

The BCM5387 complies with IEEE 802.3, 802.3u, 802.3ab, and 802.3x specifications, including the MAC control, pause frame, and auto-negotiation subsections, providing compatibility with all industry-standard Ethernet, Fast Ethernet, and Gigabit Ethernet devices.

The integrated five SerDes cores enable direct connections across backplanes with the lowest possible amount of traces. The device also integrates six IEEE compliant 10/100/1000 MACs. Five of these are internally connected to the SerDes cores offering alternatively true serial interfaces for backplane connections or fiber optic transceivers or SGMII interfaces for connection to industry-standard Gigabit Ethernet copper transceivers such as the Broadcom BCM5464R. The sixth MAC features multiple MII interface modes (RvMII, RGMII, GMII) for connection to a variety of CPUs. The media access controllers on the BCM5387 also support jumbo frames which are typically used for high-performance connections to servers because they offer a smaller percentage of overhead on the link for more efficiency.

SPI or EEPROM interfaces provide easy programming of the on-chip 802.1p QoS and/or DiffServ. This allows switch traffic to be given different classes of priority or service. For example, voice traffic for IP phone applications, video traffic for multimedia applications, or data traffic for e-mail applications. Up to 4k virtual LANs (VLANs) can be set up via the SPI port for separation of different users or groups on the network. For multi-Gigabit per second connections, multiple ports of the BCM5387 can be grouped together to form logical links. These links feature automatic load balancing.

The BCM5387 can also be used in fully managed applications where support for Spanning Tree and MIB counters is a requirement. In such applications, the CPU will be connected using the SPI interface for register control and the sixth MII interface for protocol frames.

Finally, the BCM5387 supports per-port rate control for applications like MTU/MDU switches where individual ports need to be restricted in speed to comply with the agreed and paid for service levels.

Broadcom®, the pulse logo, **Connecting everything**®, and the Connecting everything logo are among the trademarks of Broadcom Corporation and/or its affiliates in the United States, certain other countries and/or the EU. Any other trademarks or trade names mentioned are the property of their respective owners.

Connecting everything®

BROADCOM®

BROADCOM CORPORATION
16215 Alton Parkway, P.O. Box 57013
Irvine, California 92619-7013

© 2006 by BROADCOM CORPORATION. All rights reserved.

5387-PB01-R 04/18/06

Phone: 949-450-8700
Fax: 949-450-8710
E-mail: info@broadcom.com
Web: www.broadcom.com