

## 10/100BASE-TX/FX OCTAL-Φ™ TRANSCEIVER

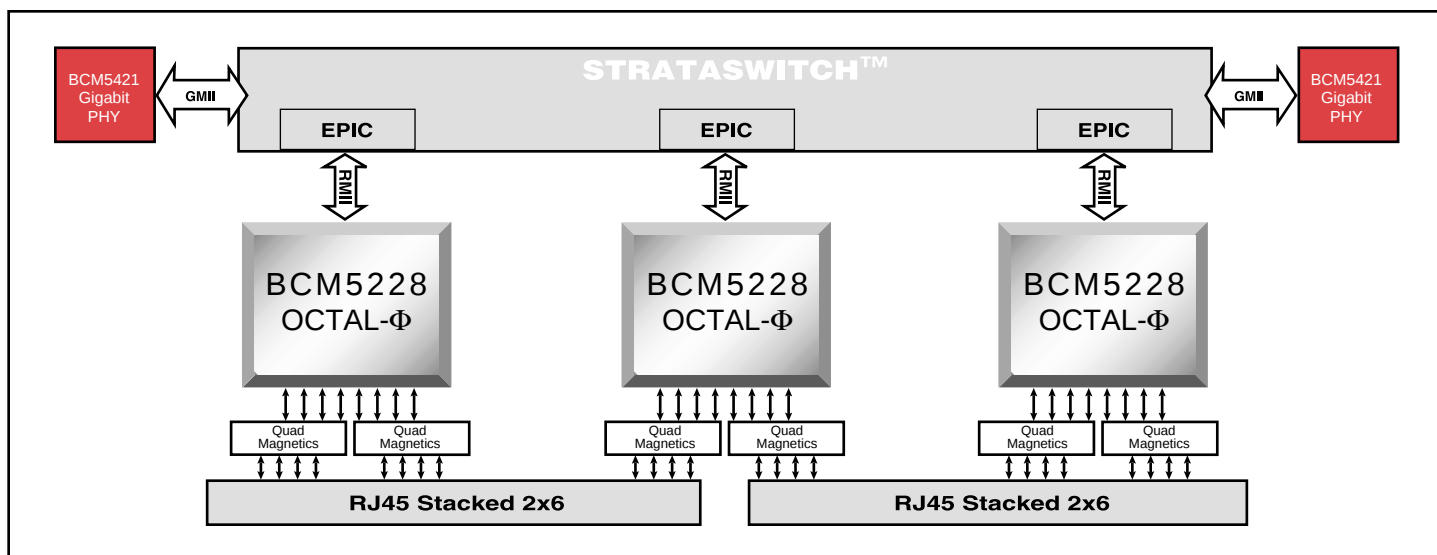
### BCM5228 FEATURES

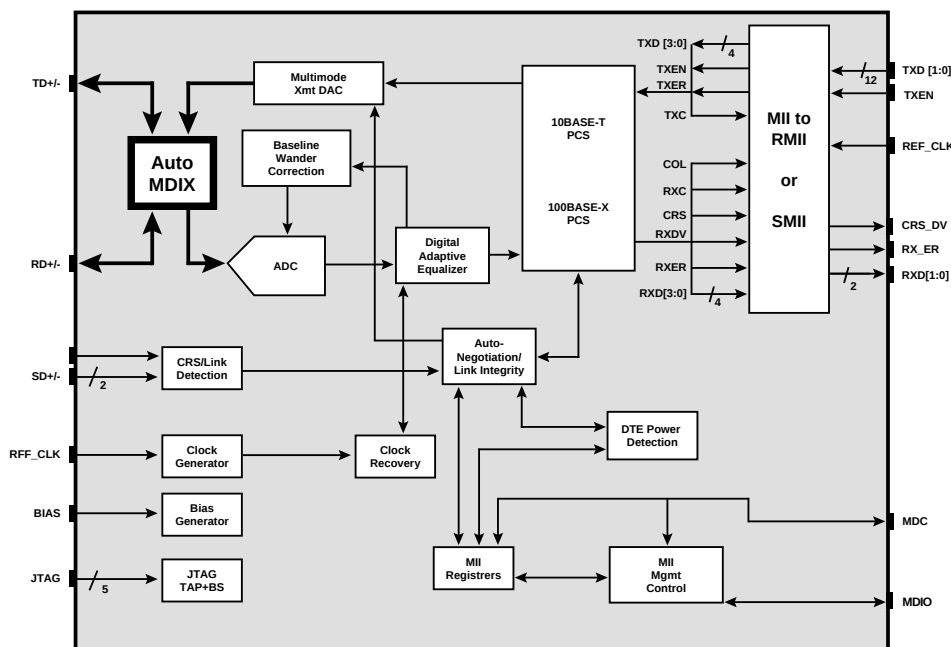
- Single-chip, eight-port Fast Ethernet transceiver
- HP auto-MDIX
- Low-power 2.5V CMOS technology
- Support for DTE power detection
- Compatible with 2.5V I/O and 3.3V I/O
- Reduced Media Independent Interface (RMII)
- Serial Media Independent Interface (SMII)
- Fully integrated digital adaptive equalization
- Up to 150 meters of error-free operation
- Full-duplex support
- Twisted-pair or fiber support on any or all ports
- Interrupt output capability
- 208-pin PQFP or 256-pin FPBGA package
- Proven Broadcom proprietary All-DSP Digi-Φ™ architecture

### SUMMARY OF BENEFITS

- Target usage: Fast Ethernet switches.
- Lowest per-port power solution available – < 250 milliwatts per port.
- Smallest footprint per port available.
- HP Auto-MDIX detects and corrects cabling errors.
- Measures 17 mm × 17 mm for eight ports.
- Single-chip device contains eight independent Fast Ethernet transceivers.
- Performs all physical layer interface functions for 100BASE-TX full- or half-duplex Ethernet on Category 5 unshielded twisted-pair (UTP) cable and 10BASE-T full- or half-duplex Ethernet on Category 3, 4, or 5 UTP cable.
- Permits transmission over fiber-optic cabling when paired with an external fiber-optic transceiver.
- Compliant with IEEE 802.3 standard.
- IEEE 1149.1 (JTAG) scan chain support.
- Three LED indicator pins per port.
- Onboard cable length meter reports the link distance for each port.

24-Port 10/100 Switch





The Broadcom **BCM5228** is a single-chip device containing eight independent Fast Ethernet transceivers. Each performs all the physical layer functions for 100BASE-TX full or half-duplex Ethernet on Category 5 UTP cable and 10BASE-T full or half-duplex Ethernet on Category 3, 4 or 5 UTP cable. The **BCM5228** chip performs encoding and decoding, clock and data recovery, digital adaptive equalization, line transmission, carrier sense and link integrity monitoring, auto-negotiation and RMII/SMII management functions. The BCM5228 is compliant with the IEEE 802.3 standard.

The **BCM5228** can be connected to a switch controller through the RMII/SMII on one side and to the network media on the other side through isolation transformers for UTP modes or fiber-optic transceiver/receiver components for FX mode. The **BCM5228** operates from a 2.5V power supply; the I/O operates at either 2.5V or 3.3V.

The **BCM5228** includes support for HP auto-MDIX, which enables the transceiver to automatically detect and correct miswired cable. With the HP auto-MDIX feature, all ports on a switch can be connected to any other 10/100 port on any switch, hub, or network interface card, using crossover or straight-through cables interchangeably. This makes installation, debugging, and maintenance of the network simpler and less expensive to the end user.

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

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The **BCM5228** incorporates Broadcom's DTE power detection feature, a mechanism for detecting whether the link partner's DTE requires a power supply. Emerging applications require the delivery of power with the data over unshielded twisted pair. A key requirement for such applications is to determine when to apply power to the DTE. Broadcom's DTE power detection feature allows manufacturers to develop switches to support this emerging class of Ethernet devices, which include IP telephones, web cameras and wireless LAN access points.

The BCM5227 is a version that does not support HP auto-MDIX or DTE power detection.

The BCM5227 and **BCM5228** are offered in three package options. The BCM5227U and BCM5228U are packaged in a 208-pin PQFP and support 10/100 operation over UTP, with three LED indicators per port. The BCM5227F and BCM5228F are packaged in a 208-pin PQFP and support either 10/100 UTP transmission or 100BASE-FX via external fiber-optic transceivers, along with one LED indicator per port. The BCM5227B and BCM5228B are packaged in 256-pin FPBGA and support either UTP or fiber on each port, as well as three LED indicators per port. All of these products support both RMII and SMII.



Phone: 949-450-8700  
FAX: 949-450-8710  
Email: info@broadcom.com  
Web: www.broadcom.com