BROADCOM®

Connecting everything®
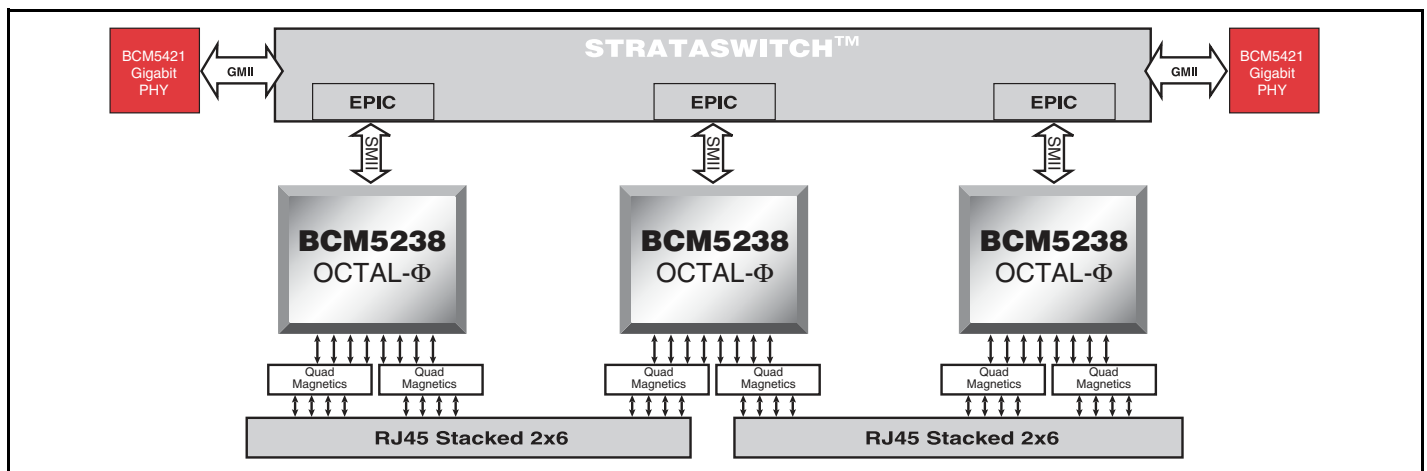
BCM5238
PRODUCT Brief

10/100BASE-TX OCTAL-Φ™ TRANSCEIVER

FEATURES

- Single-chip, eight-port Fast Ethernet transceiver
- Low-power 1.8V CMOS technology
- Serial Media Independent Interface (SMII)
- Source Synchronous SMII (SSSMII)
- HP Auto-MDIX automatic crossover
- Supports 10BASE-T Polarity Correction
- Compatible with 2.5V I/O and 3.3V I/O
- Fully integrated digital adaptive equalization
- Up to 150 meters of error-free operation
- Full-duplex support
- Interrupt output capability
- 128-pin PQFP or 256-ball BGA package
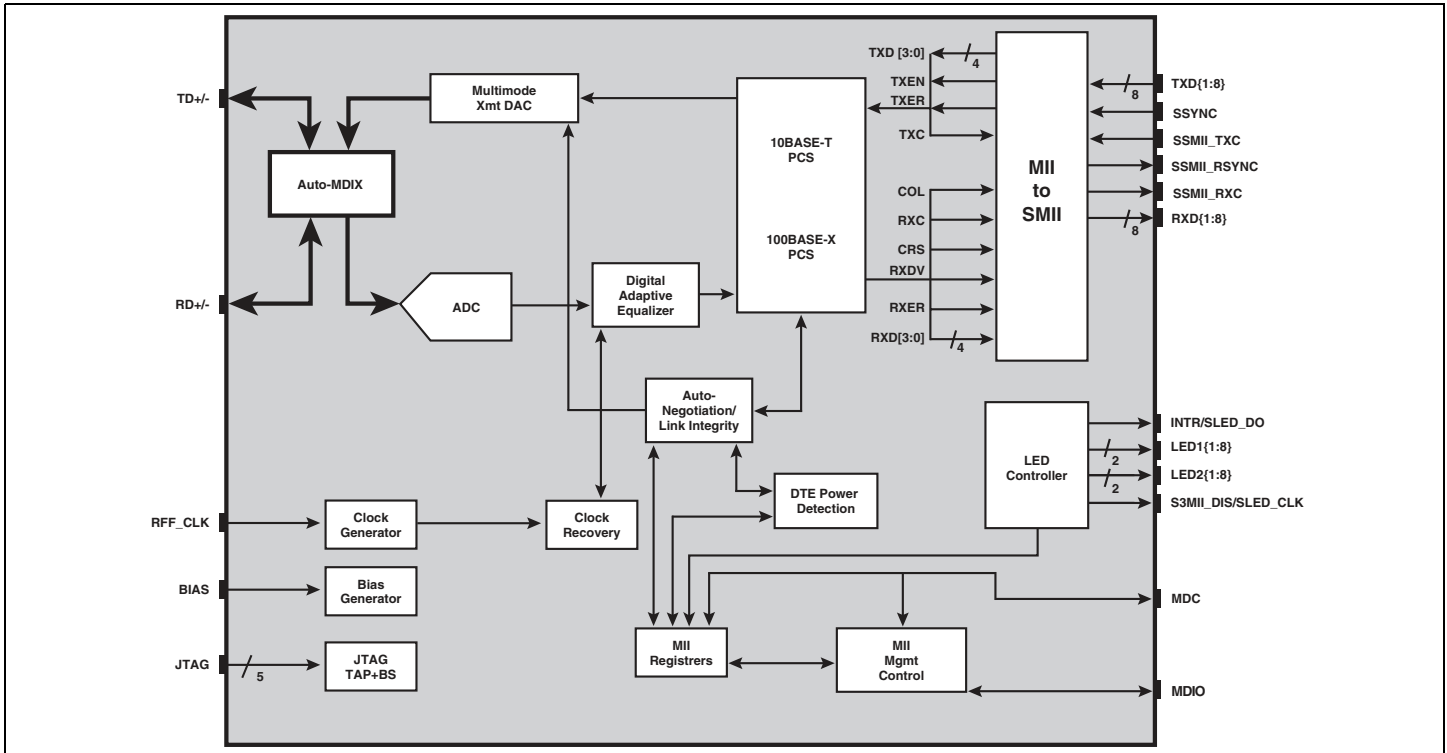- Proven Broadcom proprietary all-DSP Digi-Φ™ architecture

SUMMARY OF BENEFITS

- Target usage: Fast Ethernet switches.
- Lowest per port power solution available:< 215 milliwatts per port.
- Smallest footprint per port available.
- Measures 14 mm ∞20 mm for eight ports.
- Single-chip device contains eight independent Fast Ethernet transceivers.
- Performs all physical layer interface functions for 100BASE-TX full-duplex 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.
- Compliant with IEEE 802.3 standard.
- IEEE 1149.1 (JTAG) scan chain support.
- Two LED indicator pins per port.

24-Port 10/100BASE-T Ethernet Switch Example

BROADCOM®

Multimode
Xmt DAC

TXD [3:0] /4
TXEN
TXER
TXC

10BASE-T
PCS

100BASE-X
PCS

COL
RXC
CRS
RXDV
RXER
RXD[3:0] /4

MII
to
SMII

TXD{1:8} /8
SSYNC
SSMII_TXC
SSMII_RSYNC
SSMII_RXC
RXD{1:8} /8

TD+/-

Auto-MDIX

RD+/-

ADC

Digital
Adaptive
Equalizer

Auto-
Negotiation/
Link Integrity

DTE Power
Detection

LED
Controller

INTR/SLED_DO
LED1{1:8} /2
LED2{1:8} /2
S3MII_DIS/SLED_CLK

RFF_CLK

Clock
Generator

Clock
Recovery

BIAS

Bias
Generator

MDC

JTAG /5

JTAG
TAP+BS

MII
Registrers

MII
Mgmt
Control

MDIO

The Broadcom BCM5238 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 BCM5238 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 BCM5238 is compliant with the IEEE 802.3 standard.

The BCM5238 can be connected to a switch controller through the SMII or SSSMII on one side and to the network media on the other side through isolation transformers. The BCM5238 operates from 1.8 and 2.5V/3.3V power supplies; the I/O operates at either 2.5V or 3.3V.

The BCM5238 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.

The BCM5238 is offered in a 128-pin PQFP or 256-ball BGA package and supports two LED indicators per port.

Connecting
everything®