# BROADCOM

C o n n e c t i n g
e v e r y t h i n g ®

**BCM5421S**

**PRODUCT Brief**

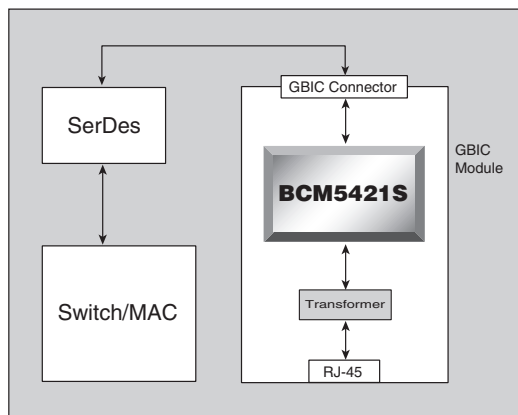# 10/100/1000BASE-T GIGABIT COPPER TRANSCEIVER WITH SERDES

## FEATURES

- Fully integrated 10BASE-T/100BASE-TX/1000BASE-T Gigabit Ethernet transceiver with SerDes
- MII, GMII, TBI, RGMII, RTBI, SGMII, and MAC SerDes interface options
- Line-side copper and fiber interface options
- On-chip low voltage regulators
- Fully compliant with IEEE 802.3, 802.3u, and 802.3ab standards
- 0.13-μm CMOS — low power and cost
- Low power
  - 1W per port
  - Wake on LAN support
  - Advanced power management
- Low EMI emissions
- Ethernet@WireSpeed™ logic automatically selects the maximum speed based on channel conditions
- Cable plant diagnostic
  - Cable plant analyzer function detects cable plant impairments
  - Link quality indication LED
  - Automatic detection and correction of wiring pair swaps, pairskew, and pair polarity
  - Automatic MDI/MDIX crossover at all speeds
- Robust CESD tolerance
- Support for jumbo packets up to 9 KB
- IEEE 1149.1 (JTAG) boundary scan
- 117-pin BGA and 128-pin MQFP packages

## SUMMARY OF BENEFITS

- Provides triple-speed operation for compatibility with legacy networks.
- Simplifies system and board design.
  - RGMII/RTBI reduces I/O pin requirement over GMII and TBI by more than 50%.
  - SGMII further reduces the interface to six pins, while the serial
  - MAC SerDes interface requires only four pins.
- Lowers system cost and reduces solution footprint.
- Provides interoperability with IEEE standard device operation at 10, 100 and 1000 Mbps at half- and full-duplex.
- Requires no airflow or heatsink.
- Provides compliance with PCI 2.2 and PC99/PC2000.
- Reduces system design constraints to meet EMI emissions standards.
- Automatically configures the link to support the highest possible speed based on link partner capability and characteristics of the channel.
- Cable diagnostic function characterizes cable plant condition and immediately indicates cabling issues.
  - Prevents erroneous equipment return due to bad cable plants.
  - Prevents manufacturing fall-out due to bad cable plants.
- High CESD tolerance prevents equipment damage and return.
- Operates with larger packets for wider range of packet protocol support and improved efficiency.
- Ease of manufacturing with JTAG support, simplified power supply, and multiple MAC interfaces.

### 10/100/1000BASE-T GBIC Module



### 1000BASE-T Gigabit Copper or Fiber Uplink



BROADCOM®