BROADCOM®

Connecting
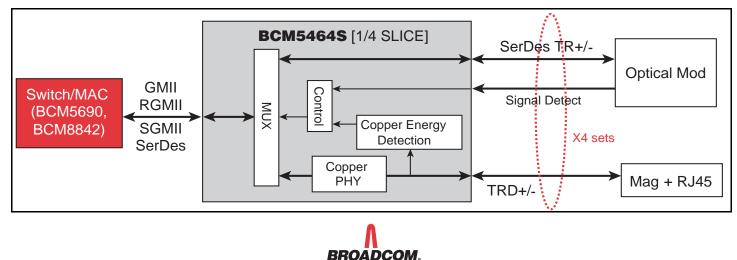e v e r y t h i n g®

BCM5464S
PRODUCT Brief

QUAD-PORT GIGABIT COPPER TRANSCEIVER WITH COPPER/FIBER MEDIA INTERFACE

FEATURES

- **Four fully integrated 10BASE-T/100BASE-TX/1000BASE-T Gigabit Ethernet transceivers**
- **GMII, RGMII, SGMII, and SerDes MAC interface options**
- **Copper or SerDes line interface options**
- **Fully compliant with IEEE 802.3, 802.3u, and 802.3ab standards**
- **0.13-micron CMOS—low-power and cost**
- **Low-power**
  - 750 mW per port
  - Advanced power management
- **Trace matched output impedance**
- **Line-side loopback**
- **Low EMI emissions**
- **Cable plant diagnostic**
  - Cable plant analyzer function detects cable plant impairments
  - Link-quality indication LED
  - Automatic detection and correction of wiring pair swaps, pair skew, and pair polarity
  - Automatic MDI/MDIX crossover at all speeds
- **Robust cable-sourced electrostatic discharge (CESD) tolerance**
- **Support for jumbo packets up to 10 KB**
- **IEEE 1149.1 (JTAG) boundary scan**
- **Package: 354-pin BGA**

SUMMARY OF BENEFITS

- **Low-power quad-port integration enables single-row, high port density switches**
  - Lowers system costs by eliminating PCB layers required for routing high density solutions
  - Reduced I/O pin requirements with RGMII (over 50%), SGMII (over 75%), and SerDes (over 80%)
  - Clock timing can be adjusted to eliminate board trace delays required by the RGMII specification
  - Lowers MAC/switch costs by reducing the number of pins required to interface to the PHY
- **Flexibility for copper or fiber applications**
- **Provides compatibility with IEEE standard devices operating at 10, 100, and 1000 Mbps at half-duplex and full-duplex**
- **Requires no air flow or heat sink**
- **Eases system level debug**
- **Enables use of low cost magnetics, even in high density (48+) designs**
- **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
- **Over 4kV of 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**

BCM5464S System Diagram

BCM5464S [1/4 SLICE]

Switch/MAC (BCM5690, BCM8842)

GMII RGMII SGMII SerDes

MUX — Control — Copper Energy Detection — Copper PHY

SerDes TR+/-
Signal Detect
Optical Mod

X4 sets

TRD+/-
Mag + RJ45

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