



## QUAD-PORT GIGABIT COPPER TRANSCEIVER WITH RGMII AND RTBI INTERFACE

### BCM5414 FEATURES

- Four fully integrated 10BASE-T/100BASE-TX/1000BASE-T Gigabit Ethernet transceivers
- RTBI and HSTL level RGMII interface options
- Fully compliant with IEEE 802.3, 802.3u, and 802.3ab standards
- 0.13μ CMOS — low power and cost
- Low power
  - 1W per port
  - 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, pair skew, 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

### 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
  - 1.5V or 1.8V HSTL signal levels eliminate the need for 3.3V power supply, lowering system cost and simplifying design
  - 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.
- Provides compatibility with IEEE standard devices operating at 10, 100, and 1000 Mbps at half- and full-duplex.
- Reduces design constraints in high-density applications that have higher EMI emissions.
- 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.
- Supports jumbo packets for wider range of packet protocol compatibility.
- Ease of manufacturing with JTAG support and simplified power supply.

### BCM5414 System Diagram

