BROADCOM®

Product Brief

BCM84884
Quad-port 5GBASE-T/2.5GBASE-T/ 1000BASE-T/100BASE-TX Transceiver

Overview

The Broadcom® BCM84884 is a quad-port 5GBASE-T/2.5GBASE-T/ 1000BASE-T/100BASE-TX Ethernet CMOS transceiver. The device performs all physical-layer functions for 5GBASE-T, 2.5GBASE-T, 1000BASE-T, and 100BASE-TX Ethernet on Category 5e, 6, or 6A twisted-pair cable.

The BCM84884 supports the USXGMII, XFI, 5000BASE-X, 2500BASE-X, and 1000BASE-X (SGMII) interfaces for connection to a MAC. The device is a highly integrated solution combining digital adaptive equalizers, ADCs, phase-locked loops, line drivers, encoders, decoders, echo cancelers, crosstalk cancelers, and all the required support circuitry.

The BCM84884 features the Energy Efficient Ethernet (EEE) protocol. EEE enables the BCM84884 to auto-negotiate and operate with EEE-compliant link partners to reduce overall system power during low utilization of the link. Broadcom's AutogrEEEn® mode permits legacy systems to enjoy the power saving benefits of EEE.

The BCM84884 automatically negotiates an operating speed with any transceiver on the opposite end of the line. The device features Enhanced Cable Diagnostics, which detects common cable problems such as shorts, opens, and cable length.
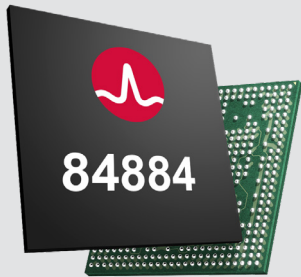
Key Features

- Single-chip integrated quad-port Ethernet transceiver-MAC to magnetics:
  - 5GBASE-T IEEE 802.3bz
  - 2.5GBASE-T IEEE 802.3bz
  - 1000BASE-T IEEE 802.3ab
  - 100BASE-TX IEEE 802.3u
  - 5G NBASE-T specification
  - 2.5G NBASE-T specification
- IEEE 802.3z
- IEEE 802.3az
- USXGMII, XFI, 5000BASE-X, 2500BASE-X, and 1000BASE-X (SGMII) MAC Interfaces
- 5G rate over USXGMII/ XFI/5000BASE-X MAC interfaces
- 2.5G rate over USXGMII/ XFI/2500BASE-X MAC interfaces
- IEEE 1588-2008 PTP version 2 (timestamp)
- IEEE fast retrain and link monitoring
- EEE on 5GBASE-T, 2.5GBASE-T, 1000BASE-T, and 100BASE-TX
- Trace-matched output impedance

Benefits

- Low power consumption with EEE enhances thermal performance and reduces system operating cost
- Robust reach performance allows for high-speed data over existing installed Cat5e cable wirings
- Downshift feature selects the highest data rate on a given link within the cable plant
- Comprehensive IEEE 1588 PTP feature set provides accurate timing synchronization and minimizes the CPU intervention for timestamping

Applications

- Ethernet switch
- Ethernet server
- Fronthaul and backhaul of radio access network
- Industrial Ethernet

Quad-port Ethernet CMOS Transceiver

Key Features (con't)

- Line-side loopback
- Low electromagnetic interference (EMI) emissions
- Enhanced cable diagnostics
- Support for jumbo packets up to 18 KB
- Detection and correction of pair swaps (MDI crossover), pair skew, and pair polarity
- Downshift
- Auto-negotiation with next page support
- IEEE 1149.1 (JTAG) and IEEE 1149.6 (ACJTAG) boundary scan support
- Low-power 1.0V CMOS core
- 1.2V or 2.5V MDIO I/O, 1.8V CMOS I/O
- Device package: 23 mm × 23 mm BGA

BCM84884 Block Diagram
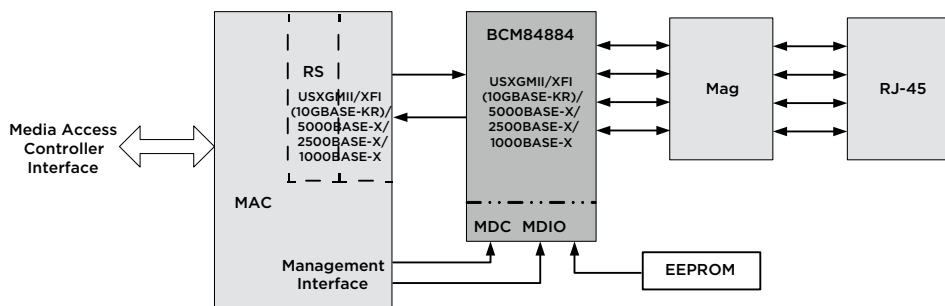
Ordering Information		
Part Number	**Package**	**Ambient Temperature**
BCM84884B0KFEBG (without heat spreader)	484-pin BGA (RoHS-compliant)	0°C to 70°C
BCM84884B0IFEBG (without heat spreader)	484-pin BGA (RoHS-compliant)	–40°C to +55°C
BCM84884B0KFSBG (with heat spreader)	484-pin BGA (RoHS-compliant)	0°C to 70°C
BCM84884B0IFSBG (with heat spreader)	484-pin BGA (RoHS-compliant)	–40°C to +55°C

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