



### Key Features

- Single-chip integrated triple-speed Ethernet transceiver. Support for the following copper line interfaces:
  - 1000BASE-T IEEE 802.3ab
  - 100BASE-TX IEEE 802.3u
  - 10BASE-T IEEE 802.3
  - 10 Mb/s BroadR-Reach
  - 100 Mb/s BroadR-Reach
- Supports extended cable reach applications of 300m or 500m at 10 Mb/s and 100 Mb/s modes (depending on cable type, individual parametrics, and number of pairs used).
- Integrated twisted-pair termination resistors
- Supports RGMII MAC interface
- Supports synchronous Ethernet
- Ethernet@Wirespeed™
- Integrated voltage regulator
- Trace matched output impedance
- Line loopback
- Low EMI emissions
- Cable plant diagnostics

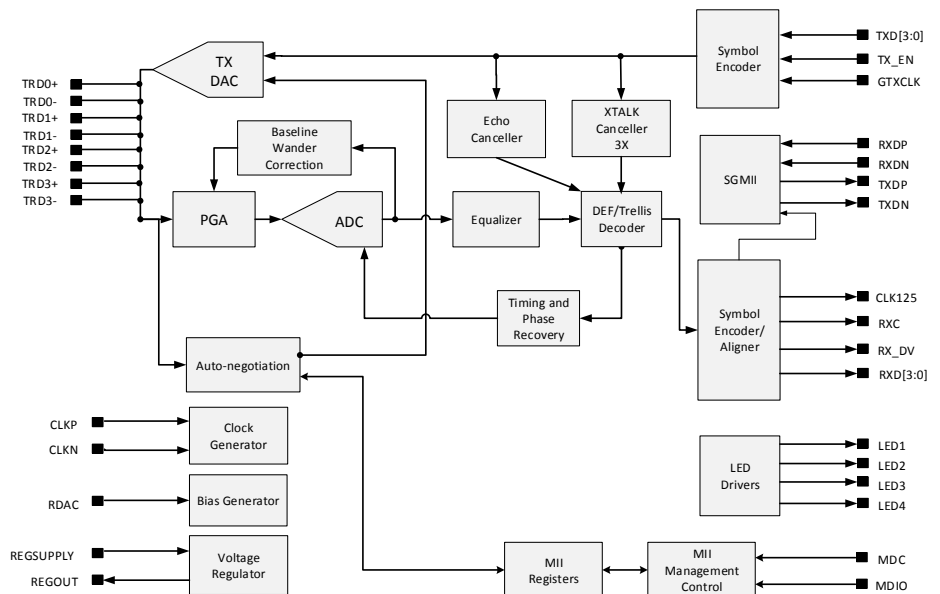
# BCM54811

## BroadR-Reach® Single-Port 10/100/1000Base-T Transceiver

### Overview

The Broadcom® BCM54811 is a triple-speed 10/100/1000BASE-T Gigabit Ethernet (GbE) transceiver integrated into a single monolithic CMOS chip. The device performs all of the physical layer (PHY) functions for 1000BASE-T, 100BASE-TX, and 10BASE-T on standard Category 5 UTP cable. The 10BASE-T Ethernet can also run on standard categories 3, 4, and 5 UTP. The BCM54811 is designed to exceed IEEE specifications for noise cancellation and transmission jitter, providing consistent and reliable operation over the broadest range of existing cable plants. The BCM54811 is based on proven Broadcom digital signal processor technology, combining digital adaptive equalizers, ADCs, phase locked loops, line drivers, encoders, decoders, echo cancelers, crosstalk cancelers, and all other required support circuitry. The BCM54811 is designed to be fully compliant with RGMII and MII interface specifications, allowing compatibility with industry-standard Ethernet MACs and switch controllers. Designed for reliable operation over worst-case Category 5 cable plants, the BCM54811 automatically negotiates with its link partner to determine the highest possible operating speed. The device detects and corrects most common wiring problems. The BCM54811 features CableChecker™ diagnostics, which detect common cable problems including shorts, opens, and cable length. BroadR-Reach® enables the BCM54811 to autonegotiate and link up with BroadR-Reach compliant link partners in extended cable reach applications of 300m or 500m at 10 Mb/s and 100 Mb/s modes (depending on cable type, individual parametrics, and number of pairs used).

### Functional Block Diagram



### Key Features (con't)

- Robust cable ESD (CESD) tolerance
- Support for jumbo packets up to 10 KB
- Detection and correction of pair swaps (MDI crossover), pair skew, and pair polarity
- Advanced power management
- IEEE 1149.1 (JTAG) boundary scan
- Super Isolate mode
- 48-pin MLP package
- IEEE 1588-v2 compliant
- IEEE 802.3az-compliant
  - Supports native Energy Efficient Ethernet (EEE) MACs
  - Supports legacy non-EEE MACs using AutogrEEEn® mode

### Applications

- High-Density GbE Switches and Routers
- Industrial Automation
- Smart Grid
- Video Surveillance
- Elevator and Escalator Controls
- Building Control
- Inflight Entertainment
- In-Train Communication