Product Brief

BCM82756

Quad-Channel 10GbE SFI-to-XFI EDC/LRM PHY with IEEE MACsec/IEEE 1588

Description

The Broadcom BCM82756 is a low-power, high-density PHY that integrates IEEE 802.1AE MACsec GCM-AES-256b encryption, IEEE 1588, retimer, and EDC equalizer functions supporting 1GbE, 10GbE, and 40GbE applications. The BCM82756 is targeted for SMF, MMF, or copper twin-axial applications interfacing to both limiting-based and linear-based SFP+ and SFP modules.

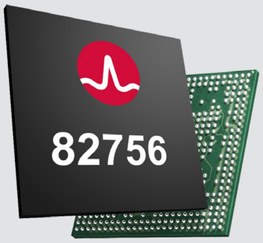
The BCM82756 is fully compliant with the 10GbE IEEE 802.3aq standard and also supports 1000BASE-X for 1GbE operation. The BCM82756 is developed using an all-DSP high-speed front end, providing the highest performance and most flexibility for LRM applications. On-chip clock synthesis is performed by a single low-cost 156.25 MHz reference clock (for all IEEE standard 1G/10G rate) via high-frequency, low-jitter, phase-locked loops (PLLs). Individual clock recovery is performed on the device by synchronizing directly to the respective incoming data streams.

The BCM82756 is designed in 28-nm CMOS technology to provide a low-power solution with integrated AC-coupling capacitors for direct interfacing to Broadcom switch products.

The BCM82756 is footprint compatible with the BCM84756 and is available in a 17-mm × 17-mm, 1-mm pitch, 144-ball BGA, RoHS-compliant package.

Applications

- Supports IEEE 802.1AE (dataplane) and IEEE 802.1AEbw-2013, including GCM-AES-128 and GCM-AES-256
- MACsec encryption on high-density 1G/10G/40G line cards
- QSFP+ and SFP+ optical SR, LR, and LRM modules



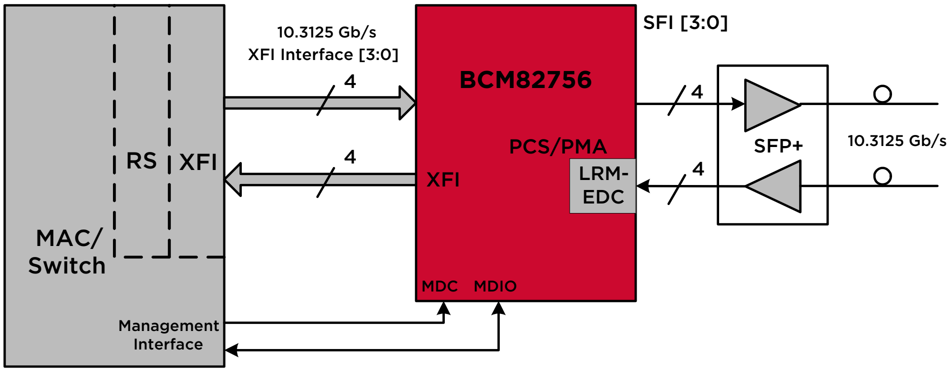
Key Features

- Quad 10GbE port with SFI-to-XFI PHY supports SR/LR/CR/LRM, SFP+, retimer/equalization/MACsec encryption
- Supports IEEE 1588 timestamping as well as ITU-T Y.1731 with Synchronous Ethernet (SyncE) recovered clock outputs
- Supports SFP+ SR, LR, and LRM optical interfaces
- Supports SFP+ copper twin-axial, direct attach copper
- Industry's best LRM/EDC performance:
  - Supports 300m of MMF, exceeding the IEEE 802.3aq standard
- 1GbE mode with support for IEEE 802.3 Clause 37 AN and compliance to SFF-8431, Appendix F Electrical Specifications
- Supports IEEE 802.3ap Clause 72 transmit training
- Supports 10G CL74 and 1G CL37 FEC
- Integrated AC-coupling capacitors on all high-speed receivers
- Standard two-wire serial interface (BSC) support for external EEPROM, SFP, and SFP+

Key Features (con't)

- MDC/MDIO interface-compliant to IEEE 802.3ae Clause 45
- Support for advanced diagnostics on SFP+ interface, including eye-mapping, SNR, and BER
- Core supply: 1.0V and I/O: 2.5V or 3.3V
- Footprint compatible with the BCM84756
- 17-mm × 17-mm BGA package, 1-mm ball pitch

Figure 1: BCM82756 Block Diagram



Ordering Information

Commercial rated, 17 mm × 17 mm, 1-mm pitch, 256-ball BGA, Pb-free package	BCM82756AKFSBG
Industrial rated, 17 mm × 17 mm, 1-mm pitch, 256-ball BGA, Pb-free package	BCM82756AIFSBG

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