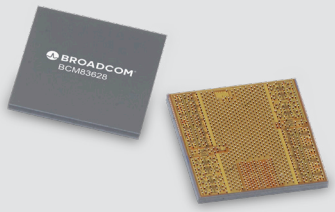
BROADCOM®

Product Brief

BCM83628-DIE

3-nm CMOS 1.6T (8:8) PAM-4 Transceiver PHY with Integrated Laser Driver



Key Features

- Supports various chip modes:
  - 8:8 retimer mode with client 212.5G PAM-4 and line 212.5G PAM-4
  - 8:8 retimer mode with client 212.5G PAM-4 and line 226.875G PAM-4 with IEEE and InfiniBand (XDR) compliance
  - Backward 8:8 retimer modes comparability to 106G/lane and 53G/lane Ethernet and InfiniBand interface
- Proven interoperability with the Broadcom 200G electro-absorption modulated laser (EML)
- Full compliance with IEEE 802.3dj D1p3
- Supports 200G silicon photonics (SiPh) optics with 3.0V differential high-swing driver
- Client side supports MR reach for switch-to-module pluggable interface
- Supports client-side and line-side crossbar for flexible routing
- Supports FEC monitoring in the repeater modes with a subsampling feature available for reduced power

Overview

The Broadcom® BCM83628-DIE is the industry's highest-performance and lowest-power 3-nm 200G/lane PAM-4 PHY with integrated laser driver to enable 1.6T DR8 and FR8 pluggable transceivers for next-generation AI/ML clusters and Ethernet networking of hyperscale data centers.

The BCM83628-DIE leverages the market-leading DSP and equalization technology of 200G/lane PAM-4 PHY, already proven with the BCM85828-DIE, and designed with best-in-class Broadcom 3-nm 200G per lane SerDes technology. The advanced Broadcom DSP and equalization technology compensate for optical impairments while delivering best-in-class transceiver BER performance and power consumption.

The BCM83628-DIE integrates the laser driver for 200G/lane EML and SiPh optics to not only simplify the transceiver design, but also to deliver the best-in-class optical transmitter performance with lowest power consumption. The BCM83628-DIE, designed with 3-nm 200G/lane SerDes same as Broadcom leading switch silicon, guarantees interoperability when paired with Broadcom switch and provide an unmatched competitive advantage to the market.

The BCM83628-DIE incorporates a highly differentiated feature set, including multiple line-side FEC options:

- Bypass mode
- Segmented mode
- Concatenated mode

The BCM83628-DIE is a monolithic 1.6T (8:8) PAM-4 DSP. It converts eight lanes of 212.5 Gb/s from the client side into eight lanes of 212.5 Gb/s or 226.875G to drive next-generation high-density optical PAM-4 links inside an octal small form-factor pluggable (OSFP) module.

The BCM83628-DIE also features crossbar on both the client side and line side for easier routing in the PCBs.

The on-chip clock synthesis is performed by a low-cost 625-MHz reference clock through high-frequency, low-jitter phase-locked loops (PLLs).

Key Features (cont.)

- IEEE 802.3cd standard-compliant KP4 and end-to-end FEC bypass operation: 800G/400G/200G/100G KP4 FEC
- Lowest-power 3-nm CMOS design
- Lowest latency solution

Applications

- 1.6T OSFP DR8 pluggable for InfiniBand XDR in AI/ML clusters
- 1.6T OSFP DR8 and FR8 pluggable for Ethernet 200G per-lane switch ASIC in hyperscale data centers

Figure 1: Block Diagram

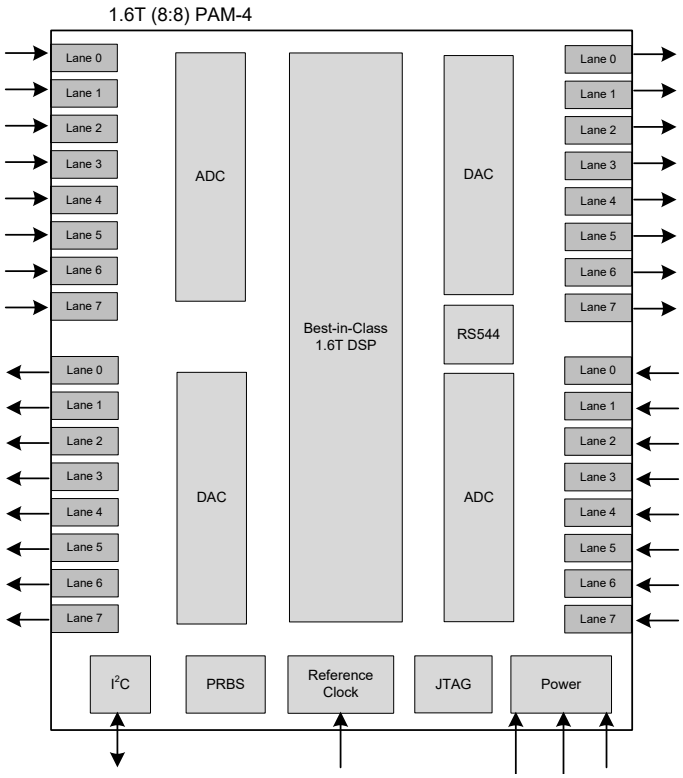
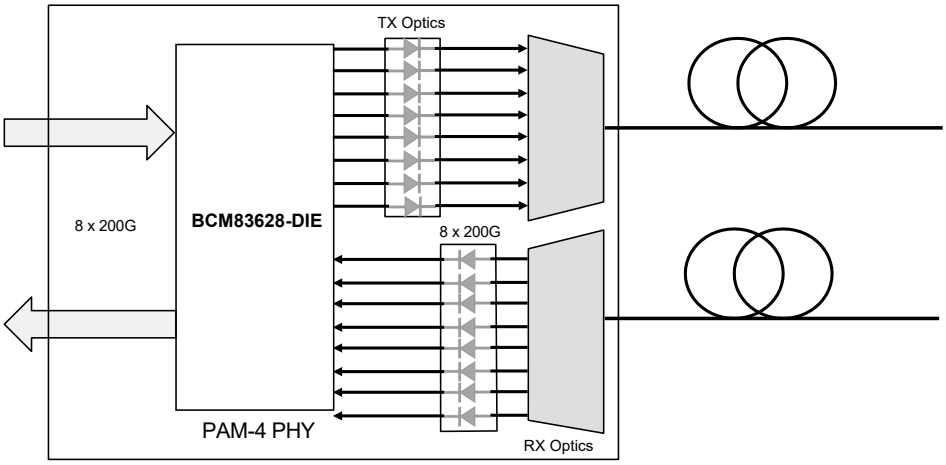


Figure 2: Application Diagram



For more product information: broadcom.com

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