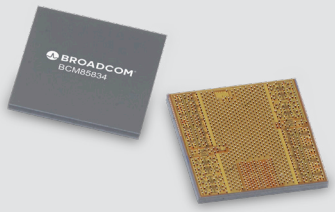
BROADCOM®

Product Brief

BCM85834-DIE

5-nm CMOS 800G (4:4) PAM-4 Transceiver PHY with Integrated VCSEL Laser Driver



Key Features

- Integrated laser driver to directly drive 200G per lane vertical-cavity surface-emitting laser (VCSEL)
- Best-in-class performance and module power with the Broadcom 200G per lane (VCSEL)
- Supports various chip modes:
  - 4:4 retimer mode with client 212.5G PAM-4 and line 212.5G PAM-4
  - Backward 4:4 retimer modes comparability to 106G/lane and 53G/lane Ethernet and HDR/NDR interface
- Client side supports PCB loss for switch-to-module pluggable interface
- Supports client-side crossbar for flexible routing
- Supports FEC monitoring in the repeater modes with a subsampling feature available for reduced power

Overview

The Broadcom® BCM85834-DIE is the industry's first 200G/lane PAM-4 PHY with integrated VCSEL laser driver to enable 1.6T MMF pluggable transceivers for next-generation AI/ML clusters and Ethernet networking of hyperscale data centers.

The BCM85834-DIE leverages the market-leading 5-nm 200G/lane PAM-4 PHY transceiver technology platform, already proven with the BCM85828-DIE, and adds additional advanced equalization capability specifically design for MM links. The advanced Broadcom DSP technology and equalization techniques compensate for MM optical impairments while delivering best-in-class module BER performance.

The BCM85834-DIE integrates the VCSEL laser driver to not only simplify the transceiver design, but also delivers the best-in-class transmitter performance and module power consumption.

The BCM85834-DIE incorporates a highly differentiated feature set, including the following line-side FEC options:

- Bypass mode
- Segmented mode

The BCM85834-DIE client-side SerDes, fully interoperable with Broadcom switch silicon, provides an unmatched competitive advantage to the market.

The BCM85834-DIE is a monolithic 800G (4:4) PAM-4 DSP. It converts four lanes of 212.5 Gb/s from the client side into four lanes of 212.5 Gb/s to drive next-generation high-density MM optical PAM-4 links inside an octal small form-factor pluggable (OSFP) module.

The BCM85834-DIE also features crossbar on the client 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.)

- Fourteen-tap TX FIR support on both line and client sides
- IEEE 802.3cd standard-compliant KP4 and end-to-end FEC bypass operation: 800G/400G/200G/100G KP4 FEC
- Lowest-power 5-nm CMOS design
- Lowest latency solution (~80 ns)

Applications

- 200G/lane VCSEL based 1.6T OSFP transceiver for InfiniBand XDR in AI/ML clusters
- 200G/lane VCSEL based 1.6T/800G OSFP transceiver for Ethernet switch ASIC in hyperscale data centers

Figure 1: Block Diagram

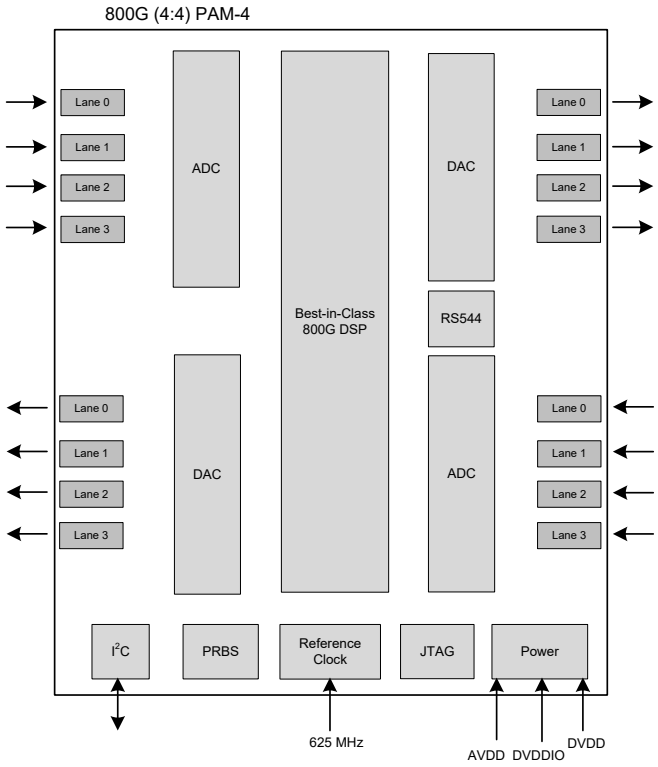
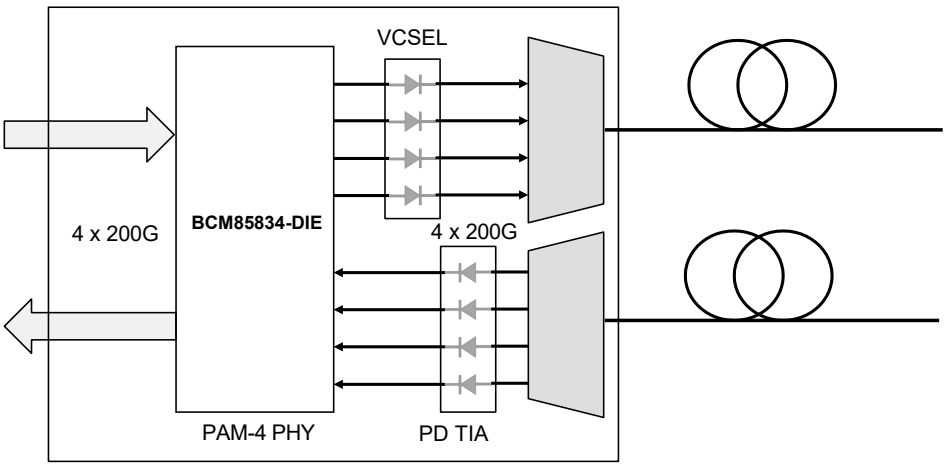


Figure 2: Application Diagram



For more product information: broadcom.com

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