Product Brief

Marvell® Petra 800G PAM4 Gearbox DSP

PAM4 DSP for pluggable 8x100G to 4x200G optical transceiver applications

P/N MV-CD432CL3WL-A0-T

Overview

The Marvell® Petra PAM4 DSP is a gearbox featuring an 8x100G/channel PAM4 host electrical interface, retimed and mapped to a 4x200G/channel PAM4 output through and integrated differential driver to directly drive silicon photonics and differential EML optics.

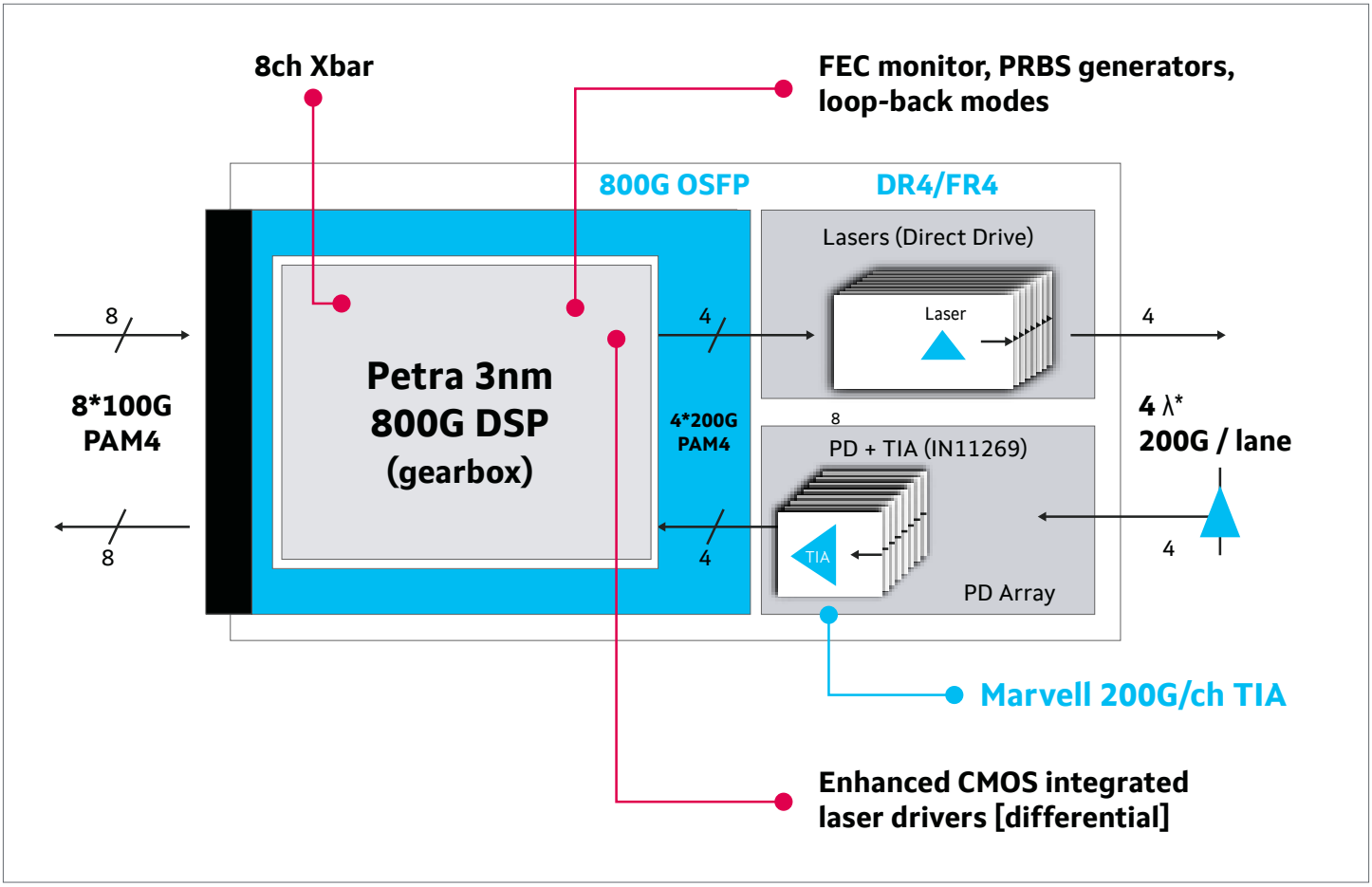
Optical transceiver modules based on the Petra DSP bridge the speed difference between 100G/channel-based switches and NICs to 200G/channel optical interconnects to enable AI, cloud and high-performance computing use cases. The Petra DSP is manufactured using advanced 3nm process technology that delivers rapid time-to-market with power efficiency.

The direct drive capabilities of the DSP simplify manufacturing complexity while saving additional power and cost, making the Petra device ideal for 800G DR4/FR4 modules.

The Petra DSP also integrates advanced diagnostic features including SNR performance monitoring, histograms, and FFE taps. The DSP also adds PRBS generators and supports shallow loopback for both the line and host interfaces.

The Petra DSP supports multiple industry standard protocols and incorporates concatenated forward error correction (FEC) to provide additional-FEC bit error rate (BER) margin for high-volume deployment within the data center.

Block Diagram



Key Features

Features	Benefits
8x100Gbps <-> 4x200Gbps PAM4 DSP	• Bridges the gap between 100G per lane host devices and 200G per lane optical. • Enables host devices to connect to high-speed optical networks.
Integration of enhanced optical modular drivers	• Reduces transceiver design complexity while delivering cost and power savings.
All lanes independent to support breakout applications	• Enables 1x800G, 2x400G, and 4x200G combinations.
Full data and clock crossbars on egress and ingress for network flexibility	• Enables board routing flexibility for high-speed I/Os.
3nm process enabling <13W 800G using four optical channels/lambdas	• Low power 800G for high-volume data center deployment.

Target Applications

- 800G OSFP modules
- Single-mode 800G DR4/FR4 optical transceivers

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