MARVELL™

Marvell® Alaska® A 800G PAM4 DSP for Active Electrical Cable (AEC)

High Performance, Low Power Retimer family

Overview

The Marvell Alaska A MV-CHA180C0C 800G is a PAM4 DSP retimer for 800G Active Electrical Cable (AEC) application, optimized for Switch to Switch and Switch to Server connectivity inside next generation cloud data center, high-performance computing and AI systems.
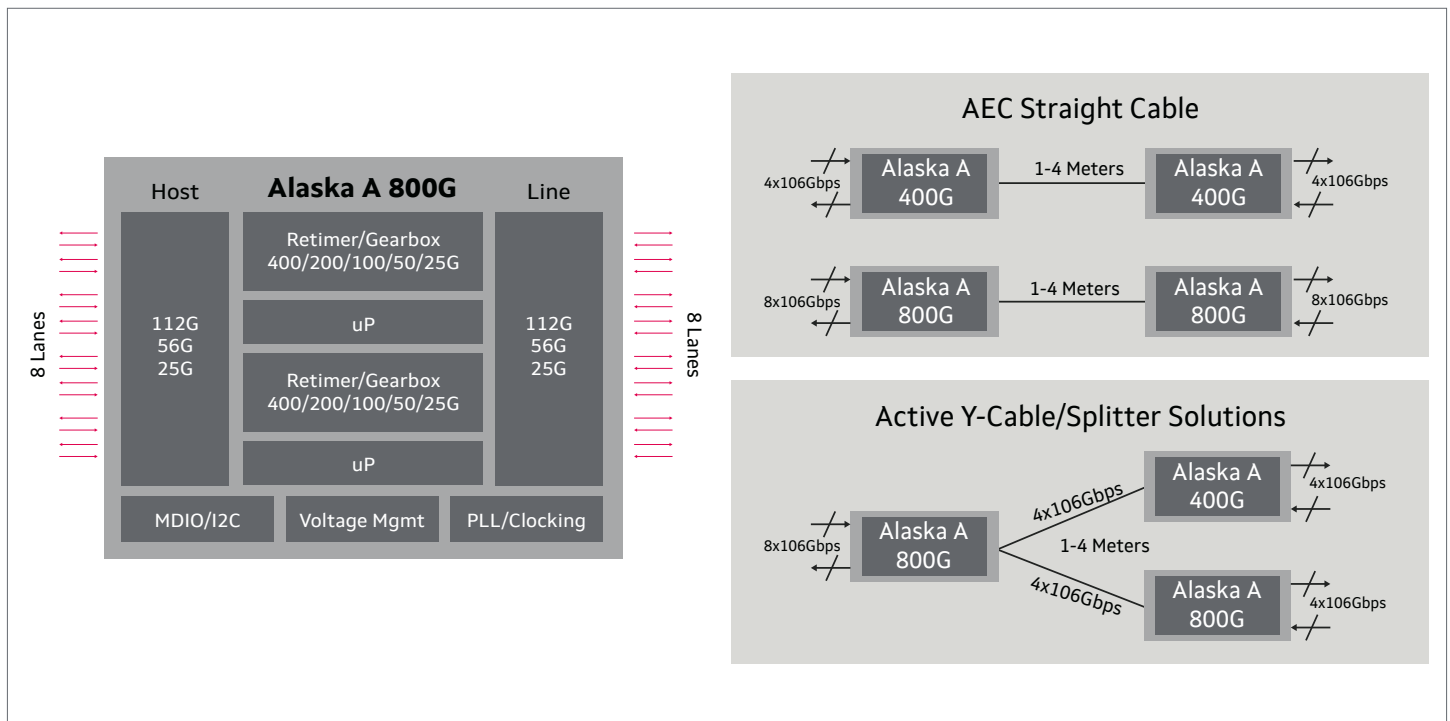
Alaska A 800G is a retimer device which utilizes a 112G Gbps PAM4 DSP SERDES. There are 8-host and 8-line ports with each receiver port being able to recover 112Gbps PAM-4 signals and transmit to partnered TX. It can provide up to 800G (8 x 112G) full duplex mission mode traffic.

The Alaska A product family also includes a 400G retimer, providing optimized devices for both Straight and Split AEC applications (see figure).

Alaska A supports multiple industry standard protocols up to 112Gbs for both host and lines sides (IEEE and CEI). It includes IEEE compliant Auto Negotiation and Link Training, for automatic tuning of the host link between the Switch/Server ASIC to the AEC, to maximize reach and link margins for high density switch designs.

The Alaska A retimer family is equipped with an industry leading PAM4 Digital Signal Processing (DSP) core for optimal performance with greater than 40dB loss on both the Line and Host interfaces. Alaska A 800G device includes several performance monitoring features including SNR, Eye histogram, for both Line and Host side interfaces. Additionally, both Host and Line interface support loopbacks and PRBS generator/checker for diagnostic operations.

Alaska A Block Diagram and AEC Applications

Key Features

Features	Benefits
8x100G Full duplex	• Optimized for 800G AEC cables in QSFP-DD and OSFP form factors
DSP based SerDes	• Support for >40dB Loss • Enables thinner and longer reach cablesModular solution optimizing for different reach applications up to >35dB Loss • Significant margin to fCompliant with all major IEEE (802.3ck, etc) and CEI Standards for 100G and 50G PAM4 operation (VSR, MR, LR)
Data rates	• 100G PAM4 • 50G PAM4 • 25 NRZ • Provides support for gearboxing and legacy interfaces
Support for IEEE Auto Negotiation and Training protocol	• Automatic tuning of Serdes parameters to maximize link margins • Seamless interoperability with standards- compliant devices from other vendors
PRBS generation capabilities and eye monitoring capability on all high-speed interfaces	• Comprehensive test and debug capabilities
Package	• 12mm x 14mm BGA, 0.5mm pitch

Target Applications

• 800G Active Electrical Cable (AEC)