

Marvell® Alaska® A 400G PAM4 DSP for Active Electrical Cable (AEC)

High Performance, Low Power Retimer family

Overview

The Marvell Alaska A MV-CHA140C0C 400G is a PAM4 DSP retimer for 400G/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.

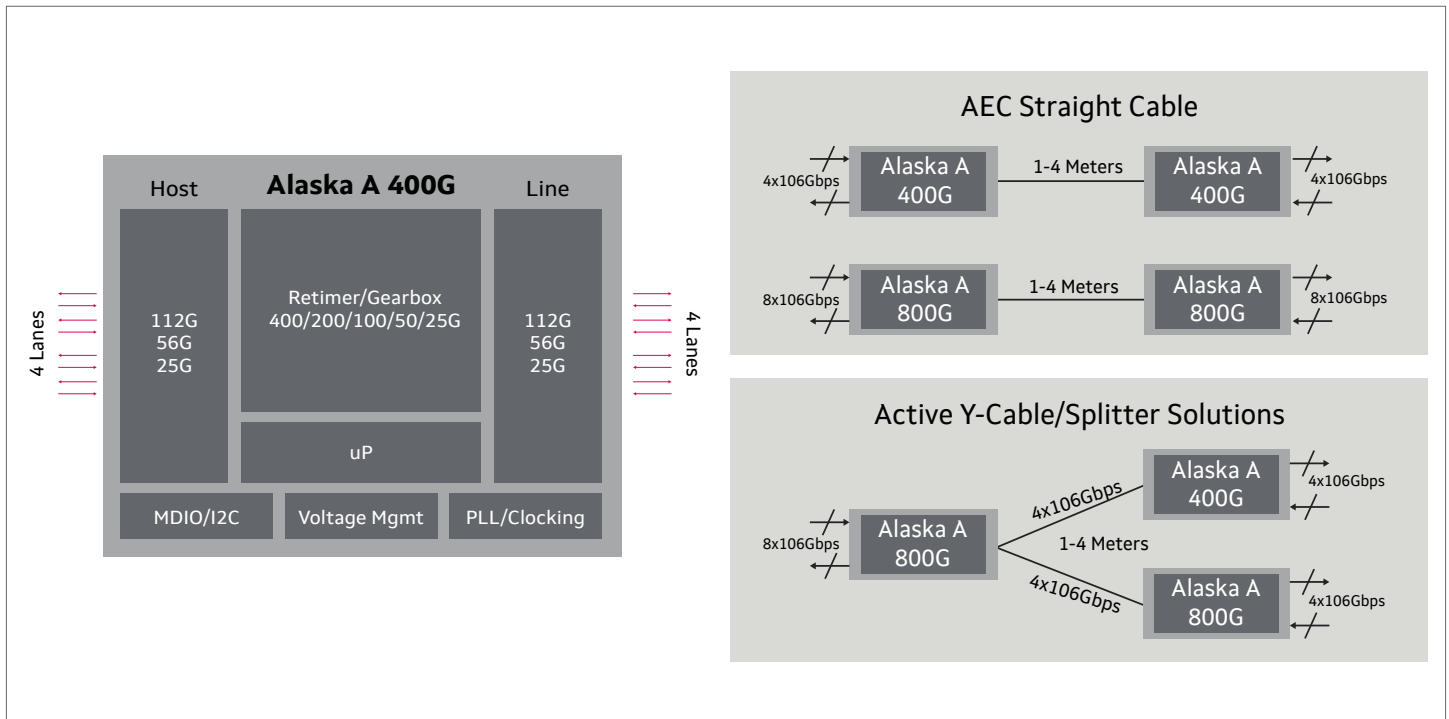
Alaska A 400G is a retimer device which utilizes a 112G Gbps PAM4 DSP SERDES. There are 4-host and 4-line ports with each receiver port being able to recover 112Gbps PAM-4 signals and transmit to partnered TX. It can provide up to 400G (4 x 112G) full duplex mission mode traffic.

The Alaska A product family also includes a 800G retimer, providing optimized devices for both Straight and Split AEC applications (see figure).

Alaska A supports multiple industry standard protocols up to 112Gbps for both host and line 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 400G 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
4x100G Full duplex	<ul style="list-style-type: none">Optimized for 400G/800G AEC cables in QSFP-DD and OSFP form factors
DSP based SerDes	<ul style="list-style-type: none">Support for >40dB LossEnables thinner and longer reach cableSignificant margin to IEEE and CEI Standards for 100G and 50G PAM4 operation
Data rates	<ul style="list-style-type: none">100G PAM450G PAM425 NRZProvides support for gearboxing and legacy interfaces
Support for IEEE Auto Negotiation and Training protocol	<ul style="list-style-type: none">Automatic tuning of Serdes parameters to maximize link marginsSeamless interoperability with standards-compliant devices from other vendors
PRBS generation capabilities and eye monitoring capability on all high-speed interfaces	<ul style="list-style-type: none">Comprehensive test and debug capabilities
Package	<ul style="list-style-type: none">10mm x 13 mm BGA, 0.5mm pitch

Target Applications

- 400G/800G Active Electrical Cable (AEC) Cable (AEC)



To deliver the data infrastructure technology that connects the world, we're building solutions on the most powerful foundation: our partnerships with our customers. Trusted by the world's leading technology companies for 25 years, we move, store, process and secure the world's data with semiconductor solutions designed for our customers' current needs and future ambitions. Through a process of deep collaboration and transparency, we're ultimately changing the way tomorrow's enterprise, cloud, automotive, and carrier architectures transform—for the better.

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