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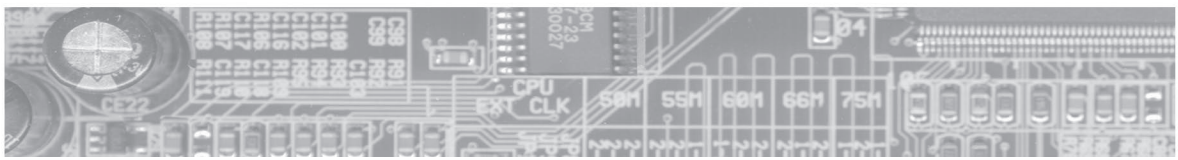
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Marvell Expands Connectivity Portfolio With New PCIe Retimer Product Line to Scale Compute Fabrics of Accelerated Infrastructure

- *Built on Marvell industry-leading 5nm PAM4 technology, new Alaska® P PCIe retimer product line scales connections between AI accelerators, GPUs, CPUs and other components inside servers.*
- *Higher compute performance for AI drives requirement for a new category of connectivity devices.*
- *Industry's lowest power PCIe Gen 6 16-lane retimer is now sampling.*

Santa Clara, California (May 30, 2024) – Marvell (NASDAQ:MRVL), a leader in data infrastructure semiconductor solutions, today expanded its connectivity portfolio with the launch of the new Alaska® P PCIe retimer product line built to scale data center compute fabrics inside accelerated servers, general-purpose servers, CXL systems and disaggregated infrastructure. The first two products, 8- and 16-lane PCIe Gen 6 retimers, connect AI accelerators, GPUs, CPUs and other components inside server systems.

Artificial intelligence (AI) and machine learning (ML) applications are driving data flows and connections inside server systems at significantly higher bandwidth, necessitating PCIe retimers to meet the required connection distances at faster speeds. PCIe is the industry standard for inside-server-system connections between AI accelerators, GPUs, CPUs and other server components. AI models are doubling their computation requirements every six months and are now the primary driver of the PCIe roadmap, with PCIe Gen 6 becoming a requirement.

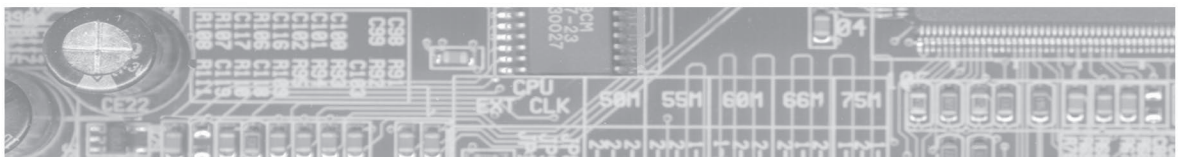


PCIe Gen 6, which operates at 64 gigatransfers-per-second (GT/s), is the first PCIe standard to use four-level pulse-amplitude modulation (PAM4) signaling, displacing the non-return to zero (NRZ) modulation used for the last 20 years. The higher bandwidth and faster data rate limit the physical reach signals can travel reliably, reducing the distance connections can span. Marvell® Alaska P retimers address this by compensating for the signal degradations and regenerating the signal to deliver reliable communication over the physical distances required for connections between GPUs and CPUs within an AI server, between GPUs on different boards, or between CPUs and a pool of shared memory enabled by CXL, among other use cases. The retimers can be used on AI accelerator baseboards, server motherboards, riser cards, or integrated into active electrical cables (PCIe AEC) and active optical cables (PCIe AOC) for emerging multi-rack server system architectures.

"Signal distance is a real dilemma for service providers. We estimate over 75% of cloud and AI servers shipping two years from now will rely on retimers and these servers will contain multiple retimers. An eight GPU server might contain 16 or more of these devices. Retimers will even percolate into enterprise servers," said Alan Weckel, co-founder of 650 Group. "Marvell's extensive experience in PAM4 technology positions the company well to drive the evolution of this emerging market."

Extending PAM4 Leadership

Marvell pioneered PAM4 technology over a decade ago and leads the industry in PAM4 interconnect shipments, enabling data center backend and frontend networks. Today, most of these data center optical interconnects are based on PAM4 technology. The new Alaska P PCIe retimer product line extends the industry-leading Marvell PAM4 connectivity portfolio beyond Ethernet and InfiniBand interconnects into copper and optical PCIe, CXL and proprietary compute fabric links. The product line addresses connections inside AI and general-purpose server systems, expanding the addressable market for Marvell.



Leveraging its PAM4 SerDes technology leadership combined with its data infrastructure IP platform, Marvell has created a state-of-the-art connectivity platform that is enabling leading cloud data center operators to optimize their infrastructure for their unique architectures and workloads. In 2023, Marvell introduced Nova, the industry's first 1.6T PAM4 DSP. Marvell has also introduced integrated PAM4 DSPs (Perseus) and DSPs optimized for efficiency (Spica Gen2-T) to serve the broadening spectrum of cloud data center link types and use cases. PAM4 technology is also the foundation of the Marvell Alaska A DSP chips optimized for active electrical cable (AEC) applications.

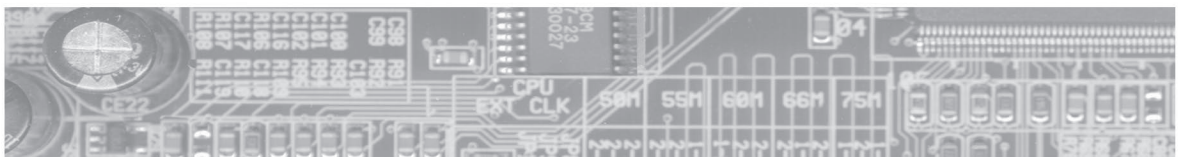
Alaska P PCIe Retimer Benefits and Features

With typical power consumption of 10 watts, the 5nm 16-lane PCIe 6 retimer operates at the lowest power in the industry today. Available in 8- and 16-lane configurations, the Alaska P PCIe devices can compensate for 40dB of channel loss compared to the spec of 32dB at PCIe 6.

The retimers can be used for on-board or cable copper connections or combined with electrical-to-optical components to produce optical PCIe modules, addressing different cloud customer data center architectures. Marvell is working with cable and optical module partners to integrate the products into cloud-optimized interconnect solutions for different data center customer applications.

Key features include:

- Compatible with PCI Express® Gen 6/5/4/3/2/1 and Compute Express Link™ 3/2/1.1
- Industry-leading PAM4 SerDes performance
- Low-latency mode for cache-coherent links
- Industry's lowest power consumption (10W PCIe 6 x16)
- Industry-standard x16 and x8 footprints



Advanced telemetry and diagnostics: in-band FEC monitoring, out-of-band SerDes eye monitoring, embedded logic analyzer and software suite for fleet management in large-scale deployments

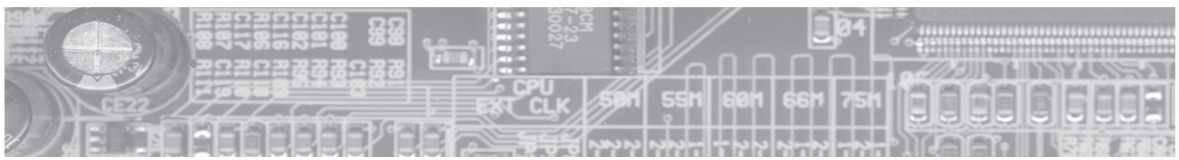
"Marvell is the industry leader for data center-to-data center, switch-to-switch, rack-to-rack, server-to-switch, and server-to-server connectivity. We are now entering the market for compute fabrics as PCIe and CXL go through an inflection point, migrating from NRZ to PAM4 technology," said Venu Balasubramonian, vice president of product marketing, Connectivity Business Unit at Marvell. "Marvell is building on more than 10 years of in-house expertise in PAM4 technology and our industry-leading 5nm PAM4 IP portfolio to enable this transition. Our Alaska P PCIe retimer family is an important addition to the comprehensive Marvell accelerated infrastructure portfolio."

Strong Ecosystem Support

Raghu Nambiar, corporate vice president, Data Center Ecosystems and Solutions, AMD said: "AMD EPYC data center CPUs and AMD Instinct GPUs are essential to delivering the leadership performance needed for the most demanding and business critical applications. Our close collaboration with Marvell on PCIe technologies ensures our customers' platforms continue to meet the increased connectivity demands of next-generation AI and HPC workloads."

Dermot O'Driscoll, vice president of product solutions, Infrastructure Line of Business, Arm said: "As AI and ML applications consume more power, there is a critical need for efficient interconnect technology with faster data rates. Marvell's expanding portfolio will help system designers deliver cloud-optimized Arm Neoverse-powered compute solutions with the latest in PCIe connectivity and marks a new chapter in our long history of collaboration to advance high-performance, efficient computing."

Osa Mok, chief marketing officer, InnoLight said: "Data center operators need new solutions to support evolving workloads and architectures. For instance, customers are looking for PCIe optical cables for longer reach large-scale AI accelerator interconnect



and CXL disaggregation infrastructure where electrical connectivity reaches its limits. InnoLight and Marvell are leveraging our strong optical connectivity expertise and collaboration history to move the optical PCIe ecosystem forward."

Jim Pappas, director, Technology Initiatives, Intel said: "AI workloads are driving Intel computing platforms to support PCIe 6 with 64 GT/s data rate to optimize performance and utilization. PCIe retimers are critical to help deliver these platforms. PCIe retimer products such as those from Marvell can enable our platforms to meet our customers' ever-increasing performance requirements of AI and other high-performance compute workloads."

Vishwas Rao, vice president of product management, Data and Devices, TE said: "Following our successful PCIe 6 DAC cable demo with Marvell in 2023, TE Connectivity applauds Marvell's PCIe retimer product portfolio launch. The Alaska P PCIe retimer product line together with TE's advanced cabling solution will provide data center operators a powerful combination for meeting the performance requirements of mission-critical data center applications."

Availability and Pricing

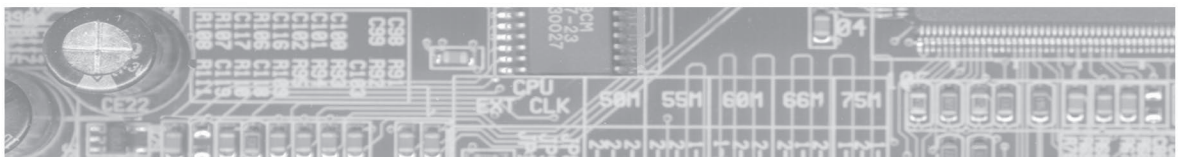
The Marvell Alaska P PCIe 16-lane retimer is sampling now to customers and ecosystem partners; the 8-lane product will sample next quarter. For more information, visit here. More Information about availability, samples and pricing, please visit email: sales.europe@macnica.com.

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About Marvell

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 over 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.

For further information, please visit website https://www.marvell.com.

About Macnica ATD Europe GmbH

Macnica's ATD Europe GmbH, (former Macnica GmbH), was originally established in the UK in 2006, and moved to Germany in July 2008, to increase efficacy of its service for European customers.

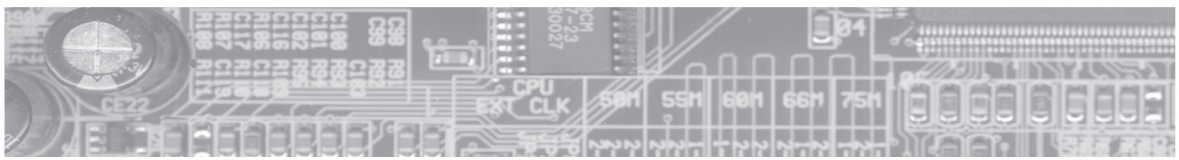
By it's acquisition of the Munich based company Scantec Mikroelektronik in 2014 Macnica Europe formed a powerful semiconductor distribution with headquarter in Ingolstadt and offices in Munich, Regensburg, Milton Keynes (UK) and Warsaw offering an attractive and competitive portfolio of highly sophisticated devices.

Macnica provides end to end support from design-in to production through its global service network to its customers, regardless of the final destination of the product shipment to customers' manufacturing locations.

About Macnica ATD Europe S.A.S.

Founded in 1990 as ATD Electronique, Macnica ATD Europe headquarter offers innovative components dedicated to imaging applications for the European market. Its product portfolio includes: image sensors (CCD, CMOS, InGaAs, Thermal etc.), optics, interface circuits, FPGA & IPs, imaging processors, cables and OLED microdisplays.

It also covers development tools and design services enabling fast and efficient realization of new high-performance camera systems for markets such as machine vision, medical, life sciences, surveillance, automotive and others. After the acquisition of the company by Macnica Inc. as of October 1, 2020 the company operates under the name Macnica ATD Europe.



About Macnica, Inc.

Macnica was established in 1972 as a semiconductor distribution company headquartered in Yokohama, Japan, and has over 85 sales offices worldwide in eastern Asia, Europe and the USA. Total number of employees is over 3,900 and its consolidated revenue for fiscal 2021 was approximately US$ 7.6 B.

Macnica is famous for having an excellent engineering team of more than 900 application support engineers, IC designers and software developers with strong focus on providing technical support for its customers including custom design services. Macnica is continuing to extend its presence globally by having successful partners in strategic areas in the electronics market.

More information about Macnica: https://www.macnica.com/global/en/home.html.

