

Alaska® P Gen6 16L PCIe Retimer

Low-power, low-latency, 16-lane PCIe Gen 6/CXL 3 protocol-aware retimer
P/N MV-CHP10160

Overview

The Alaska® P Gen6 16L PCIe Retimer (MV-CHP10160) is a 16-lane, low-power, low-latency, fully PCI Express® Gen 6.x-compliant device with leading I/O performance. It is capable of driving sixteen lanes of maximum 64 Gbps signal, extending the reach between PCIe root complex (RC) and end point (EP).

The MV-CHP10160 is optimized for low-latency applications with Compute Express Link™ 3.x protocol and its long-range SerDes on both sides (upstream and downstream) support transmission over high-loss channels.

The MV-CHP10160 can operate at 64 GT/s, 32 GT/s, 16 GT/s, 8 GT/s, 5 GT/s, and 2.5 GT/s PCIe Data Rate with automatic link equalization and training per PCIe specifications.

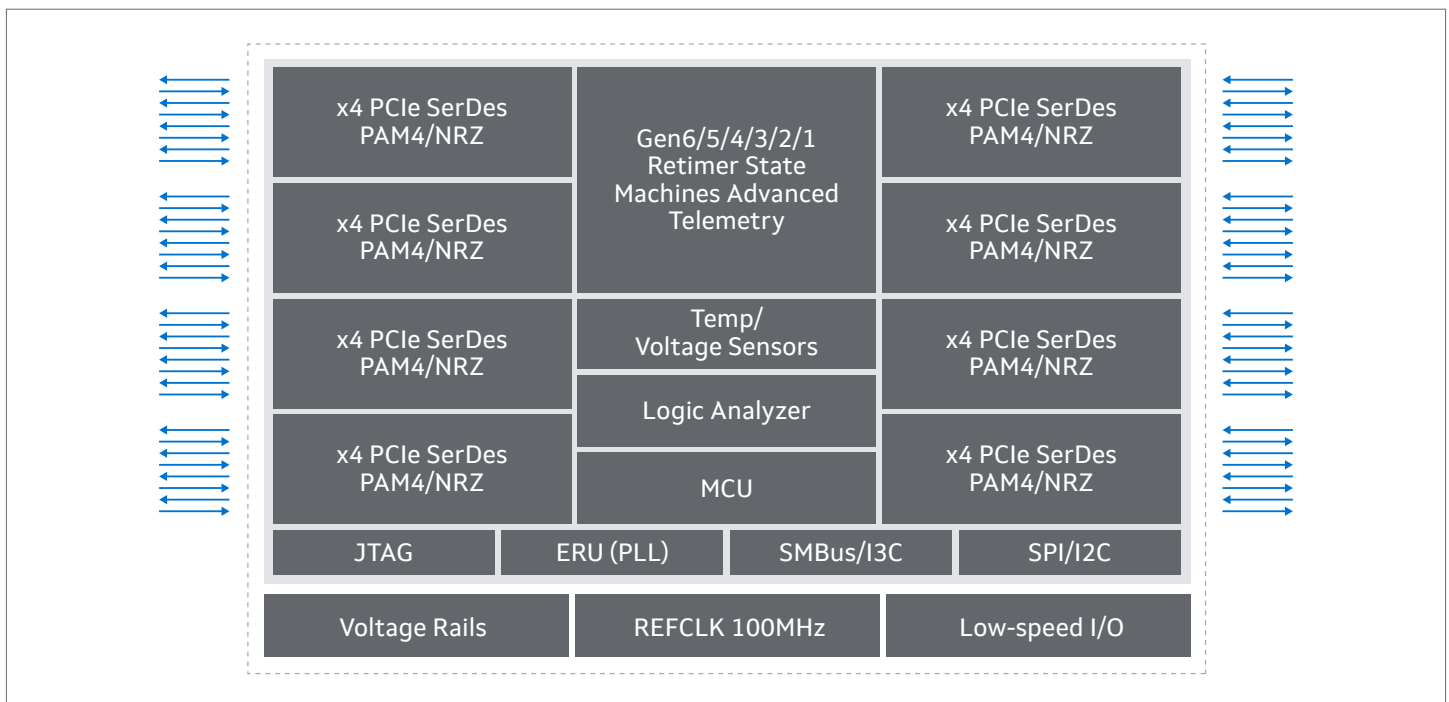
The MV-CHP10160 exceeds PCI-SIG electrical specifications with >32 dB Insertion Loss (IL) at 64 GT/s (PCIe 6) and >36 dB IL at 32 GT/s (PCIe 5). The device enables customers to scale compute fabric inside accelerated systems, general-purpose servers, and cache-coherent disaggregated infrastructure.

The MV-CHP10160 follows Intel PCIe 6.0 Retimer Supplemental Footprint and enables gen-to-gen design compatibility. The device is developed under advanced process node and provides significant power efficiency.

The MV-CHP10160 supports flexible link bifurcation, with one x16, two x8, four x4, eight x2 and more combinations. The device takes PCIe base specification-compliant 100 MHz clock input and provides reference clock output to downstream devices. Common clock, SRIS, and SRNS are all supported clocking systems.

The MV-CHP10160 features advanced in-band and out-of-band diagnostics and telemetry functionality, supporting large-scale fleet management. It can be configured through SMBus/I3C or EEPROM/SPI flash for ease of adoption.

Block Diagram



Key Features

Features	Benefits
Standard and compatibility	<ul style="list-style-type: none">Compliant with PCI-SIG specifications for PCI Express® Gen-6.x/5/4/3/2/1Compliant with Compute Express Link™ 3.x/2.0/1.1Support cache-coherent application with low-latency mode32 bi-directional PCIe lanes; 16-lane upstream and 16-lane downstreamAll lanes can operate at 64 GT/s, 32 GT/s, 16 GT/s, 8 GT/s, 5 GT/s, and 2.5 GT/s data ratesFlexible link bifurcation from 1 x16, 2 x8, 4 x4, and up to 8 x2 lanes per linkPCIe hot-add and hot-removal of end point devices independently on each link or partition
I/O performance	<ul style="list-style-type: none">First Bit Error Rate (FBER) better than 1E-6Support channel IL budget of >32 dB for PCIe 6, >36 dB for PCIe 5 at 16 GHz Nyquist frequencyAdvanced equalization features support various channel topologies
Clocking	<ul style="list-style-type: none">Support Common Clock, SRIS, and SRNSPCIe base specification compliant 100 MHz clock inputHCSL reference clock output to downstream devices
Management	<ul style="list-style-type: none">I2C/SMBus-compatible management interface with additional I3C featuresOn-chip voltage and thermal sensors
Design information	<ul style="list-style-type: none">Three external power railsPackage options for integrated DC-blocking capacitorsIBIS-AMI model for simulationDevice configuration through SMBus/I3C, EEPROM or SPI FlashGPIO for quick indications of link status and functional status
Debug and diagnostics	<ul style="list-style-type: none">Advanced in-band and out-of-band diagnostics and telemetry featuresIEEE 1149.6 AC-JTAG boundary scanEmbedded logic analyzer and history FIFO
Package characteristics	<ul style="list-style-type: none">MV-CHP10160: 8.9 mm × 22.8 mm HFETBGA package with minimum 0.5 mm ball pitch

Target Applications

- Motherboard PCIe/CXL trace-length extension
- Compute fabric of GPU/AI system
- PCIe riser card and backplane
- NVMe SSD storage and CXL disaggregated memory
- PCIe active electrical cable (PCIe 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 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.

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