

# XpressConnect™ PCIe® Gen 6 and CXL™ Retimer Family

PM8691



## Summary

XpressConnect™ PCIe® 6.0 / Compute Express Link™ 3.0/3.1 retimer is engineered to unlock the full potential of next-generation high-performance computing, AI acceleration and hyperscale data center architectures.

Built to support blazing-fast 64 GT/s data rates, it restores signal integrity across long PCB traces, cables and connectors—effectively extending PCIe reach without compromising latency or reliability.

XpressConnect Retimers provide best-in-class signal conditioning for PCI Express 6.0 / CXL3.0/3.1 interconnects and support Intel's® PCIe 6.0 Retimer Supplemental Features and Standard BGA Footprint specification. Xpress-Connect Retimers extends the reach of PCIe Gen 6 electrical signals with minimal impact to latency to enable the most demanding computational workloads in artificial intel-ligence, machine learning, communication systems and high-performance computing applications. XpressConnect Retimers support x4/x8/x16 bifurcation to connect to a wide range of PCIe and CXL devices.

XpressConnect Retimers delivers the industry's lowest latency retimer solution with over 80% lower latency than the PCIe specification to maximize performance for PCIe and CXL devices. XpressConnect Retimers includes comprehensive diagnostics features, multiple configuration options, a simple management interface and low power to reduce total cost of ownership during design, bring-up, validation and production.

XpressConnect Retimers are ideal for enterprise servers, PCIe NVMe enclosures, all Flash NVMe arrays, PCIe fabrics, CXL accelerator/memory solutions, and other applications that require low latency, low power and secure PCIe and CXL retiming.

Backed by Microchip's proven high-speed connectivity expertise, long product lifecycles and robust engineering support, it delivers a future-ready solution for scalable, bandwidth-hungry platforms.

## Features

### PCIe and CXL Features

- Intel PCIe 6.0 Retimer Supplemental Features and Standard BGA Footprint Specification
- PCIe Express 3.0/4.0/5.0/6.0
- Compute Express Link 3.0/3.1
- >80% lower latency than PCIe specification
- Bifurcation/link subdivision (x4/x8/x16)
- Automatic detection of pseudo port orientation
- Lane reversal and lane polarity inversion
- Passive copper and active optical cable support
- Receiver detection bypass
- Integrated AC-Coupling capacitors to reduce design size and simplify PCB routing
- Firmware storage using SPI Flash or EEPROM
- Support for the PCIe® Low-Latency Retimer Specification
- Lane Polarity Inversion

### Diagnostics and Debug

- ChipLink™ Diagnostics Tool compatible with Windows®, Linux® and Mac® OS X
- Real-time eye capture
- LTSSM logs and triggers
- PCIe link EQ logs
- Pattern generation, detection and error injection
- Receiver lane margining
- PCIe loopback
- Real-time error injection
- PHY-level error counters and TX/RX settings

## Management and Configuration

- Dynamic configuration via BMC to SMBus
- Configuration through SMBus or I2C EEPROM
- Pin straps to select configuration settings
- Status pins for visual indication of device status
- Analog preset tuning

## Clocking and Power

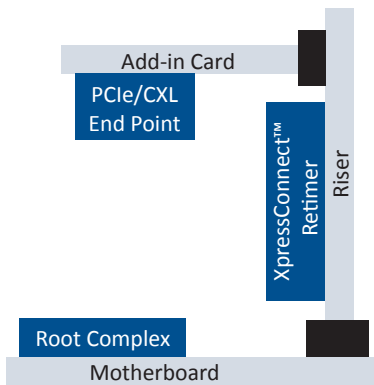
- Common, SRIS and SRNS clocking
- One input and one output PCIe reference clock
- Asynchronous upstream/downstream clocking
- L1 PM sub states (Link power management)
- Output REFCLK re-referenced to TX serdes PLL

## Security

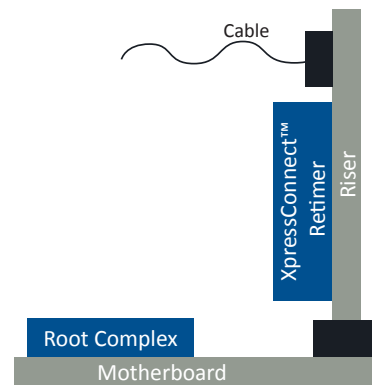
- Embedded security features
- Secure boot
- Advanced security using Caliptra 2.0

## Example Application

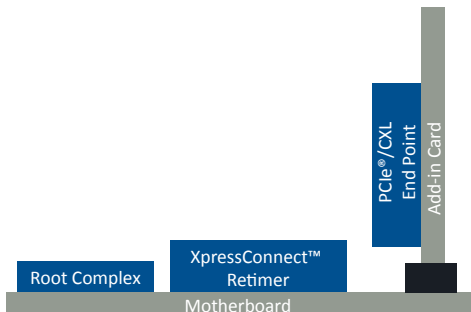
### Retimer Riser With PCIe or CXL Add-in Card



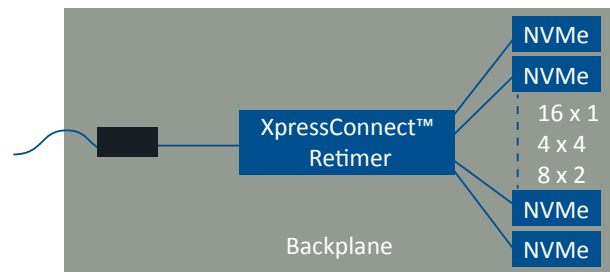
### Retimer Riser for Cabled PCIe Solutions



### Retimer on Platform With PCIe or CXL Add-in Card



### Retimer on NVMe Backplane



## Evaluation Kit

The XpressConnect Evaluation Kit includes the RTM-C NxG6 device. Microchip Total System Solution (TSS) provides all the key components for the most efficient and high performance BOM.

## Ordering Information

Product	Lanes	Width	PCIe	CXL	Max Rate	Package	Ordering No.
RTM-C 16xG6	32	x16	6.0	3.0/3/1	64 GT/s	8.9 x 22.8 mm	PM8691A-FEIP