# XpressConnect<sup>™</sup> PCle<sup>®</sup> Gen 5 and CXL<sup>™</sup> Retimer Family PM8658, PM8659

### Summary

XpressConnect<sup>™</sup> Retimers provide best-in-class signal conditioning for PCI Express<sup>®</sup> 5.0 and Compute Express Link<sup>™</sup> 1.1/2.0 interconnects and support Intel's<sup>®</sup> PCIe 5.0 Retimer Supplemental Features and Standard BGA Footprint specification. Xpress-Connect Retimers triple the reach of PCIe Gen 5 electrical signals with minimal impact to latency to enable the most demanding computational workloads in artificial intelligence, machine learning, communication systems and high-performance computing applications.

XpressConnect Retimers support x1/x2/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.

### **Features**

#### PCIe and CXL Features

- Intel PCIe 5.0 Retimer Supplemental Features and Standard BGA Footprint Specification
- PCIe Express 3.0/4.0/5.0
- Compute Express Link 1.1/2.0
- >80% lower latency than PCle specification
- Bifurcation/link subdivision (x1/x2/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

#### **Diagnostics and Debug**

- ChipLink<sup>™</sup> Diagnostics Tool compatible with Windows<sup>®</sup>, Linux<sup>®</sup> and Mac<sup>®</sup> 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 I<sup>2</sup>C 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)

#### Security

• Embedded security features

### **Example Application**

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



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



### Retimer Riser for Cabled PCIe Solutions



### **Retimer on NVMe Backplane**



### **Evaluation Kit**

The XpressConnect Evaluation Kit includes the RTM-C NxG5 device with PCIe Gen 5 CEM edge and slot connectors.

### **Ordering Information**

Product	Lanes	Width	PCle	CXL	Max Rate	Package	Ordering No.	Kit Ordering No.
RTM-C 8xG5	16	x8	5.0	1.1/2.0	32 GT/s	8.5 x 13.4 mm	PM8658A-F4EIP	PM8658-KIT
RTM-C 16xG5	32	x16	5.0	1.1/2.0	32 GT/s	8.9 x 22.8 mm	PM8659A-F4EIP	PM8659-KIT

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