PCIe®/CXL® Retimers
Toucan
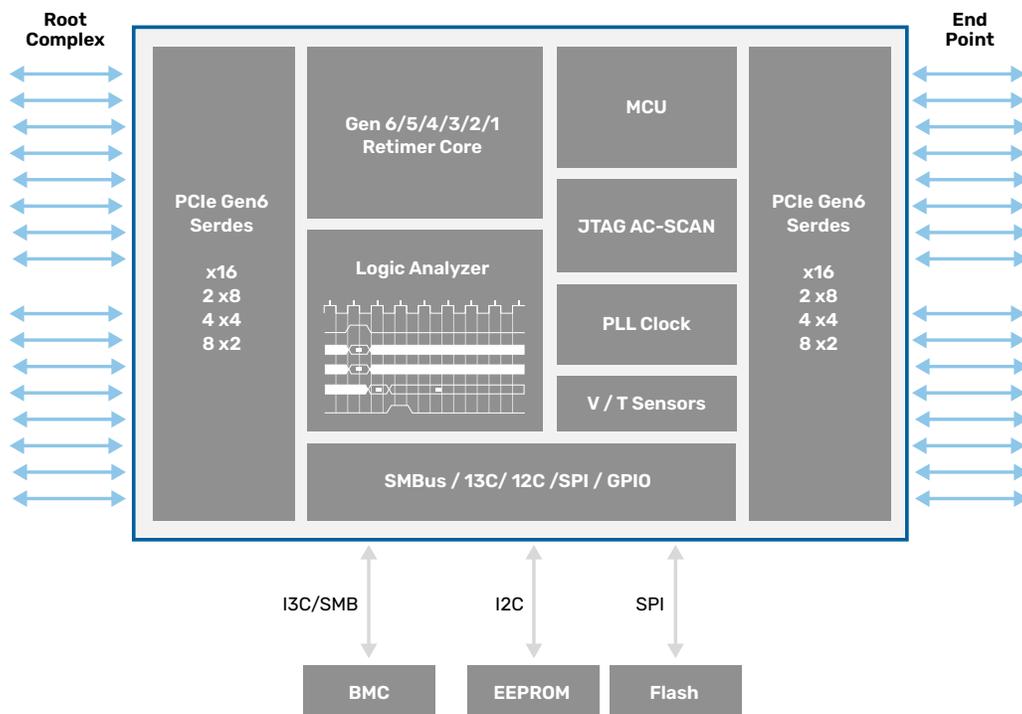
PCIe 6.x/CXL 3.x 8-lane/16-lane Retimer

The Credo Toucan PCIe Gen6 / CXL 3.x Retimer is a low-power, low-latency, protocol-aware, fully PCI Express Gen6.x compliant device with leading I/O performance. It can drive 16 lanes of maximum 64 GT/s signal, extending the reach between PCIe root complex (RC) and end point (EP) in high-loss server environments. Toucan is backward compatible with earlier PCIe generations and is optimized for AI accelerator platforms, scale-up GPU fabrics, and CXL-based memory expansion. The device integrates Credo's DSP-based SerDes architecture along with advanced diagnostics, telemetry, and security features to enable rapid bring-up and reliable operation for our customers.

Applications

- AI GPU fabrics and compute nodes
- PCIe riser cards and backplane for compute, network, memory and storage
- PCIe active electrical cable (PCIe AEC)
- PCIe Storage Servers

Functional Block Diagram

Key Features

Features	Details
Core Standard Features	• Compliant with PCI-SIG specifications for PCI Express® Gen-6.x/5/4/3/2/1 • Compliant with Compute Express Link™ 3.x/2.0/1.1 • Support cache-coherent applications with low-latency mode • 32 bi-directional PCIe lanes; 16-lane upstream and 16-lane downstream • All 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 rates • Flexible link bifurcation from 1x16, 2x8, 4x4, 8x2 lanes per link and more • Supports L0p, L1 and L1 substates
Performance	• First Bit Error Rate (FBER) before FEC better than 1E-9 • Support channel IL budget of >45 dB for PCIe 6, at 16 GHz Nyquist frequency • Advanced equalization features support various channel topologies • 6.5ns latency in low latency mode • Robust Tx training
Clocking	• Support Common Clock, SRIS, and SRNS • PCIe base specification compliant 100 MHz clock input
Design information	• Three external power rails • Package options for Integrated AC-coupling capacitors • Device configuration through SMBus/I3C, EEPROM or SPI Flash • IBIS-AMI model for simulation
Management	• I2C/SMBus-compatible management interface with additional I3C features • On-chip voltage and thermal sensors
Debug and diagnostics	• Hitless Firmware Updates • Robust diagnostic and telemetry capabilities with PILOT (Predictive Link Optimization and Telemetry) including integrated Logic Analyzer with out-of-band(I2C/SMBus) access
Security	• Security through Embedded Root of Trust (PUF) • Secure boot/update/debug and recovery • SPDM secure Attestation support tailored for secure enablement
Packaging	• Intel footprint spec compliant • 8.9 mm × 22.8 mm BGA package with minimum 0.5 mm ball pitch

Product Family

Part Number	PCIe/CXL	Lanes	Status
CPR61664	PCIe 6.x/CXL	16	Pre-production
CPR60864	PCIe 6.x/CXL	8	Pre-production
CPR51632	PCIe 5.x/CXL 2.0	16	Production
CPR50832	PCIe 5.x/CXL 2.0	8	Production

For more information please visit **www.credosemi.com**
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