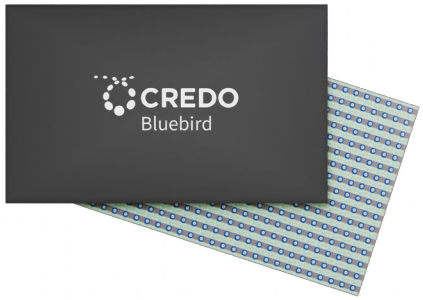
OPTICAL DSP

Optical DSP
Bluebird



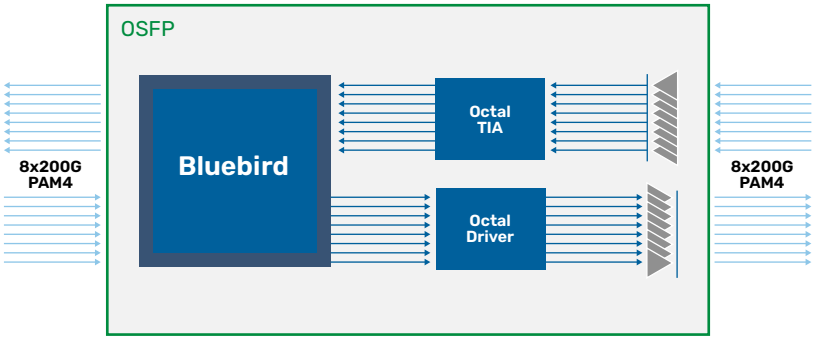
3nm 1.6Tbps PAM4 DSP

The Credo Bluebird optical DSP, incorporating 224Gbps per lane PAM4 data transmission, is designed for high-performance, low power 800G QSFP224 and 1.6T OSFP optical transceivers. The Bluebird DSP is purpose-built to meet the rigorous demands of next-generation AI, hyperscale, and cloud networks, including large language model (LLM) training and inference workloads.

Leveraging advanced 3nm CMOS technology and Credo's proprietary design methodologies, the Bluebird DSP delivers industry-leading power efficiency, ultra-low latency, and exceptional reliability. Available in full DSP and Linear Receive Optics (LRO) variants, the Bluebird DSP provides flexibility for a wide variety of both scale-up and scale-out use cases.

The Bluebird DSP enables 1.6Tbps optical transceivers with power consumption well under 25W. With latency below 40ns for GPU-to-GPU communications, the Bluebird DSP contributes to enhanced computational efficiency and performance in AI clusters.

To maximize system uptime and reliability, the Bluebird DSP integrates a robust suite of telemetry features for advanced link monitoring and diagnostics. It also includes a comprehensive set of performance capabilities designed to streamline optical transceiver integration, facilitate optimal optical component selection, and ensure seamless interoperability with host ASICs.



Applications

- AI and cloud networks
- Hyperscale data centers
- 1.6Tbps optical transceivers
- 800Gbps optical transceivers
- Breakout applications

Function

- 800G or 1.6T retimer or symbol mux

Key Parameters

- Host side: 224G PAM4
- Line side: 224G PAM4
- Operating Temp: 0° to 70°C
- Process: 3nm CMOS

Key Features

- Retimer mode with host and line side at 200G
- Symbol mux mode with host interface at 100G and line side at 200G
- Optional IEEE-compliant Hamming (128, 120) inner FEC
- Optional IEEE-compliant KP4 RS (544, 514) FEC
- Powerful DSPs on optical line side and electrical host side deliver industry-leading sensitivity and BER performance, providing margin for high volume manufacturing tolerance
- Line side receivers include non-linear cancellation and reflection cancellation, improving yield, link margin and reduced cost
- Transmitters with integrated multi-tap FIR filters and non-linear cancellation, allowing precision optimization at both the module electrical connector and the optical interface
- Under 40ns latency
- Independent phase locked loops per channel support flexible breakout configurations
- Full suite of test features simplifies lab bring-up, production testing and reduces time-to-market
- On-chip crossbar
- Low power dissipation enables higher rack utilization and lower thermal cooling requirements
- Sold as bare die

Supported Standards and Interfaces

- 800G-SR4/DR4/FR4
- 2x800G-SR4/DR4/FR4
- 1.6T SR8/DR8
- 200GAUI-1, 400GAUI-2, 800GAUI-4
- Full DSP and LRO transceivers
- CMIS 5.3

About Credo

Credo's mission is to advance high-speed connectivity solutions that deliver optimized performance, reliability, energy efficiency, and security for the next generation of AI driven applications, cloud computing, and hyperscale networks.

Optimized for both optical and electrical applications, our solutions support port speeds up to 1.6Tb. At the core of our technology is our proprietary Serializer/Deserializer (SerDes) IP. Our diverse solutions portfolio includes system-level products such as Active Electrical Cables (AECs), a range of Integrated Circuits, including Retimers, Optical DSPs, SerDes chipsets, and SerDes IP Licensing.

For more information please visit **www.credosemi.com**
or email **sales@credosemi.com**

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