Optical DSP
Seagull 50

2x25G NRZ ⇌ 1x53G PAM4
1x53G PAM4 ⇌ 1x53G PAM4

Seagull 50 (CFD10101) is a versatile full-duplex devise that comes with industry leading power dissipation and can be used in next-generation QSFP28, DSFP, and SFP56 pluggable optical transceivers. It supports 50Gbps SR/DR/FR/LR and ER applications based on PAM4 modulation. Seagull 50 operates over the full industrial temperature range of -40°C to +85°C module case and is ideal for use in enterprise data centers and 5G wireless/eCPRI front-, mid- and back-haul applications.

Seagull 50 is a dual-mode DSP and can be used as a gearbox or retimer. In gearbox mode, the IC is configured as two lanes of 24.33-25.78Gbps NRZ on the host side to one lane of 50.135-53.125Gbps PAM4 on the line side. In retimer mode, the DSP is configured as one lane of 50.135-53.125Gbps PAM4 to one lane of 50.135-53.125Gbps PAM4.
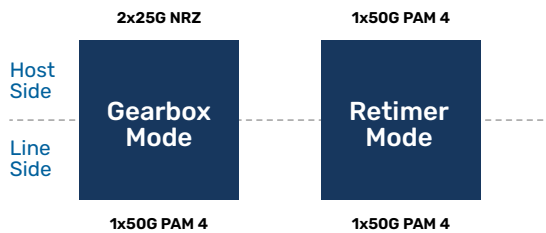
Seagull 50 employs proprietary DSP technology and equalization techniques. The DSP is especially critical in 5G wireless applications where cost-effective solutions are required, leading to wider use of DML lasers, and ultimate push for uncooled optics. The DSP helps to compensate for the optical impairments and nonlinearities resulting from optics, wider temperature range and fiber, and provides a high performance, robust solution.

Applications

- 5G wireless front-haul
- 5G wireless mid-haul/back-haul
- Enterprise data centers

Key Parameters

Host Side	2x25G NRZ or 1x53G PAM4
Line Side	1x53G PAM4
Package Size	8mm x 5mm
Operating Temp	-40° to 85°C
Communication Interface	MDIO / I²C
Process	CMOS

Key Features

- DSP with industry-leading performance
- Adaptive CTLE and multi-tap DFE and FFE on line and host side receivers
- Multi-tap FIR filter on line and host side transmitters
- Flexible configuration in gearbox or mux mode•LOS and LOL detection
- Diagnostic features including pattern generators and checkers, eye monitor and loopbacks
- Optimized, compact firmware•Low power dissipation enables 1.5W optical transceivers
- Industrial temperature support -40°C to +85°C

Supported Standards and Interfaces

- IEEE802.3 50GBASE-SR/FR/LR/ER
- IEEE 802.3 50GAUI-1 and 50GAUI-2
- eCPRI
- CEI-56G-VSR-NRZ and CEI-56G-VSR-PAM4
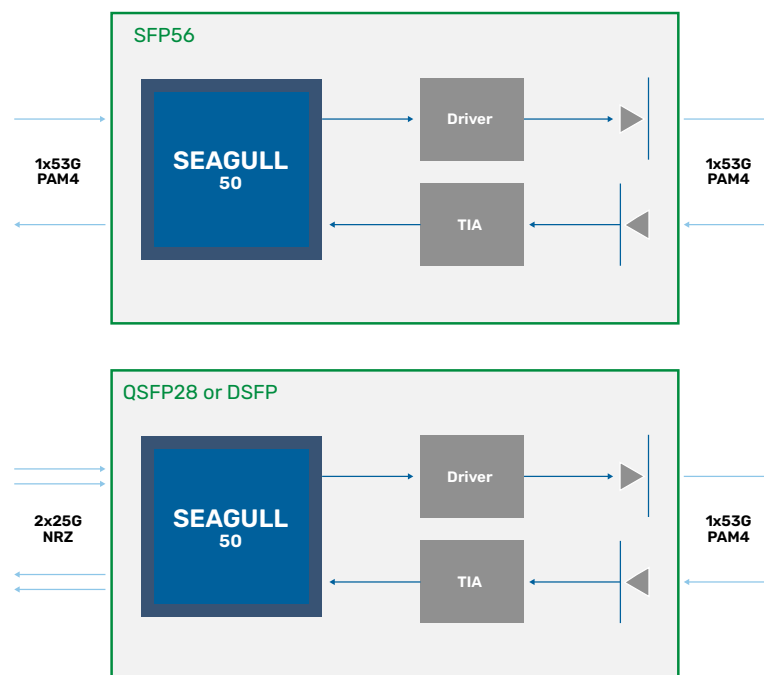
About Credo

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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.

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