

50G Optical DSP



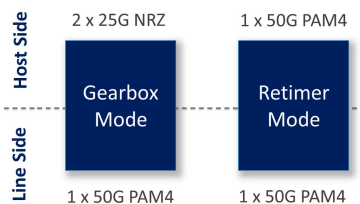
Seagull 51

2 x 25G NRZ \rightleftharpoons 1 x 53G PAM4

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Seagull 51 (**CFD13201**) is a versatile full-duplex device with industry-leading power dissipation that 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 51 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.

As a dual-mode DSP, the Seagull 51 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. Integrated drivers enable direct connection to VCSELs and EMLs, eliminating the need for external drivers and simplifying the optics interface.



Seagull 51 employs proprietary DSP technology and equalization techniques, especially critical in 5G wireless applications where cost-effective solutions are required, leading to wider use of DML lasers and uncooled optics. The DSP is a high performance, robust solution that helps to compensate for the optical impairments and nonlinearities resulting from optics, wider temperature range and fiber. It is optimized for optimal component placement and use of standard assembly techniques for high-yield, reliable PCB designs.

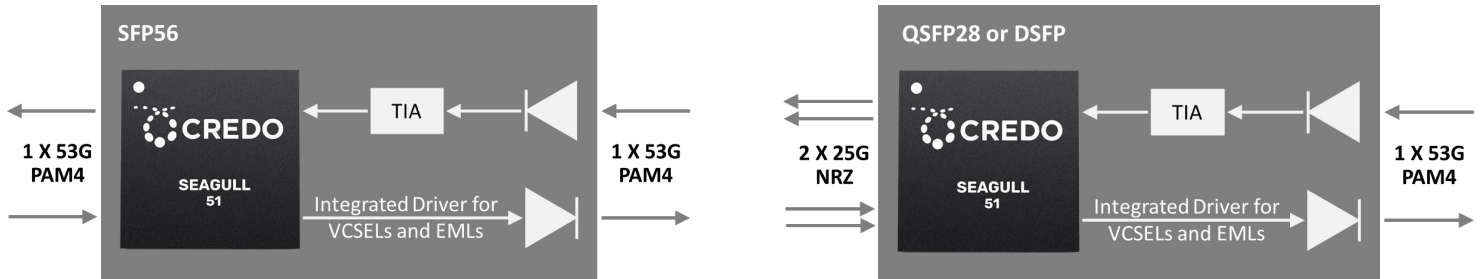
Applications

- 5G wireless front-haul
- 5G wireless mid-haul/back-haul
- Enterprise data centers
- Applications using VCSELs or EMLs

Key Parameters

Host Side	2 x 25G NRZ or 1 x 53G PAM4
Line Side	1 x 53G PAM4
Package Size	5mm x 5mm
Operating Temp	-40° to 85°C
Communication Interface	MDIO / I ² C
Process	CMOS

Pluggable Optical Transceiver Block Diagrams



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
- Integrated drivers for VCSELS and EMLs on the line side
- 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

For more information please visit www.credosemi.com/optical-dsp/seagull-51 or email sales@credosemi.com.