

Description

The HXT44121-1 is a single channel, low power, Linear PAM4 Directly-Modulated Laser (DML) driver with differential output and anti-reflection buffer design for LR applications. It supports signaling rates up to 56Gbps PAM4. In conjunction with a DML, the HXT44121-1 provides the complete electrical-to-optical conversion, CML input with equalization, laser bias and modulations, laser power control, and various supervision.

The HXT44121-1 integrates a number of functions required for Automatic Power Control (APC), as well as internal and module temperature measurements and reporting. With an additional RSSI input, the user can directly measure the module receive optical power and report it.

The device is designed as an AC-coupled packaged driver to work with TO-CAN or TOSA type of DML lasers.

Applications

- Up to 10km 50G SFP56 module for datacenter
- 5G FH and MH wireless applications

Features

- 310mW power dissipation per channel
- Supports up to: $I_{MOD} = 50mA_{PP}$ & $I_{BIAS} = 120mA$ with $V_{CC} = 3.3V$
- Integrated 12-bit ADC with 6 channel analog multiplexor front-end
- Programmable 8-bit laser modulation bias (average) current controls
- Integrated bias monitor, transmit and receive power monitor capability
- Automatic power control (APC)
- Programmable input LOS and Squelch function with disable, transmit disable, and transmit fault indication
- Programmable input CTLE
- Integrated temperature sensor and input for external module temperature sensor
- Interrupts with user selectable mask control
- Input polarity inversion
- Laser disable for I_{MOD} and I_{BIAS}
- Integrated OTP for calibration
- 2-wire interface control

Block Diagram

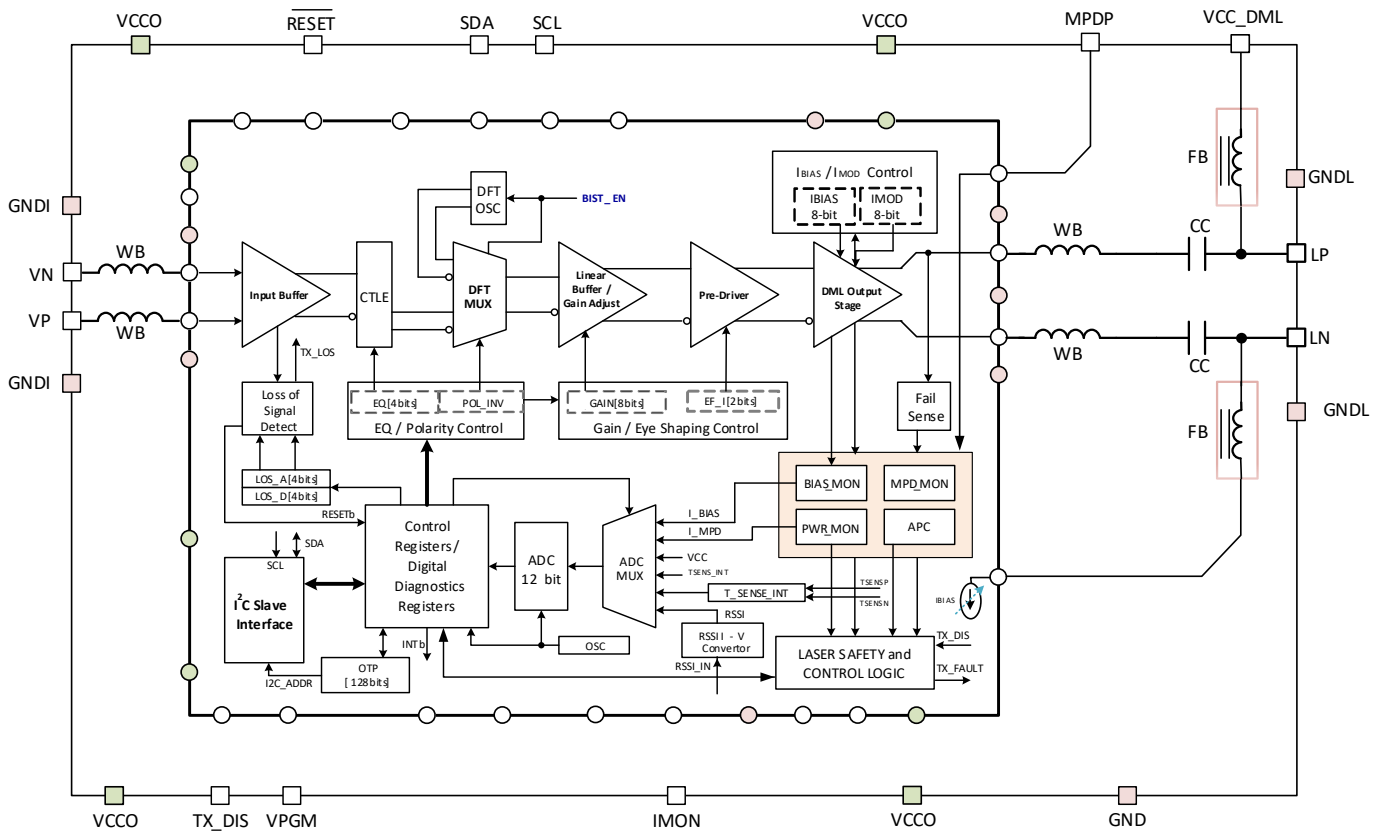


Figure 1: Functional Block Diagram

IMPORTANT NOTICE AND DISCLAIMER

RENESAS ELECTRONICS CORPORATION AND ITS SUBSIDIARIES ("RENESAS") PROVIDES TECHNICAL SPECIFICATIONS AND RELIABILITY DATA (INCLUDING DATASHEETS), DESIGN RESOURCES (INCLUDING REFERENCE DESIGNS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, SAFETY INFORMATION, AND OTHER RESOURCES "AS IS" AND WITH ALL FAULTS, AND DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT OF THIRD-PARTY INTELLECTUAL PROPERTY RIGHTS.

These resources are intended for developers who are designing with Renesas products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards, and any other safety, security, or other requirements. These resources are subject to change without notice. Renesas grants you permission to use these resources only to develop an application that uses Renesas products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Renesas intellectual property or to any third-party intellectual property. Renesas disclaims responsibility for, and you will fully indemnify Renesas and its representatives against, any claims, damages, costs, losses, or liabilities arising from your use of these resources. Renesas' products are provided only subject to Renesas' Terms and Conditions of Sale or other applicable terms agreed to in writing. No use of any Renesas resources expands or otherwise alters any applicable warranties or warranty disclaimers for these products.

(Disclaimer Rev.1.01)

Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,
Koto-ku, Tokyo 135-0061, Japan
www.renesas.com

Contact Information

For further information on a product, technology, the most up-to-date version of a document, or your nearest sales office, please visit www.renesas.com/contact-us/.

Trademarks

Renesas and the Renesas logo are trademarks of Renesas Electronics Corporation. All trademarks and registered trademarks are the property of their respective owners.