

HXT14450

56Gbps – Linear PAM4 VCSEL Driver with CDR

The HXT14450 is a quad-channel, low power, linear vertical-cavity surface-emitting laser (VCSEL) driver with an integrated clock and data recovery (CDR) unit. The chip is designed for MMF PMD Short-Reach applications that support 200G per port with a signaling rate up to 56Gbps PAM4 modulation. In conjunction with the HXR14450 – a quad-channel transimpedance amplifier (TIA) receiver with an integrated CDR, one can produce compact quad small form factor QSFP-type modules to serve high speed optical interconnects in data center applications.

The HXT14450 has a built-in auto-adaptive continuous-time linear equalizer (CTLE) and a decision-feedback equalizer (DFE), which can work in chip-to-module and chip-to-chip interconnects. The chipsets provide on-chip testability such as PRBS generator and error checker.

Applications

- 200G QSFP56 SR4 and 400G QSFP-DD or OSFP SR8 Ethernet Modules and AOC
- 400G OBO Modules
- Support CEI-56G-VSR-PAM4

Features

- Quad 56Gb/s PAM4 VCSEL Driver integrated with a low latency CDR
- Low power – typical 490 mW per channel
- Supports up to 11mA modulation current to VCSEL
- Programmable 8-bit IMOD and IBIAS control
- Auto-Adaptive CTLE and DFE
- Support reference-less and reference clock modes
- On-chip testability: eye opening monitor (EOM), jitter tolerance (JTOL), PRBS generator, error checker
- Integrated temperature sensor
- Input and output polarity inversion
- Programmable TX test pattern generation
- TX Disable, programmable loss of signal (LOS) and output de-emphasis
- I²C interface control: standard and fast modes

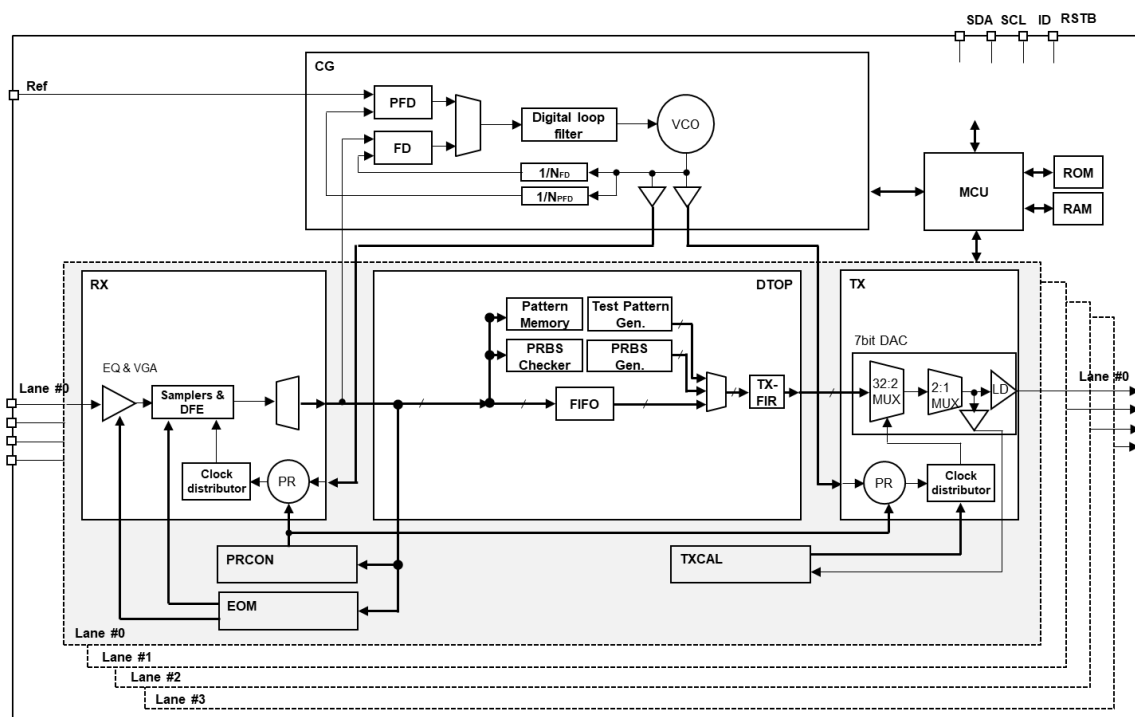


Figure 1. Block Diagram

HXT14450 Short-Form Datasheet

Orderable Part Number	Temperature Range	Dimensions
HXT14450-DNU ^[1] HXT14450-TNU ^[2]	-5°C to +95°C	Die: 3320.1 x 1265.4µm
HXX14450-EVB	Room Temperature	-

1. Waffle pack
2. Blue tape

For price, delivery schedules, and to place orders, please contact Renesas at www.renesas.com/us/en/buy-sample/locations.

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 skilled in the art 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 for development of 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 out of 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.

(Rev.1.0 Mar 2020)

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/

Trademarks

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