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
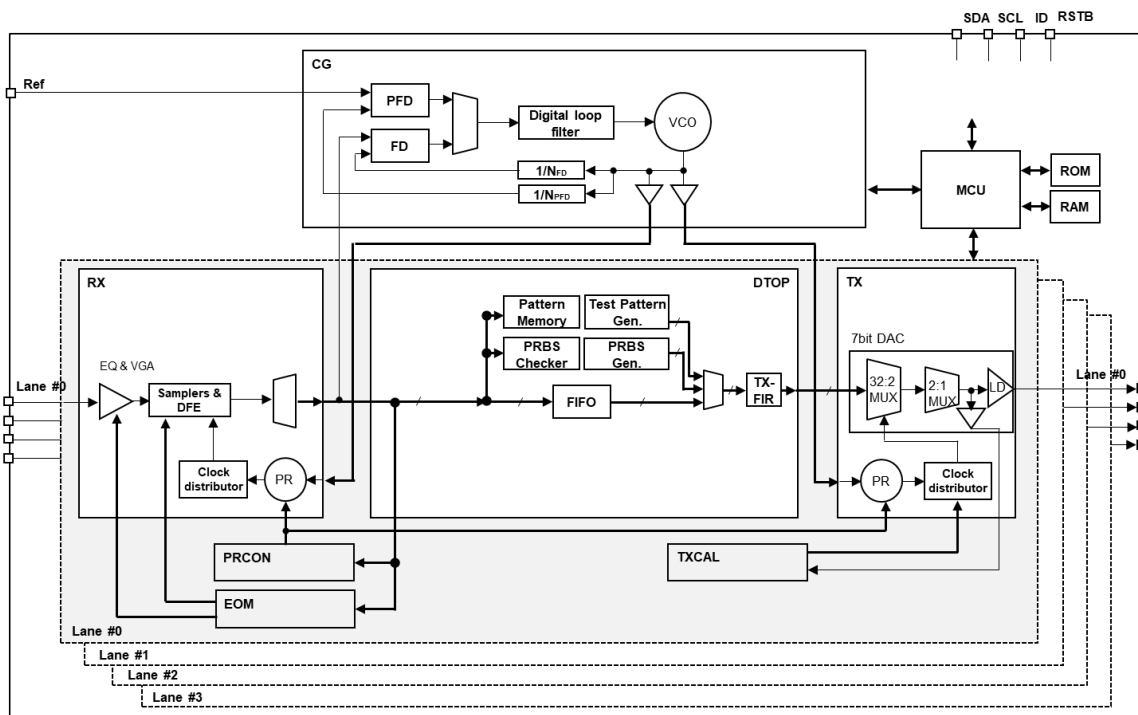- I²C interface control: standard and fast modes

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.