

HXR14450

Quad-Channel 56Gbps PAM4 Linear TIA with CDR

The HXR14450 is a quad-channel, low power, linear trans-impedance amplifier (TIA) with an integrated clock and data recovery (CDR) unit. It is a member of the family of optical receiver transmitter array (ORTA) products for high-speed optical interconnects. The HXR14450 integrates a linear trans-impedance pre-amplifier, linear post-amplifier, CDR unit, and a versatile output stage in one chip for higher density and lower power consumption applications. 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 HXT14450 – a quad-channel vertical-cavity surface-emitting laser (VCSEL) driver 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 HXR14450 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.

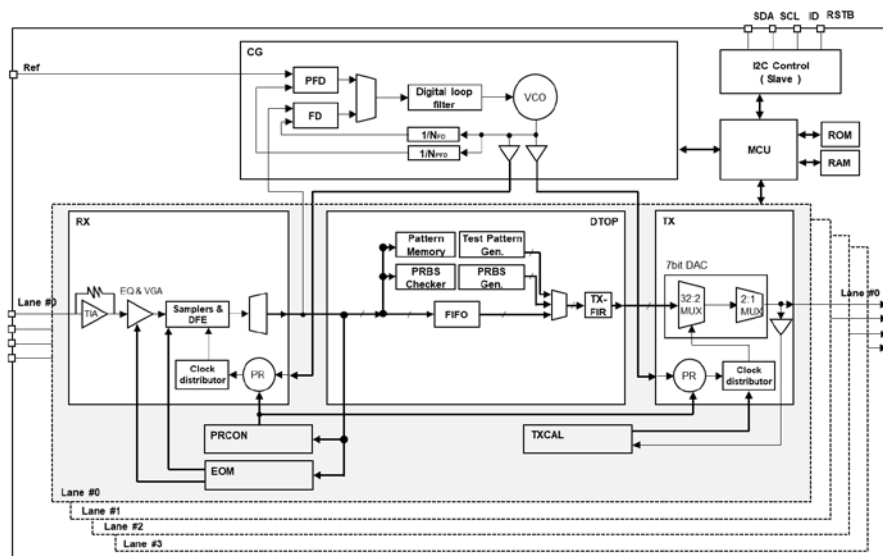
Designed for direct DC-coupled die with on-board optics (OBO) and with a small number of additional components for cost-effective and compact assemblies, this chipset enables lower power and compact modules for high density and high bandwidth applications in hyper-scale data center applications.

Features

- Quad-channel 56Gbps PAM4 linear TIA integrated with a low latency CDR
- Low power – typical 400mW per channel
- Typical 750mVppd output (adjustable)
- Up to 3 mApp overload
- Independent, per channel receiver signal strength indicator (RSSI)
- 5kΩ typical differential gain
- Linear operation with internal automatic gain control (AGC)
- Auto-Adaptive CTLE and DFE
- Programmable 3-tap de-emphasis
- Support reference-less and reference clock modes
- On-chip testability: eye opening monitor (EOM), jitter tolerance (JTOL), PRBS generator, error checker
- Support both isolated and common cathode photo-detector (PD) arrays
- I<sup>2</sup>C interface control: standard and fast modes

Applications

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



## HXR14450 Short-Form Datasheet

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Orderable Part Number	Temperature Range	Dimensions
HXR14450-DNU <sup>[1]</sup>	-5°C to +95°C	Die: 3428.2 × 1398.4 × 200µm
HXX14450-EVB	Room Temperature	-

1. Waffle pack.

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

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