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
- I²C 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

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

1. Waffle pack.

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