General Description

The HXC42200 is a bi-directional Dual Channel CDR / Retimer for retiming data rates from 25Gbps to 28.05Gbps. It is optimized for 25.78125Gbps Ethernet, OIF CEI-28G-VSR and OTU-4 Optical Transport applications. The HXC42200 can be used in either direction of a transceiver module can be adopted into SFP28+ modules because of its low 100mW per channel power dissipation. In Bypass operation, the HXC42200 supports legacy data rates up to 16Gbps.

The HXC42200 provides programmable and adaptive equalization in the receiver and programmable de-emphasis in the transmitter to compensate for channel Insertion Loss and ISI. In the receive direction, the programmable / adaptive CTLE provides up to 16dB of equalization and a 1-tap DFE provides additional compensation. In the transmit direction, the programmable, 4-bit, de-emphasis with 3-tap FIR filter provides a 12dB control range.

Auto DC-offset calibration is complemented with auto phase calibration and the unique CDR / Retimer architecture enables independent receive and transmit CDR loop bandwidth optimization for increased Jitter Tolerance and reduced Jitter Transfer performance.

The HXC42200 is able to be used with or without a reference clock with a built-in, single 14GHz master VCO providing the oscillator output for each channel.

Multiple Built-in Self-Test (BIST) functions such as a PRBS generator / checker, Jitter Tolerance, Eye Open Monitor, and single lane loopback are supported for module level testing.

The HXC42200 has an I^2C interface that is used to set the start-up operating mode for the internal state machine which performs all required calibrations and settings.

The HXC42200 is packaged in a 4x4mm BGA of 0.5mm ball pitch.

Applications

- 25GBASE Ethernet SFP28 SR/MR/LR optical modules
- Supports OTU4 28Gbps operation for OTL4.4 as defined in ITU Rec G.709
- 32G Fibre Channel modules
- OIF CEI-28G-VSR/MR retimed interface
- 25G InfiniBand EDR active optical cables

Features

- Dual 25 - 28Gbps CDR / Retimer
  - Also provides a half-rate mode for 12.5 – 14Gbps operation
- Bypass-mode to support legacy data rate up to 16Gbps
- Programmable 3-tap output de-emphasis for transmitter side
- Adaptive linear equalizer and adaptive decision-feedback equalizer (DFE) to cover up to 16dB lossy channel in receiver side
- Low sensitivity of $25mV_{PPD}$ and adjustable threshold level of data sampler
- Reference-less and Master channel-less operation
- Independent, adaptive bandwidth control in RX CDR for optimum jitter tolerance
- Internal and automatic DC and phase offset calibrations
- On-chip testability; EOM, JTOL, PRBS generator/checker, local/remote loopback,
- Polarity (P/N) inversion
- I^2C control interface
- 4x4mm, 1mm - 0.5m pitch, 49 ball FCBGA

Ordering Information

Part Number[1]	Temp Range	Package - # Balls
HXC42200-xFI	-40°C to +85°	4x4mm FCBGA - xx
HXC42200EVB		

Note[1] – Where 'x' denotes Product Carrier type for shipping:

R = Tape and Reel
C = Bulk – Carrier Tray
B = Bulk - Tubes

For price, delivery schedules, and to place orders, please contact IDT: www.IDT.com/go/sales

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Device Diagram

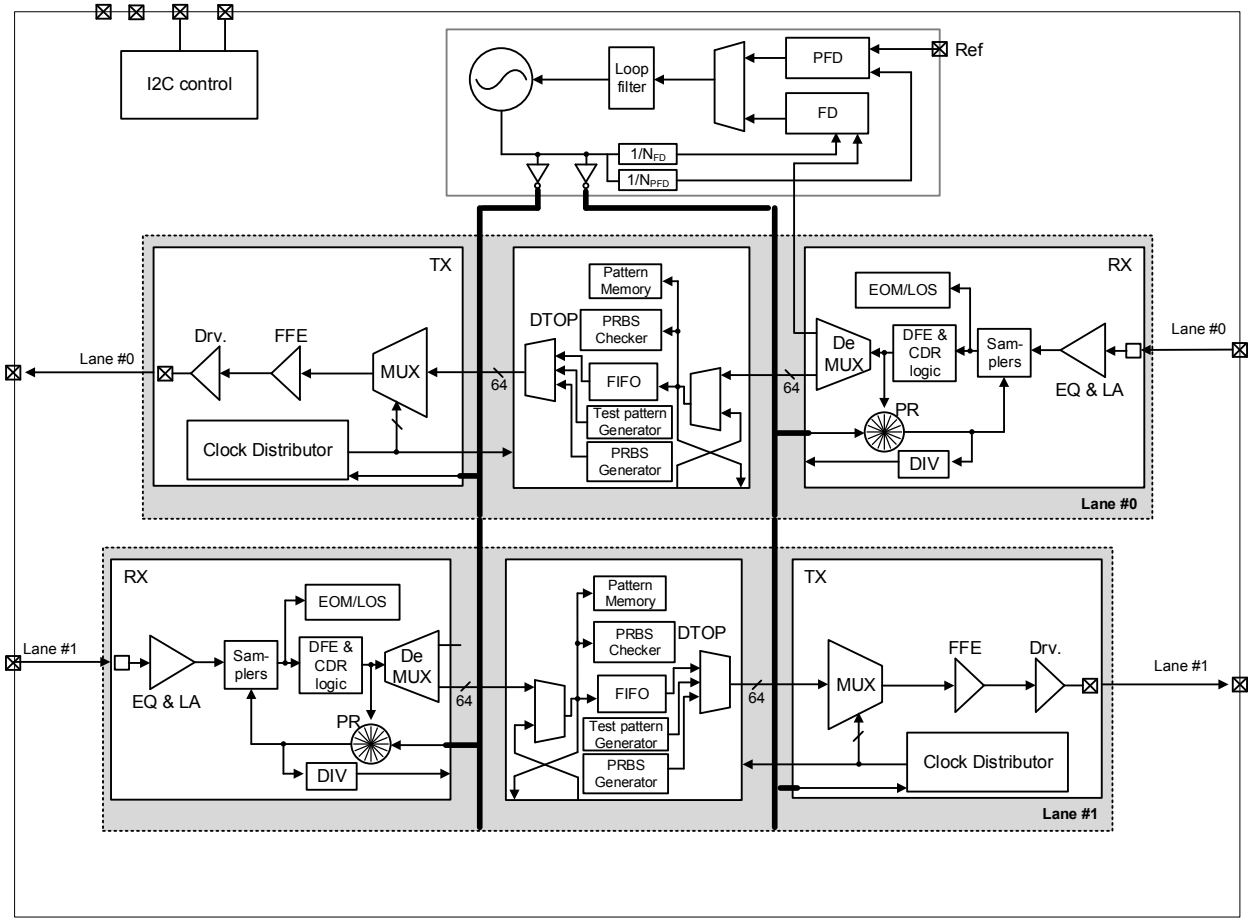


Figure 1: Device Block Diagram

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