HXC44400

Quad Channel 56G CDR/Retimer

The HXC44400 is a uni-directional quad-channel PAM4 CDR/retimer. The chip can support both data rates of 56Gbps PAM4 and 28Gbps NRZ. The HXC44400 can be used in 200G QSFP56 and 400G QSFP-DD modules. The chip is optimized for Ethernet applications. It is in full compliance with OIF CEI-56G-VSR. The power consumption is typically 380mW per channel.

The HXC44400 has built-in programmable and adaptive equalization in both the receiver and transmitter paths to compensate for transmission line losses and inter-symbol interference.

Auto DC-offset calibration is implemented 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 device has a built-in, single 14GHz master voltage-controlled oscillator (VCO) providing the oscillator output for each channel. In addition, the self-test functions such as a PRBS generator/checker, jitter tolerance (JTOL), and eye-opening monitor (EOM) provide users with module-level diagnostics and function tests.

The HXC44400 also integrates a microcontroller unit (MCU) for programmable control, which could reduce BOM cost and enable better module design. The I2C interface is used to control the built-in MCU.

Features

- Quad CDR/retimer for transmitter or receiver channels
- Supports 56Gbps PAM4 and 28Gbps NRZ
- 750mVpp typical output swing with 7-bit resolution for output amplitude control
- Auto-adaptive CTLE and DFE in input receiver equalization
- Programmable 3-tap de-emphasis at the output transmitter
- Linearity compensation for the output through a look-up table
- Independent, adaptive bandwidth control in RX CDR for optimum jitter tolerance
- Internal and automatic DC and phase offset calibrations
- Reference-less and reference clock operation
- On-chip testability: EOM, JTOL, PRBS generator/checker, user-defined pattern generator
- Embedded CPU with RAM/ROM and downloadable firmware
- I2C control interface (16-bit address and data): standard and fast modes
- CEI-56G-VSR-PAM4 compliance

Applications

- 200G QSFP-based Ethernet Transceivers and Active optical cables (AOCs)
- 4 x 50G PAM4 Ethernet CDR/Retimer

Ordering Information

Part Number	Package	Temperature
HXC44400-BFI	4.8 x 4 mm 81-FCCSP 11 x 9 grid, 0.4mm pitch	-40°C to +85°
HXC44400-EVB	Evaluation Board	Room Temperature

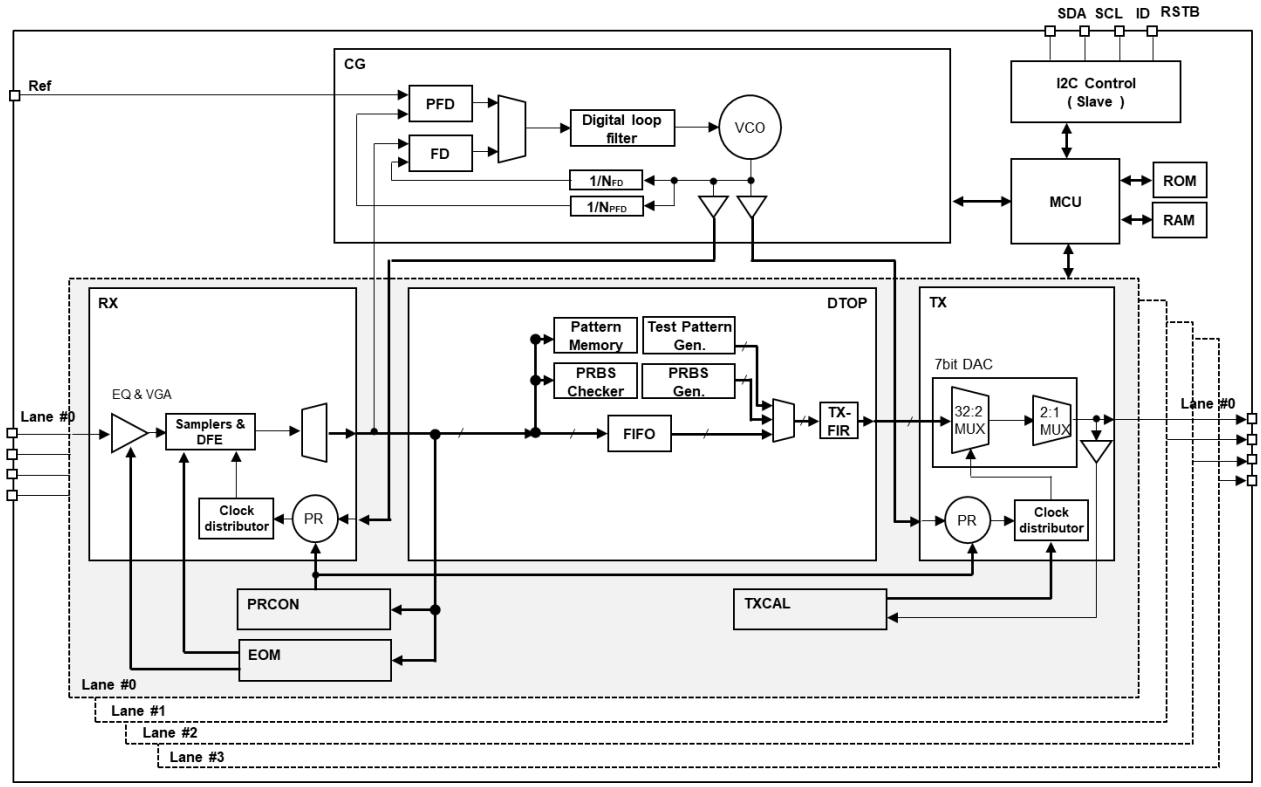

Figure 1. Block Diagram

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