

Comparison of Intelligent Delay in Optical Cross-Connector

Overview

In this paper, predictions of the performance of CMOS compatible optical devices are made based on current state-of-art optical technologies. INTRODUCTION. As CMOS technology is scaled, the design requirements of delay, power, bandwidth, and noise due to the on-chip interconnects have become increasingly stringent. New design challenges are continuously emerging, such as delay uncertainty induced by process and environmental variations. An analytical comparison of three different receiver architectures, including transimpedance, integrating, and totem-pole diode pair, is. We have proposed latency-optimized MFS with serial optical interface with two different inter-chip communication strategies. The crosstalk has major concern on VLSI technology because it totally changes the system performance.



Article Content

Aug 31, 2025

Ultra-compact high efficiency and low crosstalk optical ...

In this paper, we combine inverse design concept and direct binary search algorithm to demonstrate three ultra-compact high efficiency and low crosstalk on-chip integrated optical...

May 22, 2026

Recent Advances of High-Speed Short-Reach Optical Interconnects ...

This article reviews and analyzes recent design challenges and advances of optical transceiver, phase-locked loop (PLL), and clock and data recovery (CDR) for data center applications with a distance of ...

Jul 20, 2026

0-Article 27 (Pg 109-112).pmd

This section presents basic geometry of optical interconnects for various materials that is analyzed by equivalent single conductor (ESC) model at arbitrary dimensions of OI.

Nov 13, 2025

Recent Advances on Chip-to-Chip Optical Interconnect

This self-alignment technology and the fabricated optical sub-assembly are effective in achieving low-cost optical modules for optical interconnect systems from commodities to high-end applications.

Aug 03, 2025

Experimental evaluation and comparison of latency-optimized

Using real benchmark circuits, we have evaluated the behavior of proposed and conventional MFS system frequency with respect to increasing multiplexing ratio in Multi-Gigabit ...

Apr 01, 2026

Performance comparison of integrated optical switching delay lines on ...

We have designed, fabricated and packaged three integrated optical switching delay line (OSDL) chips based on SOI (The waveguide core thickness is 220 nm and 3 μm respectively) and ...

Oct 19, 2025

Latency Reduction in Optical Interconnects Using Short Optical ...

We also experimentally demonstrate a 65% reduction in latency of a transimpedance receiver by using short optical pulses. Finally, we show that the latency of optical interconnects can be comparable to ...

Mar 30, 2026

On-Chip Copper-Based vs. Optical Interconnects: Delay ...

In this paper, predictions of the performance of CMOS compatible optical devices are made based on current state-of-art optical technologies. Based on these predictions, electrical and optical ...

Jun 06, 2026

On-Chip Optical Interconnect for Reduced Delay Uncertainty

Based on these predictions, the delay uncertainty in electrical and optical interconnects is analyzed, and shown to affect both the latency and bandwidth of the interconnect.

Oct 26, 2025

Crosstalk performance of integrated optical cross-connects

In the following, we will compare eleven different cross-connect configurations as depicted in Fig. 2 by considering the total number of dominant crosstalk terms.

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