

# Benchmark for Silicon Photonics Chip Technology



## Overview

In this paper, we introduce PICBench, the first benchmarking and evaluation framework specifically designed to automate PIC design generation using LLMs, where the generated output takes the form of a netlist. We benchmark the PIC at 760 nm, which is a typical wavelength for Yb + -applications. The fabricated grating couplers enable the outcoupling of collimated free-space beams for both polarizations, exhibiting distinct emission angles. This dual-polarization capability gives more flexibility in. Three material platforms — silicon photonics, indium phosphide, and thin-film lithium niobate — are competing to define the next generation of photonic integrated circuits for data centers and sensing. A breakdown of Co-Packaged Optics and its key concepts.

## Article Content

Photonic integrated circuit technology landscape 2026

Three material platforms — silicon photonics, indium phosphide, and thin-film lithium niobate — are competing to define the next generation of photonic integrated circuits for data centers

Silicon Photonics and Photonic Integrated Circuits 2025-2035 ...

This report includes a detailed examination of the latest innovations in Silicon Photonics and Photonic Integrated Circuits, key technical trends, analysis across the value chain, major player

## Silicon Photonics and Photonic Integrated Circuits 2025-2035 ...

Silicon Photonics is a subcategory of Photonic Integrated Circuits (PICs). There are differences between the two terms, with PICs generally referring to the whole Integrated Photonics industry, and Silicon

## Roadmapping the next generation of silicon photonics

We chart the generational trends in silicon photonics technology, drawing parallels from the generational definitions of CMOS technology. We identify the crucial challenges that must be...

## PICBench: Benchmarking LLMs for Photonic Integrated Circuits Design

In this paper, we introduce PICBench, an open-source and comprehensive benchmark for PIC design using natural language to generate simulation-ready netlists. The benchmark includes 24

## Review of Silicon Photonics Technology and Platform Development

In this paper, we review most of the foundries that presently enable silicon photonics integrated circuits fabrication. Some of these are pilot lines of major research institutes, and others are fully commercial

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