

Integrated circuits in optical modules



Overview

A photonic integrated circuit (PIC) or integrated optical circuit is a microchip containing two or more photonic components that form a functioning circuit. This technology detects, generates, transports, and processes light. Advanced Signal Integrity for High-Speed Digital Designs, S. Heck, John Wiley & Sons, 2009. Whether you are creating a 100-Gbps or 400-Gbps, small form-factor pluggable (SFP) module, SFP+ transceiver, XFP module, CFP, X2/XENPAK module. ing devices and functions required for a coherent optical transceiver. Increased complexity in chip functionality has resulted in a need for increased fabricati n complexity from III-V epitaxy, through wafer. Electronics increasingly supplemented by optics with the introduction of optical communication systems (1980s) for long distance telecommunication (lasers, photodetectors, optical fiber, waveguides, optical amplifiers, etc.



Article Content

Sep 11, 2025

Advanced Optical Integration Processes for

Based on its components, integrated circuits can be categorized into electronic integrated circuits (EICs), comprising electronic components, and

Sep 23, 2025

Five Key Trends of Co-Packaged Optics (CPO) in 2026

These pressures are driving renewed momentum behind co-packaged optics (CPO). According to LightCounting, sales of lasers and photonic integrated

Dec 15, 2025

Lighting the way forward: The bright future of photonic integrated circuits

Integrated optics, a key photonics technology, has major implications for telecommunications, sensing, and computing. By integrating optical elements like lasers, modulators,

Jun 16, 2026

OMNIVISION | Semiconductor Manufacturer of Sensing,

Wafer-level chip scale packaging integrates image sensors and lenses to deliver miniaturized camera modules intelligently empowering automotive, mobile

Dec 23, 2025

NeoPhotonics to Acquire Optical Unit of Lapis Semiconductor

SAN JOSE, Calif., Jan. 23, 2013 — NeoPhotonics Corp., a maker of photonic integrated circuit (PIC) based modules and subsystems for high-speed communications networks, announced Tuesday that

Feb 03, 2026

POET Technologies Reports First Quarter 2026 Financial Results

TORONTO, May 14, 2026 (GLOBE NEWSWIRE) -- POET Technologies Inc. ("POET" or the "Company") (NASDAQ: POET), the designer and developer of Photonic Integrated Circuits

Feb 18, 2026

Photonic Integrated Circuits | Speed, Bandwidth

Photonic Integrated Circuits (PICs) have drastically changed how we process and transmit information by leveraging photons instead of electrons. This

Mar 29, 2026

Top Silicon Photonics Stocks 2026: Breaking the

Watchlist of silicon photonics stocks: Co-packaged optics replacing electrical I/O to slash latency and power consumption in AI data centers.

Nov 24, 2025

Recent Trends in the Manufacturing of InP Photonic Integrated Circuits

Keywords: Photonic Integrated Circuits, Optical Fabrication, Semiconductor Materials, Laser Materials Processing, Process Control, Coherent Communications Abstract
Coherent

Oct 18, 2025

Internships

PhD on Demonstration of Large-Scale Optical Circuits room PhotonDelta Enschede, Netherlands, Europe

Aug 01, 2025

ECEN721: Optical Interconnects Circuits and Systems Spring 2026

Efficient cost-effective optical integration approaches are necessary for optical interconnects to realize their potential for improved power efficiency at higher data rates

Aug 19, 2025

POET Technologies Reports Third Quarter 2025

POET Technologies Inc. the designer and developer of Photonic Integrated Circuits light sources and optical modules for the AI and data center

Oct 12, 2025

Overview of 11 Photonic Quantum Computing

They also integrate naturally with existing fiber optic infrastructure, which could be advantageous for quantum networking and distributed computing

Jun 20, 2026

POET Technologies Inc.: POET Technologies Secures Financing of

TORONTO, May 15, 2026 (GLOBE NEWSWIRE) -- POET Technologies Inc. (NASDAQ: POET) (the "Corporation"), the designer and developer of Photonic Integrated Circuits (PICs), light

Mar 06, 2026

GlobalFoundries" Unveils Optical Module Solution Targeting CPO

Integrated photonics is a field of study and technology that involves the integration of optical components, such as lasers, modulators, detectors, and waveguides, on a single chip or

Mar 31, 2026

Mauricio Yañez

Photonics Design Engineer @ Nokia | PhD in Electrical Engineering · As a Photonics Design Engineer, I have 15+ years of experience across various aspects of

Apr 10, 2026

POET Technologies Secures Financing of US\$400 Million in a

Additional changes in company executive leadership also announcedTORONTO, May 15, 2026 (GLOBE NEWSWIRE) -- POET Technologies Inc. (NASDAQ: POET) (the "Corporation"), the

Apr 14, 2026

Intel® Silicon Photonics

Fully integrated die stack, consisting of a single Intel® Silicon Photonics Integrated Circuit (PIC) with on-chip DWDM lasers and SOAs, and an advanced node CMOS electrical integrated circuit (EIC) with

Mar 05, 2026

What is a Photonic Integrated Circuit: A Guide to PICs

A photonic integrated circuit (PIC) integrates dozens to thousands of miniaturized optical components —such as waveguides, modulators, and detectors—onto a

Jan 08, 2026

Mixed-signal and digital signal processing ICs | Analog

Analog Devices is global leader in the design and manufacturing of analog, mixed signal, and DSP integrated circuits to help solve the toughest engineering

Dec 12, 2025

Yole Report Calls for Photonics Packaging Market to Triple by 2031

The goal of integrated photonics is to miniaturize and consolidate optical elements in a manner similar to the integration of electronic components on a microchip in traditional integrated

Jul 21, 2025

Photonic Integrated Circuits (PICs) for Next Generation Space ...

Feature highly-scaled integration of multiple optical components on single compact chip (micron to mm-size), enabling complex functions analogous to electronic ICs. Future integration with electronic

Oct 30, 2025

How to Integrate Photon Avalanche Diodes With FPGA Timing Modules

Next-generation optical communication systems require detection speeds compatible with terabit data transmission rates, necessitating the tight integration between photon detection elements

Mar 13, 2026

Photonic integrated circuit

A photonic integrated circuit (PIC) or integrated optical circuit is a microchip containing two or more photonic components that form a functioning circuit. This technology detects, generates, transports,

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Optical module design resources | TI

Integrated circuits and reference designs help you create a smaller and faster optical module design used in high-bandwidth data communication applications.

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