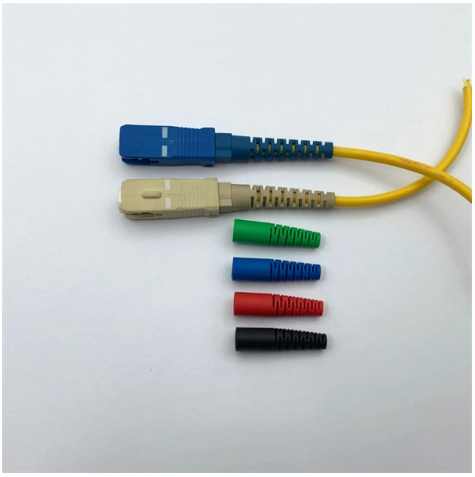
Integrated Optical Coupler



Overview

High-performance optical couplers are useful for interfacing on-chip waveguides with off-chip optical media, e., interconnecting waveguides and optical fibers within and between integrated photonic computer chips, as well as waveguide-to-free space coupling. Optical interconnects is an important issue in silicon photonic integrated circuits for transmitting light, and fiber-to-chip optical interconnects is vital in application scenarios such as data centers and optical transmission systems. The microscopic light interactions with the grating coupler are simulated with Ansys Lumerical, while Ansys Zemax OpticStudio is used for. The present technology is related to optics and optical systems, particularly to photonic packaging, optical coupling, optical interconnects, micro-optics, and their fabrication. The present technology includes free-form micro-optical coupler architectures and systems with superb optical. In this paper, we propose a novel scheme to vertically couple between silicon based waveguides on separate chips using graded index (GRIN) couplers in combination with an evanescent coupler. Simulation results using a 3D Finite-Difference Time-Domain (FDTD) solver are presented, demonstrating.



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Article Content

Design and analysis of an integrated optical coupler based ...

In this paper, we proposed and designed an integrated optical coupler based on three-core fiber (TCF) with long-period gratings (LPGs). The TCF with three cores distributed in the cladding

Advances in waveguide to waveguide couplers for 3D

The following section discusses different types of inter-chip optical couplers and their operation.

Integrated Optical Chip With Low-Loss Waveguide Coupler for ...

We present an integrated optical chip (IOC) featuring a low-loss and compact waveguide coupler for miniaturized interferometric fiber optic gyroscopes (IFOGs).

Edge Couplers in Silicon Photonic Integrated Circuits: A

In this paper, we mainly focus on edge couplers in silicon photonic integrated circuits. We deliver an introduction to the research background,

Integrated microlens and grating coupler for photonic

In this article, we introduce a multi-scale simulation workflow to design the coupler leveraging the interoperability between Ansys Lumerical and Ansys Zemax

US20230393357A1

The present technology includes free-form micro-optical coupler architectures and systems with superb optical performance and a high-throughput method of fabricating large-area coupler arrays...

Graded Index Couplers for Next Generation Chip-to-Chip and Fiber-to ...

In light of these packaging and assembly related problems, we have developed and patented an optical coupling solution based on integrated GRIN lenses and evanescent couplers

Double-layer metasurface-based edge coupler for low-loss coupling ...

In this paper, we propose and theoretically investigate a novel edge coupler based on an all-dielectric double-layer metasurface (DLMS), designed to overcome these limitations.

Integrated Optical Coupler With an Arbitrary Splitting Ratio Based on a ...

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Optical couplers with different power splitting ratios are essential building blocks in photonic integrated circuits. We theoretically and experimentally demonstrate a broadband and

MIT develops optical chip links for faster, greener data transfer

MIT develops new photonic integration tech to help future chips transmit data at more than 1 petabit/second with improved energy efficiency.

Co-Packaged Optics: Integration & Scaling

Co-packaged optics is the integration of photonic devices with electronic ASICs within a single package, enabling ultra-high bandwidth (≥1 Tb/s per chip) and energy-efficient optical links. It

Ansys Optics

Modeling thermal crosstalk in photonic circuit simulation with INTERCONNECT Achromatic Metalens 2D Polarization Splitting Grating Couplers Integrated Ion Traps using Surface Electrodes and Grating

OPTICAL COUPLING APPARATUS INCLUDING OPTICAL

An optical coupling apparatus includes a shell in which a sleeve that guides optical coupling is inserted; a ferrule into which an optical fiber collimator stub is inserted, wherein the optical

Integrated waveguide coupled Si_3N_4 resonators in the ultrahigh-Q ...

Silicon nitride (Si3N4) optical ring resonators provide exceptional opportunities for low-loss integrated optics. Here we study the transmission through a multimode waveguide coupled to a Si3N4 ring

HGLaser: Enabling AI Optical Module Mass Production with Integrated ...

By focusing on real production challenges, the company builds integrated solutions covering: Coupling → Assembly → Inspection → Complete Production Lines From individual equipment to

A novel technique to measure the propagation loss of integrated optical ...

A method to measure the propagation loss of optical waveguides is discussed. The measurement system involves two 3 dB couplers, a CCD camera and a signal processing unit. The propagation

Optical Couplers | Springer Nature Link

Optical couplers are one of the most important classes of integrated optical components. These devices are used in directional routing of a light signal from one waveguide to another or in

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Optical Free-Form Couplers for High-density Integrated Photonics ...

Coupling of light between different photonic devices, for example on-chip waveguides, fibers, and free-space optical elements, is an essential function enabling integrated optical systems.

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