

Article Overview

State-owned enterprises in silicon photonics are primarily found in Asia, particularly China, where government-backed firms drive strategic development in optical communications and AI data center infrastructure.

Overview of Silicon Photonics

Silicon photonics integrates optical components with silicon-based electronics on a single chip, enabling high-speed, low-power data transmission for applications such as AI data centers, telecom networks, and high-performance computing . The technology leverages the scalability of silicon manufacturing while using light for data movement, which reduces energy consumption and increases bandwidth . Major global players include Cisco, Intel, NeoPhotonics, Hamamatsu Photonics, and STMicroelectronics .

Role of State-Owned Enterprises

While most leading silicon photonics companies are private, state-owned enterprises (SOEs) play a significant role in countries like China, where the government strategically invests in advanced semiconductor and photonics technologies. These SOEs often:

- o Develop optical transceivers, photonic integrated circuits (PICs), and co-packaged optics for AI and telecom applications.
 - o Collaborate with private firms and research institutes to accelerate R&D and manufacturing scale-up.
 - o Support national initiatives for data center expansion, 5G networks, and high-speed optical interconnects.
- Examples of Chinese SOEs active in silicon photonics include Yangtze Optical Fibre and Cable Joint Stock Limited Company (YOFC) and FiberHome Technologies Group, which focus on optical components, fiber optics, and integrated photonics solutions for domestic and international markets.

Strategic Importance

SOEs in silicon photonics are critical for:

- o National security and technological self-reliance, ensuring domestic supply of high-speed optical components.
- o AI and cloud infrastructure, providing the backbone for large-scale data centers.
- o Global competitiveness, as silicon photonics becomes essential for next-generation computing and telecommunications.

Global Context

Outside China, most silicon photonics development is led by private companies and public-private partnerships, such as AIM Photonics in the U.S., which is supported by the Department of Defense but operates as a consortium of private and academic entities . These initiatives focus on accelerating prototyping, manufacturing, and commercialization of integrated photonics. In summary, state-owned enterprises in silicon photonics are concentrated in countries with strategic government investment, particularly China, where they complement private innovation and help secure national capabilities in high-speed optical communications and AI infrastructure.

ST's silicon photonics technology can combine heterogeneous components for developing even faster modulators. It can also enable

The Silicon Photonics Modules Market represents a critical segment within the broader optical communications and

In order to complete the transition to the era of large-scale integration, silicon photonics will have to overcome several

Silicon photonics is defined as an optical technology that integrates photonics and electronics to enhance high-speed

The research area Silicon Photonics focuses on the development of optical and electro-optical technologies based on Group IV

While linear-drive pluggable modules remain competitive, CPO is expected to offer

Skorprios (<https://>), a US-based startup, has developed a way to

Silicon Photonics based Pluggable Transceiver modules The industry adoption of Silicon Photonics based 100G modules has

The United States is at the forefront of silicon photonics deployment, with leading technology companies, cloud service

Intel previously has said that its large customers (presumably Facebook/ Meta) had seen

Silicon Photonics Optical Module Market Analysis: The global Silicon Photonics Optical Module market size



Silicon Photonics Module State-Owned Enterprise

was estimated at USD

The idea of using silicon photonics for guiding, filtering and manipulating light was first explored in the 1980s¹⁻³, but only in the past

Roughly fifteen specialist industries have to coordinate to build a single co-packaged module, and at least six of them

The Silicon Photonics Optical Module Market was valued at USD 540 Million in 2025 and is projected to grow to USD 3.34 Billion by

Here, we introduce a silicon photonic MEMS platform consisting of high-performance nano-opto-electromechanical

Silicon photonics is now the binding constraint on AI infrastructure at scale, and Tower Semiconductor just committed \$3

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