

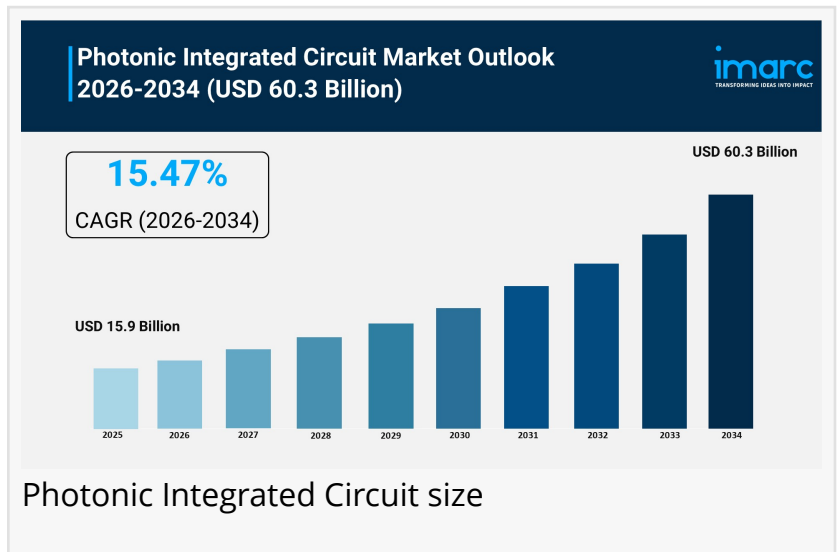
Photonic Integrated Circuit Market to Reach USD 60.3 Billion by 2034, Growing at a CAGR of 15.47%

The global photonic integrated circuit market size was valued at USD 15.9 Billion in 2025. Looking forward.

SHERIDAN, WY, UNITED STATES, May 7, 2026 /EINPresswire.com/ -- IMARC Group, a leading global market research and management consulting firm, has published its latest market intelligence report on the photonic integrated circuit market. The global [photonic integrated circuit market size](#) was valued at USD 15.9 Billion in 2025.

Looking forward, IMARC Group estimates the market to reach USD 60.3 Billion by 2034, exhibiting a CAGR of 15.47% from 2026-2034. The report provides a comprehensive analysis of market size, growth trends, key drivers, segmentation, regional dynamics, and competitive landscape, offering valuable insights for investors, business strategists, consultants, and C-suite executives.

The market is experiencing robust growth driven by the increasing data center expansion, rising 5G deployment, AI-driven high-performance computing, and continuous advancements in silicon photonics. The growing adoption of PICs in LiDAR systems for autonomous vehicles, ongoing biomedical imaging innovations, and increasing government investments in quantum computing and semiconductor manufacturing are further accelerating market expansion. Additionally, strong investments in research and development, strategic partnerships across the semiconductor ecosystem, and miniaturization of photonic components are creating new opportunities across telecommunications, healthcare, defense, and aerospace sectors.



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improving chip performance, yield rates, and energy efficiency across data center and telecommunications applications.

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The increasing deployment of cloud computing, artificial intelligence (AI), and hyperscale data centers is significantly driving the adoption of photonic integrated circuits (PICs). These circuits enable faster data transfer, lower latency, and reduced power consumption compared to traditional electronic components. Telecom operators and technology companies are increasingly utilizing PICs in optical communication networks to support the growing demand for high-bandwidth applications, including 5G infrastructure, video streaming, and edge computing solutions.

The rapid advancement of silicon photonics technology is emerging as a major trend in the photonic integrated circuit market. Manufacturers are focusing on integrating optical and electronic components onto a single silicon chip to improve performance while reducing manufacturing costs. Silicon-based PICs are gaining traction across data communication, sensing, and healthcare applications due to their scalability, compact size, and compatibility with existing semiconductor fabrication processes. Continuous investments in research and development are further accelerating commercialization and innovation in this segment.

Photonic integrated circuits are increasingly being adopted in healthcare diagnostics, biosensing, and LiDAR-based sensing systems. The technology enables highly accurate optical sensing and miniaturized medical devices, supporting applications such as disease detection, wearable monitoring systems, and advanced imaging solutions. Additionally, the rising use of autonomous vehicles and industrial automation is boosting demand for PIC-enabled LiDAR and sensing technologies. These developments are encouraging companies to develop more efficient and compact photonic solutions for next-generation sensing applications.

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The report has segmented the market into the following categories:

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- Lasers
- MUX/DEMUX
- Optical Amplifiers
- Modulators
- Attenuators
- Detectors

Largest component holding ~40.3% market share in 2025. Lasers are fundamental to PICs, enabling high-speed data transmission in 5G networks, data centers, LiDAR systems, medical diagnostics, and defense targeting applications.

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- Indium Phosphide (InP)
- Gallium Arsenide (GaAs)
- Lithium Niobate (LiNbO3)
- Silicon
- Silica-on-Silicon

Market leader with ~45.6% share in 2025. InP's wide bandgap and high electron mobility enable superior performance in optical communications, 5G networks, data centers, and quantum computing — driving its dominance in high-performance PICs.

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- Monolithic Integration
- Hybrid Integration
- Module Integration

Dominant segment with ~48.9% share in 2025. All optical components — lasers, waveguides, modulators, and detectors — are fabricated on a single semiconductor substrate, delivering superior size, performance, and cost advantages for data centers, telecom, and sensing applications.

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- Optical Fiber Communication
- Optical Fiber Sensor
- Biomedical
- Quantum Computing

Largest application segment with ~50.2% share in 2025. PICs serve as the backbone for high-speed internet, 5G backhaul, and data center interconnects, integrating lasers, modulators, and detectors on-chip for reduced latency and enhanced power efficiency.

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- North America (United States, Canada)
- Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, Others)
- Europe (Germany, France, United Kingdom, Italy, Spain, Russia, Others)
- Latin America (Brazil, Mexico, Others)
- Middle East and Africa

Largest regional market with over 35.0% share in 2025, driven by strong semiconductor R&D investments, rapid 5G and data center expansion, AI-driven computing demand, and government support for domestic chip production.

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Market players in the global PIC industry are actively investing in R&D for next-generation photonic chips, focusing on higher integration, lower power consumption, and improved performance:

- Broadcom Inc.
- ColorChip Ltd.
- Hamamatsu Photonics K.K.
- II-VI Incorporated
- Infinera Corporation
- Intel Corporation
- LioniX International
- POET Technologies
- VLC Photonics S.L. (Hitachi Ltd.)

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If you are tracking the photonic integrated circuit market for investment decisions, market entry

approvals and licensing navigation, branding, marketing and sales strategies, competitive landscape and benchmarking analyses, pricing and cost research, and procurement research.

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