Photonics - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)

Market Report | 2024-02-17 | 197 pages | Mordor Intelligence

AVAILABLE LICENSES:

- Single User License $4750.00
- Team License (1-7 Users) $5250.00
- Site License $6500.00
- Corporate License $8750.00

Report description:

The Photonics Market size is estimated at USD 1.64 trillion in 2024, and is expected to reach USD 2.25 trillion by 2029, growing at a CAGR of 6.5% during the forecast period (2024-2029).

Photonics involves radiant energy (such as light), whose fundamental element is the photons and waves that can cure diseases, explore the universe, and even solve crimes. It involves the generation, manipulation, transmission, detection, and utilization of light and other forms of electromagnetic radiation. It is widely regarded as a critical enabling technology for developing smart systems that efficiently use energy without sacrificing overall system efficiency. Many verticals, including healthcare, automotive, communications, manufacturing, and retail, are leveraging the technology to attain higher efficiency, driving growth. Investments from these sectors also have witnessed significant growth in the recent past.

Key Highlights
-With photonics being a core technology of multiple industries, the consumption of the technology is witnessing rapid growth, with the market expanding in new verticals. Over the past few years, there has been an increasing trend of LiDAR or additive manufacturing in photonics. LiDAR has been used to study the atmosphere's distribution of gases and contaminants for decades. In recent years, it has become a critical technology for autonomous driving. The advancements in LiDAR mapping systems and their enabling technologies penetrated different verticals, like aerospace and defense, corridor mapping and topographical survey, automotive, mining, oil and gas, and other verticals, which are increasing the market scope.
-In the United States, the presence of industry giants such as Google, Microsoft, and Facebook is the primary force driving the photonics market, necessitating optimizing the data transmission process for respective data centers. The country also provides a favorable environment for technological advancements and expansions. Furthermore, the significant funding landscape in the United States silicon photonics devices industry has encouraged organizations and start-ups to invest in the expanding photonics

market.
-Moreover, an article titled "A Survey on Silicon Photonic in Deep Learning," published by the Association of Computing Machinery, stated that deep learning has led to exceptional success in solving some extremely tough problems in disciplines, including computer vision, natural language processing, and general pattern recognition. These achievements are the product of decades of research into better training methodology and deeper neural network models, as well as developments in deep neural network hardware platforms for training and execution. Many application-specific integrated circuit (ASIC) hardware accelerators for deep learning have received attention in recent years due to their improved performance and energy efficiency over standard CPU and GPU designs.
-Industries require a high level of initial investment to integrate such photonics technology for automation purposes. The high cost of automated systems is concerned with effective and robust hardware and efficient software. Automation equipment requires high capital investment to invest in smart production (an automated system can cost millions of dollars to install, design, and fabricate). Thus, industries rely on the existing technologies available at a lower price, ultimately challenging the adoption.
-Apart from the direct impact evident in the supply chains and production of photonic solutions, the aftereffects of the pandemic are also impacting the growth of the market studied. For instance, the ongoing threat of recession looming over various regions, including the United States, may negatively influence the market's growth, as the economic uncertainty will prevent consumers and businesses from spending more on high-value products, which may impact the growth of the market studied.
-The COVID-19 pandemic influenced the overall semiconductor manufacturing market from the demand and supply sides. In addition, the global lockdowns and closure of semiconductor plants also fueled the supply shortage. The effects were also reflected in the market studied. However, many of these effects were short-term. Precautions by governments worldwide to support automotive and semiconductor sectors helped revive industry growth.

Photonics Market Trends

Consumer End-user Industry Segment Holds Significant Market Share

- Photonics are utilized in several consumer devices like barcode scanners, DVD players, TV remote controls, televisions, smartphones, etc. Barcode scanners are commonly used in consumer equipment like printers, CD/DVD/Blu-ray devices, and remote devices. Barcode scanners play a crucial role in logistics and supply chain management. They are used for scanning barcodes on product packages and shipping labels to track inventory, manage stock levels, and ensure accurate delivery.
- Photonics-based barcode scanners are used for package sorting in logistics applications. These scanners help automate sorting packages based on their barcode information. They are also extensively used in retail environments, including point-of-sale transactions, inventory management, and price verification. They enable quick and accurate scanning of product barcodes, improving efficiency and customer service.
- Photonics technology also plays a crucial role in the functioning of DVD players. DVD players utilize photonics technology in their optical disc drives, including CD, DVD, Blu-ray, and HD (high-definition) players and recorders. DVD players use lasers for reading and writing data on optical discs. The laser diode emits a focused, narrow beam of light that can be directed onto the surface of the disc, allowing for precise data retrieval and recording. DVD players are optical disc players that rely on photonics technology to read and write data on DVDs. The laser beam emitted by the laser diode interacts with the pits and lands on the DVD's surface, allowing the player to retrieve the stored information.
- According to the Consumer Technology Association (CTA) and the US Census Bureau, the sales value of smartphones sold in the United States was expected to increase from USD 73 billion in 2021 to USD 74.7 billion in 2022. Additionally, according to GSMA, in North America, the number of smartphone subscribers is expected to reach 328 million by the year 2025. Moreover, by 2025, the region may witness an increase in the penetration rates of mobile subscribers (86%) and the Internet (80%). The increasing demand for mobile phones is likely to offer lucrative opportunities for the growth of the market studied.
- Moreover, the US Census Bureau estimated the smartphone sales value to be USD 74.7 billion in 2022-2023. This sluggish

growth is an outcome of declined smartphone shipments in the United States. Low-end smartphone sales declines were the most significant contributing factor to the downturn amid economic challenges, high inflation, and poor seasonal demand. However, this is expected to end in the upcoming years. These sales trends are expected to impact smartphone camera lens growth significantly.

Asia Pacific to Register Major Growth

- Japan is a high-tech powerhouse economy in Asia. The global camera industry is rapidly evolving, and Japan is a consistent leader and innovator in the market. Mirror-less hybrid cameras, DSLRs, and compact interchangeable-lens cameras now drive the camera market, further creating opportunities for the market studied.
- The country has many universities and institutes related to photonics. For instance, the Photonics Advanced Research Center (PARC) at Osaka University in Japan has emerged as a leading scientific and industrial research center for Japan's photonics.
- China is expected to exhibit a significant growth rate among the Asia-Pacific countries, owing to its growing economy and global electronics market share. China is one of the prominent electronics producers and consumers. The manufacturing industry is rapidly growing in the region and is witnessing the deployment of various manufacturing and telecommunications technologies, which is expected to aid the market's growth.?
- India is one of the largest and fastest-growing economies in the world. The growing purchasing power and the rising influence of social media are expected to drive the market for electronic goods. The government is undertaking many initiatives to become one of the developed economies. The Ministry of Electronics and Information Technology, India, approves various digital projects, creating significant market growth opportunities over the forecast period.
- South Korea is one of the significant contributors to the market. The growing population, increasing investments toward developing silicon photonic products, international and domestic players' rising focus on developing modern silicon photonic products, and improving R&D activities to increase the region's data transmission rate fuel the market growth.
- The countries considered part of the rest of the Asia-Pacific include Indonesia, Singapore, and Thailand. The rapid development of 5G, AI, the internet of things (IoT), virtual reality (VR), and the commercial application of such new technologies increase the demand for data processing and information interaction. This scenario may boost the construction of data centers in the region, leading to the industry's explosive growth.? ?

Photonics Industry Overview

The photonics market is highly fragmented, with the presence of major players like Hamamatsu Photonics KK, Intel Corporation, Polatis Incorporated (Huber+Suhner), Alcatel-Lucent SA (Nokia Corporation), and Molex Inc. (Koch Industries). Players in the market are adopting strategies, such as partnerships and acquisitions, to enhance their product offerings and gain sustainable competitive advantage.

- November 2023 - Innolume announced the introduction of high-power O-Band quantum Dot SOA with 1W optical power. It can be used in LiDARs, PONs, and FSO.
- September 2023 - Ams OSRAM AG and the Malaysian Investment Development Authority (MIDA) announced mutual support for the continued investment and expansion in Malaysia. Through a Collaborative Agreement, MIDA demonstrated significant support for ams OSRAM's initiatives in Malaysia.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

Table of Contents:

1 INTRODUCTION
1.1 Study Assumptions and Market Definition
1.2 Scope of the Study

2 RESEARCH METHODOLOGY

3 EXECUTIVE SUMMARY

4 MARKET INSIGHTS
4.1 Market Overview
4.2 Industry Value Chain Analysis
4.3 Industry Attractiveness - Porter's Five Forces Analysis
4.3.1 Bargaining Power of Suppliers
4.3.2 Bargaining Power of Buyers/Consumers
4.3.3 Threat of New Entrants
4.3.4 Threat of Substitute Products and Services
4.3.5 Intensity of Competitive Rivalry
4.4 Impact of COVID-19 Aftereffects and Other Macroeconomic Factors on the Market
4.5 Technology Snapshot

5 MARKET DYNAMICS
5.1 Market Drivers
5.1.1 Emergence of Silicon-based Photonics Applications
5.1.2 Increasing Focus on High Performance and Eco-friendly Solutions
5.2 Market Restraints
5.2.1 High Initial Cost of Photonics-enabled Devices

6 MARKET SEGMENTATION
6.1 By End-user Industry
6.1.1 Consumer
6.1.2 Aerospace and Defense
6.1.3 Display
6.1.4 Solar
6.1.5 LED Lighting
6.1.6 Medical and Bioinstrumentation
6.1.7 Industrial and Manufacturing
6.1.8 Automotive
6.1.9 Other End-user Industries
6.2 By Geography
6.2.1 North America
6.2.1.1 United States
6.2.1.2 Canada

6.2.2 Europe
6.2.2.1 United Kingdom
6.2.2.2 Germany
6.2.2.3 France
6.2.2.4 Italy
6.2.2.5 Rest of Europe
6.2.3 Asia-Pacific
6.2.3.1 Japan
6.2.3.2 China
6.2.3.3 India
6.2.3.4 Taiwan
6.2.3.5 South Korea
6.2.3.6 Rest of Asia-Pacific
6.2.4 Rest of the World

7 COMPETITIVE LANDSCAPE
7.1 Vendor Positioning Analysis
7.2 Company Profiles*
7.2.1 Hamamatsu Photonics KK
7.2.2 Intel Corporation
7.2.3 Polatis Incorporated (HUBER+SUHNER)
7.2.4 Alcatel-lucent SA (Nokia Corporation)
7.2.5 Molex Inc. (Koch Industries)
7.2.6 Infinera Corporation
7.2.7 NEC Corporation
7.2.8 Innolume GmbH
7.2.9 Coherent Corporation
7.2.10 IPG Photonics Corporation
7.2.11 AMS OSRAM AG
7.2.12 Signify NV
7.2.13 LEA Photonics SAS (Keopsys)
7.2.14 Schott AG
7.2.15 Carl Zeiss AG (Scantinel Photonics GmbH)
7.2.16 Nikon Corporation
7.2.17 Corning Inc.

8 INVESTMENT ANALYSIS

9 FUTURE OUTLOOK OF THE MARKET

SCOTTS INTERNATIONAL

Photonics - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)

Market Report | 2024-02-17 | 197 pages | Mordor Intelligence

To place an Order with Scotts International:

- - Print this form
- - Complete the relevant blank fields and sign
- - Send as a scanned email to support@scotts-international.com

ORDER FORM:

Select license	License	Price
	Single User License	$4750.00
	Team License (1-7 Users)	$5250.00
	Site License	$6500.00
	Corporate License	$8750.00
	VAT	
	Total	

*Please circle the relevant license option. For any questions please contact support@scotts-international.com or 0048 603 394 346.

** VAT will be added at 23% for Polish based companies, individuals and EU based companies who are unable to provide a valid EU Vat Numbers.

Email*		Phone*	
First Name*		Last Name*	
Job title*			
Company Name*		EU Vat / Tax ID / NIP number*	
Address*		City*	
Zip Code*		Country*	
		Date	2026-02-26
		Signature