

VCSELS in Data Communication Market Trends and Opportunities Through 2027

VCSEL for Data Communication Market Expected to Reach \$358.41 Million by 2027

WILMINGTON, DE, UNITED STATES, January 9, 2025 /EINPresswire.com/ -- Allied Market Research, titled, "[VCSEL for Data Communication Market](#) by Type and Material: Opportunity Analysis and Industry Forecast, 2020-2027" the global VCSEL for data communication industry size is expected to reach \$358.41 million by 2027 from \$120.52 million in 2019, growing at a CAGR of 13.54% from 2020 to 2027. Europe is expected to be the leading contributor to the global VCSEL for data communication market growth, followed by North America and Asia-Pacific.



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VCSEL for data communication market sees global growth potential, driven by data center demand, 850nm VCSELS, and Industry 4.0 advancements.”

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A vertical cavity surface emitting laser (VCSEL) is a specialized laser diode that has the potential to transform fiber optic communications by improving efficiency and increasing data speed. VCSELS emit energy at 850 nanometers (nm) and 1300 nm. These wavelengths correspond to energy in the near-infrared (IR) portion of

the electromagnetic spectrum. VCSELS are replacing edge-emitting lasers as the reference technology for short-range data communications networks and local networks, which offer lower production costs and higher reliability.

Data centers widely use 850nm-emitting VCSELS, especially for applications wherein the size of

the data transmitted over a network is extremely large. Increasing adoption of data centers across large businesses creates a higher demand for VCSEL technology. In addition, Asia-Pacific countries such as China, India, Indonesia, and Singapore are emerging as hubs for data centers, due to technological advancements in basic telecom infrastructure and encouragement from respective governments. High data transfer rates in data centers are particularly essential, as they allow high-speed transmission for processing and retrieving results, which creates high growth for the VCSEL for data communication market.

The Gallium Arsenide segment contributed the maximum in terms of revenue to the market and accounted for a 65% share in 2019. The demand for gallium arsenide has increased as compared to other materials, due to their most important advantage such as speed. Electrons travel about five times faster in gallium arsenide than they do in silicon. Gallium arsenide also has a high resistance to electrical current before it is doped with any impurities to form circuit elements. However, indium phosphide is expected to grow at a faster rate, by 16.5% in comparison to other materials. Indium phosphide (InP) is the most developed platform for photonic integrated circuits (PICs). The high advancement in indium phosphide applications, and demand for high-performance VCSEL technology, are expected to create growth opportunities for the VCSEL for data communication market.

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The multi-mode segment was the largest contributor to revenue in 2019 and is expected to grow at a CAGR of 14.0% from 2020 to 2027. The majority of the commercially available VCSELS operate at 850 nm and are designed to meet demanding specifications for high-speed data communication. This market has experienced a remarkable growth rate over the last decades due to the high use of vertical-cavity surface-emitting lasers (VCSELS) and multimode optical fibers.

By region, the [VCSEL for data communication market trends](#) have been analyzed across North America, Europe, Asia-Pacific, and LAMEA. The analysis identified that North America contributed the maximum revenue in 2019. The VCSEL for data communication market in Asia-Pacific is expected to grow at a faster rate as compared to other regions. VCSELS are widely used across several applications due to their advantages of compact size, low power requirements, high reliability, and low manufacturing costs. The rising use of VCSEL technology in the telecommunication sector is fuelling the growth of the VCSEL market in Asia-Pacific.

Global VCSEL market has been significantly impacted by the covid-19 outbreak, due to the shutdown of manufacturing units globally. The new production throughout the world has been delayed which in turn has a significant demand in several industries including automotive, consumer electronics, industrial, and others.

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Key Findings Of The Study

- In 2019, the gallium arsenide segment accounted for the maximum revenue and is projected to grow at a notable CAGR of 12.9% during the forecast period.
- The multi-mode segment accounted for more than 70.0% of the VCSEL for data communication market share in 2019.
- The indium phosphide segment is expected to witness the highest growth rate during the forecast period.
- The U.S. was the major shareholder in the North America VCSEL for data communication market, accounting for approximately 50.0% share in 2019.

The key players profiled in the report include Hamamatsu Photonics K.K, TRUMPF, II-VI Incorporated, RPMC Lasers, Bandwidth10, Vixar Inc. (Osram Opto semiconductor), VERTILAS GmbH, VI Systems GmbH, Ushio America, Inc., and Vertilite. Market players have adopted various strategies such as product launches, partnerships, and acquisitions, to expand their foothold in the VCSEL for the data communication industry.

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