

North America Vertical Cavity Surface Emitting Laser (VCSEL) Market Forecast to 2030 –Regional Analysis – by Type (Single Mode and Multi-Mode), Material [(Gallium Arsenide (GAAS), Indium Phosphide (INP), Others)], Data Rate (Up to 10 GBPS, 10.1 to 25 GBPS, and Above 25 GBPS), Wavelength (Red, Near Infrared (NIR), and Short Wave Infrared (SWIR), Application (Sensing, Data Communication, Industrial Heating & Printing, and Others), and End-use Industry (Mobile & Consumer, Telecom & Infrastructure, Industrial, Defense & Aerospace, Medical, and Automotive & Mobility)

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Abstracts

The North America vertical cavity surface emitting laser market is expected to grow from US\$ 672.88 million in 2023 to US\$ 1,872.15 million by 2030. It is estimated to grow at a CAGR of 15.7% from 2023 to 2030.

Rising Adoption of VCSEL for 3D Sensing Applications Fuel North America Vertical Cavity Surface Emitting Laser (VCSEL) Market

VCSELs are used widely as light sources in 3D sensing applications. 3D sensing technologies are used in various industries such as consumer electronics, medical, industrial, automotive, and automotive to gain high precision and accuracy for the required task. For example, the technologies are used in cameras, commonly in smartphones, automobiles, drones, and robots, to scan and render objects in 3D. In consumer electronics such as smartphones, VCSEL widely used for facial recognition

and gesture control applications. In industrial automation, VCSEL is used for accurate sensing technologies. It is also employed in virtual reality and gaming applications. Thus, the growth of these industries propels the requirement for 3D sensing technologies, positively influencing the demand for VCSEL.

Moreover, to cater to the demand for VCSEL, several market players are introducing new VCSEL products. For instance, In April 2022, TRUMPF launched new VCSEL products to expand its VCSEL product portfolio for 3D sensing in consumer and industrial applications. In March 2021, IQE PLC unveiled an IQVCSEL™ product line to expand its VCSEL portfolio for service communication and advanced sensing markets. In March 2021, Lumentum Operations LLC launched five and six-junction VCSEL array products for the advanced consumer and other 3D sensing applications. The use of VCSEL-based imaging increases the power and wavelength for 3D sensing. Further, it is considered an ideal solution for face and gesture recognition. Its ability to produce high-power outputs makes it an optimal solution in robotics and autonomous vehicle application. Such benefits of VCSEL encourage new product launches and contribute to its demand, which drives the North America VCSEL market growth.

North America Vertical Cavity Surface Emitting Laser (VCSEL) Market Overview

Based on country, the VCSEL market in North America is segmented into the US, Canada, and Mexico. These countries are a hub of technological development in the region. The manufacturing industry is one of the significant contributors to the region's economy. Thus, governments of various countries in the region are investing in the development of the manufacturing industry.

In January 2021, the US President announced plans to strengthen the US manufacturing sector under the “Made in America” initiative, which focused on making technologically advanced and automated manufacturing sectors. The President announced an investment of US\$ 300 billion for R&D activities, and the inclusion of advanced technologies to boost the country's production output. These technological advancements, including automation, can increase the revenue of manufacturing companies, leading to the adoption of automation by the manufacturing facilities. North America has a robust medical device manufacturing industry. According to the National Library of Medicine, the US was among the top countries to export medical devices from 1990 to 2020. The region comprises major medical device manufacturers such as Johnson & Johnson Services, Inc.; Abbott; Boston Scientific Corporation; and General Electric. Thus, the use of VCSEL in various sensing and laser applications in the medical devices industry contributes to the VCSEL market growth in the region.

North America Vertical Cavity Surface Emitting Laser (VCSEL) Market Revenue and Forecast to 2030 (US\$ Million)

North America Vertical Cavity Surface Emitting Laser (VCSEL) Market Segmentation

The North America vertical cavity surface emitting laser market is segmented into type,

material, data rate, wavelength, application, end-use industry, and country.

Based on type, the North America vertical cavity surface emitting laser market is segmented into single mode and multi-mode. The single mode segment held a larger share of the North America vertical cavity surface emitting laser market in 2023.

Based on material, the North America vertical cavity surface emitting laser market is segmented into Gallium Arsenide (GAAS), Indium Phosphide (INP), others. The Gallium Arsenide (GAAS) segment held the largest share of the North America vertical cavity surface emitting laser market in 2023.

Based on data rate, the North America vertical cavity surface emitting laser market is segmented into Up to 10 GBPS, 10.1 to 25 GBPS, and Above 25 GBPS. The above 25 GBPS segment held the largest share of the North America vertical cavity surface emitting laser market in 2023.

Based on wavelength, the North America vertical cavity surface emitting laser market is segmented into Red, Near Infrared (NIR), and Short Wave Infrared (SWIR). The red segment held the largest share of the North America vertical cavity surface emitting laser market in 2023.

Based on application, the North America vertical cavity surface emitting laser market is segmented into sensing, data communication, industrial heating & printing, and others. The sensing segment held the largest share of the North America vertical cavity surface emitting laser market in 2023.

Based on end-use industry, the North America vertical cavity surface emitting laser market is segmented into mobile & consumer, telecom & infrastructure, industrial, defense & aerospace, medical, and automotive & mobility. The mobile & consumer segment held the largest share of the North America vertical cavity surface emitting laser market in 2023.

Based on country, the North America vertical cavity surface emitting laser market is segmented into the US, Canada, and Mexico. The US dominated the share of the North America vertical cavity surface emitting laser market in 2023.

ams-OSRAM AG; Broadcom Inc; Coherent Corp; Hamamatsu Photonics KK; IQE Plc; Leonardo SpA; Lumentum Holdings Inc; TRUMPF SE + Co KG; and VERTILAS GmbH are the leading companies operating in the North America vertical cavity surface emitting laser market.

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