

Global VCSEL Flood Illumination Module Supply, Demand and Key Producers, 2026-2032

<https://marketpublishers.com/r/GF353851E16DEN.html>

Date: May 2026

Pages: 84

Price: US\$ 4,480.00 (Single User License)

ID: GF353851E16DEN

Abstracts

The global VCSEL Flood Illumination Module market size is expected to reach \$ 741 million by 2032, rising at a market growth of 22.3% CAGR during the forecast period (2026-2032).

A VCSEL flood illumination module is a near infrared area light source module built around vertical cavity surface emitting laser arrays, with diffuser optics or freeform lenses, monitor photodiodes, package substrates, and necessary eye safety design integrated into a compact package. It is mainly used to meet the requirements of 2D near infrared imaging and 3D time of flight sensing for uniform illumination, high signal to noise ratio, fast modulation, and compact system integration. Compared with conventional infrared LED solutions, these modules usually offer higher power density, narrower spectral width, better sunlight immunity, and more flexible matching of the field of illumination, which is why they are widely used in driver monitoring, occupant monitoring, gesture recognition, 3D face and biometric recognition, industrial robots and AGV perception, smart security, and occupancy sensing. Mainstream products are typically delivered as SMT reflowable packages or highly integrated surface mount modules. Their common structures include multi junction VCSEL arrays, diffusers or freeform lenses, photodiodes, and ceramic or other high reliability substrates. Commercially, the market includes both catalog products and joint development models centered on automotive qualification, ToF modules, and customized light field design.

The clearest growth trajectory for VCSEL flood illumination modules is now moving toward in-cabin 3D sensing. Official product pages from leading suppliers consistently place driver monitoring, occupant monitoring, gesture recognition, and ToF 3D sensing at the center of their positioning, which indicates that the category is evolving from an optional infrared illumination component into a core module within the intelligent cockpit

sensing chain. European safety ratings and regulation are reinforcing this trend and raising the incentive for automakers and Tier 1 suppliers to adopt higher performance active illumination solutions.

From a technology perspective, competition in VCSEL flood illumination modules is no longer centered on simply increasing output power. It is increasingly defined by system-level optimization across chips, optics, packaging, monitoring, and driver matching. Public materials from Coherent, Lumentum, ams OSRAM, Stanley Electric, and RAYSEES repeatedly highlight diffusers, freeform lenses, photodiodes, AEC-Q102, compact SMT packaging, and multiple field-of-illumination options. This shows that customer priorities have shifted from isolated light source parameters to repeatable module-level performance.

From a regional perspective, the supply side of the VCSEL flood illumination module market already shows a parallel structure across Europe, the United States, Japan, and China. European and U.S. suppliers retain strengths in automotive qualification and ToF modularization, Japanese suppliers remain strong in automotive reliability, and Chinese suppliers are moving quickly through local manufacturing, packaging innovation, and faster customization response. On the demand side, the earliest concentration is likely to remain in the European automotive market, China's intelligent cockpit and robotics markets, and broader Asian electronics manufacturing ecosystems.

This report studies the global VCSEL Flood Illumination Module production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for VCSEL Flood Illumination Module and provides market size (US\$ million) and Year-over-Year (YoY) Growth, considering 2025 as the base year. This report explores demand trends and competition, as well as details the characteristics of VCSEL Flood Illumination Module that contribute to its increasing demand across many markets.

Highlights and key features of the study

Global VCSEL Flood Illumination Module total production and demand, 2021-2032, (Million Units)

Global VCSEL Flood Illumination Module total production value, 2021-2032, (USD Million)

Global VCSEL Flood Illumination Module production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (Million Units), (based on production site)

Global VCSEL Flood Illumination Module consumption by region & country, CAGR,

2021-2032 & (Million Units)

U.S. VS China: VCSEL Flood Illumination Module domestic production, consumption, key domestic manufacturers and share

Global VCSEL Flood Illumination Module production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (Million Units)

Global VCSEL Flood Illumination Module production by Type, production, value, CAGR, 2021-2032, (USD Million) & (Million Units)

Global VCSEL Flood Illumination Module production by Application, production, value, CAGR, 2021-2032, (USD Million) & (Million Units)

This report profiles key players in the global VCSEL Flood Illumination Module market based on the following parameters - company overview, production, value, price, gross margin, product portfolio, geographical presence, and key developments. Key companies covered as a part of this study include II-VI, ams OSRAM, Lumentum, Stanley Electric Co., Ltd., RAYSEES, etc.

This report also provides key insights about market drivers, restraints, opportunities, new product launches or approvals.

Stakeholders would have ease in decision-making through various strategy matrices used in analyzing the World VCSEL Flood Illumination Module market

Detailed Segmentation:

Each section contains quantitative market data including market by value (US\$ Millions), volume (production, consumption) & (Million Units) and average price (US\$/Unit) by manufacturer, by Type, and by Application. Data is given for the years 2021-2032 by year with 2025 as the base year, 2026 as the estimate year, and 2027-2032 as the forecast year.

Global VCSEL Flood Illumination Module Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global VCSEL Flood Illumination Module Market, Segmentation by Type:

940 nm

850 nm

Global VCSEL Flood Illumination Module Market, Segmentation by Eye Safety Monitoring Integration:

Integrated Photodiode

Photodiode Integration Not Explicitly Disclosed

Global VCSEL Flood Illumination Module Market, Segmentation by Optical Beam Shaping Method:

Diffuser Optics

Freeform Lens

Micro-Lens Array

Global VCSEL Flood Illumination Module Market, Segmentation by Application:

Time-of-Flight (ToF) 3D Sensing

Gesture Recognition

Access Control

Illumination for DMS/OMS

Industrial Automation

Home Automation

Others

Companies Profiled:

II-VI

ams OSRAM

Lumentum

Stanley Electric Co., Ltd.

RAYSEES

Key Questions Answered:

1. How big is the global VCSEL Flood Illumination Module market?
2. What is the demand of the global VCSEL Flood Illumination Module market?
3. What is the year over year growth of the global VCSEL Flood Illumination Module market?
4. What is the production and production value of the global VCSEL Flood Illumination Module market?
5. Who are the key producers in the global VCSEL Flood Illumination Module market?
6. What are the growth factors driving the market demand?

Contents

1 SUPPLY SUMMARY

- 1.1 VCSEL Flood Illumination Module Introduction
- 1.2 World VCSEL Flood Illumination Module Supply & Forecast
 - 1.2.1 World VCSEL Flood Illumination Module Production Value (2021 & 2025 & 2032)
 - 1.2.2 World VCSEL Flood Illumination Module Production (2021-2032)
 - 1.2.3 World VCSEL Flood Illumination Module Pricing Trends (2021-2032)
- 1.3 World VCSEL Flood Illumination Module Production by Region (Based on Production Site)
 - 1.3.1 World VCSEL Flood Illumination Module Production Value by Region (2021-2032)
 - 1.3.2 World VCSEL Flood Illumination Module Production by Region (2021-2032)
 - 1.3.3 World VCSEL Flood Illumination Module Average Price by Region (2021-2032)
 - 1.3.4 North America VCSEL Flood Illumination Module Production (2021-2032)
 - 1.3.5 Europe VCSEL Flood Illumination Module Production (2021-2032)
 - 1.3.6 China VCSEL Flood Illumination Module Production (2021-2032)
 - 1.3.7 Japan VCSEL Flood Illumination Module Production (2021-2032)
 - 1.3.8 South Korea VCSEL Flood Illumination Module Production (2021-2032)
 - 1.3.9 China Taiwan VCSEL Flood Illumination Module Production (2021-2032)
- 1.4 Market Drivers, Restraints and Trends
 - 1.4.1 VCSEL Flood Illumination Module Market Drivers
 - 1.4.2 Factors Affecting Demand
 - 1.4.3 VCSEL Flood Illumination Module Major Market Trends

2 DEMAND SUMMARY

- 2.1 World VCSEL Flood Illumination Module Demand (2021-2032)
- 2.2 World VCSEL Flood Illumination Module Consumption by Region
 - 2.2.1 World VCSEL Flood Illumination Module Consumption by Region (2021-2026)
 - 2.2.2 World VCSEL Flood Illumination Module Consumption Forecast by Region (2027-2032)
- 2.3 United States VCSEL Flood Illumination Module Consumption (2021-2032)
- 2.4 China VCSEL Flood Illumination Module Consumption (2021-2032)
- 2.5 Europe VCSEL Flood Illumination Module Consumption (2021-2032)
- 2.6 Japan VCSEL Flood Illumination Module Consumption (2021-2032)
- 2.7 South Korea VCSEL Flood Illumination Module Consumption (2021-2032)
- 2.8 ASEAN VCSEL Flood Illumination Module Consumption (2021-2032)

2.9 India VCSEL Flood Illumination Module Consumption (2021-2032)

3 WORLD MANUFACTURERS COMPETITIVE ANALYSIS

3.1 World VCSEL Flood Illumination Module Production Value by Manufacturer (2021-2026)

3.2 World VCSEL Flood Illumination Module Production by Manufacturer (2021-2026)

3.3 World VCSEL Flood Illumination Module Average Price by Manufacturer (2021-2026)

3.4 VCSEL Flood Illumination Module Company Evaluation Quadrant

3.5 Industry Rank and Concentration Rate (CR)

3.5.1 Global VCSEL Flood Illumination Module Industry Rank of Major Manufacturers

3.5.2 Global Concentration Ratios (CR4) for VCSEL Flood Illumination Module in 2025

3.5.3 Global Concentration Ratios (CR8) for VCSEL Flood Illumination Module in 2025

3.6 VCSEL Flood Illumination Module Market: Overall Company Footprint Analysis

3.6.1 VCSEL Flood Illumination Module Market: Region Footprint

3.6.2 VCSEL Flood Illumination Module Market: Company Product Type Footprint

3.6.3 VCSEL Flood Illumination Module Market: Company Product Application

Footprint

3.7 Competitive Environment

3.7.1 Historical Structure of the Industry

3.7.2 Barriers of Market Entry

3.7.3 Factors of Competition

3.8 New Entrant and Capacity Expansion Plans

3.9 Mergers, Acquisition, Agreements, and Collaborations

4 UNITED STATES VS CHINA VS REST OF THE WORLD

4.1 United States VS China: VCSEL Flood Illumination Module Production Value Comparison

4.1.1 United States VS China: VCSEL Flood Illumination Module Production Value Comparison (2021 & 2025 & 2032)

4.1.2 United States VS China: VCSEL Flood Illumination Module Production Value Market Share Comparison (2021 & 2025 & 2032)

4.2 United States VS China: VCSEL Flood Illumination Module Production Comparison

4.2.1 United States VS China: VCSEL Flood Illumination Module Production Comparison (2021 & 2025 & 2032)

4.2.2 United States VS China: VCSEL Flood Illumination Module Production Market Share Comparison (2021 & 2025 & 2032)

4.3 United States VS China: VCSEL Flood Illumination Module Consumption Comparison

4.3.1 United States VS China: VCSEL Flood Illumination Module Consumption Comparison (2021 & 2025 & 2032)

4.3.2 United States VS China: VCSEL Flood Illumination Module Consumption Market Share Comparison (2021 & 2025 & 2032)

4.4 United States Based VCSEL Flood Illumination Module Manufacturers and Market Share, 2021-2026

4.4.1 United States Based VCSEL Flood Illumination Module Manufacturers, Headquarters and Production Site (States, Country)

4.4.2 United States Based Manufacturers VCSEL Flood Illumination Module Production Value (2021-2026)

4.4.3 United States Based Manufacturers VCSEL Flood Illumination Module Production (2021-2026)

4.5 China Based VCSEL Flood Illumination Module Manufacturers and Market Share

4.5.1 China Based VCSEL Flood Illumination Module Manufacturers, Headquarters and Production Site (Province, Country)

4.5.2 China Based Manufacturers VCSEL Flood Illumination Module Production Value (2021-2026)

4.5.3 China Based Manufacturers VCSEL Flood Illumination Module Production (2021-2026)

4.6 Rest of World Based VCSEL Flood Illumination Module Manufacturers and Market Share, 2021-2026

4.6.1 Rest of World Based VCSEL Flood Illumination Module Manufacturers, Headquarters and Production Site (State, Country)

4.6.2 Rest of World Based Manufacturers VCSEL Flood Illumination Module Production Value (2021-2026)

4.6.3 Rest of World Based Manufacturers VCSEL Flood Illumination Module Production (2021-2026)

5 MARKET ANALYSIS BY TYPE

5.1 World VCSEL Flood Illumination Module Market Size Overview by Type: 2021 VS 2025 VS 2032

5.2 Segment Introduction by Type

5.2.1 940 nm

5.2.2 850 nm

5.3 Market Segment by Type

5.3.1 World VCSEL Flood Illumination Module Production by Type (2021-2032)

- 5.3.2 World VCSEL Flood Illumination Module Production Value by Type (2021-2032)
- 5.3.3 World VCSEL Flood Illumination Module Average Price by Type (2021-2032)

6 MARKET ANALYSIS BY EYE SAFETY MONITORING INTEGRATION

- 6.1 World VCSEL Flood Illumination Module Market Size Overview by Eye Safety Monitoring Integration: 2021 VS 2025 VS 2032
- 6.2 Segment Introduction by Eye Safety Monitoring Integration
 - 6.2.1 Integrated Photodiode
 - 6.2.2 Photodiode Integration Not Explicitly Disclosed
- 6.3 Market Segment by Eye Safety Monitoring Integration
 - 6.3.1 World VCSEL Flood Illumination Module Production by Eye Safety Monitoring Integration (2021-2032)
 - 6.3.2 World VCSEL Flood Illumination Module Production Value by Eye Safety Monitoring Integration (2021-2032)
 - 6.3.3 World VCSEL Flood Illumination Module Average Price by Eye Safety Monitoring Integration (2021-2032)

7 MARKET ANALYSIS BY OPTICAL BEAM SHAPING METHOD

- 7.1 World VCSEL Flood Illumination Module Market Size Overview by Optical Beam Shaping Method: 2021 VS 2025 VS 2032
- 7.2 Segment Introduction by Optical Beam Shaping Method
 - 7.2.1 Diffuser Optics
 - 7.2.2 Freeform Lens
 - 7.2.3 Micro-Lens Array
- 7.3 Market Segment by Optical Beam Shaping Method
 - 7.3.1 World VCSEL Flood Illumination Module Production by Optical Beam Shaping Method (2021-2032)
 - 7.3.2 World VCSEL Flood Illumination Module Production Value by Optical Beam Shaping Method (2021-2032)
 - 7.3.3 World VCSEL Flood Illumination Module Average Price by Optical Beam Shaping Method (2021-2032)

8 MARKET ANALYSIS BY APPLICATION

- 8.1 World VCSEL Flood Illumination Module Market Size Overview by Application: 2021 VS 2025 VS 2032
- 8.2 Segment Introduction by Application

- 8.2.1 Time-of-Flight (ToF) 3D Sensing
- 8.2.2 Gesture Recognition
- 8.2.3 Access Control
- 8.2.4 Illumination for DMS/OMS
- 8.2.5 Industrial Automation
- 8.2.6 Home Automation
- 8.2.7 Others
- 8.3 Market Segment by Application
 - 8.3.1 World VCSEL Flood Illumination Module Production by Application (2021-2032)
 - 8.3.2 World VCSEL Flood Illumination Module Production Value by Application (2021-2032)
 - 8.3.3 World VCSEL Flood Illumination Module Average Price by Application (2021-2032)

9 COMPANY PROFILES

- 9.1 II-VI
 - 9.1.1 II-VI Details
 - 9.1.2 II-VI Major Business
 - 9.1.3 II-VI VCSEL Flood Illumination Module Product and Services
 - 9.1.4 II-VI VCSEL Flood Illumination Module Production, Price, Value, Gross Margin and Market Share (2021-2026)
 - 9.1.5 II-VI Recent Developments/Updates
 - 9.1.6 II-VI Competitive Strengths & Weaknesses
- 9.2 ams OSRAM
 - 9.2.1 ams OSRAM Details
 - 9.2.2 ams OSRAM Major Business
 - 9.2.3 ams OSRAM VCSEL Flood Illumination Module Product and Services
 - 9.2.4 ams OSRAM VCSEL Flood Illumination Module Production, Price, Value, Gross Margin and Market Share (2021-2026)
 - 9.2.5 ams OSRAM Recent Developments/Updates
 - 9.2.6 ams OSRAM Competitive Strengths & Weaknesses
- 9.3 Lumentum
 - 9.3.1 Lumentum Details
 - 9.3.2 Lumentum Major Business
 - 9.3.3 Lumentum VCSEL Flood Illumination Module Product and Services
 - 9.3.4 Lumentum VCSEL Flood Illumination Module Production, Price, Value, Gross Margin and Market Share (2021-2026)
 - 9.3.5 Lumentum Recent Developments/Updates

9.3.6 Lumentum Competitive Strengths & Weaknesses

9.4 Stanley Electric Co., Ltd.

9.4.1 Stanley Electric Co., Ltd. Details

9.4.2 Stanley Electric Co., Ltd. Major Business

9.4.3 Stanley Electric Co., Ltd. VCSEL Flood Illumination Module Product and Services

9.4.4 Stanley Electric Co., Ltd. VCSEL Flood Illumination Module Production, Price, Value, Gross Margin and Market Share (2021-2026)

9.4.5 Stanley Electric Co., Ltd. Recent Developments/Updates

9.4.6 Stanley Electric Co., Ltd. Competitive Strengths & Weaknesses

9.5 RAYSEES

9.5.1 RAYSEES Details

9.5.2 RAYSEES Major Business

9.5.3 RAYSEES VCSEL Flood Illumination Module Product and Services

9.5.4 RAYSEES VCSEL Flood Illumination Module Production, Price, Value, Gross Margin and Market Share (2021-2026)

9.5.5 RAYSEES Recent Developments/Updates

9.5.6 RAYSEES Competitive Strengths & Weaknesses

10 INDUSTRY CHAIN ANALYSIS

10.1 VCSEL Flood Illumination Module Industry Chain

10.2 VCSEL Flood Illumination Module Upstream Analysis

10.2.1 VCSEL Flood Illumination Module Core Raw Materials

10.2.2 Main Manufacturers of VCSEL Flood Illumination Module Core Raw Materials

10.3 Midstream Analysis

10.4 Downstream Analysis

10.5 VCSEL Flood Illumination Module Production Mode

10.6 VCSEL Flood Illumination Module Procurement Model

10.7 VCSEL Flood Illumination Module Industry Sales Model and Sales Channels

10.7.1 VCSEL Flood Illumination Module Sales Model

10.7.2 VCSEL Flood Illumination Module Typical Distributors

11 RESEARCH FINDINGS AND CONCLUSION

12 APPENDIX

12.1 Methodology

12.2 Research Process and Data Source

12.3 Disclaimer

List Of Tables

LIST OF TABLES

Table 1. World VCSEL Flood Illumination Module Production Value by Region (2021, 2025 and 2032) & (USD Million)

Table 2. World VCSEL Flood Illumination Module Production Value by Region (2021-2026) & (USD Million)

Table 3. World VCSEL Flood Illumination Module Production Value by Region (2027-2032) & (USD Million)

Table 4. World VCSEL Flood Illumination Module Production Value Market Share by Region (2021-2026)

Table 5. World VCSEL Flood Illumination Module Production Value Market Share by Region (2027-2032)

Table 6. World VCSEL Flood Illumination Module Production by Region (2021-2026) & (Million Units)

Table 7. World VCSEL Flood Illumination Module Production by Region (2027-2032) & (Million Units)

Table 8. World VCSEL Flood Illumination Module Production Market Share by Region (2021-2026)

Table 9. World VCSEL Flood Illumination Module Production Market Share by Region (2027-2032)

Table 10. World VCSEL Flood Illumination Module Average Price by Region (2021-2026) & (US\$/Unit)

Table 11. World VCSEL Flood Illumination Module Average Price by Region (2027-2032) & (US\$/Unit)

Table 12. VCSEL Flood Illumination Module Major Market Trends

Table 13. World VCSEL Flood Illumination Module Consumption Growth Rate Forecast by Region (2021 & 2025 & 2032) & (Million Units)

Table 14. World VCSEL Flood Illumination Module Consumption by Region (2021-2026) & (Million Units)

Table 15. World VCSEL Flood Illumination Module Consumption Forecast by Region (2027-2032) & (Million Units)

Table 16. World VCSEL Flood Illumination Module Production Value by Manufacturer (2021-2026) & (USD Million)

Table 17. Production Value Market Share of Key VCSEL Flood Illumination Module Producers in 2025

Table 18. World VCSEL Flood Illumination Module Production by Manufacturer (2021-2026) & (Million Units)

Table 19. Production Market Share of Key VCSEL Flood Illumination Module Producers in 2025

Table 20. World VCSEL Flood Illumination Module Average Price by Manufacturer (2021-2026) & (US\$/Unit)

Table 21. Global VCSEL Flood Illumination Module Company Evaluation Quadrant

Table 22. World VCSEL Flood Illumination Module Industry Rank of Major Manufacturers, Based on Production Value in 2025

Table 23. Head Office and VCSEL Flood Illumination Module Production Site of Key Manufacturer

Table 24. VCSEL Flood Illumination Module Market: Company Product Type Footprint

Table 25. VCSEL Flood Illumination Module Market: Company Product Application Footprint

Table 26. VCSEL Flood Illumination Module Competitive Factors

Table 27. VCSEL Flood Illumination Module New Entrant and Capacity Expansion Plans

Table 28. VCSEL Flood Illumination Module Mergers & Acquisitions Activity

Table 29. United States VS China VCSEL Flood Illumination Module Production Value Comparison, (2021 & 2025 & 2032) & (USD Million)

Table 30. United States VS China VCSEL Flood Illumination Module Production Comparison, (2021 & 2025 & 2032) & (Million Units)

Table 31. United States VS China VCSEL Flood Illumination Module Consumption Comparison, (2021 & 2025 & 2032) & (Million Units)

Table 32. United States Based VCSEL Flood Illumination Module Manufacturers, Headquarters and Production Site (States, Country)

Table 33. United States Based Manufacturers VCSEL Flood Illumination Module Production Value, (2021-2026) & (USD Million)

Table 34. United States Based Manufacturers VCSEL Flood Illumination Module Production Value Market Share (2021-2026)

Table 35. United States Based Manufacturers VCSEL Flood Illumination Module Production (2021-2026) & (Million Units)

Table 36. United States Based Manufacturers VCSEL Flood Illumination Module Production Market Share (2021-2026)

Table 37. China Based VCSEL Flood Illumination Module Manufacturers, Headquarters and Production Site (Province, Country)

Table 38. China Based Manufacturers VCSEL Flood Illumination Module Production Value, (2021-2026) & (USD Million)

Table 39. China Based Manufacturers VCSEL Flood Illumination Module Production Value Market Share (2021-2026)

Table 40. China Based Manufacturers VCSEL Flood Illumination Module Production,

(2021-2026) & (Million Units)

Table 41. China Based Manufacturers VCSEL Flood Illumination Module Production Market Share (2021-2026)

Table 42. Rest of World Based VCSEL Flood Illumination Module Manufacturers, Headquarters and Production Site (State, Country)

Table 43. Rest of World Based Manufacturers VCSEL Flood Illumination Module Production Value, (2021-2026) & (USD Million)

Table 44. Rest of World Based Manufacturers VCSEL Flood Illumination Module Production Value Market Share (2021-2026)

Table 45. Rest of World Based Manufacturers VCSEL Flood Illumination Module Production, (2021-2026) & (Million Units)

Table 46. Rest of World Based Manufacturers VCSEL Flood Illumination Module Production Market Share (2021-2026)

Table 47. World VCSEL Flood Illumination Module Production Value by Type, (USD Million), 2021 & 2025 & 2032

Table 48. World VCSEL Flood Illumination Module Production by Type (2021-2026) & (Million Units)

Table 49. World VCSEL Flood Illumination Module Production by Type (2027-2032) & (Million Units)

Table 50. World VCSEL Flood Illumination Module Production Value by Type (2021-2026) & (USD Million)

Table 51. World VCSEL Flood Illumination Module Production Value by Type (2027-2032) & (USD Million)

Table 52. World VCSEL Flood Illumination Module Average Price by Type (2021-2026) & (US\$/Unit)

Table 53. World VCSEL Flood Illumination Module Average Price by Type (2027-2032) & (US\$/Unit)

Table 54. World VCSEL Flood Illumination Module Production Value by Eye Safety Monitoring Integration, (USD Million), 2021 & 2025 & 2032

Table 55. World VCSEL Flood Illumination Module Production by Eye Safety Monitoring Integration (2021-2026) & (Million Units)

Table 56. World VCSEL Flood Illumination Module Production by Eye Safety Monitoring Integration (2027-2032) & (Million Units)

Table 57. World VCSEL Flood Illumination Module Production Value by Eye Safety Monitoring Integration (2021-2026) & (USD Million)

Table 58. World VCSEL Flood Illumination Module Production Value by Eye Safety Monitoring Integration (2027-2032) & (USD Million)

Table 59. World VCSEL Flood Illumination Module Average Price by Eye Safety Monitoring Integration (2021-2026) & (US\$/Unit)

Table 60. World VCSEL Flood Illumination Module Average Price by Eye Safety Monitoring Integration (2027-2032) & (US\$/Unit)

Table 61. World VCSEL Flood Illumination Module Production Value by Optical Beam Shaping Method, (USD Million), 2021 & 2025 & 2032

Table 62. World VCSEL Flood Illumination Module Production by Optical Beam Shaping Method (2021-2026) & (Million Units)

Table 63. World VCSEL Flood Illumination Module Production by Optical Beam Shaping Method (2027-2032) & (Million Units)

Table 64. World VCSEL Flood Illumination Module Production Value by Optical Beam Shaping Method (2021-2026) & (USD Million)

Table 65. World VCSEL Flood Illumination Module Production Value by Optical Beam Shaping Method (2027-2032) & (USD Million)

Table 66. World VCSEL Flood Illumination Module Average Price by Optical Beam Shaping Method (2021-2026) & (US\$/Unit)

Table 67. World VCSEL Flood Illumination Module Average Price by Optical Beam Shaping Method (2027-2032) & (US\$/Unit)

Table 68. World VCSEL Flood Illumination Module Production Value by Application, (USD Million), 2021 & 2025 & 2032

Table 69. World VCSEL Flood Illumination Module Production by Application (2021-2026) & (Million Units)

Table 70. World VCSEL Flood Illumination Module Production by Application (2027-2032) & (Million Units)

Table 71. World VCSEL Flood Illumination Module Production Value by Application (2021-2026) & (USD Million)

Table 72. World VCSEL Flood Illumination Module Production Value by Application (2027-2032) & (USD Million)

Table 73. World VCSEL Flood Illumination Module Average Price by Application (2021-2026) & (US\$/Unit)

Table 74. World VCSEL Flood Illumination Module Average Price by Application (2027-2032) & (US\$/Unit)

Table 75. II-VI Basic Information, Manufacturing Base and Competitors

Table 76. II-VI Major Business

Table 77. II-VI VCSEL Flood Illumination Module Product and Services

Table 78. II-VI VCSEL Flood Illumination Module Production (Million Units), Price (US\$/Unit), Production Value (USD Million), Gross Margin and Market Share (2021-2026)

Table 79. II-VI Recent Developments/Updates

Table 80. II-VI Competitive Strengths & Weaknesses

Table 81. ams OSRAM Basic Information, Manufacturing Base and Competitors

Table 82. ams OSRAM Major Business

Table 83. ams OSRAM VCSEL Flood Illumination Module Product and Services

Table 84. ams OSRAM VCSEL Flood Illumination Module Production (Million Units), Price (US\$/Unit), Production Value (USD Million), Gross Margin and Market Share (2021-2026)

Table 85. ams OSRAM Recent Developments/Updates

Table 86. ams OSRAM Competitive Strengths & Weaknesses

Table 87. Lumentum Basic Information, Manufacturing Base and Competitors

Table 88. Lumentum Major Business

Table 89. Lumentum VCSEL Flood Illumination Module Product and Services

Table 90. Lumentum VCSEL Flood Illumination Module Production (Million Units), Price (US\$/Unit), Production Value (USD Million), Gross Margin and Market Share (2021-2026)

Table 91. Lumentum Recent Developments/Updates

Table 92. Lumentum Competitive Strengths & Weaknesses

Table 93. Stanley Electric Co., Ltd. Basic Information, Manufacturing Base and Competitors

Table 94. Stanley Electric Co., Ltd. Major Business

Table 95. Stanley Electric Co., Ltd. VCSEL Flood Illumination Module Product and Services

Table 96. Stanley Electric Co., Ltd. VCSEL Flood Illumination Module Production (Million Units), Price (US\$/Unit), Production Value (USD Million), Gross Margin and Market Share (2021-2026)

Table 97. Stanley Electric Co., Ltd. Recent Developments/Updates

Table 98. Stanley Electric Co., Ltd. Competitive Strengths & Weaknesses

Table 99. RAYSEES Basic Information, Manufacturing Base and Competitors

Table 100. RAYSEES Major Business

Table 101. RAYSEES VCSEL Flood Illumination Module Product and Services

Table 102. RAYSEES VCSEL Flood Illumination Module Production (Million Units), Price (US\$/Unit), Production Value (USD Million), Gross Margin and Market Share (2021-2026)

Table 103. RAYSEES Recent Developments/Updates

Table 104. RAYSEES Competitive Strengths & Weaknesses

Table 105. Global Key Players of VCSEL Flood Illumination Module Upstream (Raw Materials)

Table 106. Global VCSEL Flood Illumination Module Typical Customers

Table 107. VCSEL Flood Illumination Module Typical Distributors

List Of Figures

LIST OF FIGURES

Figure 1. VCSEL Flood Illumination Module Picture

Figure 2. World VCSEL Flood Illumination Module Production Value: 2021 & 2025 & 2032, (USD Million)

Figure 3. World VCSEL Flood Illumination Module Production Value and Forecast (2021-2032) & (USD Million)

Figure 4. World VCSEL Flood Illumination Module Production (2021-2032) & (Million Units)

Figure 5. World VCSEL Flood Illumination Module Average Price (2021-2032) & (US\$/Unit)

Figure 6. World VCSEL Flood Illumination Module Production Value Market Share by Region (2021-2032)

Figure 7. World VCSEL Flood Illumination Module Production Market Share by Region (2021-2032)

Figure 8. North America VCSEL Flood Illumination Module Production (2021-2032) & (Million Units)

Figure 9. Europe VCSEL Flood Illumination Module Production (2021-2032) & (Million Units)

Figure 10. China VCSEL Flood Illumination Module Production (2021-2032) & (Million Units)

Figure 11. Japan VCSEL Flood Illumination Module Production (2021-2032) & (Million Units)

Figure 12. South Korea VCSEL Flood Illumination Module Production (2021-2032) & (Million Units)

Figure 13. China Taiwan VCSEL Flood Illumination Module Production (2021-2032) & (Million Units)

Figure 14. VCSEL Flood Illumination Module Market Drivers

Figure 15. Factors Affecting Demand

Figure 16. World VCSEL Flood Illumination Module Consumption (2021-2032) & (Million Units)

Figure 17. World VCSEL Flood Illumination Module Consumption Market Share by Region (2021-2032)

Figure 18. United States VCSEL Flood Illumination Module Consumption (2021-2032) & (Million Units)

Figure 19. China VCSEL Flood Illumination Module Consumption (2021-2032) & (Million Units)

Figure 20. Europe VCSEL Flood Illumination Module Consumption (2021-2032) & (Million Units)

Figure 21. Japan VCSEL Flood Illumination Module Consumption (2021-2032) & (Million Units)

Figure 22. South Korea VCSEL Flood Illumination Module Consumption (2021-2032) & (Million Units)

Figure 23. ASEAN VCSEL Flood Illumination Module Consumption (2021-2032) & (Million Units)

Figure 24. India VCSEL Flood Illumination Module Consumption (2021-2032) & (Million Units)

Figure 25. Producer Shipments of VCSEL Flood Illumination Module by Manufacturer Revenue (\$MM) and Market Share (%): 2025

Figure 26. Global Four-firm Concentration Ratios (CR4) for VCSEL Flood Illumination Module Markets in 2025

Figure 27. Global Four-firm Concentration Ratios (CR8) for VCSEL Flood Illumination Module Markets in 2025

Figure 28. United States VS China: VCSEL Flood Illumination Module Production Value Market Share Comparison (2021 & 2025 & 2032)

Figure 29. United States VS China: VCSEL Flood Illumination Module Production Market Share Comparison (2021 & 2025 & 2032)

Figure 30. United States VS China: VCSEL Flood Illumination Module Consumption Market Share Comparison (2021 & 2025 & 2032)

Figure 31. United States Based Manufacturers VCSEL Flood Illumination Module Production Market Share 2025

Figure 32. China Based Manufacturers VCSEL Flood Illumination Module Production Market Share 2025

Figure 33. Rest of World Based Manufacturers VCSEL Flood Illumination Module Production Market Share 2025

Figure 34. World VCSEL Flood Illumination Module Production Value by Type, (USD Million), 2021 & 2025 & 2032

Figure 35. World VCSEL Flood Illumination Module Production Value Market Share by Type in 2025

Figure 36. 940 nm

Figure 37. 850 nm

Figure 38. World VCSEL Flood Illumination Module Production Market Share by Type (2021-2032)

Figure 39. World VCSEL Flood Illumination Module Production Value Market Share by Type (2021-2032)

Figure 40. World VCSEL Flood Illumination Module Average Price by Type (2021-2032)

& (US\$/Unit)

Figure 41. World VCSEL Flood Illumination Module Production Value by Eye Safety Monitoring Integration, (USD Million), 2021 & 2025 & 2032

Figure 42. World VCSEL Flood Illumination Module Production Value Market Share by Eye Safety Monitoring Integration in 2025

Figure 43. Integrated Photodiode

Figure 44. Photodiode Integration Not Explicitly Disclosed

Figure 45. World VCSEL Flood Illumination Module Production Market Share by Eye Safety Monitoring Integration (2021-2032)

Figure 46. World VCSEL Flood Illumination Module Production Value Market Share by Eye Safety Monitoring Integration (2021-2032)

Figure 47. World VCSEL Flood Illumination Module Average Price by Eye Safety Monitoring Integration (2021-2032) & (US\$/Unit)

Figure 48. World VCSEL Flood Illumination Module Production Value by Optical Beam Shaping Method, (USD Million), 2021 & 2025 & 2032

Figure 49. World VCSEL Flood Illumination Module Production Value Market Share by Optical Beam Shaping Method in 2025

Figure 50. Diffuser Optics

Figure 51. Freeform Lens

Figure 52. Micro-Lens Array

Figure 53. World VCSEL Flood Illumination Module Production Market Share by Optical Beam Shaping Method (2021-2032)

Figure 54. World VCSEL Flood Illumination Module Production Value Market Share by Optical Beam Shaping Method (2021-2032)

Figure 55. World VCSEL Flood Illumination Module Average Price by Optical Beam Shaping Method (2021-2032) & (US\$/Unit)

Figure 56. World VCSEL Flood Illumination Module Production Value by Application, (USD Million), 2021 & 2025 & 2032

Figure 57. World VCSEL Flood Illumination Module Production Value Market Share by Application in 2025

Figure 58. Time-of-Flight (ToF) 3D Sensing

Figure 59. Gesture Recognition

Figure 60. Access Control

Figure 61. Illumination for DMS/OMS

Figure 62. Industrial Automation

Figure 63. Home Automation

Figure 64. Others

Figure 65. World VCSEL Flood Illumination Module Production Market Share by Application (2021-2032)

Figure 66. World VCSEL Flood Illumination Module Production Value Market Share by Application (2021-2032)

Figure 67. World VCSEL Flood Illumination Module Average Price by Application (2021-2032) & (US\$/Unit)

Figure 68. VCSEL Flood Illumination Module Industry Chain

Figure 69. VCSEL Flood Illumination Module Procurement Model

Figure 70. VCSEL Flood Illumination Module Sales Model

Figure 71. VCSEL Flood Illumination Module Sales Channels, Direct Sales, and Distribution

Figure 72. Methodology

Figure 73. Research Process and Data Source

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