

Optoelectronics Market by Device (LEDs, Sensors), Device Material (Gallium Nitride, Indium Phosphide), Application (Measurement, Communication, Lighting), End User (Consumer Electronics, Healthcare), and Geography - Forecast to 2027

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Abstracts

Optoelectronics Market by Device (LEDs, Sensors), Device Material (Gallium Nitride, Indium Phosphide), Application (Measurement, Communication, Lighting), End User (Consumer Electronics, Healthcare), and Geography—Forecast to 2027

The optoelectronics market is expected to record a CAGR of 9.6% from 2020 to 2027 to reach \$ 77.9 billion by 2027.

Succeeding extensive secondary and primary research and in-depth analysis of the market scenario, the report carries out an impact analysis of the key industry drivers, restraints, and opportunities. Factors such as the growing adoption of smart consumer electronics devices, increasing demand for optical solutions in the healthcare and automotive industries, and rising need for durable, low power consuming components are the factors driving the growth of this market. However, high initial costs associated with manufacturing and fabrication are expected to hamper the growth of the market to an extent.

Optoelectronics is a fast-emerging technology dealing with the sourcing, detection, and control of light. The technology has become increasingly important in a wide range of applications across the automotive, telecommunications, and other industry verticals. Optoelectronics is a broad field, and it covers many devices such as LEDs and elements, information displays, optical storages, remote sensing systems, and optical communication systems. Optoelectronics technology offers superior performance with

high beam quality and low energy consumption at minimal costs. Moreover, as sensitive optoelectronic components operate in potentially high-temperature environments, active thermoelectric coolers are used for temperature stabilization to ensure maximum performance and longevity of the components.

The COVID-19 pandemic has drastically hit the manufacturing and processing industries worldwide. Governments worldwide imposed lockdowns to minimize the spread of the virus, resulting in the shutting down of manufacturing facilities and disruptions in supply chains owing to trade restrictions. The market witnessed a dip in 2020 due to the factors above. Moreover, as the market slowly and steadily opened up with relaxations in the lockdown, a demand-supply gap was witnessed due to the shutting down of production facilities and halted manufacturing operations. However, the market is expected to gain traction by 2021, with the manufacturing facilities operating at full capacity to cater to the growing demand.

The optoelectronics market has been segmented based on device, device material, application, end user, and geography.

Based on device, the optoelectronics market has been segmented into LEDs, sensors, infrared components, optocouplers, photovoltaic cells, displays, and others, such as optical fiber, solid-state relays, and laser diodes. The sensors segment is projected to record the highest CAGR during the forecast period. The high growth rate is attributed to the growing adoption of various sensors such as photodiodes, image sensors, and optical sensors across various industry verticals. Moreover, the increasing incorporation of IoT and other connected technologies is further expected to propel the demand for sensors during the forecast period.

Based on device material, the optoelectronics market has been segmented into gallium nitride, gallium arsenide, gallium phosphide, silicon germanium, silicon carbide, and indium phosphide. In 2020, the gallium nitride segment accounted for the largest market share amongst device materials in the optoelectronics market. Gallium nitride (GaN) is a binary III/V direct bandgap semiconductor that is ideal for use in high-power transistors capable of operating at high temperatures. The ability to withstand high temperatures and voltages makes the material ideal for imaging and sensing applications. GaN is used in LEDs, power devices, RF components, lasers, and photonics applications. Thus, the need for enhanced efficiency, minimized power consumption, and lower system costs is expected to contribute to the largest market share of the gallium nitride segment.

Based on application, the optoelectronics market has been segmented into lighting, security & surveillance, communication, measurement, displays, and other applications such as infotainment, spectrometry, and scanning. The measurement segment accounted for the largest share of the optoelectronics market in 2020. The high market share is attributed to the increasing use of optical measurement systems for process monitoring and control across various industries and in machine vision and other applications.

Based on end user, the optoelectronics market has been segmented into automotive, consumer electronics, aerospace & defense, IT & telecommunication, healthcare, food & beverage, energy & utilities, residential, industrial, commercial, and others, such as media & entertainment, retail, and government. In 2020, the consumer electronics segment held the largest share of the optoelectronics market. The segment's largest market share is attributed to the growing adoption of optoelectronic components in the manufacture of consumer electronics and advancements in electronic devices such as smartphones, high-end cameras, smart television displays, LED projectors, organic LEDs, and flexible 3-D displays.

An in-depth geographical analysis of the optoelectronics market provides detailed qualitative and quantitative insights about the five major geographies (North America, Europe, Asia-Pacific, Latin America, and the Middle East & Africa) along with the coverage of major countries in each region. Asia-Pacific commanded the largest share of the optoelectronics market in 2019, followed by North America, Europe, Middle East & Africa, and Latin America. Asia-Pacific is also projected to record the highest CAGR during the forecast period. Asia-Pacific is the hub of semiconductor components manufacturing; the region houses the majority of key players operating in the optoelectronics market such as Renesas, Rohm Co., Ltd, Hamamatsu Photonics K.K., Samsung Electronics Co., Ltd., Sony Corporation, Panasonic Corporation, and Sharp Corporation along with other small regional players. Furthermore, growth in the healthcare, consumer electronics, and automotive industries is further expected to propel the demand for optoelectronic components in the region. China, Japan, South Korea, and India are the major market contributors in the region.

The key players operating in the optoelectronics market are Rohm Co., Ltd (Japan), Renesas (Japan), Vishay Intertechnology, Inc. (U.S.), Hamamatsu Photonics K.K. (Japan), Osram Licht AG (Germany), ON Semiconductor (U.S.), Cree, Inc. (U.S.), TT Electronics (U.K.), Samsung Electronics Co., Ltd. (South Korea), Sony Corporation (Japan), Panasonic Corporation (Japan), General Electric Company (U.S.), Sharp Corporation (Japan), Broadcom (U.S.), and Texas Instruments (U.S.).

Scope

Optoelectronics Market, by Device

LEDs

General LEDs

UV LEDs

OLEDs

Sensors

Phototransistors

Photodiodes

Photo Relays

Image Sensors

CMOS Image Sensors

CCD Image Sensors

Hybrid Image Sensors

Optical Sensors

UV Sensors

Infrared Components

Detectors

Transceivers

Emitters

Optocouplers

Photovoltaic Cells/Solar Cells

Displays

Others

Optoelectronics Market, by Device Material

Gallium Nitride

Gallium Arsenide

Gallium Phosphide

Silicon Germanium

Silicon Carbide

Indium Phosphide

Optoelectronics Market, by Application

Lighting

Security & Surveillance

Communication

Measurement

Displays

Others

Optoelectronics Market, by End User

Automotive

Consumer Electronics

Aerospace & Defense

IT & Telecommunication

Healthcare

Food & Beverage

Energy & Utilities

Residential

Industrial

Commercial

Others

Optoelectronics Market, by Geography

North America

U.S.

Canada

Europe

U.K.

Germany

France

Spain

Italy

Russia

Rest of Europe

Asia-Pacific (APAC)

China

India

Japan

South Korea

Indonesia

Australia

Rest of Asia-Pacific

Middle East & Africa (MEA)

UAE

Saudi Arabia

South Africa

Rest of the Middle East & Africa

Latin America

Brazil

Mexico

Argentina

Rest of Latin America

Contents

1. INTRODUCTION

- 1.1. Market Definition
- 1.2. Market Ecosystem
- 1.3. Currency and Limitations
 - 1.3.1. Currency
 - 1.3.2. Limitations
- 1.4. Key Stakeholders

2. RESEARCH METHODOLOGY

- 2.1. Research Process
- 2.2. Data Collection & Validation
 - 2.2.1. Secondary Research
 - 2.2.2. Primary Research
- 2.3. Market Assessment |
 - 2.3.1. Market Size Estimation
 - 2.3.2. Bottom-up Approach
 - 2.3.3. Top-down Approach
 - 2.3.4. Growth Forecast
- 2.4. Assumptions for the Study
- 2.5. Limitations for the Study

3. EXECUTIVE SUMMARY

4. COVID-19: IMPACT ASSESSMENT

- 4.1. Scenario A: Severe Impact
- 4.2. Scenario B: Moderate Impact
- 4.3. Scenario C: Low Impact

5. MARKET INSIGHTS

- 5.1. Introduction
- 5.2. Market Dynamics
 - 5.2.1. Drivers
 - 5.2.1.1. Growing Demand for Smart Consumer Electronic Devices

- 5.2.1.2. Increasing Need for Long Life and Low Power Components
- 5.2.1.3. Optoelectronics in Healthcare and Automotive
- 5.2.2. Restraints
 - 5.2.2.1. High Initial Costs Associated with Manufacturing and Fabrication
- 5.2.3. Opportunities |
 - 5.2.3.1. Rising IoT Applications
 - 5.2.3.2. Advancements in Li-Fi Technology
 - 5.2.3.3. Innovations in Optoelectronic Devices
- 5.3. Value Chain Analysis

6. GLOBAL OPTOELECTRONICS MARKET, BY DEVICE

- 6.1. Introduction
- 6.2. Sensors
 - 6.2.1. Phototransistor
 - 6.2.2. Photodiode
 - 6.2.3. Image Sensor
 - 6.2.3.1. CMOS Image Sensor |
 - 6.2.3.2. CCD Image Sensor
 - 6.2.3.3. Hybrid Image Sensor
 - 6.2.4. Optical Sensors
 - 6.2.5. UV Sensor
 - 6.2.6. Photo Relay
- 6.3. LED
 - 6.3.1. General LED
 - 6.3.2. UV LEDs
 - 6.3.3. OLED
- 6.4. Infrared Components
 - 6.4.1. Infrared Detectors
 - 6.4.2. Infrared Trans-Receivers
 - 6.4.3. Infrared Emitters
- 6.5. Displays
- 6.6. Optocoupler
- 6.7. Other Devices
- 6.8. Photovoltaic Cells/ Solar Cells

7. GLOBAL OPTOELECTRONICS MARKET, BY DEVICE MATERIAL

- 7.1. Introduction

- 7.2. Gallium Nitride
- 7.3. Gallium Arsenide
- 7.4. Silicon Carbide
- 7.5. Silicon Germanium
- 7.6. Gallium Phosphide
- 7.7. Indium Phosphide

8. GLOBAL FOOD AUTOMATION MARKET, BY APPLICATION

- 8.1. Introduction
- 8.2. Measurement
- 8.3. Lighting
- 8.4. Displays
- 8.5. Security & Surveillance
- 8.6. Communication
- 8.7. Other Applications

9. GLOBAL OPTOELECTRONICS MARKET, BY INDUSTRY VERTICAL

- 9.1. Introduction
- 9.2. Consumer Electronics
- 9.3. Residential
- 9.4. IT & Telecommunication
- 9.5. Commercial
- 9.6. Automotive
- 9.7. Healthcare
- 9.8. Aerospace & Defense
- 9.9. Industrial
- 9.10. Energy & Utility
- 9.11. Food & Beverage
- 9.12. Other Industry Verticals

10. GLOBAL OPTOELECTRONICS MARKET, BY GEOGRAPHY

- 10.1. Introduction
- 10.2. Asia-Pacific
 - 10.2.1. Japan
 - 10.2.2. China
 - 10.2.3. South Korea

- 10.2.4. India
- 10.2.5. Australia
- 10.2.6. Indonesia
- 10.2.7. Rest of Asia-Pacific
- 10.3. North America
 - 10.3.1. U.S.
 - 10.3.2. Canada
- 10.4. Europe
 - 10.4.1. Germany
 - 10.4.2. U.K.
 - 10.4.3. France
 - 10.4.4. Italy
 - 10.4.5. Russia
 - 10.4.6. Spain
 - 10.4.7. Rest of Europe
- 10.5. Middle East & Africa
 - 10.5.1. Saudi Arabia
 - 10.5.2. South Africa
 - 10.5.3. Rest of Middle East & Africa
- 10.6. Latin America
 - 10.6.1. Brazil
 - 10.6.2. Mexico
 - 10.6.3. Argentina
 - 10.6.4. Rest of Latin America

11. COMPETITIVE LANDSCAPE

- 11.1. Introduction
- 11.2. Key Growth Strategies
- 11.3. Market Share Analysis (2019)
 - 11.3.1. Sony Corporation
 - 11.3.2. Sharp Corporation
 - 11.3.3. On Semiconductor Corporation
 - 11.3.4. Samsung Electronics Co., Ltd.
 - 11.3.5. Osram Licht Group

12. COMPANY PROFILES

- 12.1. ROHM Co., Ltd.

- 12.2. Renesas Electronics Corporation
- 12.3. Vishay Intertechnology, Inc.
- 12.4. Hamamatsu Photonics K.K.
- 12.5. Osram Licht Group
- 12.6. ON Semiconductor Corporation
- 12.7. Cree, Inc.
- 12.8. TT Electronics plc
- 12.9. Texas Instruments Incorporated
- 12.10. Sharp Corporation
- 12.11. Broadcom Inc.
- 12.12. General Electric Company
- 12.13. Panasonic Corporation
- 12.14. Sony Corporation
- 12.15. Samsung Electronics Co., Ltd.

13. APPENDIX

- 13.1. Questionnaire
- 13.2. Available Customization

List Of Tables

LIST OF TABLES

- Table 1 Impact of Covid-19 on Global Optoelectronics Market (USD Million)
- Table 2 Global Optoelectronics Market, by Device, 2018–2027 (USD Million)
- Table 3 Global Optoelectronics Sensors Market, by Country/Region, 2018–2027 (USD Million)
- Table 4 Global Optoelectronics Market, by Sensor, 2018–2027 (USD Million)
- Table 5 Global Optoelectronics Phototransistor Sensor Market, by Country/Region, 2018–2027 (USD Million)
- Table 6 Global Optoelectronics Photodiode Sensor Market, by Country/Region, 2018–2027 (USD Million)
- Table 7 Global Optoelectronics Image Sensor Market, by Country/Region, 2018–2027 (USD Million)
- Table 8 Global Optoelectronics Market, by Image Sensor, 2018–2027 (USD Million)
- Table 9 Global Optoelectronics CMOS Image Sensor Market, by Country/Region, 2018–2027 (USD Million)
- Table 10 Global Optoelectronics CCD Image Sensor Market, by Country/Region, 2018–2027 (USD Million)
- Table 11 Global Optoelectronics Hybrid Image Sensor Market, by Country/Region, 2018–2027 (USD Million)
- Table 12 Global Optoelectronics Optical Sensor Market, by Country/Region, 2018–2027 (USD Million)
- Table 13 Global Optoelectronics UV Sensor Market, by Country/Region, 2018–2027 (USD Million)
- Table 14 Global Optoelectronics Photo Relay Market, by Country/Region, 2018–2027 (USD Million)
- Table 15 Global Optoelectronics Led Market, by Country/Region, 2018–2027 (USD Million)
- Table 16 Global Optoelectronics Led Market, 2018–2027 (USD Million)
- Table 17 Global Optoelectronics General Led Market, by Country/Region, 2018–2027 (USD Million)
- Table 18 Global Optoelectronics UV Led Market, by Country/Region, 2018–2027 (USD Million)
- Table 19 Global Optoelectronics OLED Market, by Country/Region, 2018–2027 (USD Million)
- Table 20 Global Optoelectronics IR Components Market, by Country/Region, 2018–2027 (USD Million)

Table 21 Global Optoelectronics Infrared Components Market, 2018–2027 (USD Million)

Table 22 Global Optoelectronics IR Detectors Market, by Country/Region, 2018–2027 (USD Million)

Table 23 Global Optoelectronics IR Trans-Receiver Market, by Country/Region, 2018–2027 (USD Million)

Table 24 Global Optoelectronics IR Trans- Emitter Market, by Country/Region, 2018–2027 (USD Million)

Table 25 Global Optoelectronics Displays Market, by Country/Region, 2018–2027 (USD Million)

Table 26 Global Optoelectronics Optocoupler Market, by Country/Region, 2018–2027 (USD Million)

Table 27 Global Other Optoelectronics Device Market, by Country/Region, 2018–2027 (USD Million)

Table 28 Global Optoelectronics Photovoltaic Cells/ Solar Cells Market, by Country/Region, 2018–2027 (USD Million)

Table 29 Global Optoelectronics Market, by Device Material, 2018–2027 (USD Million)

Table 30 Global Optoelectronics Market for Gallium Nitride, by Country/Region, 2018–2027 (USD Million)

Table 31 Global Optoelectronics Market for Gallium Arsenide, by Country/Region, 2018–2027 (USD Million)

Table 32 Global Optoelectronics Market for Silicon Carbide, by Country/Region, 2018–2027 (USD Million)

Table 33 Global Optoelectronics Market for Silicon Germanium, by Country/Region, 2018–2027 (USD Million)

Table 34 Global Optoelectronics Market for Gallium Phosphide, by Country/Region, 2018–2027 (USD Million)

Table 35 Global Optoelectronics Market for Indium Phosphide, by Country/Region, 2018–2027 (USD Million)

Table 36 Global Optoelectronics Market, by Application, 2018–2027 (USD Million)

Table 37 Global Optoelectronics Market for Measurement, by Country/Region, 2018–2027 (USD Million)

Table 38 Global Optoelectronics Market for Lighting, by Country/Region, 2018–2027 (USD Million)

Table 39 Global Optoelectronics Market for Displays, by Country/Region, 2018–2027 (USD Million)

Table 40 Global Optoelectronics Market for Security & Surveillance, by Country/Region, 2018–2027 (USD Million)

Table 41 Global Optoelectronics Market for Communication, by Country/Region, 2018–2027 (USD Million)

Table 42 Global Optoelectronics Market for Other Applications, by Country/Region, 2018–2027 (USD Million)

Table 43 Global Optoelectronics Market, by Industry Vertical, 2018–2027 (USD Million)

Table 44 Global Optoelectronics Market for Consumer Electronics, by Country/Region, 2018–2027 (USD Million)

Table 45 Global Optoelectronics Market for Residential, by Country/Region, 2018–2027 (USD Million)

Table 46 Global Optoelectronics Market for It & Telecommunication, by Country/Region, 2018–2027 (USD Million)

Table 47 Global Optoelectronics Market for Commercial, by Country/Region, 2018–2027 (USD Million)

Table 48 Global Optoelectronics Market for Automotive, by Country/Region, 2018–2027 (USD Million)

Table 49 Global Optoelectronics Market for Healthcare, by Country/Region, 2018–2027 (USD Million)

Table 50 Global Optoelectronics Market for Aerospace & Defense, 2018–2027 (USD Million)

Table 51 Global Optoelectronics Market for Industrial, by Country/Region, 2018–2027 (USD Million)

Table 52 Global Optoelectronics Market for Energy & Utility, by Country/Region, 2018–2027 (USD Million)

Table 53 Global Optoelectronics Market for Food & Beverage, by Country/Region, 2018–2027 (USD Million)

Table 54 Global Optoelectronics Market for Other Industry Verticals, by Country/Region, 2018–2027 (USD Million)

Table 55 Global Optoelectronics Market Size, by Country/Region, 2018–2027 (USD Million)

Table 56 Asia-Pacific: Optoelectronics Market Size, by Country, 2018–2027 (USD Million)

Table 57 Asia-Pacific: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 58 Asia-Pacific: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 59 Asia-Pacific: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 60 Asia-Pacific: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 61 Asia-Pacific: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 62 Asia-Pacific: Optoelectronics Market Size, by Device Material, 2018–2027

(USD Million)

Table 63 Asia-Pacific: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 64 Asia-Pacific: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 65 Japan: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 66 Japan: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 67 Japan: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 68 Japan: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 69 Japan: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 70 Japan: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 71 Japan: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 72 Japan: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 73 China: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 74 China: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 75 China: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 76 China: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 77 China: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 78 China: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 79 China: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 80 China: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 81 South Korea: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 82 South Korea: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 83 South Korea: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 84 South Korea: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 85 South Korea: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 86 South Korea: Optoelectronics Market Size, by Device Material, 2018–2027

(USD Million)

Table 87 South Korea: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 88 South Korea: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 89 India: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 90 India: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 91 India: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 92 India: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 93 India: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 94 India: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 95 India: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 96 India: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 97 Australia: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 98 Australia: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 99 Australia: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 100 Australia: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 101 Australia: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 102 Australia: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 103 Australia: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 104 Australia: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 105 Indonesia: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 106 Indonesia: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 107 Indonesia: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 108 Indonesia: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 109 Indonesia: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 110 Indonesia: Optoelectronics Market Size, by Device Material, 2018–2027

(USD Million)

Table 111 Indonesia: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 112 Indonesia: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 113 Rest of Asia-Pacific: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 114 Rest of Asia-Pacific: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 115 Rest of Asia-Pacific: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 116 Rest of Asia-Pacific: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 117 Rest of Asia-Pacific: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 118 Rest of Asia-Pacific: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 119 Rest of Asia-Pacific: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 120 Rest of Asia-Pacific: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 121 North America: Optoelectronics Market Size, by Country, 2018–2027 (USD Million)

Table 122 North America: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 123 North America: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 124 North America: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 125 North America: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 126 North America: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 127 North America: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 128 North America: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 129 North America: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 130 U.S.: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 131 U.S.: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 132 U.S.: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 133 U.S.: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 134 U.S.: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 135 U.S.: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 136 U.S.: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 137 U.S.: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 138 Canada: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 139 Canada: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 140 Canada: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 141 Canada: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 142 Canada: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 143 Canada: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 144 Canada: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 145 Canada: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 146 Europe: Optoelectronics Market Size, by Country, 2018–2027 (USD Million)

Table 147 Europe: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 148 Europe: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 149 Europe: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 150 Europe: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 151 Europe: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 152 Europe: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 153 Europe: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 154 Europe: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

- Table 155 Germany: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)
- Table 156 Germany: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)
- Table 157 Germany: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)
- Table 158 Germany: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)
- Table 159 Germany: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)
- Table 160 Germany: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)
- Table 161 Germany: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)
- Table 162 Germany: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)
- Table 163 U.K.: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)
- Table 164 U.K.: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)
- Table 165 U.K.: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)
- Table 166 U.K.: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)
- Table 167 U.K.: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)
- Table 168 U.K.: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)
- Table 169 U.K.: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)
- Table 170 U.K.: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)
- Table 171 France: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)
- Table 172 France: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)
- Table 173 France: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)
- Table 174 France: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)
- Table 175 France: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)
- Table 176 France: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)
- Table 177 France: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)
- Table 178 France: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 179 Italy: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 180 Italy: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 181 Italy: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 182 Italy: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 183 Italy: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 184 Italy: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 185 Italy: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 186 Italy: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 187 Russia: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 188 Russia: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 189 Russia: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 190 Russia: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 191 Russia: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 192 Russia: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 193 Russia: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 194 Russia: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 195 Spain: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 196 Spain: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 197 Spain: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 198 Spain: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 199 Spain: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 200 Spain: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 201 Spain: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 202 Spain: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 203 Rest of Europe: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 204 Rest of Europe: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 205 Rest of Europe: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 206 Rest of Europe: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 207 Rest of Europe: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 208 Rest of Europe: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 209 Rest of Europe: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 210 Rest of Europe: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 211 Middle East & Africa: Optoelectronics Market Size, by Country, 2018–2027 (USD Million)

Table 212 Middle East & Africa: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 213 Middle East & Africa: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 214 Middle East & Africa: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 215 Middle East & Africa: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 216 Middle East & Africa: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 217 Middle East & Africa: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 218 Middle East & Africa: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 219 Middle East & Africa: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 220 Saudi Arabia: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 221 Saudi Arabia: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 222 Saudi Arabia: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 223 Saudi Arabia: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 224 Saudi Arabia: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 225 Saudi Arabia: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 226 Saudi Arabia: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 227 Saudi Arabia: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 228 South Africa: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 229 South Africa: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 230 South Africa: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 231 South Africa: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 232 South Africa: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 233 South Africa: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 234 South Africa: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 235 South Africa: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 236 Rest of Middle East & Africa: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 237 Rest of Middle East & Africa: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 238 Rest of Middle East & Africa: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 239 Rest of Middle East & Africa: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 240 Rest of Middle East & Africa: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 241 Rest of Middle East & Africa: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 242 Rest of Middle East & Africa: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 243 Rest of Middle East & Africa: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 244 Latin America: Optoelectronics Market Size, by Country, 2018–2027 (USD Million)

Table 245 Latin America: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 246 Latin America: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 247 Latin America: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 248 Latin America: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 249 Latin America: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 250 Latin America: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 251 Latin America: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 252 Latin America: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 253 Brazil: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 254 Brazil: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 255 Brazil: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 256 Brazil: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 257 Brazil: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 258 Brazil: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 259 Brazil: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 260 Brazil: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 261 Mexico: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 262 Mexico: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 263 Mexico: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 264 Mexico: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 265 Mexico: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 266 Mexico: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 267 Mexico: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 268 Mexico: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 269 Argentina: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 270 Argentina: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 271 Argentina: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 272 Argentina: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 273 Argentina: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 274 Argentina: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 275 Argentina: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 276 Argentina: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 277 Rest of Latin America: Optoelectronics Market Size, by Device, 2018–2027 (USD Million)

Table 278 Rest of Latin America: Optoelectronics Market Size, by Led, 2018–2027 (USD Million)

Table 279 Rest of Latin America: Optoelectronics Market Size, by Sensors, 2018–2027 (USD Million)

Table 280 Rest of Latin America: Optoelectronics Market Size, by Image Sensor, 2018–2027 (USD Million)

Table 281 Rest of Latin America: Optoelectronics Market Size, by Infrared Components, 2018–2027 (USD Million)

Table 282 Rest of Latin America: Optoelectronics Market Size, by Device Material, 2018–2027 (USD Million)

Table 283 Rest of Latin America: Optoelectronics Market Size, by Application, 2018–2027 (USD Million)

Table 284 Rest of Latin America: Optoelectronics Market Size, by Industry Vertical, 2018–2027 (USD Million)

Table 285 Recent Developments, by Company, 2018-2020

List Of Figures

LIST OF FIGURES

Figure 1 Research Process

Figure 2 Key Secondary Sources

Figure 3 Primary Research Techniques

Figure 4 Key Executives Interviewed

Figure 5 Breakdown of Primary Interviews (Supply-side & Demand-side)

Figure 6 Market Sizing and Growth Forecast Approach

Figure 7 Key Insights

Figure 8 Meticulous Research Estimates: by Device

Figure 9 Meticulous Research Estimates: by Device Material

Figure 10 Meticulous Research Estimates: by Application

Figure 11 Meticulous Research Estimates: by Industry Vertical

Figure 12 Geographic Snapshot: Global Optoelectronics Market 2020

Figure 13 Covid-19 Impact on the Global Optoelectronics Market

Figure 14 Market Dynamics

Figure 15 Passenger Vehicle Sales, 2015-2019 (Million Units)

Figure 16 Value Chain for Optoelectronics Market

Figure 17 Global Optoelectronics Market Size, by Device, 2020 Vs 2027 (USD Million)

Figure 18 Global Optoelectronics Market Size, by Sensors, 2020 Vs 2027 (USD Million)

Figure 19 Global Optoelectronics Market Size, by Image Sensor, 2020 Vs 2027 (USD Million)

Figure 20 Global Optoelectronics Led Market Size, 2020 Vs 2027 (USD Million)

Figure 21 Global Optoelectronics Infrared Components Market Size, 2020 Vs 2027 (USD Million)

Figure 22 Global Optoelectronics Market Size, by Device Material, 2020 Vs 2027 (USD Million)

Figure 23 Global Optoelectronics Market Size, by Application, 2020 Vs 2027 (USD Million)

Figure 24 Global Optoelectronics Market Size, by Industry Vertical, 2020 Vs 2027 (USD Million)

Figure 25 Global Optoelectronics Market Size, by Region, 2020 Vs 2027 (USD Million)

Figure 26 Key Adopters of Optoelectronics Products (2020)

Figure 27 Key Growth Strategies Adopted by Leading Players, 2017-2020

Figure 28 Market Share Analysis, By Leading Players, 2020

Figure 29 Rohm Co., Ltd.: Financial Overview, 2020

Figure 30 Renesas Electronics Corporation: Financial Overview, 2019

- Figure 31 Vishay Intertechnology, Inc.: Financial Overview, 2019
- Figure 32 Hamamatsu Photonics K.K.: Financial Overview, 2019
- Figure 33 Osram Licht Group: Financial Overview, 2019
- Figure 34 On Semiconductor Corporation: Financial Overview, 2019
- Figure 35 Cree, Inc.: Financial Overview, 2020
- Figure 36 TT Electronics plc: Financial Overview, 2019
- Figure 37 Texas Instruments Incorporated: Financial Overview, 2019
- Figure 38 Sharp Corporation: Financial Overview, 2020
- Figure 39 Broadcom Inc.: Financial Overview, 2020
- Figure 40 General Electric Company: Financial Overview, 2019
- Figure 41 Panasonic Corporation: Financial Overview, 2020
- Figure 42 Sony Corporation: Financial Overview, 2020
- Figure 43 Samsung Electronics Co., Ltd.: Financial Overview, 2019

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