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Global APD/SPAD Array Receiver Chips for LiDAR Supply, Demand and Key Producers, 2026-2032

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Abstracts

The global APD/SPAD Array Receiver Chips for LiDAR market size is expected to reach $ 710 million by 2032, rising at a market growth of 15.4% CAGR during the forecast period (2026-2032).

APD and SPAD array receiver chips for LiDAR are high sensitivity optoelectronic semiconductor devices used on the receiver side of LiDAR systems. Their core function is to capture reflected pulsed laser signals from objects and convert weak optical signals into electrical signals for distance measurement, three dimensional perception and point cloud generation. The product scope focuses on APD arrays, SPAD arrays, SiPM arrays and direct time of flight receiver chips that integrate time to digital conversion, histogram processing and readout circuits. Major product forms include linear array chips, area array chips, single line LiDAR receiver chips, automotive grade depth sensing chips and industrial ranging receiver array chips. The key technologies include avalanche multiplication, single photon detection, low dark count design, high photon detection efficiency, near infrared response optimization, ambient light suppression, low noise readout, wafer level packaging and automotive reliability qualification. Important specifications include pixel count, array size, response wavelength, photon detection efficiency, dark count rate, timing resolution, dynamic range, breakdown voltage, operating temperature, package size and functional safety grade. These chips are mainly used in automotive LiDAR, robotics LiDAR, industrial ranging, drone mapping, intelligent transportation and security sensing. In 2025, the global average price of APD and SPAD array receiver chips for LiDAR is estimated at about US$35 to US$55 per unit, global shipment volume is estimated at about 4.30 million to 5.20 million units, and the industry average gross margin is estimated at about 40% to 55%.

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The core nature of APD and SPAD array receiver chips for LiDAR is the transition of LiDAR receiver functions toward chip based, array based and digitally integrated architectures. The upstream chain includes silicon semiconductor processes, near infrared optoelectronic materials, wafer manufacturing, packaging and testing, automotive reliability qualification and optical filtering components. The midstream covers the design, production and testing of APD arrays, SPAD arrays, SiPM arrays and direct time of flight receiver chips. The downstream demand mainly comes from intelligent vehicles, robotics, industrial ranging, drone mapping and intelligent transportation. As LiDAR moves from premium vehicle platforms to broader advanced driver assistance applications, receiver chip value is no longer defined only by optical sensitivity. It is increasingly defined by device consistency, ambient light resistance, low noise performance, on chip timing capability and the ability to reduce the total system cost.

Competition is shifting from traditional discrete photodetectors to array level chips, automotive qualification, on chip integration and supply chain collaboration. Established international suppliers still have advantages in APD, SiPM and optoelectronic device processes, while Chinese suppliers are accelerating in SPAD direct time of flight chips, area array receivers and local LiDAR supply chain support. Mergers and business integration have helped some international groups build broader optoelectronic sensing portfolios, while new product launches continue to push SPAD arrays toward higher pixel counts, better photon detection efficiency and lower system level cost. Because this product is shaped by semiconductor process capability, automotive qualification and design in cycles with LiDAR system platforms, near term competition is unlikely to be a simple price war. It will be a combined contest of technology route, customer validation and stable high volume delivery.

The policy and investment environment remains supportive. Intelligent connected vehicles, autonomous driving, robotics, industrial automation and low altitude economy applications all provide a clearer long term demand base for LiDAR receiver chips. Regional supply chains are also changing. Automotive and industrial customers increasingly care about local supply, chip security, traceable manufacturing and long term availability, which creates more entry opportunities for domestic chip vendors. Future growth will mainly come from three directions: wider adoption of automotive LiDAR across vehicle models, rising low cost short range sensing demand in robotics and industrial applications, and gradual replacement of some traditional APD receiver schemes by SPAD and SiPM routes. At the same time, LiDAR system cost reduction, competition from alternative sensing architectures and internal chip development by system vendors may pressure margins. Companies with scalable process know how,

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automotive grade experience and strong system adaptation capability are more likely to secure durable market positions.

This report studies the global APD/SPAD Array Receiver Chips for LiDAR production, demand, key manufacturers, and key regions.

This report is a detailed and comprehensive analysis of the world market for APD/SPAD Array Receiver Chips for LiDAR 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 APD/SPAD Array Receiver Chips for LiDAR that contribute to its increasing demand across many markets.

Highlights and key features of the study
Global APD/SPAD Array Receiver Chips for LiDAR total production and demand, 2021-2032, (Million Units)
Global APD/SPAD Array Receiver Chips for LiDAR total production value, 2021-2032, (USD Million)
Global APD/SPAD Array Receiver Chips for LiDAR production by region & country, production, value, CAGR, 2021-2032, (USD Million) & (Million Units), (based on production site)
Global APD/SPAD Array Receiver Chips for LiDAR consumption by region & country, CAGR, 2021-2032 & (Million Units)
U.S. VS China: APD/SPAD Array Receiver Chips for LiDAR domestic production, consumption, key domestic manufacturers and share
Global APD/SPAD Array Receiver Chips for LiDAR production by manufacturer, production, price, value and market share 2021-2026, (USD Million) & (Million Units)
Global APD/SPAD Array Receiver Chips for LiDAR production by Detector Technology, production, value, CAGR, 2021-2032, (USD Million) & (Million Units)
Global APD/SPAD Array Receiver Chips for LiDAR production by Application, production, value, CAGR, 2021-2032, (USD Million) & (Million Units)

This report profiles key players in the global APD/SPAD Array Receiver Chips for LiDAR 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 Sony Semiconductor Solutions Corporation, onsemi, Hamamatsu Photonics K.K., Excelitas Technologies Corp., TE Connectivity plc, LASER COMPONENTS GmbH, Shenzhen Adaps Photonics Technology Co., Ltd., Shenzhen FortSense Co., Ltd., Nanjing Evisionics

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Microelectronics Technology Co., Ltd., Shenzhen PolarisIC Microelectronics Co., Ltd., 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 APD/SPAD Array Receiver Chips for LiDAR 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 Detector Technology, 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 APD/SPAD Array Receiver Chips for LiDAR Market, By Region:

United States

China

Europe

Japan

South Korea

ASEAN

India

Rest of World

Global APD/SPAD Array Receiver Chips for LiDAR Market, Segmentation by Detector Technology:

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APD Array Receiver Chips

SPAD Array Receiver Chips

SiPM Array Receiver Chips

Others

Global APD/SPAD Array Receiver Chips for LiDAR Market, Segmentation by Array Format:

Linear Array Receiver Chips

Area Array Receiver Chips

Sparse or Segmented Array Receiver Chips

Custom Array Receiver Chips

Others

Global APD/SPAD Array Receiver Chips for LiDAR Market, Segmentation by Operating Wavelength:

850 to 905 nm Near-infrared Receiver Chips

940 nm Near-infrared Receiver Chips

1,550 nm Receiver Chips

Multi-wavelength or Custom Wavelength Receiver Chips

Others

Global APD/SPAD Array Receiver Chips for LiDAR Market, Segmentation by Performance and Qualification Class:

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Automotive-grade Receiver Chips

Industrial-grade Receiver Chips

Commercial-grade Receiver Chips

Research and Specialty-grade Receiver Chips

Others

Global APD/SPAD Array Receiver Chips for LiDAR Market, Segmentation by Application:

Automotive LiDAR

Robotics LiDAR

Industrial Ranging and Automation

UAV Mapping and Surveying

Intelligent Transportation and Security

Others

Companies Profiled:

Sony Semiconductor Solutions Corporation

onsemi

Hamamatsu Photonics K.K.

Excelitas Technologies Corp.

TE Connectivity plc

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LASER COMPONENTS GmbH

Shenzhen Adaps Photonics Technology Co., Ltd.

Shenzhen FortSense Co., Ltd.

Nanjing Evisionics Microelectronics Technology Co., Ltd.

Shenzhen PolarisIC Microelectronics Co., Ltd.

Key Questions Answered:
1. How big is the global APD/SPAD Array Receiver Chips for LiDAR market?
2. What is the demand of the global APD/SPAD Array Receiver Chips for LiDAR market?
3. What is the year over year growth of the global APD/SPAD Array Receiver Chips for LiDAR market?
4. What is the production and production value of the global APD/SPAD Array Receiver Chips for LiDAR market?
5. Who are the key producers in the global APD/SPAD Array Receiver Chips for LiDAR market?
6. What are the growth factors driving the market demand?

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