

Global Shortwave Infrared - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

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Report description:

The Global Shortwave Infrared Market is expected to register a CAGR of 8.6% during the forecast period.

Key Highlights

- SWIR is used for testing purposes in various industries, such as semiconductor manufacturing. Along with this, the increasing need for miniaturization and low-power consumption technology across defense applications positively influences the market.
- Favorable government initiatives aimed at military and defense equipment upgrades are expected to drive the SWIR market during the forecast period. Increasing applications in scientific research for surveillance and object detection also support the growth of this market. Also, the growing demand for SWIR products for monitoring and inspection application is expected to drive market growth. The primary advantage of using SWIR technology in military applications is that SWIR cameras can see through and image higher contrast images and provide data even through the mist, rain, and challenging atmospheric conditions.
- SWIR cameras have emerged to provide surveillance for securing risky zones. They can be mounted on buildings, trucks, and unmanned aerial vehicles and can detect any human activity or threats. Moreover, such cameras are adopted by geologists for studying several physical aspects of the earth.
- Additionally, SWIR has the advantage of low power consumption and can sense temperature, making it useful for detecting fires. A shortwave infrared sensor on the Earth Observation satellite from DigitalGlobe (an American commercial provider of space imagery and geospatial material) can see through dense smoke clouds from burning objects on the ground.
- SWIR cameras are being used more frequently for vehicle navigation. As driverless vehicles become more common, SWIR technology can aid in navigating through fog, snow, dust, and rain. Due to the expanding use of SWIR cameras in autonomous vehicles, the Israeli firm TriEye intends to create a SWIR camera for the dashboard of consumer cars that can successfully navigate through snow, fog, dust, and rain.
- However, COVID-19 has caused a setback in the development of autonomous cars in the automotive industry as the global

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lockdown has impacted the testing of autonomous vehicles. Also, with the implementation of remote working, it is estimated that urbanization in most countries is decelerating as more people move to rural and suburban areas. This is causing testing and utilization challenges for Autonomous vehicles which delays their development and rollout time, hampering the growth of the studied market.

Shortwave Infrared Market Trends

The Military and Defense Sector is Expected to Drive the Market Growth

- Infrared imaging is employed in defense applications to facilitate high-resolution vision and identification in near and total darkness. The infrared (IR) wavelengths are crucial for military and defense research and development because so much surveillance and targeting occur in darkness.
- The SWIR region bridges the void between visible wavelengths and peak thermal sensitivity of infrared, scattering less than visible wavelengths and detecting low-level reflected light at longer distances, which is ideal for imaging through smoke and fog. Moreover, SWIR cameras are helpful security and surveillance devices, sometimes by themselves and often combined with other imagers.
- Applications for these SWIR devices include facility, port, border security and surveillance, and other covert operations such as low-light-level imaging, military driver vision enhancement, and military IR laser spotting and tracking.
- For instance, FLIR Systems makes InGaAsSWIR cameras based on its focal-plane array (FPA), which the company also sells separately. These FPAs have a capacitive trans-impedance amplifier circuit design optimized for applications ranging from security imaging to high-speed scientific laser testing, which requires multiple outputs and dynamic windowing.
- Government spending on military and defense equipment may be one of the significant factors for the market's growth. For instance, according to the US Department of Defense, compared to the FY 2020 authorized amount of USD 704.6B, the President's budget request of USD 705.4B represents a minor gain in 2021. Further, according to the United Kingdom parliament, the defense spending in 2020/21 was GBP 42.4 billion in cash terms, a nominal rise of GBP 2.5 billion over the previous year. The yearly defense budget in 2024/25 is estimated to be GBP 6.2 billion more in cash terms than in 2020/21.

North America is Expected to Hold Significant Market Share

- Owing to the presence of the United States and Canada, amongst the prominent automotive markets across the globe, the North American region is expected to hold a significant share of the SWIR market.
- The United States also has the biggest defense budget in the world, making it a significant market for SWIR cameras and technology. For fiscal 2019, a new provision to the National Defense Authorization Act prohibits US federal agencies from purchasing security equipment made in China. They especially mentioned Chinese firms like Hangzhou Hikvision Digital Technology Co. and Zhejiang Dahua Technology Co. Other national vendors now have a great chance to fill the market void.
- Further, with the advent of several disruptive technologies, the application areas of SWIR cameras have increased in several sectors, thereby acting as a growth opportunity for the providers of SWIR cameras in the region.
- The capability of SWIR cameras to differentiate between colors and analyze properties like temperature, water vapor, and chemical composition of materials makes them suitable for applications like industrial inspection, art inspection, spectroscopy, and astronomy.
- Thus, the companies in the region are striving to launch innovative products to cater to the evolving needs of their customers. For instance, in April 2022, TriEye, a producer of the first mass-market Short-Wave Infrared (SWIR) sensing technology, announced a collaboration with Toshiba Teli, a global player in providing integrated cameras for automation. The two companies are working

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to commercialize a SWIR camera for industrial-related processes and applications. The partnership will leverage TriEye's SWIR sensing technology to provide vision systems with an additional layer of information, reshaping the industrial sector and enhancing process capabilities.

Shortwave Infrared Industry Overview

Due to the presence of major vendors engaging in R&D to advance the technology provided, the shortwave infrared market is evolving toward a consolidated structure. The significant businesses include Princeton Instruments, Xenics, Sensors Unlimited (a United Technologies Company), FlirSystems Inc., Hamamatsu Photonics K.K., and Hamamatsu Photonics K.K.

- July 2022 - Artilux and II-VI launched a miniature 3D camera that operates in the shortwave infrared. The camera, designed for 3D sensing in consumer devices and the automotive market, combines Artilux's GeSi sensor arrays with II-VI's indium phosphide semiconductor lasers. It features a high-bandwidth and high-quantum-efficiency GeSi SWIR sensor array based on a scalable CMOS technology platform.
- October 2021 - SWIR Vision Systems Inc., a next-generation image sensor solutions company catering to industrial automation, autonomous vehicles, and other applications, announced that it had closed a USD 5 million Series A financing round. Based on a unique quantum-dot photodiode sensor design, SWIR Vision's patented sensor solutions have provided high resolution, commercially available short-wavelength infrared (SWIR) cameras worldwide. The funding round is reported to aid the company in enhancing its technical abilities.

Additional Benefits:

- The market estimate (ME) sheet in Excel format
- 3 months of analyst support

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