

Camera Module - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2024 - 2029)

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Abstracts

The Camera Module Market size is estimated at USD 39.82 billion in 2024, and is expected to reach USD 49.24 billion by 2029, growing at a CAGR of 4.34% during the forecast period (2024-2029).

Key Highlights

A camera module is a product that takes photos and videos from devices like smartphones, automobiles, and smart home appliances. It is widely used in video conferencing, security systems, and real-time monitoring as a video input device. It comprises image sensors, an IR-cut filter, an actuator (AF/OIS), a lens set, and a lens mount, among others. Module assembly brings all these components together into a module.

The ADAS market's increasing adoption of self-driving or autonomous vehicles is a primary growth factor. For instance, according to Intel, global car sales are expected to cross 101.4 million units in 2030, and autonomous vehicles are expected to account for about 12% of car registrations by 2030.

The increasing construction activities globally provide lucrative opportunities for incorporating security systems wherein cameras are widely used. In January 2024, Consistent Infosystems, an Indian IT brand, introduced its new Made in India surveillance cameras that include Wireless Pan-Tilt Wifi 3MP/4MP Mini Wifi P2P Plug and Play Hassle Free, 4G Camera Color Camera, Smart Wireless 4G PT Camera, 4G Solar Camera, and CCTV Camera 4G Dome.

The rising number of terrorist attacks and organized crimes globally, expanding

adoption of IP cameras, and rising adoption of IoT-based security systems are primarily driving the demand for security cameras in residential and commercial establishments. For instance, according to the Office for National Statistics (UK), in 2021/22, with a crime rate of 129 per 1,000 people, Cleveland, in Northeast England, had the highest crime rate of all the police force areas in England and Wales.

Compact camera modules are complex systems involving various disciplines, technologies, and processes. The supply chain of CCMs is witnessing complexities against the backdrop of overlaps between the activities of CCM's sub-component manufacturing companies. Challenges in realizing robust CCM technology further add to the complexity of the market's ecosystem, thereby creating challenges for the evolution of the technology.

Factors such as the higher cost of camera modules and overhead costs such as maintenance challenge the market's growth, especially in developing or underdeveloped regions, wherein consumer price sensitivity is higher. However, the growing demand for camera modules for applications such as video conferencing, security systems, and real-time monitoring is anticipated to propel the market growth.

Camera Module Market Trends

The Mobile Segment is Expected to Hold a Notable Market Share

The growing sales of smartphones across economies with slower technological developments and budgets propel the growth of the camera module market. According to GSMA, global smartphone penetration as a percentage of connections will likely increase from 76% in 2022 to 92% in 2030.

According to GSMA, the number of smartphone subscribers in North America is anticipated to reach 328 million by 2025, with the region witnessing an increase in the number of mobile phone subscribers (86%) and Internet penetration (80%). Furthermore, by 2025, Europe is estimated to register the highest internet penetration rate (82%) and smartphones (88%). All these factors would contribute positively to the market's growth.

The increasing demand to improve camera resolution across smartphones of all ranges has enabled several manufacturers to launch new sensors and camera modules. For instance, in January 2023, Samsung introduced its latest 200-megapixel (MP) image sensor, the ISOCELL HP2, with improved pixel technology and full-well capacity to

improve mobile images in premium smartphones.

The new sensor packs 200 million 0.6-micrometer pixels in a 1/1.3" optical format, a sensor size commonly used in 108MP main smartphone cameras. It enables consumers to experience even higher resolutions in the latest high-end smartphones without larger camera bumps.

Most smartphones use CMOS (complementary metal-oxide semiconductor) image sensors instead of CCD (charge-coupled device). CMOS uses less power than CCD, which makes it highly suitable for mobile devices. Smartphone vendors are developing advanced cameras for their mobile phones, driving the camera module market.

Asia-Pacific is Expected to Dominate the Market

The widespread presence of electronics, semiconductor, and automobile manufacturing companies, as well as an increase in consumer purchasing power, is fueling the growth of the compact camera module market in Asia-Pacific. The region witnessed a change in smartphone adoption and smart surveillance systems, thus propelling the deployment of compact camera modules to cater to a booming consumer electronics manufacturing sector.

According to GSMA, smartphone subscriptions in Asia-Pacific are anticipated to reach 94% by 2030, compared to 76% in 2022. Unique mobile subscribers are also expected to increase to 2.11 billion in 2030 from 1.73 billion in 2022. All these factors together create a favorable outlook for the growth of the market in the Asia-Pacific region.

The region's rapidly growing consumer electronics industry creates an optimistic growth scenario for the market as camera modules are increasingly being integrated into consumer electronic devices for different segments. China already has one of the largest consumer electrical industries in the world.

Automation in the region is expected to boost the growth of the camera module market during the forecast period, as automation and industrial robotic solutions use camera modules for various purposes. For instance, the Chinese government's programs, such as the Made in China 2025 plan, promote R&D in factory automation and technology investments. As most of the automation equipment is imported from other countries, the 'Made in China' initiative aims to expand the country's domestic production of

automation equipment.

The healthcare sector in the region has shown significant adoption of digitization, which is expected to drive the market demand, as camera modules are an ideal solution for next-generation single-use endoscopes. Healthcare has emerged as one of the largest sectors in India. The healthcare market in the country is expected to be driven by increasing income, better health awareness, lifestyle diseases, and growing access to insurance. Thus, the growing demand for medical devices also augments the demand for camera modules for many such devices.

Camera Module Industry Overview

The camera module market is moving toward a fragmented stage as the growing demand is attracting new players to the market. The ever-increasing presence of prominent manufacturers in the camera module market is expected to intensify competitive rivalry during the forecast period. Market incumbents, such as Cowell E Holdings Inc., Fujifilm Corporation, and Sony Corporation, considerably influence the overall market.

May 2023: Sharp introduced the Aquos R8 Pro, which features a 1" Leica image sensor. It has a 47.2MP 1-inch Sony IMX989 primary camera with a Summicron lens as opposed to a 50.3MP 1/1.55-inch camera with a 19 mm focal length equivalent. Additionally, they are fueled by a 4,570 mAh battery and a Qualcomm Snapdragon 8 Gen 2 chipset with LPDDR5x RAM and UFS 4.0 storage.

April 2023: Samsung Electro-Mechanics announced that it would release a 200-megapixel-class camera module with improved image stabilization features that are more than twice as good. The company also wants to target the market with unique technologies for taking high-quality photos and videos. This product's 3.0-degree image stabilization angle is twice as good as the existing products' 1.5-degree stabilization angle. It offers the highest level globally among the smartphones with OIS features currently on the market.

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