Surface Acoustic Wave Sensors - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

Market Report | 2025-04-28 | 118 pages | Mordor Intelligence

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Report description:

The Surface Acoustic Wave Sensors Market size is estimated at USD 1.16 billion in 2025, and is expected to reach USD 2.06 billion by 2030, at a CAGR of 12.29% during the forecast period (2025-2030).

Due to their small size, rugged nature, economical production, stability in operation, and applications across various end-user industries, the surface acoustic wave sensors make them an increasingly adopted sensor technology during the forecast period.

Key Highlights
- Surface acoustic wave (SAW) technology has been significantly adopted across some industry applications, including aerospace, telecommunication, and automotive. The most common use is in electronic components known as SAW filters, a basic radio frequency (RF) circuit component. SAW devices have also been utilized to measure humidity, pressure, and temperature and detect certain chemicals.
- With advancements in the communication sector, SAW and bulk-acoustic-wave (BAW) resonators, filters, oscillators, and delay lines have gained traction. Apart from being passive and wirelessly interrogated, SAW sensors are competitively priced, intrinsically rugged, highly responsive, and intrinsically reliable.
- The automotive, defense, and aerospace industries are also attracting vendors in the market studied in recent years. As these sensors are insensitive to Magnetic Fields, many automotive applications require torque-sensing close to electric motors and solenoids. This is problematic for some other types of sensor technology.
- In the initial phase of COVID-19, the studied market witnessed a disruption in the supply chain owing to a nationwide lockdown and closure of many manufacturing capacities. However, after Q2 2020, the market started witnessing a recovery in demand and in production, the trend of the semiconductor industry was also reflected in the studied market. However, trends like electric vehicles and mandating safety features in automotive are increasing the per vehicle semiconductor content, which will help the

SAW sensors demand to overcome the impact in the coming months.
- Researchers specializing in SAW sensors are actively seeking opportunities to partner with non-destructive testing solution providers in a bid to check the feasibility and ultimately open new application areas for these sensors. For instance, in partnership with NYIT's School of Engineering and Computing Sciences, the NDT solution provider for the aerospace and defense industry, X-Wave Innovations Inc., announced to work for NASA to develop an embedded sensor system capable of measuring temperature, pressure, and other stimuli affecting rocket propulsion engine systems. The project was also awarded funding of over USD 125,000 by NASA.

Surface Acoustic Wave Sensors Market Trends

Healthcare Segment is Expected to Grow at a Significant Rate

- The ongoing demands for low-cost sensor adaptability with flexible substrates, which are also capable of wireless monitoring, are driving the need for SAW sensors in the Healthcare industry. Biosensing application is one of the most common SAW technology applications in the healthcare industry, increasing its adoption in Point of Care (POC) testing and analysis devices for a particular disease.
- The healthcare and the biomedical sectors are increasingly investing in biosensors and MEMS due to the increasing requirement for rapid, compact, accurate, and portable diagnostic sensing systems. SAW sensors are useful for devices used for cancer cell detection, electrocardiogram (ECG), biopotential monitoring biosensors, heart attack monitoring, blood glucose monitoring, and the development of wearable biosensors.
- Another promising application is monitoring chest sounds in neonatal care units where the miniature SAW sensors minimize discomfort for newborns. The increasing adoption and development of hand-held monitoring devices are also expanding the scope of SAW sensor adoption.
- In recent years, SAW sensors have been increasingly used for detecting multiple high-profile bacteria viruses, including Ebola, HIV, Sin Nombre, and Anthrax. The recent COVID-19 pandemic has also motivated many SAW manufacturers to target this application.
- For instance, in August 2022, engineers at the Massachusetts Institute of Technology (MIT) developed a new category of wireless wearable skin-like sensors for health monitoring. The new sensor is an ultrathin semiconductor film made of a piezoelectric substance that adheres to the skin, sensing the vibrations of the body, and will be called 'e-skin.' Such initiatives by various organizations are expected to contribute to the increase in demand growth for SAW sensors in the healthcare market.
- Similarly, the increase in the demand for wireless and remote monitoring systems in the healthcare market owing to the spread of COVID-19 is also expected to contribute to the market growth.

North America Region is Expected to Witness Significant Growth

- The United States is one of the major markets for surface acoustic wave sensors in the North American region, followed by Canada. The North American market is expected to witness an increase in the demand for SAW sensors owing to the applications in the safety-related mandates for the automobile industry in the region.
- With the increasing technological advancements in the North American region, many industries are expected to take advantage of these sensors. The rapid surge in demand for these sensors is also due to multiple applications in various industries, including automotive, aerospace, healthcare, consumer electronics, and the industrial sector.
- Moreover, the regional market is also growing owing to the various innovative research and development activities undertaken by the government and research institutions. Market scenarios like the recent COVID-19 pandemic have further fueled the support

and demand for these research activities.
- Moreover, the North American region is also one of the most technologically advanced application markets for these sensors owing to the presence of many prominent system suppliers, sensor manufacturers, and large semiconductor companies. The enormous size of the region, the affluence of its consumers, and the highly competitive nature of the medical equipment manufacturers make this region a lucrative market for surface acoustic wave sensor manufacturers.
- Further, semiconductor industry participants are also trying different ways to benefit from the anticipated MEMS demand. The market is expected to constitute IDMs and established fabless companies that would outsource some of their technologies in the future. The market has been witnessing several developments and expansion activities related to the field by various players to stay ahead of the competition.
- For instance, in December 2021, Microchip Technology Inc. announced a significant expansion of its Gallium Nitride (GaN) Radio Frequency (RF) power device portfolio with new MMICs and discrete transistors that cover frequencies up to 20 gigahertz (GHz). The company's SAW sensors and microelectromechanical systems (MEMS) oscillators and highly integrated modules combine microcontrollers (MCUs) with RF transceivers (Wi-Fi MCUs) that support major short-range wireless communications protocols from Bluetooth and Wi-Fi to LoRa design.

Surface Acoustic Wave Sensors Industry Overview

The Surface Acoustic Wave Sensors Market is moderately competitive owing to the presence of many small and large players operating in the domestic as well as the international markets. The market appears to be moderately concentrated, with the key players adopting strategies like product innovation and mergers and acquisitions.

- August 2022 - The next generation of McLaren Applied's cutting-edge torque system that uses Transense's SAW (Surface Acoustic Wave) technology has been successfully delivered to one of their leading motorsport clients, who will mandate the part across all entrants. The new torque sensor is a non-contact measurement device based on Transense's SAW technology which uses small sensors, is lightweight, robust, and provides accurate wireless measurement.

Additional Benefits:

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

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