Current Sensor Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

Market Report | 2023-01-23 | 120 pages | Mordor Intelligence

AVAILABLE LICENSES:

- Single User License $4750.00
- Team License (1-7 Users) $5250.00
- Site License $6500.00
- Corporate License $8750.00

Report description:

The current sensor market is anticipated to grow at a CAGR of 8% during the forecast period. The rapidly increasing use of battery-powered and renewable energy applications drives the market. Smartphones, tablets, and other portable devices need smaller form factors and lower power consumption rates. A highly accurate, ultra-low-power solution for predicting remaining battery life and protecting the circuitry and Li+ battery from overcurrent conditions, the requirement of current sensors is high. Open-loop sensors are typically used in battery-powered applications. They require less power than closed-loop sensors and are better able to withstand overloads.

Key Highlights
In recent years, the demand for low-cost, accurate, and small-size current sensor solutions has increased across the industrial, automotive, commercial, and communications systems. New design concepts and the systematic utilization of advanced technology have entitled further improvements in IC performance. It has also opened the path to new product approaches by supporting the integration of additional functions, such as power protection, in the same current sensor IC.
Increasing the use of battery-powered and renewable energy applications drives the market. Smartphones, tablets, and other portable devices require smaller form factors and lower power consumption rates. Current sensors are used to achieve a highly accurate, ultra-low-power solution for estimating remaining battery life and for protecting the circuitry and Li+ battery from overcurrent conditions.
The increasing smartphone penetration is expected to drive the demand for current sensors over the forecast period. For instance, according to Ericsson, the number of smartphone users globally in 2021 was 6,259 million, and it is expected to reach 7,690 million users by 2027.
Furthermore, with the growing concerns about the global demand for energy and the overall augmentation of environmental awareness, designers for power electronics applications are under constant pressure to improve efficiency. The advent of the

smart grid, grid-tied photovoltaic (PV), and some other grid-tied renewable energy systems require the growth of high-efficiency power inverters. According to the International Energy agency's Net Zero Emissions by 2050 Scenario, 300 million electric automobiles will be on the road by 2030, accounting for more than 60% of new car sales, up from only 4.6% in 2020. Because of the widespread usage of current sensors in EVs and HEVs, the automotive end user is projected to continue to be one of the significator factors for the growth of the current sensor market.
Large-scale commercialization of IoT and IIoT is bolstering the market. According to Ericsson, the number of cellular IoT connections is expected to reach 3.5 billion in 2023. With the traditional manufacturing sector witnessing a digital transformation, IoT is fueling intelligent connectivity's next industrial revolution. This is transforming the way industries approach increasingly complex systems and machines to improve efficiency and reduce downtime, creating a good scenario for the growth of the current sensor market.
However, high cost and technical limitations associated with product development and integration of current sensors integration, along with the rules of current sensors in case of high voltage spikes, high temperature, and current conditions, are some of the major factors challenging the growth of the studied market.
However, due to the COVID-19 situation, shipping and delivery services were significantly affected. Most car manufacturers, consumer electronic manufacturers, and tier-1 suppliers had to suspend operations or function at reduced capacity, reducing the demand for the semiconductors and sensors used in cars and consumer electronics. However, as the economies reopened and businesses returned to normalcy, the market started gaining traction. The demand for these sensors increased across industries and is further expected to propel them, thereby boosting the market growth.

Current Sensor Market Trends

Automotive Industry to Hold Considerable Market Share

With increased automotive technology advancements, the trends toward electric vehicle production are highly recommended in various countries. A complex architectural diagram of an electric car generally incorporates multiple current sensors. Besides this, current sensors are also needed for brushless (BLDC) electric motor control. The EVs of companies like BMW, Volkswagen, etc. use this motor-control-current device.
Typically, current sensors are found in battery current monitoring, solar power inverters, and power inverters that drive traction motors in mid and full hybrid electric vehicles. CMOS Hall-effect-based magnetic sensors integrate advanced features and provide high-level output signals functionality. Sophisticated magnetic sensors hold programmable memory and even microcontroller logic allowing for a fully custom-calibrated output. Additionally, it is possible to implement standard interfaces that simplify communication with other circuits in EVs.
Furthermore, the hybrid electric vehicle (HEV) is quickly becoming the most popular green car and employs complex electronic circuitry to control the flow of electric energy through the vehicle. In a single-motor HEV, the motor acts as a drive motor in parallel with the internal combustion engine or as a generator to charge the battery during regenerative braking. A typical HEV contains various systems that require electrical current sensors for maximally efficient operation, including AC motor and DC-DC converter applications. According to the US Department of Energy, in 2021, the sales of HEVs increased by about 76% compared to the previous year.
Players like Allegro MicroSystems have developed a broad family of current sensor integrated circuits (ICs) that are ideally suited for HEV applications. The features include signal processing and package design innovations enabling 120 kHz output bandwidth, high current resolution, low noise spectral density, reduced power loss through-hole compliance, and low-resistance integrated conductor packages.
According to the IEA, electric car sales have more than doubled to 6.6 million, representing close to 9% of the global car market, in 2021. Favorable government regulations are also playing an integral role in the growth of the electric vehicle industry, which has emerged as a leading consumer of current sensors. For instance, in early 2022, the European Union announced a unique EUR

750 billion (~USD 770.5 billion) stimulus package, which includes EUR 20 billion (~USD 20.5 billion) to boost the sales of clean vehicles and to install about 1 million electric and hydrogen vehicle charging stations by 2025.

Asia-Pacific is Expected to Register Significant Growth

Asia-Pacific is anticipated to account for significant growth. The population growth and rapid urbanization in developing economies, such as China, India, and Japan, have prompted the speedy development in the region, which will boost the demand for the current sensor from end-users such as energy, automotive, telecom and networking, industrial, and healthcare.
According to the Consumer Electronics and Appliances Manufacturers Association, in India, the appliances and consumer electronics industry is projected to double to INR 1.48 lakh crore (~USD 17.9 Billion) by 2024 - 25. As players are manufacturing fully integrated, and programmable current sensors based on BiCMOS or CMOS technology, the demand for these current sensors will increase effectively with the increasing production of consumer electronics.
In robots, there are hundreds of sensors made today to sense virtually anything. Current sensors output an analog voltage between 0V and 5V, which can be further processed using a microcontroller in the robots. According to Japan Robot Association (JARA), in 2021, the production value of industrial robots will increase by 22.5% year on year to JPY 939.1 billion (~USD 6.64 billion), and the total shipments will increase by about 23.2% year on year to JPY 962.4 billion (~USD 6.8 billion), making the country one of the leading suppliers of industrial robots.
Furthermore, China, responsible for a large portion of global car consumption, pledged to control its carbon emissions by 2030. It has been streamlining the production cuts and sale of vehicles that run on fossil fuels to meet the emission goals. This is anticipated to increase the demand for electric vehicles, thereby driving the market growth. According to the China Association of Automobile Manufacturers (CAAM), in 2021, around 2.9 million battery electric vehicles were sold in China, an increase of 162% compared to 2020. In the same year, about 603,000 plug-in hybrid cars were sold in China, a rise of 140% compared to the previous year. Such trends are expected to propel the demand for current sensors during the forecast period.

Current Sensor Market Competitor Analysis

The current sensor market is fragmented, with several companies operating in the segment. Leading players are currently focusing on providing cost-competitive products to the customers, which caters to an intense rivalry in the market. Key players are Allegro MicroSystems, LLC, TDK Corporation, Infineon Technologies AG, etc.

June 2022 - Murata launched the MRD series of open-loop current sensors for industrial systems. Each sensor in the MRD series integrates high-performance tunnel magneto-resistive (TMR) elements - enabling precision measurement concerning both DC and AC currents up to 40A, and maintaining stable characteristics across an extensive temperature range.
January 2022 - Toshiba Electronic Devices & Storage Corporation developed an integrated shunt MOS current sensor in a half-bridge module. The sensor enables power electronics systems to monitor current with high accuracy, without any increase in power loss, when used on devices such as gallium nitride (GaN) power devices. The new sensor technology utilizes a cascode comprising a low-voltage MOSFET (metal oxide semiconductor field effect transistor) connected to a GaN field effect transistor for current sensing.

Additional Benefits:

The market estimate (ME) sheet in Excel format

3 months of analyst support

Table of Contents:

1 INTRODUCTION
1.1 Study Assumptions and Market Definition
1.2 Scope of the Study

2 RESEARCH METHODOLOGY

3 EXECUTIVE SUMMARY

4 MARKET INSIGHTS
4.1 Market Overview
4.2 Industry Value Chain Analysis
4.3 Industry Attractiveness - Porter's Five Forces Analysis
4.3.1 Threat of New Entrants
4.3.2 Bargaining Power of Buyers
4.3.3 Bargaining Power of Suppliers
4.3.4 Threat of Substitute Products
4.3.5 Intensity of Competitive Rivalry
4.4 Assesment of the Impact of COVID-19 on the Market

5 MARKET DYNAMICS
5.1 Market Drivers
5.1.1 Increasing Use of Battery-Powered and Renewable Energy Applications
5.1.2 Large Scale Commercialization of IoT and IIoT
5.2 Market Restraints
5.2.1 Falling Average Selling Prices of Sensor Components Affecting New Market Entrants

6 MARKET SEGMENTATION
6.1 By Type
6.1.1 Hall Effect Sensors
6.1.1.1 Open Loop
6.1.1.2 Closed Loop
6.1.1.3 Other Types(Split Core Hall Effect Current Sensor)
6.1.2 Fiber Optic Current Sensors
6.1.3 Inductive Current Sensors
6.2 By End User
6.2.1 Automotive
6.2.2 Consumer Electronics
6.2.3 Telecom and Networking,
6.2.4 Medical
6.2.5 Energy and Power
6.2.6 Industrial
6.2.7 Other End Users
6.3 By Geography
6.3.1 North America

6.3.1.1 United States
6.3.1.2 Canada
6.3.2 Europe
6.3.2.1 Germany
6.3.2.2 United Kingdom
6.3.2.3 France
6.3.2.4 Rest of Europe
6.3.3 Asia-Pacific
6.3.3.1 India
6.3.3.2 China
6.3.3.3 Japan
6.3.3.4 Rest of Asia-Pacific
6.3.4 Rest of the World
6.3.4.1 Latin America
6.3.4.2 Middle East

7 COMPETITIVE LANDSCAPE
7.1 Company Profiles
7.1.1 Allegro MicroSystems LLC
7.1.2 TDK Corporation (TDK-Micronas GmbH)
7.1.3 Infineon Technologies AG
7.1.4 Melexis NV
7.1.5 Honeywell International Inc.
7.1.6 Asahi Kasei Microdevices Corporation
7.1.7 ABB Group
7.1.8 NK Technologies
7.1.9 Tamura Corporation
7.1.10 Vacuumschmelze GmbH & Co KG

8 INVESTMENT ANALYSIS

9 MARKET OPPORTUNITIES AND FUTURE TRENDS

Current Sensor Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

Market Report | 2023-01-23 | 120 pages | Mordor Intelligence

To place an Order with Scotts International:

- - Print this form
- - Complete the relevant blank fields and sign
- - Send as a scanned email to support@scotts-international.com

ORDER FORM:

Select license	License	Price
	Single User License	$4750.00
	Team License (1-7 Users)	$5250.00
	Site License	$6500.00
	Corporate License	$8750.00
	VAT	
	Total	

*Please circle the relevant license option. For any questions please contact support@scotts-international.com or 0048 603 394 346.

** VAT will be added at 23% for Polish based companies, individuals and EU based companies who are unable to provide a valid EU Vat Numbers.

Email*		Phone*	
First Name*		Last Name*	
Job title*			
Company Name*		EU Vat / Tax ID / NIP number*	
Address*		City*	
Zip Code*		Country*	
		Date	2026-03-05
		Signature