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Global automotive magnetic sensors & chips market size forcast-2022

ICV, a well-known cutting-edge science and technology consulting organization, recently released a report named《Global automotive magnetic sensors& chips market size forcast-2022》. The report points out that under the trend of automobile electrification, the "three major parts" (engine, chassis and gearbox) of fuel vehicles are gradually upgraded to the "three electric system" (battery, motor and electronic control) of electric vehicles, which has higher requirements on the level of automobile electronization as a whole, driving the development of automobile electronics industry.

Automotive electronics is the general term of body electronic control system and vehicle electronic system, which is mainly composed of sensors, controllers and actuators. It is applied to vehicle perception, calculation, execution and other aspects to achieve the corresponding system functions. In traditional fuel vehicles, the cost of automotive electronics accounts for about 15% to 28% of the cost of the whole vehicle, while the proportion of pure electric vehicles can reach 65%.

As an indispensable part of automotive electronics, automotive sensors are used to measure position, pressure, torque, temperature, angle, distance, acceleration, flow and other information, and convert these information into electrical signals as input to automotive electronic controllers to achieve electronic control. Based on the measured physical quantities, automotive sensors can be divided into position sensors, speed sensors, flow sensors, pressure sensors, temperature sensors, etc. During vehicle driving, the vehicle sensor can effectively improve the power and economy of the vehicle, optimize the handling, safety and comfort in the driving process, and comprehensively improve the performance of the vehicle by sensing, receiving and processing the running state information of vehicle components. The accuracy and reliability of the sensor will also directly affect the performance of the vehicle.

With the trend of electric, intelligent and networked vehicles, new energy vehicles and intelligent driving have gradually become the direction of the future automotive

industry. In addition, the rapid development of China's automotive industry has brought all-round opportunities for automotive sensors and automotive chips.

First of all, vehicle electrification has the most direct impact on the power, braking, steering, transmission and other systems in the executive layer, and its demand for sensors and chips is more obvious than that of traditional fuel vehicles. In terms of single vehicle value, the single vehicle value of sensors in traditional fuel vehicles is about $2, the single vehicle value of sensors in hybrid electric vehicles rises to $15, and the value of sensors in pure electric vehicles rises to about $80. The number of chips used in the whole vehicle is also rising.

In 2022, the average number of traditional fuel vehicles and new energy vehicles is 934 and 1459 respectively; Secondly, the development trend of automotive intelligence and networking has increased the demand for information perception, processing and interaction. Cars need more sensors for external environment perception and internal human-computer interaction. Especially after autonomous driving has entered the relatively high L4/L5 level, the demand for ultrasonic sensors and body sensing sensors has also increased significantly.

As the main driving force of the demand for automotive sensors and chips, under the policy of carbon peaking and carbon neutralization, the sales volume and penetration rate of new energy vehicles continue to increase, and the demand for automotive sensors and chips will increase significantly. As an important category of sensors, magnetic sensors are devices that detect the corresponding physical quantities by converting the changes in the magnetic properties of sensitive components caused by magnetic field, radiation, pressure, temperature, light and other factors into electrical signals.

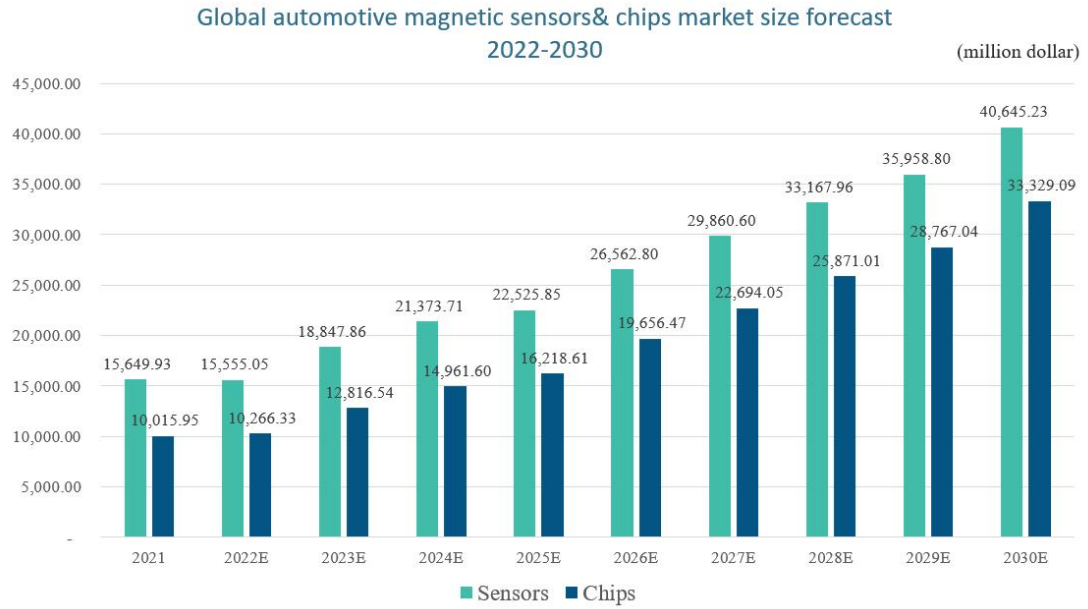
Due to the complex working environment of automobile and high requirements for device consistency and stability, magnetic sensor has become its largest application

market by far with its advantages. Magnetic sensors are particularly widely used in automobiles, including automobile safety, automobile comfort, automobile energy conservation and consumption reduction. They are mainly used for speed, inclination, angle, distance, proximity, position and other parameter detection, navigation and positioning, such as speed measurement, pedal position, gearbox position, motor rotation, power torque measurement, crankshaft position, inclination measurement, electronic navigation, anti lock detection, parking positioning Defect detection in airbag and solar panel.

According to technology, magnetic sensors can be divided into Hall effect, magnetoresistance effect (XmR) (including anisotropic magnetoresistance effect (AMR), giant magnetoresistance effect (GMR) and tunnel magnetoresistance effect (TMR)). Among them, Hall effect refers to that when the current passes through the hall element in the magnetic field, the magnetic field will produce a force perpendicular to the direction of electron movement on the electrons in the hall element, so that the positive and negative charges in the direction of vertical conductor and magnetic induction line gather to form a Hall voltage to detect the movement state change of the target. Hall sensor has become the most important magnetic sensor in the current market because of its advantages of non-contact, low power consumption, firm structure and long service life. It is widely used in automotive electronics to measure position, speed and current, and its market share in magnetic sensors is more than 70%.

Driven by the development of "three modernizations" of automobiles, the carrying capacity and value of a single automobile magnetic sensor are on the rise, and about 30 magnetic sensors are used in traditional fuel vehicles; In hybrid electric vehicles or pure electric vehicles, the number of magnetic sensors has increased to about 50, and the value of magnetic sensors in a single vehicle has also increased from 120 yuan to 250 yuan. The rapid development of new energy vehicles has brought broad market demand for automotive magnetic sensors.

According to statistics, the global market size of automotive magnetic sensors will be 1.56 billion dollars in 2021, which is expected to reach 4 billion dollars by 2030, with a compound annual growth rate of 11.19% from 2021 to 2030. Among the automotive magnetic sensors, the chip price accounts for 64% of the total sensor price. With the continuous growth of the automotive magnetic sensor market, the automotive magnetic sensor chip ushers in a good market opportunity. In 2021, the global market size of automotive magnetic sensor chips will reach US $1.002 billion, and it is predicted that it will reach US $3.333 billion in 2030, with a CAGR of 14.29%.



(Source: Global automotive magnetic sensors& chips market size forecast 2022)

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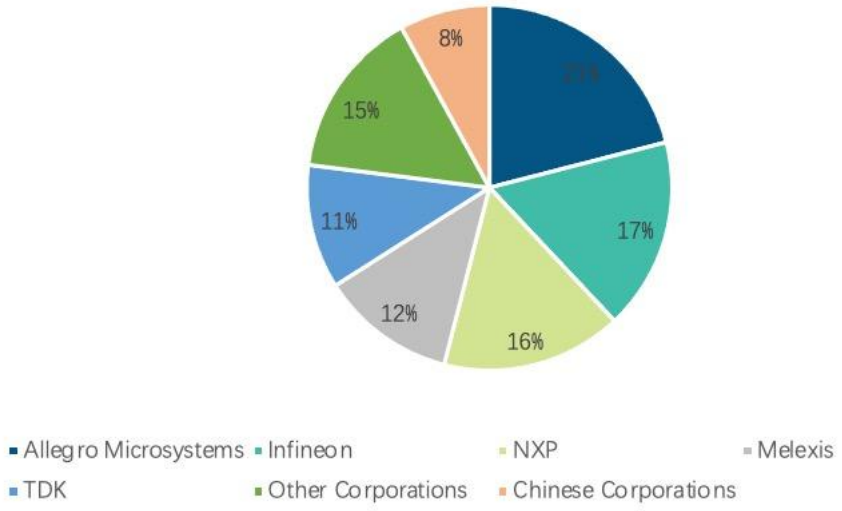
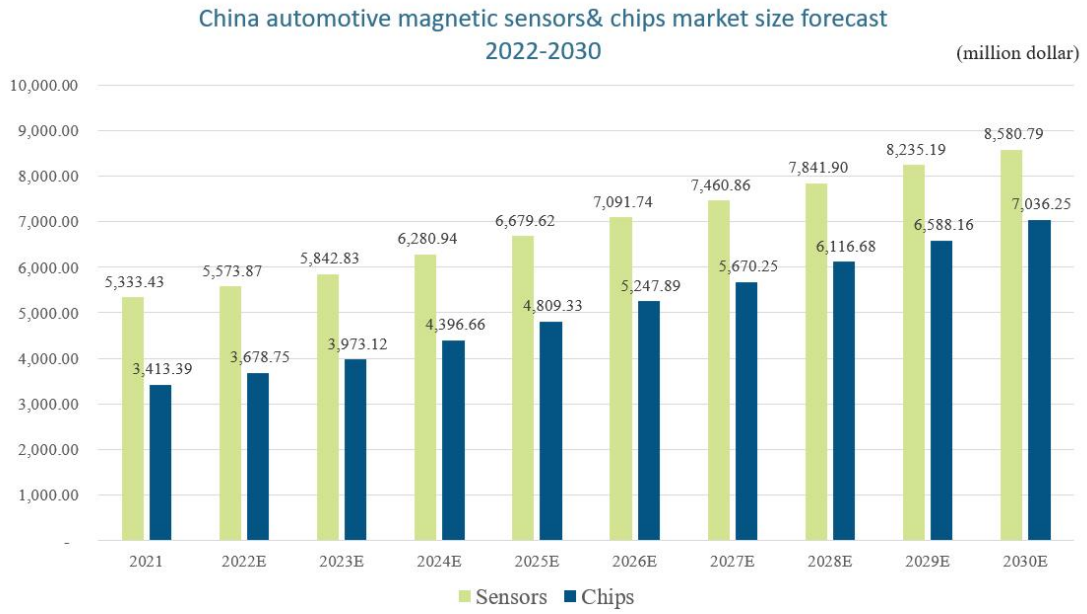
In the Chinese market, the market size of automotive magnetic sensors will be only 3.612 billion yuan in 2021. In the future, with the increase of the penetration rate of new energy vehicles and the increasing number of magnetic sensors for single vehicle, the market size of automotive magnetic sensors in China is expected to grow significantly, and is expected to reach 5.81 billion yuan by 2030.

From the perspective of the automotive magnetic sensor chip market, the industry has

a high technical threshold and a relatively concentrated industrial competition pattern. Allegro Microsystems is a leading enterprise in the automotive magnetic sensor chip market, and together with Infineon, NXP, Melexis and TDK, it accounts for more than 90% of the automotive magnetic sensor chip market. However, Chinese enterprises started relatively late, with a small number of participants, accounting for less than 10% of the market share. In 2021, the market size of China's automotive magnetic sensor chips will be only $341 million, which is predicted to reach $704 million in 2030, with a CAGR of 8%.

china automotive magnetic sensor chip market pattern





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