

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

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Abstracts

The Magnetics Market size is estimated at USD 14.10 billion in 2024, and is expected to reach USD 18.52 billion by 2029, growing at a CAGR of 5.60% during the forecast period (2024-2029).

Magnetic components are widely adopted in both advanced industrial and common household appliances, ranging from refrigerators and televisions to telecommunication devices. Magnetics plays a crucial role in cars, monitoring voltage in power supplies for dashboard displays, interior and exterior lighting, climate control, and other systems. These components are used in cell phones, computers, communication systems, and other electronic products.

Key Highlights

The global demand for HPC and AI is exploding. Similarly, the demand for smartphones, PCs, and infrastructures is stabilizing. Smartphone sales are expected to recover significantly in 2024, driving the demand for these magnetic components. High-frequency inductors are used in mobile phones, which help with fast and stable internet surfing. Furthermore, with the advancement in mobile communication networks, the number of inductors in smartphones is growing significantly. Inductors enhance various smartphones' functions, including improving color LCD and battery life.

Smartphone OEMs are ramping up Artificial intelligence-enabled smartphones in 2024, with generative AI capabilities and an additional storage capacity, which creates demand for better battery life. Further, with the advancement in technology, consumers prefer advanced technology products compared to older devices, which drives the sales of smartphones.

The need for inter-country power grid connections (super grid) and renewable energy sources based on direct currents, such as fuel cells, wind power, and solar power, is expanding globally, as is the demand for magnetic components.

Traditionally, transformers were made of solid iron; however, with the development of materials, silicon steel, amorphous steel, and ferrite ceramics have been used as core materials for transformers due to their higher penetrability. Similarly, inductors and EMI filters use iron, ferrite, and other magnetic materials as core material, and coils are usually made of copper.

With the current rapid evolution of autonomous driving technologies and ADAS, automobiles are prepared with numerous sensors such as radars, cameras, and LiDAR, resulting in dramatic growth in magnetic components. Owing to ongoing advancement in automotive sector, key vendors are continuously investing on product developments and advancement to meet consumer demand.

For instance, in January 2024, TDK Corporation launched a new inductor KLZ2012-A series, designed for automotive audio bus (A2B) applications with high durability, a wide operation range, and greater inductance tolerance. The company announced that the mass production of these new product series started in January 2024. A2B technology was developed to decrease the weight of cable harnesses containing of a broad variety of telecommunication buses, pointing at its final goal of amplified fuel efficiency of automobiles.

Magnetics Market Trends

Industrial (Motors/UPS) to Witness the Growth

Industrial motors are electrical devices that convert electrical energy into mechanical energy. They are commonly powered by alternating current (AC) sources like generators and power grids. Industrial motors are specifically engineered to supply power and movement to various equipment and machinery utilized in different industries. Due to their requirement to endure heavy loads and function in challenging environments, these motors are typically more durable and potent than those employed in residential or commercial settings. The growing need for magnetic inductance in industrial motor applications will drive the market.

The Industrial Energy Accelerator reports that a significant portion of the global

electrical energy consumed by companies is attributed to the millions of electrical motors in operation. These motors are crucial in powering essential industrial processes and auxiliary systems such as ventilation, compressed air generation, and water pumping across various sectors. Additionally, there has been a recent introduction of universal motors in the industrial motors market, designed to work with both AC and DC power sources. The increasing demand for these motors and growing developments by the various vendors will increase the applications of magnetic components.

The design and functioning of industrial motors heavily rely on magnetic induction, which serves as the primary method for producing torque. Engineers can develop efficient and high-performing motors suitable for various applications by thoroughly comprehending magnetic induction principles and optimizing different design elements.

The demand for data center uninterruptible power supply (UPS) systems is experiencing significant growth due to the increasing investments in data centers. As various industries expand their digital operations and services, there is a surge in demand for data storage, processing, and management. Consequently, substantial investments are being made in data center infrastructure to meet these requirements. According to Cloudscene, as of September 2023, there were 448 data centers in China, the most of any country or territory in the Asia-Pacific region, where market opportunities can be found significantly.

China to Witness Rapid Growth

The demand for passive electronics is expected to remain strong in the forecast period due to increased consumer electronics, automotive, and medical equipment production in China.

According to Rayming PCB and Assembly, China has continued dominating the electronics manufacturing industry for some years. This country is an integral manufacturing place for electronics despite its recent trade with the United States. As a large manufacturing company, China exports about 50% of laptops and cell phones globally.

The global electronics market grew from USD 3554.94 billion in 2022 to USD 3739.37 billion in 2023. In the global electronics sector, China contributes a large percentage of revenue. This country is ranked among the top producers of electronic devices. It

produces various electronics products, ranging from consumer electronics to industrial components. Cities such as Dongguan and Shenzhen in the South have factories. In addition, Shanghai and Choingun are home to factories.

China produces a prominent share of laptop manufacturers globally. Despite China's dependence on imported semiconductors, this country remains a good option for many world-class laptop brands. Kunshan and Chongqing are the two biggest clusters for laptop manufacturing and other popular electronic production hubs, like Dongguan and Shenzhen. These hubs are known for producing laptops, components, and accessories.

The country also holds a significant consumer market considering the country's large population, with about 160 Chinese cities having a population crossing one million people, compared to the US, having only nine cities that incorporate more than one million people. Thus, the growing electronics manufacturing and consumption are expected to drive the need for various passive components to address electric flow management in all consumer and household electronics.

China's initiatives targeting the EV industry over the past 15 years are one of the most successful cases of industrial policy in the country's recent history. Extensive government interventions, including subsidies, enabled the domestic industry and the market to grow simultaneously. The timing of the policies was crucial because they coincided with and magnified technological advancements in battery technology and greater consumer acceptance of EVs. Importantly, many existing automotive companies dismissed EV technology until recently.

Meanwhile, their Chinese competitors quickly grasped the opportunity to technologically leapfrog multinational corporations with decades of IP accumulated in internal combustion engine technology. China is also by far the main producer of lithium batteries globally, which are the main component in EVs. According to the International Energy Agency (IEA), the country accounts for 65% of battery and 80% of cathode production, and the Department of Energy's estimate is even higher. Thus, the growing prospect of the market studied in the country's automotive sector is shown.

Magnetics Industry Overview

The magnetics market is fragmented, comprising long-standing established players who have made significant investments in the product. The new players entering the market

require high investments. The companies can sustain themselves through powerful competitive strategies, and key players are TDK Corporation, Yageo Corporation, Meritek Electronics Corporation, AVX Corporation (Kyocera Group), and Vishay Intertechnolo.

In January 2024, TDK Corporations subsidiary TDK Ventures Inc. invested in Singaporean tech company Silicon Box for digital and energy transformation. It plans to accelerate the market for semiconductor packaging innovations through Silicon Box.

In November 2023, The Bourns introduced an air coil inductor series with high self-resonant frequency, high Q, and tight inductance tolerance. The Model AC4842R Air Coil Inductor Series offers a low-loss, high-frequency solution that gives RF application designers a wider range of high-Q solution options.

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