Resistor - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

Market Report | 2024-02-17 | 120 pages | Mordor Intelligence

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Report description:

The Resistor Market size is estimated at USD 10.49 billion in 2024, and is expected to reach USD 12.28 billion by 2029, growing at a CAGR of 3.20% during the forecast period (2024-2029).

Key Highlights
-Automotive manufacturers are consistently working towards enhancing performance while reducing cost and mass, leading to significant advancements in electrical and electronic components used in automobiles. Despite the emergence of digital technology, the reliability and accuracy of many circuits still rely on their analog components.
-In the automotive sector, rising functionality is resulting in a greater number of motors and ECUs, and at the same time, the mounting area for applications is limited. As a result, high-density mounting increases, spurring the demand for components, including compact power shunt resistors. Further, the applications of high-performance bus bar shunt resistors in electric vehicles are helping designers meet the challenges of the market in new and innovative ways. The increase in demand for EVs has been complementing the demand for resistors in the market.
-Power resistors are designed to withstand large amounts of power and dissipate unwanted electrical energy with a compact device footprint. This is essential in aircraft, where space and weight capacity are crucial factors. They are poised to be essential in developing next-generation fly-by-wire (FBW) flight control systems that seek to replace manual flight controls with fully electronic equivalents. Further research into power-by-wire technology also uses power resistors to replace heavyweight hydro-mechanical flight control systems with electric actuators driven by digital flight control computers.
-Resistors are being used in almost all defense platforms, and the defense industry prefers the use of nickel-chromium in film, wire, and foil formats due to its resistance to moisture and operational reliability.
-Furthermore, ruthenium has experienced a significant price increase in the last few years, from USD 40 per troy ounce to as high as USD 850 per troy ounce, corresponding with shortages of thick film chip resistors. This price increase has resulted in customers

seeking alternative resistor designs, including those based on thin-film nickel. However, the economies of scale in manufacturing thin-film resistors are a small fraction compared to thick-film chips. Thick film chips are one of the largest volume products produced globally, measured in trillions of pieces.
-Moreover, The COVID-19 pandemic had an impact on the sales of semiconductor materials. However, in Post-pandemic scenario, there has been a growing demand for consumer electronics products, which has helped the semiconductor industry to expand. As a result, there is projected to be an increase in product demand in the automotive and electronics sectors, which will contribute to the growth of the resistor market and enhance overall efficiency.

Resistor Market Trends

Consumer Electronics Segment to Dominate the Market

- Resistors are one of the most commonly used passive components in electronic circuits because they resist the flow of sudden voltage spikes, which are enough to cause damage to electronic equipment almost instantly. Multiple resistor types find widespread application in consumer electronics such as computers, PCs, and notebooks.
- Surface-mount chip resistors are tiny and used significantly for printed circuit boards (PCBs) incorporated in smartphones and laptops, and most silicon-printed circuits use them for operations that ensure signals are always right. Also, varistors, often described as movistors (a contraction of the words metal oxide varistor), are among the types of resistors available in various forms. They are significantly utilized in the surge or transient-protected mains extension to protect computers by varying the resistance with the applied voltage.
- Common types of resistors found in smartphones include surface-mount chips and network resistors. Chip resistors are one of the smallest electronic components on the PCB of a mobile phone. They decrease the current and pass it forward. Network resistors are made from two or more chip resistors. For instance, Chip Resistors Array's offering from Walsin Technology Corporation is applied to mobile phones, digital camcorders, and other consumers' electrical equipment.
- As consumer electronics continue to advance, there have been changes in the power and pulse requirements. The development of more efficient electronics means that lower power, voltage, and current conditions are now necessary. Consequently, designs that previously relied on costly carbon composition or wire-wound resistors can now opt for the more affordable metal oxide option. Although metal oxide resistors may not be able to withstand as much pulse energy as carbon comps or wire wounds, they still offer improved pulse handling compared to standard metal film resistors.

Asia-Pacific to Hold Significant Market Share

- The growing electronics industry is attracting several MNCs to establish manufacturing plants in Asian countries, either independently or through a joint venture with different regional companies. This includes large global organizations such as Tyco Electronics, FCI OEN, Molex, Vishay, and EPCOS. This is further anticipated to boost the local manufacturing activity of resistors in the Asia-Pacific region.
- In China, the demand for passive electronic components like resistors is primarily driven by the growth of consumer electronics. Moreover, China's Ministry of Industry and Information Technology released an action plan to develop the country's electronic components industry from 2021 to 2023. The action plan aims to achieve technological breakthroughs in areas including circuits, connectors, sensors, and optical communication components to enhance the position of Chinese companies in the industrial supply chain and ease supply reliance on high-end foreign products. This plan will unlock new opportunities for industry players in the region.
- The strong demand for notebooks and gaming machines supporting the stay-at-home economy and the gradual pickup in

demand for handsets and automotive applications have influenced several companies to increase their productivity.
- The trading of resistors in countries like India is witnessing an upsurge, especially with surging demand for current sense resistors. However, thin film and chip resistors currently have relatively lower demand in the Indian market. This trend indicates the lack of specialized electronic product manufacturing in the country that uses such resistors. However, most manufacturers still perceive that the future of resistor manufacturing lies in thick film and chip resistors.
- Asian companies, such as Taiwan-based Yageo, are engaging in multiple product innovation activities. YAGEO Group has developed one of the smallest metal current sensing resistors, PA0100 (01005 sizes, 0.4mm x 0.2mm). PA0100 metal current sensing resistors are mainly adopted in light, thin, multi-functional, short, and high-density mobile devices such as smartphones, battery modules, wearable devices, and radiofrequency transceiver modules.

Resistor Industry Overview

The Resistor Market is a Semi-consolidated market. The market is significantly competitive, and the players are actively trying to increase their market share. Besides, the vendors are also engaging in various growth strategies such as product development, partnerships, and geographical expansions, among others, to develop their customer base and cater to a broader range of customers across the globe. Some of the prominent vendors in the market include TE Connectivity Ltd., Murata Manufacturing Co. Ltd., Vishay Intertechnology Inc., KOA Speer Electronics, Inc., and ROHM Co., Ltd., among others.

- April 2023: ROHM Co., Ltd. announced the development of the industry's thinnest (H: 0.03 inch) 12W-rated metal plate shunt resistor (PSR350). It is optimized for high-power applications in the automotive and industrial equipment markets. ROHM plans to enhance the PSR lineup by introducing a 0.2m? (PSR100) model and a 15W type in the industry's smallest size (PSR330). Shunt resistors have a long history of being utilized in power modules for industrial equipment. Likewise, in the automotive sector, there is a growing trend of employing thin double-sided cooled power modules in the main inverters of xEVs.
- March 2023: Vishay Intertechnology, Inc. announced the enhancement of the Draloric RCS0805 e3 anti-surge thick film resistor with a higher power rating of 0.5 watts. Therefore, with its increased power rating, the resistor can now be utilized in place of one resistor in the 1210 case size, two parallel devices in the larger 1206 case size, or four standard parallel resistors in the 0805 case size. This allows designers to save board space in industrial, telecommunications, automotive, and medical applications while lowering component counts and placement costs.

Additional Benefits:

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

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