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Integrated Passive Devices Market Assessment, By Type [Radiofrequency IPDs, Electrostatic Discharge IPDs, Electromagnetic Interference IPDs, Others], By Integration [High, Low], By Material [Thin Film, Thick Film], By End-user [Consumer Electronics, Automotive, Telecom, Healthcare, Energy & Power, Others], By Region, Opportunities, and Forecast, 2017-2031F

https://marketpublishers.com/r/IBD365BC4A4AEN.html
Date: March 2025
Pages: 227
Price: US$ 4,500.00 (Single User License)
ID: IBD365BC4A4AEN

Abstracts

Global integrated passive devices market size was valued USD 1.41 billion in 2023, the market is forecasted to reach a value of USD 2.98 billion by 2031, displaying a CAGR of 9.8% from 2024 to 2031. Integrated passive devices (IPD) refers to a rapidly growing segment within the electronics industry that involves the integration of passive components, such as resistors, capacitors, and inductors, onto a single chip or substrate. These components are essential for various electronic devices, including smartphones, wearables, automotive electronics, and IoT devices. The integrated passive devices offer several advantages, including reduced footprint, enhanced performance, and improved reliability, making them increasingly popular among manufacturers. As a result, the integrated passive devices are ideal for a wide range of end-users such as consumer electronics, automotive, telecom, healthcare, and energy and power.

The market for integrated passive devices is witnessing significant growth due to the rising demand for miniaturized and compact electronic devices with improved functionality. The proliferation of smartphones and connected devices, coupled with advancements in semiconductor technology, is driving the market further. For instance,

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according to the recent statistics published by the Semiconductor Industry Association (SIA), in 2021, the global semiconductor industry sales were USD 555.9 billion, and in 2022, it was USD 574.1 billion, the highest-ever annual total. In 2022, the year-on-year growth rate of the global semiconductor industry was 3.3% as opposed to 2021. Additionally, the increasing adoption of 5G technology and the Internet of Things (IoT) applications are creating a substantial demand for integrated passive devices, as these components play a crucial role in enabling high-frequency communication and miniaturized IoT devices.

Proliferation of Smart Phones and Connected Devices are Driving Integrated Passive Devices Market

The rise in the demand for smartphones and connected devices is a significant driving force behind the growth of the integrated passive devices (IPD) market. As the global population increasingly relies on smartphones and connected devices for communication, entertainment, and productivity, the demand for smaller, more efficient, and powerful electronic components has surged. Integrated passive devices, which integrate essential passive components like resistors, capacitors, and inductors into a single chip, play a crucial role in enhancing the performance, miniaturization, and energy efficiency of these devices.

Smartphones require compact and high-performance components to support their multifunctional capabilities. Integrated passive devices enable manufacturers to reduce the overall size of smartphones and other connected devices while improving their functionality and reliability. These components are vital for functions like signal filtering, power management, and impedance matching in wireless communication technologies, thereby ensuring seamless connectivity and optimal performance.

For instance, according to recent data published by YouAppi., in 2023, the prevalence of smartphones has reached unprecedented levels, with a staggering 6.8 billion users globally. The United States stands out with 94.40% of millennials and 91% of college graduates owning smartphones. This widespread adoption has significantly impacted daily routines, as almost half of the U.S. population spends 5 to 6 hours on their smartphones every day. 72% of teenagers habitually check their phone messages and notifications immediately upon waking up. Nomophobia, the fear of being without a mobile phone, affects a staggering 99.2% of smartphone users.

Growing Adoption in 5G Technologies Influencing Integrated Passive Devices Market

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The rapid adoption of 5G technologies is significantly influencing the integrated passive devices (IPD) market. There is a surging demand for high-performance, compact, and efficient passive components in telecommunications infrastructure and mobile devices with the rollout of 5G networks worldwide. 5G networks require advanced radio frequency (RF) components, antennas, and filters to handle the higher data speeds and increased network traffic. Integrated passive devices, which combine various passive components like resistors, capacitors, and inductors into a single package, have emerged as a vital solution to meet the stringent requirements of 5G technology.

Integrated passive devices (IPDs) offer superior miniaturization and integration capabilities, enabling the design of smaller and more power-efficient 5G devices and infrastructure equipment. These components enhance the performance of RF modules, enabling seamless data transmission and reception in 5G networks. The need for integrated passive devices (IPDs) in 5G applications escalates as the demand for high-speed internet and low latency communication continues to grow. Moreover, integrated passive devices (IPDs) play a crucial role in enabling the deployment of Massive Multiple-Input, Multiple-Output (MIMO) technology, which is fundamental to 5G networks. Massive MIMO relies on advanced antenna systems that require compact and high-performance passive components, precisely what IPDs offer. As 5G technology becomes more ubiquitous, the integrated passive devices market is poised to expand further, driven by the ongoing evolution and implementation of 5G networks across various sectors, including telecommunications, Internet of Things (IoT), and smart devices.

North America Dominates the Integrated Passive Devices Market

North America boasts a thriving consumer electronics market, with a high demand for miniaturized and efficient electronic devices. Integrated passive devices (IPDs), with their ability to offer compact integration of passive components catering perfectly to this demand. The automotive industry, another significant sector in the region, has embraced integrated passive devices (IPDs) in electronic control units, infotainment systems, and advanced driver assistance systems (ADAS). Additionally, the region's early adoption of cutting-edge technologies, such as 5G, IoT, and smart devices, has created a substantial demand for high-performance, compact passive components like integrated passive devices (IPDs). The telecommunications sector, in particular, has witnessed a rapid deployment of 5G networks in North America, thereby driving the need for advanced radio frequency (RF) components, where integrated passive devices (IPDs) play a pivotal role.

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Government Initiatives

The governments of various countries are implementing strategic initiatives and policies to boost the revenue advancement of the integrated passive devices (IPDs) market growth. For instance, the European Commission and its member states have taken decisive actions to reinforce Europe's 'strategic autonomy' in the semiconductor industry. The European Commission initiatives include earmarking a substantial sum of up to USD 37.8 billion (Euro 35 billion) to bolster advanced semiconductor production capabilities within the European Union (EU). In March 2021, the European Union countries implemented the '2030 Digital Compass Initiative,' which explicitly outlines an objective to elevate the EU's global chip manufacturing share to 20% by 2030, a substantial increase from the current share of under 10%.

Likewise, in May 2021, South Korean President Moon Jae-in launched a new national semiconductor industrial policy, known as the 'K-Belt Semiconductor Strategy,' which focuses on geographic clusters. This strategy encompasses various measures, including significant tax credits for research and development (up to 50%) and manufacturing (16%), substantial long-term loans amounting to USD 886 million, federal R&D investments totaling USD 1.3 billion, regulatory simplifications, and infrastructure upgrades. These efforts come in response to intensified competition from the countries such as the United States and China, both of which are intensifying their focus on bolstering their respective semiconductor industries. The Semiconductor Industry Association (SIA) estimates that these tax incentives for South Korean chip companies could provide incentives totaling approximately USD 55-65 billion over the next three years.

Impact of COVID-19

The COVID-19 pandemic had a notable impact on integrated passive devices market. The semiconductor industry, a major consumer of these components, experienced disruptions due to supply chain challenges, factory closures, and reduced demand caused by lockdowns and economic uncertainty. Production slowdowns and delays in technology upgrades affected the market, causing temporary setbacks. Additionally, travel restrictions impeded collaborations and hindered the timely delivery of materials, impacting project timelines.

However, the pandemic also accelerated certain trends within the market. The increased reliance on digital technologies, remote working, and the surge in demand for electronics, particularly for healthcare equipment and devices, bolstered the need for

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advanced semiconductors. This demand, coupled with ongoing technological advancements, created opportunities for integrated passive devices market to rebound.

Key Players Landscape and Outlook

The top players operating in the global integrated passive devices market are STMicroelectronics N.V., Murata Manufacturing Co., Ltd., Semiconductor Components Industries, LLC, Infineon Technologies AG, Johanson Technology Inc, Taiwan Semiconductor Manufacturing Company, Johanson Technology Incorporated, OnChip Devices, Inc, Texas Instruments Incorporated, and Jiangsu Changdian Technology Co., Ltd. The integrated passive devices market is witnessing a swift growth trajectory due to the increasing emphasis placed by companies worldwide on establishing advanced semiconductor industry infrastructure. Furthermore, the market expansion is greatly facilitated by digitalization, along with significant investments made by companies to enhance research and development resources, engage in collaboration projects, bolster marketing efforts, and expand distribution networks. These factors collectively contribute to the rapid expansion of the market.

For instance, TSMC significantly raised its capital expenditure from around USD 15 billion in 2019 to an estimated USD 42–44 billion in 2022. Likewise, Samsung revealed its intention in 2023 to invest USD 230 billion in South Korea over the next two decades to establish new chip production capabilities. It's important to note that these investments require considerable time to come to fruition. Constructing semiconductor plants usually spans three to four years, and it may take an additional three to four years for these facilities to operate at maximum capacity.

In September 2023, X-FAB Silicon Foundries SE has recently announced the addition of new integrated passive device (IPD) fabrication capabilities to its existing offerings. This development reflects the growing significance of integrated passive devices in various industries. Therefore, the continuous expansion and innovation in this sector indicates a promising future for integrated passive devices.

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