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Advanced IC Substrate Market Report by Type (FC BGA, FC CSP), Application (Consumer Electronics, Automotive and Transportation, IT and Telecom, and Others), and Region 2024-2032

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Abstracts

The global advanced IC substrate market size reached US$ 10.0 Billion in 2023. Looking forward, the market is expected to reach US$ 16.5 Billion by 2032, exhibiting a growth rate (CAGR) of 5.6% during 2024-2032. The growing demand for high-performance electronic devices, rising adoption of smaller, lighter, and more energy-efficient devices, and increasing number of data centers and cloud computing services are some of the major factors propelling the market.

An advanced integrated circuit (IC) substrate is a crucial component that serves as a foundation for mounting and interconnecting ICs within electronic devices. It utilizes advanced materials and technologies to provide optimal electrical performance, thermal management, and signal integrity. It is designed to meet the specific requirements of high-performance applications that are found in smartphones, tablets, computers, and other electronic devices. As it assists in offering enhanced connectivity, reduced power consumption, and efficient heat dissipation, the demand for advanced IC substrates is rising across the globe.

At present, the increasing adoption of advanced IC substrate, as it enables the seamless functioning of intricate electronic systems, is influencing the market positively. Moreover, the rising emergence of fifth-generation (5G) technology, along with the increasing adoption of artificial intelligence (AI), is strengthening the growth of the market. Apart from this, the growing demand for advanced IC substrates that can accommodate higher data transfer rates and more complex processing tasks is offering a favorable market outlook. Additionally, the rising need for remote-controlled electrical

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equipment in industrial applications is offering lucrative growth opportunities to industry investors. Besides this, the increasing consumer preferences for advanced features, such as augmented reality (AR), virtual reality (VR), and high-definition (HD) displays, are contributing to the growth of the market. In addition, the rising utilization of the Internet of Things (IoT) devices around the world is impelling the growth of the market.

Advanced IC Substrate Market Trends/Drivers:
Rising demand for high-performance electronic devices

The rising demand for advanced electronic devices, such as smartphones, tablets, personal computers (PCs), wearable devices, and laptops, is contributing to the growth of the market. In addition, consumers are increasingly preferring electronic devices that assist in providing seamless multitasking, high-speed connectivity, and enhanced graphics performance. They are also adopting devices that provide immersive experiences to individuals. Apart from this, there is an increase in the demand for advanced IC substrates that can accommodate the integration of powerful processors, memory modules, and communication components. As a result, manufacturers are investing in substrates with optimized electrical pathways and signal integrity that ensure efficient data transfer with minimal latency.

Increasing popularity of miniaturization

The increasing demand for smaller, lighter, and more energy-efficient devices among individuals, along with the rising popularity of miniaturization around the world, is supporting the growth of the market. In line with this, there is a rise in the need for compact and high-density advanced IC substrates. Besides this, these substrates benefit by enabling the stacking of multiple layers of components and reducing the footprint of devices while maintaining optimal functionality. The ability to integrate various components on a single substrate enhances efficiency, reduces the risk of signal interference, and improves the overall device performance, which is offering a positive market outlook.

Growing number of data centers

The rising number of data centers and cloud computing services across the globe is bolstering the growth of the market. Businesses and individuals rely increasingly on cloud computing, big data analysis, and online services for storing and managing vast volumes of information. Data centers have countless servers, storage systems, and

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networking equipment that generate substantial heat. In line with this, there is a need for efficient thermal dissipation to prevent overheating and ensure uninterrupted operation. Besides this, advanced IC substrates offer enhanced thermal management capabilities and heat-spreading properties that assist in maintaining the reliability and longevity of these systems. Furthermore, the increasing demand for high-performance substrates that can manage heat effectively is strengthening the growth of the market.

Advanced IC Substrate Industry Segmentation:
IMARC Group provides an analysis of the key trends in each segment of the global advanced IC substrate market report, along with forecasts at the global, regional and country levels for 2024-2032. Our report has categorized the market based on type and application.

Breakup by Type:

FC BGA
FC CSP

FC BGA represents the largest market segment

The report has provided a detailed breakup and analysis of the market based on the type. This includes FC BGA and FC CSP. According to the report, FC BGA represented the largest segment. FC BGA is a packaging technology that facilitates the connection of integrated circuits directly to the substrate and enhances performance. In FC BGA, the IC is flipped, and its active side is connected to the substrate using tiny solder balls, which serve as conductive connections. This configuration offers numerous advantages, such as shorter signal paths, improved electrical performance, and enhanced thermal dissipation due to direct contact with the substrate. FC BGA technology is particularly advantageous in high-density applications where space is limited, such as smartphones, tablets, and high-performance computing systems.

Breakup by Application:

Consumer Electronics
Automotive and Transportation
IT and Telecom
Others

Consumer electronics accounts for the majority of the market share

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The report has provided a detailed breakup and analysis of the market based on the application. This includes consumer electronics, automotive and transportation, IT and telecom, and others. According to the report, consumer electronics represented the largest segment. Consumer electronics comprises a wide range of devices, such as smartphones, laptops, tablets, gaming consoles, and wearable gadgets. Advanced IC substrates play a vital role in enhancing the performance and functionality of these devices. In consumer electronics, these substrates enable the integration of powerful processors, memory modules, and connectivity components and ensure seamless multitasking, high-speed data transfer, and immersive user experiences. Additionally, these substrates support advanced features, such as high-definition displays, augmented reality (AR), and artificial intelligence (AI). The rising demand for sleeker designs and extended battery life with efficient thermal management and optimized power consumption is propelling the growth of the market.

Breakup by Region:

North America
United States
Canada
Asia Pacific
China
Japan
India
South Korea
Australia
Indonesia
Others
Europe
Germany
France
United Kingdom
Italy
Spain
Russia
Others
Latin America
Brazil
Mexico

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Others
Middle East and Africa

Asia Pacific exhibits a clear dominance, accounting for the largest advanced IC substrate market share

The market research report has also provided a comprehensive analysis of all the major regional markets, which include North America (the United States and Canada); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the report, Asia Pacific accounted for the largest market share.

Asia Pacific held the biggest market share due to the presence of improved manufacturing units. In line with this, the rising demand for innovative electronic devices among individuals is bolstering the growth of the market in the Asia Pacific region. Moreover, favorable government initiatives in the region are supporting the growth of the market. Apart from this, the rising popularity of automotive electronics due to the increasing demand for electric vehicles (EVs) is contributing to the growth of the market in the region.

Competitive Landscape:
Major players are consistently investing in research and development (R&D) activities to develop advanced IC substrate materials and technologies. This includes exploring novel materials with improved thermal conductivity, signal integrity, and electrical performance to cater to high-performance applications. Additionally, semiconductor manufacturers and consumer electronics companies are engaging in collaboration that enables the exchange of expertise, technology, and resources, that is leading to the development of tailored solutions that meet specific market needs. Besides this, companies are constantly refining their manufacturing processes to enhance the precision, scalability, and cost-efficiency of producing advanced IC substrates. This includes adopting advanced technologies, such as lithography, laser drilling, and advanced packaging techniques.

The report has provided a comprehensive analysis of the competitive landscape in the market. Detailed profiles of all major companies have also been provided. Some of the key players in the market include:

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AT & S Austria Technologie & Systemtechnik Aktiengesellschaft
Fujitsu Limited
Ibiden Co. Ltd.
JCET Group Co. Ltd
Kinsus Interconnect Technology Corp.
Korea Circuit Co. Ltd.
KYOCERA Corporation
LG Innotek Co. Ltd.
Nan Ya PCB Co. Ltd. (Nan Ya Plastics Corporation)
TTM Technologies Inc.
Unimicron Technology Corporation (United Microelectronics Corporation)

Recent Developments:
In 2023, LG Innotek unveiled the latest FC-BGA for the first time at the 'CES 2023'. It is highly integrated, multi layered, large scaled, and has fine patterning and a lot of micro vias.
In 2021, Advanced Semiconductor Engineering, Inc. (ASE) collaborated with Siemens Digital Industries Software to generate two new enablement solutions engineered to help mutual customers create and evaluate multiple complex integrated circuit (IC) package assemblies and interconnect scenarios in an easy-to-use, data-robust graphical environment prior to and during physical design implementation.
In 2021, AT&S AG, one of the leading manufacturers of high-end printed circuit boards and IC substrates, announced the development of a new production site for IC substrates in Southeast Asia, subject to the approval of the Supervisory Board.

Key Questions Answered in This Report

1. What was the size of the global advanced IC substrate market in 2023?
2. What is the expected growth rate of the global advanced IC substrate market during 2024-2032?
3. What are the key factors driving the global advanced IC substrate market?
4. What has been the impact of COVID-19 on the global advanced IC substrate market?
5. What is the breakup of the global advanced IC substrate market based on the type?
6. What is the breakup of the global advanced IC substrate market based on the application?
7. What are the key regions in the global advanced IC substrate market?
8. Who are the key players/companies in the global advanced IC substrate market?

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