

## **Advanced Ic Substrates Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)**

Market Report | 2023-01-23 | 125 pages | Mordor Intelligence

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### **Report description:**

The advanced IC substrates market (hereafter referred to as the market studied) was valued at USD 7.73 billion in 2020, and it is expected to reach USD 12.24 billion by 2027, recording a CAGR of 6.85% over the forecast period 2022-2027. Players are continuously advancing their packaging technologies to cater to stringent requirements with a smaller footprint, higher performances, and lower power consumption. The demand for consumer electronics and mobile communication devices drives electronics manufacturers to deliver more compact and portable products.

? The increasing trend of miniaturization is driving the demand for advanced packaging. The advent of 5G, which influenced the demand over the past few years, is expected to continue as the use of FCBGA in 5G base stations and HPCs is increasing in countries adopting communication technology.

? FCBGA is expected to hold a significant share of the market demand, owing to its routing density availability, as it can be tuned for maximum electrical performance. The key players in the market are Unimicron, ASE Group, IBIDEN, and SCC. For instance, Unimicron and Kinsus are expanding their substrate capacities. Unimicron has announced that it would be investing a total of TWD 20 billion in R&D and expansion of its production capacity for advanced flip-chip substrates through 2022.

? Apart from this, the global demand for IoT, in both the consumer and industrial spaces, is expected to add to the increasing demand for the IC substrate. According to the Internet and Television Association, the global number of IoT devices by 2020 is expected to reach 50.1 billion, and industrial IoT demand is expected to exceed consumer demand over the coming years. Such developments are expected to influence the market positively.

? The advanced substrate industry follows miniaturization trends, greater integration, and higher performance. Owing to this,

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several players across the ongoing ED and SLP packaging are making huge investments and showing an increased interest in such technologies.

? The higher power density and board integration result in thermal benefits, thereby enabling further improvements in system reliability. Such technologies bring massive value to the market due to extended adoption across automotive applications.

? They also drive the telecom and infrastructure segment, where ED is a suitable substrate solution for increased hardware efficiency. Due to this, players are investing huge amounts in new plants where ED is expected to be the main product constituent.

? Despite the potential of IC substrates, changing preferences are likely to slow down market growth. For instance, some companies utilize a silicon interposer with multiple RDLs for a better connection between logic and HBM. Others use fan-out-on-substrate with RDLs. FCBGA needs a substrate supplier, wafer bumps, and wafer fab capacity for RDLs and assembly and testing. But FO WLP only requires assembly and wafer fabs for RDLs and wafer bumps and testing. Hence, the industry is witnessing a shift toward FOWLP.

? Changes in business/enterprise working style and consumer behavior during the COVID-19 pandemic have fuelled demand for some types of products, and it is expected to open both new markets and routes to market. For instance, demand for semiconductors used in wired communication is still growing as more enterprises are upgrading their security and increasing cloud activities. Video streaming across many networks has also increased fixed broadband usage.

#### Advanced IC Substrates Market Trends

##### Growing Application of Advanced Substrates in Manufacturing of IoT Equipment and Mobiles to Drive Market Growth

The increasing functionality of consumer electronic products and the increasing adoption of smart devices and smart wearables are some of the major factors expected to drive the adoption of advanced IC substrates during the forecast period.

? The increasing adoption of high-performance mobile devices (including 5G) and increasing penetration of advanced technologies, like AI and HPC, are fuelling the need for advanced IC substrates. Smartphones command a significant share of the market, and with the advent of 5G smartphones, the demand is expected to increase even further. Global companies, like Samsung, are increasingly investing in the semiconductor business to become prominent smartphone vendors in the 5G smartphone space.

? In January 2022, China's shipments of smartphones compatible with 5G networks increased by 63.5% over 2021 to 266 million as falling prices boosted demand, according to a report by the China Academy of Information and Communications (CAICT). The report also stated that 5G smartphone shipments accounted for 75.9% of Chinese shipments, higher than the global average of 40.7%.

? The increasing adoption of smart wearables, like smartwatches and fitness bands, and their increasing functionality are also expanding the growth of the mobile and consumer segments. For instance, in April 2021, Fitbit announced its new Luxe fitness tracker, a buttonless tracker. It is supported for Android and iOS devices. It also supports Google Fast Pair for pairing more quickly to Android devices and supports the connected GPS while paired to the phone. These advancements will further develop the need for FC CSP.

? The growing market for gaming consoles and increasing advancements in these products are further expanding the scope of the mobile and consumer segments. Over 4-5 years, gaming consoles have become high-tech gadgets, and companies like Sony, Microsoft, and Nintendo, are increasingly investing in product development to reach the current 8th generation consoles. For

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instance, in May 2021, Sony announced plans to spend USD 18.39 billion over the next three years. The company has been benefiting from strong demand for the company's PlayStation 5 gaming consoles, launched in core markets in November 2020. In the business year that started April 2021, the company aimed to ship 14.8 million PlayStation 5 consoles.

? On the vendor front, Unimicron makes high-value IC substrates, such as FC CSP (Flip Chip Scale Package), and supplies them to Qualcomm, MediaTek, and Broadcom. Meanwhile, most Wafer Level (WL) CSP volume is driven by smartphone demand as it remains the most significant consumer for this platform.

#### Asia-Pacific to Register the Fastest Growth During the Forecast Period

The growth of semiconductor packaging manufacturers in Asia-Pacific correlates with the growth of end users in the region. As a result, Asia-Pacific is the fastest-growing market for smartphones and also witnessing increasing investments in renewable and automotive (EVs specifically), among various others.

? China holds a significant share of the semiconductor industry and is home to one of the most significant numbers of pure-play foundries operated by domestic and international chipset manufacturers, thus boasting a substantial share of demand and manufacturing facilities.

? The growing emphasis on the semiconductor industry by the government of China is leading to increased demand for advanced IC substrates. The country has an aggressive growth strategy to meet 70% of its semiconductor demand through domestic production by 2025. In addition, the 14th Five Year Plan (2021-2025) for technology independence also supports the goal set by the government.

? The growing emphasis on 5G deployment in the country further influences the 5G chipsets and enables device production. With the government's decision to ramp up 5G deployment, production is expected to increase over the next few years. According to Viavi solutions, as of February 2021, 341 Chinese cities have 5G availability.

? The Japanese government is taking robust measures to revive the consumer electronics and automotive industries. In line with this, Japan had announced a USD 2.2 billion stimulus package to help its manufacturers shift their production facilities out of China as the COVID-19 pandemic disrupted supply chains. The package specifies USD 2 billion for companies moving their production back to Japan and the remaining for those seeking to move production to other countries.

? Moreover, investments in the smartphone segment in the Asia-Pacific region are expected to drive the demand for advanced IC substrates. For instance, in May 2021, AT&S, an Austrian electronics component supplier, announced that it is investing EUR 450 million in expanding capacity at its Chongqing factory.

#### Advanced IC Substrates Market Competitor Analysis

The advanced IC substrates market is moderately competitive and consists of a few major players. The players dominating the market are ASE Group, TTM Technologies Inc., Kyocera Corporation, Siliconware Precision Industries Co. Ltd., and Ibiden Co. Ltd. However, with advancements in IC packaging technology, new players are increasing their market presence, thereby expanding their business footprint across emerging economies.

? In February 2021, Advanced Semiconductor Engineering Inc. (ASE) and Siemens Digital Industries Software collaborated and announced that they had developed two new enablement solutions 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 before and during physical design implementation.

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? In June 2021, AT&S announced plans to develop a new IC substrate production plant in Southeast Asia, subject to Supervisory Board permission. Furthermore, between 2021 and 2026, a new production complex for high-end substrates will be built for a total investment of up to EUR 1.7 billion.

Additional Benefits:

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

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