

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

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Report description:

The OSAT Market size is estimated at USD 46.87 billion in 2024, and is expected to reach USD 69.19 billion by 2029, growing at a CAGR of 8.10% during the forecast period (2024-2029).

The growing semiconductor demand and investments in new chip manufacturing, packaging, assembly, and testing facilities favor the studied market's growth.

Key Highlights

- Outsourcing is also a major factor in the semiconductor industry. More than just design, the manufacturing aspect of semiconductor product development is dependent on the services provided by third-party vendors. Fabs (Pure-Play Foundries) and OSATs are two prominent examples of semiconductor outsourcing. OSAT semiconductor firms provide third-party integrated circuit (IC) packaging and testing services package and test semiconductor devices made by foundries before shipping them to the market. Such companies in the market provide innovative and cost-effective solutions that deliver faster processing speeds, higher performance, and functionality while taking up less space in an electronic device.
- OSAT companies are mostly contracted by semiconductor design companies, such as Intel, AMD, and Nvidia, and execute those companies' designs. For instance, Intel is both a chip designer and a foundry (wafer provider) owing to the fact that they own and operate their fabs or foundries. Intel outsources its chip packaging to different OSATs for assembly and test services before shipping the chips to customers.
- The semiconductor industry has been growing, with miniaturization and efficiency being the focus area and semiconductors emerging as building blocks of all modern technology. The advancements and innovations in this field have been directly impacting all downstream technologies. The rapid development of electronics technology, including artificial intelligence (AI) and cloud computing, is complemented by a high demand for integrated circuits (ICs) with high speed, low power consumption, and

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high integration, leading to its significant sales.

-However, the significant downfall in demand for consumer electronics and declining demand for cloud services has negatively impacted the OSAT market, leading to a decrease in the capacity utilization of many OSAT plants in the first half of 2023. On the contrary, the introduction of advanced packaging technologies owing to the development of sophisticated electronics in both the consumer electronics and automotive sectors, as well as demand for stock adjustment, is expected to provide a moderate recovery of capacity utilization of OSAT in the upcoming quarters.

-Furthermore, the growing complexity in the semiconductor packaging and testing process owing to the advancement in manufacturing nodes and the miniaturization trend continues to remain among the major challenging factors for the growth of the studied market.

-Additionally, vertical integration of key semiconductor manufacturers into packaging operations is one of the significant threats faced by the global OSAT market. In recent years, foundries and integrated device manufacturers (IDMs) have begun to include advanced packaging products as part of their core competencies. This has a significant impact on OSAT vendors, as many of them are large players with high expenditures and control the front-end devices. If this trend continues, it may limit the scope of OSAT vendors and harm their growth.

OSAT Market Trends

Automotive Application Segment is Expected to Hold Significant Market Share

- Automotive applications are one of the fastest-growing application areas supporting the growth of the OSAT market. As the demand and complexity of automotive chips are growing with the advent of autonomous vehicles, electric cars, and advanced driver-assistance system (ADAS) systems, the demand for semiconductor chips has been growing significantly, creating opportunities in the studied market.

- For instance, in-cabin applications such as infotainment controllers and ADAS have stringent mission-critical test requirements over wide operating temperature ranges, necessitating the need for OSAT vendors to step in. Advanced packaging technologies and a new generation of chips with high performance, reliability, and integration are made possible by packaging materials, which are essential to the growth of advanced technology applications.

- Owing to the growing demand for semiconductor chips, the vendors, such as Taiwan Semiconductor Manufacturing Co. (TSMC) and United Microelectronics Corp. (UMC), announced that they have been focusing on relocating their production to meet the demand from automakers, such as Volkswagen and Toyota, among others. For instance, in February 2023, GM signed a long-term agreement with GlobalFoundries to establish the production capacity of U.S.-produced semiconductor chips. According to GlobalFoundries, this exclusive production of semiconductor chips for General Motors will be an expansion of the New York-based company's operations.

- Furthermore, the global millennial preference for autonomous vehicles is anticipated to fuel the semiconductor packaging and testing demand. In an automatic car, there are more than 2,500 chips installed. Since it used to take longer to produce a single semiconductor a few years ago, reputable companies had to deal with a shortage of semiconductors. Furthermore, the electrification trend in the automobile industry is also anticipated to have a notable influence on the studied market's growth.

- For instance, according to IEA, Electric vehicles amounted to about 14 percent of global passenger car sales in 2022, a rise of around 5.3 percentage points year-over-year. Electric vehicle sales have rapidly increased since 2017, when they rose above one percent of the market, and have particularly accelerated since 2020. Due to increased environmental consciousness, many consumers started looking for more sustainable transportation methods amid the pandemic. This contributed to the EV market expansion worldwide.

South Korea is Expected to Hold a Significant Market Share

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- South Korea is one of the promising markets for global OSAT vendors. The country is also home to some prominent chip makers for the consumer electronics segment, such as Samsung and SK Hynix, making it a lucrative hub for innovation in semiconductor devices.
- The Korean government focuses on smart manufacturing and plans to have 30,000 fully automated manufacturing companies by 2025. The government aims to achieve this by incorporating the latest automation, data exchange, and IoT technologies. This is expected to be a major driver for OSAT services in the country.
- Moreover, the size of the country's semiconductor testing sector has grown significantly with the growth of Samsung Electronics' system semiconductor business. The semiconductor testing companies in the country, such as NEPES Ark, LB Semicon, Tesna, and Hana Micron, have been dealing with increased supplies of system semiconductors by making significant investments in necessary facilities and equipment.
- The developments in the 5G space also led to the growth of advanced packaging of chips. According to the Ministry of Science and ICT, as of February 2023, the country had 29.13 million 5G Subscribers, an increase of 113% compared to 13.66 million 5G subscribers in February 2021. Such trends are anticipated to drive the demand for semiconductor chips further, creating opportunities in the studied market.
- Apart from this, the automotive maker Hyundai, one of the prominent automobile companies in South Korea, announced that it is planning to invest USD 21.56 billion over the next five years in ADAS systems, electric cars, autonomous vehicles, and related technology, as its aim to push itself to catch up in this critical emerging technology. This is also expected to fuel the regional demand for automotive semiconductors, creating opportunities in the OSAT market as well.

OSAT Industry Overview

The outsourced semiconductor assembly and test services (OSAT) Market is fragmented, with the presence of major players like ASE Technology Holding Co. Ltd, Amkor Technology Inc., Powertech Technology Inc., King Yuan Electronics Co. Ltd., ChipMOS Technologies Inc., and Players in the market are adopting strategies such as innovations, partnerships, and acquisitions to enhance their product offerings and gain sustainable competitive advantage.

In August 2023, Kaynes Technology and the Karnataka (India) IT&BT Department signed an MoU for setting up a semiconductor assembly and testing facility in Mysuru. Through this, Kaynes Circuits India Pvt. Ltd. is planning to spearhead the establishment of a manufacturing plant for producing complex multi-layered Printed Circuit boards (PCB).

In June 2023, Amkor Technology Inc. announced that it has been working toward innovating advanced packaging to enable the car of the future. This is done owing to the dramatic evolution of the enhanced automotive experience over the past few years and the move toward advanced driver assistance systems (ADAS) and full autonomy, motivated by regional legislation and consumer preference.

Additional Benefits:

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

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