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3D Semiconductor Packaging Market Research Report - Global Forecast till 2027

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Description:

3D Semiconductor Packaging Market Size and Overview

3D Semiconductor Packaging Market is expected to witness a valuation of USD 37,472.7 Million, growing at 16.25% CAGR during the forecast period (2020-2027). The demand for 3D semiconductor packaging is rising continually, mainly due to several functional advantages of 3D semiconductor packaging compared to conventional alternatives. Moreover, the rising preference for power-efficient solutions positively impacts the 3D semiconductor packaging adoption. Highly advanced 3D semiconductor packaging solutions improve the performance of the circuit performance. Besides, the increased use of consumer electronics boosts the adoption of 3D semiconductor packaging. At the same time, the growing trend of miniaturization of electronics creates new avenues for market players. 3D semiconductor packaging is an innovative technology that has several benefits. 3D semiconductor packaging boosts the overall performance of the circuit. Increased focus on achieving power efficiency has shifted the attention towards the uses of 3D technology for semiconductor packaging manufacturing. There are various packaging methods used in 3D semiconductor packaging such as flip-chip, package on package, through silicon via, through glass via, and others.

COVID-19 Analysis

COVID-19 has severely impacted the global 3D semiconductor packaging market, mainly due to slow down in various end-user industries. The global telecom industry has reportedly faced major delays in the fifth-generation mobile service due to the coronavirus outbreak worldwide. Additionally, collective lag in regulatory timelines and issuance of spectrum and auctions have acted as major headwinds for the market growth. Furthermore, the governments of various countries across the globe have postponed their expenditure plans for later. These are all impacting pointers to affect the consumers and business organizations due to limited or unavailability of network services. Additionally, lockdowns and movement restrictions have affected the business operations of equipment manufacturers leading to a shortage of components.

Market Dynamics

- ### Market Drivers

Proliferation of 3D printing technology and additive manufacturing (AM)/ additive layer manufacturing method boost market growth. The rapid industrialization and economic growth worldwide, alongside the vast technological advances in telemetry solutions and semiconductor products, drive the market. Besides, the spurring rise in information and communications industries is creating massive market demand, driving semiconductor production and sale. Semiconductors have transformed the process of energy generation, distribution, and consumption. Additive manufacturing allows the transformation of the supply chain from the production of parts manufactured by subtractive methods to higher performance, innovative designs that enable agile supply chains to adopt Industry 4.0/5.0 principles.

- ### Market Restraints

High cost of 3D printing-enabled manufacturing is a significant restraint. The high cost of 3D printing technology and the demand-supply gap in the raw materials required for the production are the major factors expected to continue hampering the growth of the market.

- ### Cumulative Growth Analysis

Growing Usages of Semiconductor in Power Amplifiers to Support the Market Growth. Semiconductor uses in power amplifiers for transmitting high-speed signals, ultra-high radio frequency, and fast electronic switching applications are rising continually. This, as a result, is expected to support market growth throughout the forecast period.

Market Segment Overview

The market report is segmented on the basis of types, packaging methods, end-users, and regions.

By type, the market is bifurcated into 3D SIP, 3D WLP, 3D SIC, 3D IC, and others.

By packaging method, the market is segmented into package-on-package, through silicon via (TSV), through glass via (TGV), and others.

Based on end-users, the report is segmented into consumer electronics, telecommunication, industrial, automotive, military & aerospace, and others.

By region, the market is segmented into the Americas, Europe, Asia Pacific, Rest-of-the-World (RoW), and other regions.

By Type Insights

By types of 3D semiconductor packaging, 3D SIP is the largest segment, witnessing wide uses in premium-grade products. . In 2017, the 3D SIP segment held around 33.5% market share. The segment is expected to surge further at a 15.0% CAGR during the forecast period.

By Packaging Method Insights

By packaging method, the through silicon via (TSV) is the largest segment, witnessing wide uses of package-on-package, mainly. Due to its high density and short connection, the TSV method is preferred more than package-on-package.

The segment has significantly contributed to the global 3D semiconductor packaging market in terms of revenue. In 2017, the TSV segment was valued at over USD 6,372.0 Million. The segment is anticipated to grow further at an impressive CAGR during the review period.

By End-User Insights

By end-users, the consumer electronics segment accounts for the largest market share, mainly due to the robust growth of the consumer electronics sector over recent years.

The consumer electronics segment is expected to reach a valuation of USD 11,700 million by 2023, registering a 15.99% CAGR during the review period.

Market Segmentation Analysis

By Type Outlook

- 3D SIP
- 3D WLP
- 3D SIC
- 3D IC
- Others

By Packaging Method Outlook

- Package-on-Package
- Through Silicon via (TSV)
- Through Class via (TGV)

By End-User Outlook

- Consumer Electronics
- Telecommunication
- Industrial
- Automotive
- Military & Aerospace

By Region Outlook

- North America
- Europe

- Asia Pacific
- Rest of the World (RoW)

Regional Analysis

On a geographical level, the Asia Pacific region is likely to remain a highly attractive market for 3D semiconductor packagings during the review period. There is a tremendous opportunity for 3D semiconductor packaging in this region. Factors such as the increasing production of semiconductors and widespread uses of 3D semiconductor packaging drive the regional market growth. Besides, the strong presence of key market players in the region leads to the faster development of 3D semiconductor packaging technologies. State-backed initiatives and investments to increase semiconductor production create the demand for cutting-edge packaging technologies. Also, the strong R&D pipeline for the semiconductor industries in the region fosters market growth. In 2018, China held a significant share in the regional market in terms of revenues, and the trend is estimated to continue over the next few years. The APAC 3D semiconductor packaging market was valued at more than USD 8,000 million in 2018; the market is projected to increase at 18.9% CAGR throughout the forecast period. North America holds the second position in the global 3D semiconductor packaging market. The regional market growth is driven by the strong growth of the electronics industry in countries like the US, Canada, and Mexico. American consumers prefer miniaturized electronic devices that are compact but do not compromise on power. Additionally, the rapid adoption of high-end electronic devices and the rise of machine learning and artificial intelligence (AI) technologies are major factors that are likely to promote the 3D packaging solutions uses for various semiconductor components. The North American 3D semiconductor packaging market reached a valuation of USD 3,888.2 million in 2017 and is likely to register a 14.6% CAGR during the assessment period.

Competitive Landscape

Highly competitive, the global 3D semiconductor packaging market appears fragmented due to the presence of many players. To gain a larger competitive share, players in corporate strategic initiatives such as mergers & acquisitions, expansion, collaboration, and product/ technology launch. They substantially invest in transforming the consumer and business landscape and in driving R&D activities.

List of Key Companies

- Intel Corporation
- Amkor Technology Inc.
- Jiangsu Changjiang Electronics Technology Co. Ltd.
- Samsung Electronics Corporation Ltd.
- STMicroelectronics NV
- Advanced Semiconductor Engineering Inc.
- Xilinx Inc.
- Siliconware Precision Industries Co. Ltd.
- AMS AG
- Taiwan Semiconductor Manufacturing Co. Ltd.

Recent Developments

Nov. 19, 2020 ---- ACM Research, Inc. (ACM –the US), a leading supplier of wafer processing solutions for semiconductors and advanced wafer-level packaging (WLP) applications, launched its new Ultra ECP 3d platform for conformably filled 3D through-silicon via (TSV) applications.

Dec. 18, 2020 ---- ASE Technology Holding Co., Ltd., a leading provider of a range of semiconductors packaging and testing, and electronic manufacturing services, announced that the consensus indicates a potential 14.2% upside. ASE provides its products, technologies, and services in the United States, Taiwan, Asia, and Europe.

Nov. 25, 2020 ---- Taiwan Semiconductor Manufacturing Co. (TSMC), the world's biggest chip-making contract company, announced the development of a new manufacturing technique for chips. The company developed this technology in collaboration with Advanced Micro Devices (AMD) and Google.

In a bid to find innovative packaging solutions for tiny chips, the semiconductor maker has come up with a new solution. TSMC is now using the new 3D technology called SoIC to stack and link a variety of chips, such as processors, memory, and sensors, into one package.

Nov. 03, 2020 ---- CEA-Leti announced a new collaboration with Intel to advance chip design through 3D packaging technologies. The research will focus on the assembly of smaller chiplets, optimizing interconnection technologies between the different elements of microprocessors, and on new bonding and stacking technologies for 3D ICs, especially for making high-performance computing (HPC) applications.

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