Dicing Equipment - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts (2025 - 2030)

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Report description:

The Dicing Equipment Market size is estimated at USD 0.83 billion in 2025, and is expected to reach USD 1.13 billion by 2030, at a CAGR of 6.43% during the forecast period (2025-2030).

Dicing equipment plays a pivotal role in ensuring precision during semiconductor manufacturing. The equipment is responsible for cutting individual die from a wafer. Typically, a dicing saw slices through an unused section of the wafer, referred to as the 'street,' which is located between the dice. These streets generally measure three miles in width, and their narrowing heightens the significance of the dicing equipment.

Key Highlights
- In electronics manufacturing, Integrated Circuits (Ics) packaging signifies the culmination of semiconductor device fabrication. During this phase, a minuscule block of semiconducting material is encased in a protective shell, shielding it from physical harm and corrosion. Enhancements in electronic packaging's resourcefulness have led to its broad adoption across diverse applications. This guarantees the semiconductor devices' longevity and reliability, making them suitable for various demanding environments.
- In the current dynamic technological environment, the pursuit of innovation remains unwavering. Central to this advancement are silicon wafers, which power devices essential to one's daily operations. From smartphones and laptops to medical equipment and renewable energy technologies, silicon wafers form the cornerstone of modern technological progress. These wafers are critical components that ensure the functionality and efficiency of various electronic devices.
- As the demand for more advanced and efficient technologies continues to grow, the role of silicon wafers in driving innovation and supporting the development of new applications becomes increasingly significant. Their importance in the electronics industry's supply chain cannot be overstated, as they are fundamental to the production and performance of a wide range of high-tech products.

- Ultra-thin wafer handling and dicing equipment processes play a crucial role in various semiconductor applications, including MEMS, compound semiconductors, LEDs, fan-out WLP, CMOS image sensors (CIS), and the emerging 3D ICs utilizing TSV interconnects. These processes ensure the integrity and performance of the wafers, which are essential for the functionality and efficiency of the end products. Nevertheless, these processing technologies face specific challenges, such as maintaining wafer stability, preventing damage during handling, and ensuring compatibility with existing manufacturing systems.
- Despite the challenges posed by the pandemic, certain players are investing strategically in wafers. For example, Okmetic Oy announced plans to invest tens of millions of euros in its Finland facility, focusing on its core competency: silicon-on-insulator (SOI) wafers.
- In November 2024, TSMC Arizona Corporation (TSMC Arizona), a Taiwan Semiconductor Manufacturing Company Limited (TSMC) subsidiary, received up to USD 6.6 billion in direct funding from the U.S. Department of Commerce. This funding was awarded under the Creating Helpful Incentives to Produce Semiconductors (CHIPS) Incentives Program's Funding Opportunity for Commercial Fabrication Facilities. In July 2024, the European Union (EU) Chips Act rolled out initiatives, including a strategic mapping of the semiconductor sector, a virtual design platform aimed at reducing entry barriers to chip design, and establishing a European Semiconductor Board.

Dicing Equipment Market Trends

Blade Dicing Segment to Hold Significant Market Share

- Blade Dicing is a precise process that involves carving grooves and cuts into board-type workpieces, typically around 10 mm thick, using specialized dicing blades.
- After processing a semiconductor wafer, dicing is employed to separate the die from it. Methods for dicing include scribing and breaking, mechanical sawing with a dicing saw, and laser cutting. To ensure precision and accuracy, these methods are predominantly automated. Dicing blades, being disposable tools, are versatile enough to groove, cut, and dice materials ranging from silicon and compound semiconductors to glass, ceramics, crystals, and more, using chopping and cutting saws.
- Dicing blades are in high demand due to the growing demand for accurate dicing/cutting, grinding, and polishing among end-user sectors. The increased knowledge of dicing blades' benefits among manufacturers fosters market growth. In addition, the requirement for higher throughput is encouraging industries to use dicing blades. Technological improvements are allowing the dicing blade industry to expand into new areas. Furthermore, substantial research and development play a significant part in propelling the dicing blade market in the future.
- Dicing blades can be constructed from various bonding materials, such as resin, nickel, or metal. Dicing blades come in multiple sizes to satisfy the needs of a wide range of applications. Manufacturers are developing blades with improved efficiency to perform precise and accurate cutting while increasing overall productivity.
- With the rise of the semiconductor industry, the demand for semiconductors in the market will also increase. Semiconductors are a crucial element in modern electronics, making up an essential component of many commonly used electronic devices, including smartphones, tablets, and PCs - essentially all modern devices that many users have become so highly dependent on in everyday life. As one might expect, the semiconductor industry is extensive and competitive due to its central importance.
- Blade dicing is the most widely used process for separating silicon wafers into individual chips/devices, both in MEMS and semiconductor technologies. It is also a low-cost dicing technology in many applications.
- According to Semiconductor Equipment and Materials International (SEMI), global shipments of silicon wafers hit 3,035 million square inches (MSI) in Q2 2024, up 7.1% from the prior quarter. Yet, this number is down 8.9% when stacked against sales from the same quarter in 2023. The rebound in silicon wafer sales is predominantly driven by a surge in demand for generative artificial intelligence (AI) products. This trend indicates a significant shift in the semiconductor market, highlighting the growing importance of AI technologies in driving industry growth and recovery.

China is Expected to Hold Significant Market Share

- China stands out as one of the fastest-growing semiconductor markets globally. The surging demand for smartphones and consumer electronics is prompting numerous vendors to establish production facilities in the nation. Further, the Chinese government's initiatives are attracting international players to set up local production units.
- The Semiconductor Industry Association forecasts that by 2024, China's semiconductor industry will generate an annual revenue of USD 116 billion, capturing over 17.4% of the global market share. This forecast depends on China maintaining its strong growth momentum, assuming other countries' growth rates remain stable. The anticipated growth underscores China's strategic investments and advancements in semiconductor technology, positioning it as a significant player in the global market.
- Further, Semiconductor Equipment and Materials International's (SEMI) data indicates that while China's foundry industry comprises both multinational and domestic vendors, domestic companies are poised to dominate. Out of the USD 24 billion fab projects in China, domestic firms are expected to command a significant share.
- Wafer fabrication includes dicing, a critical process where individual semiconductor chips are separated from a silicon wafer. This involves precise cutting techniques such as mechanical sawing, laser cutting, and scribing. Thus, developing new wafer fabrication facilities in the country is expected to generate demand for various dicing equipment used in wafer processing.
- For instance, in November 2024, Beijing, supported by state-owned enterprises and funds, plans to invest USD 4.6 billion in a 12-inch wafer fabrication facility. This initiative highlights China's ongoing efforts to strengthen its domestic semiconductor production. The new facility involves Beijing Yandong Microelectronics (YDME) Co., Ltd. and BOE Technology Co., Ltd., China's leading display manufacturer.
- China has become a significant global hub for semiconductor manufacturing, driven by government initiatives and rising domestic demand for electronic devices. This increase in semiconductor production has led to a corresponding rise in the demand for dicing equipment to separate individual chips from silicon wafers.
- China's semiconductor industry is poised for significant growth, highlighted by a notable increase in wafer processing capacity and the establishment of new fabrication facilities. The Semiconductor Equipment and Materials International (SEMI) World Fab forecast projects a 6.4% rise in global wafer capacity by 2024, with China playing a pivotal role as a global leader in new semiconductor production. This includes the planned launch of 18 new fabs in 2024, driven by strong government support and investments.
- The increase in wafer production to 30 million wafer starts per month reflects escalating demand for advanced semiconductor technologies, driven by advancements in artificial intelligence (AI), high-performance computing (HPC), and leading-edge logic chips developed by key players such as Intel Corporation, Taiwan Semiconductor Manufacturing Company Limited (TSMC), and Samsung Electronics Co., Ltd. (Samsung Foundry).

Dicing Equipment Industry Overview

Major players, such as Disco Corporation and Panasonic Corporation, dominate the dicing equipment market. The demand for smart sensors has surged, driven by the rise of smart devices like smartphones and smartwatches, in turn boosting the market for advanced semiconductors. Moreover, challenges in manufacturing thin wafers have hindered the entry of new players into the market.

Trends like miniaturization, which aims for enhanced memory and performance in smaller sizes, have heightened the demand for compact electronic packages. Consequently, thin wafers have become essential in today's miniaturized electronics landscape, leading to increased production of thin wafers and a heightened demand for processing and dicing equipment.

Despite facing challenges, market players are actively innovating and investing in research and development (R&D) to maintain their competitive edge. Consequently, the current level of competitive rivalry in the market stands at a moderate level.

Additional Benefits:

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

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