Semiconductor Bonding Equipment - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

Market Report | 2024-02-17 | 143 pages | Mordor Intelligence

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Report description:

The Semiconductor Bonding Equipment Market size is estimated at USD 0.59 billion in 2024, and is expected to reach USD 1.03 billion by 2029, growing at a CAGR of 11.76% during the forecast period (2024-2029).

Semiconductor bonding equipment is finding applications due to the rising demand for semiconductor chips with higher efficiency, processing power, and smaller footprints, driving the demand for the market during the forecast period.

Key Highlights
-The impact of digitalization on lives and businesses has led to a boom in the semiconductor markets. This has resulted in government programs supporting the deployment of 5G. For instance, the European Commission established a public-private partnership to develop and research 5G technology.
-With chip demand set to surge over the coming decade, the global semiconductor industry is expected to become a trillion-dollar industry by 2030. This growth is largely favored by companies and countries investing heavily in semiconductor manufacturing, materials, and research to guarantee a steady supply of chips and know-how to support growth across data-centric industries.
-Despite the global pandemic and resulting economic downturn, the semiconductor industry remained resilient, with revenue growth of 6.5% to reach the USD 440 billion mark in 2020, driven by a spike in demand for all types of chips, especially those developed at mature nodes.
-Semiconductor components are widely deployed in most consumer electronics products. China is not only one of the largest consumers and producers of various consumer electronics products but also caters to a broad range of countries by exporting several input supplies that are essentially used to produce finished goods.
-The onset of the COVID-19-induced lockdown created a basic need for continuity of work and education, resulting in an increase in demand for computing devices such as laptops and PCs, and consequently, the semiconductor bonding equipment market

experienced a surge in demand.
-When a product requires the bonding of two dies or wafers, several methods might be used, with the bonding process selected being the primary driver for the cost of ownership of bonding. The high cost of ownership associated with some bonding processes might restrict market growth.

Semiconductor Bonding Equipment Market Trends

Power IC and Power Discrete Application Segment Holds Significant Market Share

- The rising demand for high-energy and power-efficient devices, coupled with the increasing prevalence of wireless and portable electronic products and the increased use of these devices in the automotive industry due to the shift towards electrification, are some key factors driving the growth of the segment.
- One significant trend in power IC and discrete is efficient power management. New system architectures improve the efficiency of AC-DC power adapters while reducing their size and component count. New Power-over-Ethernet (PoE) standards allow higher power transfer, enabling the development of new device classes, such as connected lighting.
- Several aspects of wearable devices, from the underlying physics to the end-user experience, play crucial roles in driving consumer adoption and acceptance. Discrete semiconductor companies poised to benefit from being aware of the challenges and market trends during the design phase of products to stay competitive.
- The use of semiconductors with larger mobility and higher critical breakdown fields, such as SiC, to reduce power losses is gaining traction, particularly among the transistor range, as well as power electronics devices like Schottky barrier diodes (SBDs), junction field-effect transistors (JFETs), and MOSFET transistors.
- Additionally, smartphone transmission speeds are dramatically increasing, requiring battery modules to support processing. Discrete semiconductors are finding their way into power adapters, with an expected increase in demand due to the sale of battery-powered devices.
- The growth of Internet of Things (IoT) applications is expected to boost the sales of discrete semiconductors. For instance, as per Ericsson, there were 1.9 billion cellular IoT connections worldwide in 2022, which is expected to grow to 5.5 billion in 2027, registering a CAGR of 19% over the period. Moreover, the wireless communications sector is expected to grow with the expansion of 5G networks. The likelihood of consumers upgrading their handsets/devices to drive discrete adoption further globally is also indicative of fifth-generation networks.

Asia Pacific is Expected to be the Fastest Growing Market

- The Asia Pacific region is a significant player in the market and is expected to experience considerable growth over the forecast period, thanks to strategic investments by key domestic suppliers and the well-established semiconductor sector. According to SIA, the Asia-Pacific semiconductor market is set to be more than three times the size of the Americas market over the next four years as chip consumption continues to rise.
- This growth is expected to be fueled by some of the largest semiconductor companies located in the region, as well as growing investments to support the semiconductor industry infrastructure across nations like China, India, and Vietnam. In addition, well-known domestic vendors and government agencies are making significant technological investments in offering next-generation semiconductor bonding solutions, such as hybrid bonding, which is expected to increase market demand.
- For example, Adeia, the recently launched brand for the intellectual property (IP) licensing business of Xperi Holding Corporation, and LAPIS Technology Co., Ltd., a subsidiary of the ROHM Group, announced an agreement in May 2022 that includes a technology transfer of Adeia's DBI Ultra die-to-wafer hybrid bonding know-how to support the development and deployment of the

technology into LAPIS's product line. The agreement also includes a license to Adeia's underlying hybrid bonding patent portfolio.
- China is predicted to overtake the United States as the world's top powerhouse in the semiconductor industry based on its expanding domestic chip demand. According to the Semiconductor Industry Association, the semiconductor market will double in size to reach more than USD 1 trillion by 2030, with China contributing over 60% of that increase. This exponential growth is expected to increase demand for semiconductor bonding equipment.
- Furthermore, in December 2022, China announced a support program worth more than CNY 1 trillion (USD 143 billion) for its semiconductor industry, significantly advancing chip self-sufficiency and retaliating against American efforts to obstruct its technological development. Most of the financial assistance would be used to finance the purchases of local semiconductor equipment by Chinese enterprises, which is expected to support regional market demand.

Semiconductor Bonding Equipment Industry Overview

The Semiconductor Bonding Equipment Market is highly fragmented, with major players such as EV Group, ASMPT Semiconductor Solutions, and MRSI Systems (Myronic AB), as well as WestBond Inc. and Panasonic Industry Co. Ltd. These market players are implementing various strategies, such as partnerships, innovations, investments, and acquisitions, to enhance their product offerings and gain a sustainable competitive advantage.

In November 2022, SUSS MicroTec SE paved the way for a novel low-temperature field-assisted bonding technology called Impulse Current Bonding. The Swiss university spin-off has developed Sy&Se technology based on a significant scientific discovery and will be available on both manual and automatic wafer bonder systems. The current impulse bonding combines the robustness of anodic bonding with the material versatility of other, more complex bonding methods.

In August 2022, EV Group expanded its collaboration with the Industrial Technology Research Institute, a significant applied technology research institute based in Hsinchu, Taiwan, to develop advanced heterogeneous integration processes. As a member of the Hi-CHIP Alliance, EVG Group provided several wafer bonding and lithography systems, including the GEMINI FB hybrid bonding system and the EVG 850 DB automated debonding system.

Additional Benefits:

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

Table of Contents:

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