

Fan Out Packaging - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

Market Report | 2024-02-17 | 125 pages | Mordor Intelligence

AVAILABLE LICENSES:

- Single User License \$4750.00
- Team License (1-7 Users) \$5250.00
- Site License \$6500.00
- Corporate License \$8750.00

Report description:

The Fan Out Packaging Market size is estimated at USD 2.94 billion in 2024, and is expected to reach USD 6.30 billion by 2029, growing at a CAGR of 16.5% during the forecast period (2024-2029).

The expansion of this market is being driven by technological advancements in semiconductor-based technologies and rapidly expanding demand in various sectors.

Key Highlights

- Fan-out wafer level packaging (FOWLP) finds its increased application in footprint-sensitive devices such as smartphones due to the requirement of high-performing, energy-efficient thin- and small-form-factor packages. Further, on average, five to seven wafer-level packages (especially fan-out) can be found in modern smartphones, and the numbers are expected to increase in the future. This is because they are gradually replacing the more traditional package-on-package (PoP) memory-on-logic solutions.
- Moreover, the increasing application of artificial intelligence and machine learning in various fields has increased the installation of high-performance computing in the market. UHD fan-out technology is expected to be applied to the cloud, 5G, autonomous cars, and AI chips and will lead the packaging trend during the forecast period.
- South Korea's semiconductor industry is continuing to put in efforts to improve and make 3D TSV (Through-silicon via), packaging and FoWLP (Fan-out Wafer-Level Packaging), and FoPLP (Fan-out Panel-Level Packaging) technologies more effective to raise the performance of semiconductors and the degree of integration.
- In December 2021, Nepes Laweh corporation announced the successful production of the world's first 600 mm x 600 mm large Panel Level Packaging (PLP) using Deca's M-Series fan-out technologies. The Fan-out-Panel Level Packaging (FOPLP) line passed customer certification in the third quarter, established a consistent yield, and commenced full-scale mass production, according to the business.

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scottss-international.com

www.scottss-international.com

-Because South Korean companies depended on foreign companies for these systems in the past, KOSTEK is expecting a huge import substitution effect in the future. Its temporary wafer bonder and debonding techniques can be used during a fan-out packaging process.

-With the outbreak of COVID-19, the semiconductor packaging market witnessed a decline in growth due to restrictions on the movement of goods and severe disruptions in the semiconductor supply chain. In Q1 2020, COVID-19 caused low inventory levels for clients of semiconductor vendors and distribution channels. The market is expected to witness a long-term impact due to the coronavirus outbreak.

Fan Out Packaging Market Trends

High-Density Fan-Out to Hold a Significant Share

- Targeted for mid-range to high-end apps, high-density fan-out has between 6 to 12 I/Os per mm² and between 15/15 μm to 5/5 μm line/space. High-density fan-out packaging gained popularity to address the form factor and performance requirements for mobile phone packaging. Key building blocks for this technology comprise redistribution layer (RDL) metal and mega pillar plating.

- TSMC's InFO technology is one of the most notable examples of high-density fan-out. This technology targets higher pin count applications, such as application processors (AP). The company plans to extend its FO-WLP segment into technologies like inFO-Antenna-in-Package (AiP) and inFO-on-Substrate. These packages are used in automobiles, servers, and smartphones. Apple was one of the early adopters of this new technology, which used it in the A10 application processor of the iPhone 7, introduced in late 2016.

- Owing to such benefits, in December 2021, Qualcomm and MediaTek both considered adopting fan-out PoP in the production of their flagship smartphone application processors, following in the footsteps of Apple utilizing TSMC's InFO_PoP technology to package its iPhone chips.

- Furthermore, semiconductor market growth along with development in high-density fan-out packaging solutions is expected to propel market growth over the forecast period. For instance, in July 2021, Changdian Technology, the world's premier combined circuit manufacturer and technology solution provider, revealed the official introduction of the entire line of very high-density fan-out packaging options for XDFOI chips, that are intended to deliver cost-effective, high-density connectivity, high-integration, and high-reliability solutions for chip heterogeneous integration.

- Advancements are also made in the fabrication method of manufacturing High-Density Fan-Out Wafer Level Packaging (FOWLP). Solutions are being developed to reduce chip size/height and lower production costs while improving reliability, energy efficiency, device speed, and multi-function integration. For instance, SPTS Technologies offers multiple plasma etch and deposition process technologies to leading semiconductor packaging companies for advanced packaging schemes such as that of high-density fan-out wafer-level packaging.

- Moreover, high-density fan-out (HDFO) packages can address these needs of miniaturization by fabrication capabilities of wafer-level processing coupled with its ability to create 3D structures using through-mold interconnects such as tall copper (Cu) pillars and through package vias (TPVs) and advanced flip chip packaging technologies.

Taiwan to Hold a Significant Share in the Market

- Taiwan houses some of the major semiconductor manufacturing companies which are fueling the demand for advanced semiconductor packaging, especially in PLPs. According to a government think tank, Science and Technology International Strategy Center, Taiwan's output was expected to grow by 25.9% in 2021 to USD 147 billion.

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

- According to the Semiconductor Industry Association (SIA), Asia-Pacific generates more than 50% of revenue for global semiconductor sales; this, in turn, provides Taiwanese vendors with an opportunity to supply FOWLP for increased semiconductor applications.
- Most of the companies in the country are expanding their production capacity of Fan-out packaging, which is further expected to increase exports and help develop the local market. For instance, Intel, which recently announced its return to the foundry industry, will simultaneously invest USD 3.5 billion in New Mexico to construct a semiconductor packaging factory that will begin operations in the second half of 2022.
- Further, in June 2021, ASE, a pure semiconductor post-processing (OAST), started investing in advanced packaging facilities in response to the supply and demand shortage of semiconductors. It is accelerating the expansion by purchasing a large amount of semiconductor manufacturing equipment for WLP and PLP processes from HANMI Semiconductor.
- Also, the growing market for fifth-generation (5G) wireless communication and high-performance computing has enabled manufacturers to develop newer technologies. For instance, as a sole leader in the High-Density Fan-out segment, TSMC is planning to extend its FO-WLP segment into technologies like inFO-Antenna-in-Package (AiP) and inFO-on-Substrate (oS).

Fan Out Packaging Industry Overview

The market is moderately fragmented, with the presence of numerous players. Some of the major players operating in the global fan-out packaging market include Taiwan Semiconductor Manufacturing Company Limited, Jiangsu Changjiang Electronics Tech Co., Amkor Technology Inc., Samsung Electro-Mechanics, and Powertech Technology Inc., among others. These players indulge in product innovation, mergers, and acquisitions, among other developments, in order to increase market share.

- November 2021 - Amkor Technology, Inc., a semiconductor packing and test service supplier, stated that it intends to construct an intelligent factory in Bac Ninh, Vietnam. The proposed factory's initial phase will concentrate on offering Advanced System in Package (SiP) assembling and testing services to the world's premier semiconductor and electronics manufacturing businesses.
- February 2021 - Samsung Foundry has filed documents with authorities in Arizona, New York, and Texas seeking to build a leading-edge semiconductor manufacturing facility in the USA. The potential fab near Austin, Texas, is expected to cost over USD 17 billion and create 1,800 jobs. It is expected to go online by the fourth quarter of 2023.

Additional Benefits:

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

Table of Contents:

1 INTRODUCTION

1.1 Study Assumptions and Market Definition

1.2 Scope of the Study

2 RESEARCH METHODOLOGY

3 EXECUTIVE SUMMARY

4 MARKET INSIGHTS

4.1 Market Overview

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

4.2 Industry Attractiveness - Porter's Five Forces Analysis

- 4.2.1 Bargaining Power of Suppliers
- 4.2.2 Bargaining Power of Buyers
- 4.2.3 Threat of New Entrants
- 4.2.4 Intensity of Competitive Rivalry
- 4.2.5 Threat of Substitute Products
- 4.3 Impact of COVID-19 on the Market

5 MARKET DYNAMICS

- 5.1 Market Drivers
 - 5.1.1 The Proliferation of 5G Wireless Networking Along with High-performance Computing
- 5.2 Market Restraints
 - 5.2.1 Manufacturing And Cost Challenges Associated with Production
- 5.3 Market Opportunities for FOPLP
- 5.4 Impact of COVID-19 on the market

6 MARKET SEGMENTATION

- 6.1 By Type
 - 6.1.1 Core Fan-Out
 - 6.1.2 High-Density Fan-Out
 - 6.1.3 Ultra High-density Fan Out
- 6.2 By Carrier Type
 - 6.2.1 200 mm
 - 6.2.2 300 mm
 - 6.2.3 Panel
- 6.3 By Business Model
 - 6.3.1 OSAT
 - 6.3.2 Foundary
 - 6.3.3 IDM
- 6.4 Geography
 - 6.4.1 Taiwan
 - 6.4.2 China
 - 6.4.3 United States
 - 6.4.4 South Korea
 - 6.4.5 Japan
 - 6.4.6 Europe

7 FAN-OUT PACKAGING VENDOR RANKING ANALYSIS

8 COMPETITIVE LANDSCAPE

- 8.1 Company Profiles
 - 8.1.1 Taiwan Semiconductor Manufacturing Company Limited
 - 8.1.2 Jiangsu Changjiang Electronics Tech Co.
 - 8.1.3 Samsung Electro-Mechanics
 - 8.1.4 Powertech Technology Inc.
 - 8.1.5 Amkor Technology Inc.
 - 8.1.6 Advanced Semiconductor Engineering Inc

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

8.1.7 Nepes Corporation

9 INVESTMENT ANALYSIS

10 FUTURE OUTLOOK

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

Fan Out Packaging - Market Share Analysis, Industry Trends & Statistics, Growth Forecasts 2019 - 2029

Market Report | 2024-02-17 | 125 pages | Mordor Intelligence

To place an Order with Scotts International:

- Print this form
- Complete the relevant blank fields and sign
- Send as a scanned email to support@scotts-international.com

ORDER FORM:

Select license	License	Price
	Single User License	\$4750.00
	Team License (1-7 Users)	\$5250.00
	Site License	\$6500.00
	Corporate License	\$8750.00
		VAT
		Total

*Please circle the relevant license option. For any questions please contact support@scotts-international.com or 0048 603 394 346.

** VAT will be added at 23% for Polish based companies, individuals and EU based companies who are unable to provide a valid EU Vat Numbers.

Email*	<input type="text"/>	Phone*	<input type="text"/>
First Name*	<input type="text"/>	Last Name*	<input type="text"/>
Job title*	<input type="text"/>		
Company Name*	<input type="text"/>	EU Vat / Tax ID / NIP number*	<input type="text"/>
Address*	<input type="text"/>	City*	<input type="text"/>
Zip Code*	<input type="text"/>	Country*	<input type="text"/>
		Date	<input type="text" value="2026-03-03"/>
		Signature	

Scotts International. EU Vat number: PL 6772247784

tel. 0048 603 394 346 e-mail: support@scotts-international.com

www.scotts-international.com

