

Now Available!

ADVANCED IC PACKAGING TECHNOLOGIES, MATERIALS AND MARKETS

2017 EDITION

**A Strategic Report Covering the Latest
Technologies in IC Packaging, Enabling Portable and
Other Electronics**

Report Coverage

- Fan-out WLPs
- Multi-row QFNs
- Interconnection Technologies
- Through-Silicon Vias (TSV)
- 2.5D and 3D Integration
- Stacked Packages
- System-in-Package

Report Highlights

- Industry Outlook
- Market Analysis and Forecasts,
2015–2021
- Multichip Packaging
Technology Trends
- Key Application Forecasts
- Company Profiles

New Venture Research

337 Clay St., Suite 101
Nevada City, CA 95959
Tel: (408) 244-1100

A Technology Market Research Company

kwilliams@newventureresearch.com/
www.newventureresearch.com/
Fax: (408) 904-5586

Synopsis

The demand for consumer electronics and mobile communications devices that keep us connected is driving electronics manufacturers to deliver ever-more compact and portable products. Today's users ask for solutions that deliver more functionality, added performance, higher speed, and smaller form factors. Software systems and billions of networked devices are rapidly coalescing into a vast Internet of Things.

All of these forces are driving semiconductor companies to develop new advanced IC packaging technologies to provide greater silicon integration in increasingly miniaturized packages. The last decade has seen an explosion of new products including fan-out wafer-level packaging (FOWLPs), stacked IC packages and complex system-in-packages (SiPs), as well as advances in package substrates, flip chip interconnection and through-silicon vias. All these advances are enabling significant improvements in packaging density and opening new market opportunities for manufacturers.

This latest report from **New Venture Research (NVR)**, *Advanced IC Packaging Technologies, Materials and Markets, 2017 Edition*, reveals the latest technology and market trends in the IC packaging industry by focusing on the most advanced packaging products and solutions—those critical to success in developing cutting-edge products and in maintaining technological leadership. Every market or application segment discussed in the report includes quantitative analysis based on the most current historical years, 2015 and 2016, as well as forecasts from 2017 through 2021. Each of the six chapters examines the market from a different perspective.

Chapter 3: Overview of Worldwide IC Packaging Markets, outlines the major IC packaging families and the latest market and application trends. This chapter also includes an overview of the major industry trends driving the semiconductor sector, including mergers and acquisitions, the Internet of Things, artificial intelligence and machine learning, and global economic trends. Total market forecasts include units, prices, packaging revenue, package types and device types.

Chapter 4: Advanced IC Packaging Markets provides an in-depth discussion of the technologies and market trends of the semiconductor industry's advanced packaging solutions:

- Fan-out wafer-level packaging (FOWLP)
- Multi-row QFN packaging (MRQFN)
- Vertically stacked multichip packages: TSOPs, QFNs, FBGAs, and WLPs
- System-in-packages (SiPs): package-on-packages, package-in-packages, multichip modules and stacked WLPs used as components in SiPs

This chapter analyzes the total market and individual market segments from a number of views, including their characteristics, functions, applications, technology, and the key challenges facing the various advanced packaging solutions. Numerous tables and figures provide detailed market data and forecasts for unit shipments, revenues, prices, I/O-count, and die usage. The chapter ends with an examination of the substrate materials and embedded components used in SiP assembly. Forecasts include package units, area of shipped materials, and substrate revenues.

Chapter 5: Interconnection Technologies and Solutions, provides a comprehensive examination of wire bonding and flip chip technology and market trends, and includes in-depth analysis of flip chip markets in terms of specific devices and packaging types. The chapter also examines the market potential of through-silicon vias (TSVs) for 2.5D and 3D packaging. The chapter tables and figures present unit shipments and revenue forecasts for each market segment.

Chapter 6: Company Profiles presents profiles of twenty-one advanced packaging companies from across the IC packaging spectrum, including large and small competitors from among OSATs, foundries and IDMs. Each profile gives a short company background and presents examples of their advanced packaging products.

Advanced IC Packaging Technologies, Materials and Markets, 2017 Edition is an effective tool for companies determined to stay informed about the latest advances in IC packaging, and in assessing the future of this important industry. The report sells for \$3995 and is delivered by email as a single-user license PDF file. Additional single-user licenses are available for \$350 each and a corporate license is \$1500. With the purchase of the report, an Excel spreadsheet of all tables may be obtained for an additional \$1000, or a printed copy may be purchased for \$250.

About the Author

Jerry Watkins is an independent senior analyst with more than 20 years of direct experience in the field of market research and consulting. He has worked for leading research companies such as Frost & Sullivan, Lucid Information Services, and NSI Research, both in management and as a writer. Mr. Watkins has authored many syndicated reports, previously in the telecommunications and office automation sectors and more recently in the semiconductor industry writing on subjects that include IC packaging and merchant embedded computing. He holds two university degrees, including a B.A. in History and an M.A. in International Studies, but he feels that market research best fulfills his life-long passion for inquiry into difficult subject matters and making it comprehensible to a wide audience. Mr. Watkins has lived and worked in Silicon Valley for most of his career.

Chapter 1: Introduction

Chapter 2: Executive Summary

Chapter 3: Overview of Worldwide IC Packaging Markets

3.1 Chapter Overview

3.2 IC Packaging Families

3.3 IC Packaging Market, Unit and Revenue

Forecasts

Covers: Worldwide IC Packaging by I/O Count and by Device Type

3.4 Key Applications Market for IC Devices

Includes: Cellular Handsets, Tablets, PCs, Servers, Workstations, Set-Top Boxes, and others

3.5 Industry Trends Driving the Semiconductor Sector

Chapter 4: Advanced Single Chip IC Packaging

4.1 Chapter Overview

Covers: Total by Major Market Segments, Forecasts of the Advanced IC Packaging Markets

4.2 Fan-Out Wafer Level Packages

Covers: Market Overview, Trends and Forecasts

4.3 Multi-Row QFN Packages

Covers: Market Overview, Trends and Forecasts

4.4 Overview of Multichip Packaging Technology

Covers: Types of Multichip Packages, Benefits and Shortcomings, Packaging Challenges and Solutions, Wafer Thinning and MCP Market Trends/Forecasts

4.5 Stacked Multichip Packaging Market Segments

Covers: Market Trends and Forecasts for Stacked TSOPs, Stacked QFNs, Stacked FBGAs, Stacked WLPs

4.6 System-in-Packaging Market Overview

Covers: Types of SiPs, Key Features, SiPs vs. SoCs, Challenges, Market Trends and Forecasts for total Market Segment, Package-on-Packages, Package-in-Packages, Multichip Modules, Stacked WLPs in SiPs

4.7 Substrates

Covers: Market Overview, Market Trends and Forecasts by Materials, High Density Interconnect, Embedded Components

Chapter 5: Interconnection Technologies and Solutions

5.1 Interconnection Techniques Overview

5.2 Wire Bonding

5.2.1 Wire Bonding Methods

5.2.2 Wire Materials

5.2.3 Wire Bonding Material Trends and Forecasts

5.3 Flip Chip

5.3.1 The Flip Chip Process

5.3.2 Flip Chip Packaging Market Trends and Forecasts

5.3.3 Flip Chip Package Device Market Trends and Forecasts

5.3.4 Bare Die Flip Chip Market Trends and Forecasts

5.4 Through-Silicon Vias

5.4.1 The Case for TSV Integration

5.4.2 Status of TSV Interconnection

5.4.3 Interposers and 2.5D

5.4.4 Forecasts for TSV by Market Segment

Chapter 6: Advanced IC Packaging Company Profiles

6.1 Chapter Overview

6.2 3D Plus, Inc.

6.3 Advanced Semiconductor Engineering, Inc.

6.4 Amkor Technology, Inc.

6.5 Carsem, Inc.

6.6 ChipMOS Technologies (Bermuda), Ltd.

6.7 CONNECTEC Japan Corporation

6.8 Deca Technologies

6.9 FlipChip International, LLC

6.10 HANA Micron Co., Ltd.

6.11 Interconnect Systems Inc. (ISI)

6.12 NANIUM, S.A.

6.13 Palomar Technologies

6.14 Powertech Technology, Inc.

6.15 Shinko Electric Industries Co, Ltd

6.16 Signetics Corporation

6.17 Siliconware Precision Industries Co.

6.18 SPEL Semiconductor, Ltd.

6.19 STATS ChipPAC, Ltd

6.20 Taiwan Semiconductor Manufacturing Co. Ltd.

6.21 United Test and Assembly Center, Ltd.

6.22 Xintec, Inc.

Glossary of Terms

Advanced IC Packaging Technologies, Materials and Markets, 2017 Edition

Partial List of Tables (all tables provide data for 2015 through 2021)

Chapter 3 Tables: Worldwide IC Packaging Overview

Worldwide IC Packaging Unit Shipments by Market Segment
 Worldwide IC Packaging Annual Revenue by Market Segment
 Average IC Packaging Prices by Market Segment
 IC Units, Revenue & Price of Various Application Markets, including: Cellular Phones, Tablets, PCs, Set-Top Boxes, Digital Cameras and Camcorders, and GPS Devices

Chapter 4 Tables: Advanced Packaging Markets

Total Advanced IC Packaging Unit Shipments and Revenue
 Wafer-Level Packages Unit Shipments by I/O Count and Pitch
 Fan-Out WLPs by Units, Price, and Revenue
 Multi-Row QFNs by Units, Price, and Revenue
 Stacked TSOP Market by Unit Shipments, Price, and Revenue
 Stacked FBGA Market by Unit Shipments, Price, and Revenue
 Stacked QFN Market by Unit Shipments, Price, and Revenue
 Stacked WLP Market by Unit Shipments, Price, and Revenue
 System-in-package Market by Units, Price, Revenue Market Segments and Total ICs
 Package-on-Packages by Units, Price, Revenue and Total ICs

Package-in-Packages by Units, Price, Revenue and Total ICs
 Multichip Modules by Units, Price, Revenue and Total ICs
 Stacked WLPs Used in SiPs by Units, Price, and Revenue
 Total Substrate Package Units and Revenue by Type of Substrate

MCP Market by Unit Shipments, IC Shipments, and Revenue
 Total MCP Unit Shipments by Market Segment
 Total MCP Revenue by Market Segment
 Total Die in MCPs by Market Segment
 MCP Unit Shipments by Application
 MCP Units by Device Function
 MCP Units by Interconnection Method

Chapter 5 Tables: Interconnection Technologies and Solutions

Total Wire Bond Package Unit Shipments and Revenue, by Device Type and I/O Count
 Total Flip Chip Package Units Shipments, Revenue and Average Price by Package Type and I/O Count
 Individual IC Device Flip Chip Package Market Segments by Packaging Type Unit Shipments, Revenue and Share of Market
 Through-Silicon Vias Unit Shipments by Type of MCP

Published July 2017, ~350 Pages

Order Form

Payment Method

Check in the amount of \$ _____ is enclosed.

Invoice per P.O. # _____

Please charge: Visa MasterCard American Express

Card # _____ Exp. _____

Name On Card _____

Signature _____ Date _____

Name _____

Title _____

Company _____

Address _____

City/State/Zip _____

Telephone _____

Fax _____

E-mail _____

Advanced IC Packaging Technologies, Materials and Markets, 2017 Edition - single user license

\$3995

Extra Licenses (\$350 each), Corporate License (\$1500)

Returns: No return privileges. **International Orders:** Must be prepaid, please contact us for payment arrangements.

New Venture Research

337 Clay St., Suite 101

Nevada City, CA 95959

Tel: (408) 244-1100 Fax: (408) 904-5586

www.newventureresearch.com; kwilliams@newventureresearch.com

Excel Spreadsheet (\$1000)

Subtotal

All files are in PDF format only

TOTAL