# Advanced Packaging Update: Market and Technology Trends

Vol. 4-0916









The Advanced Packaging Update (4-0916) features special coverage of the market with a forecast for units of BGAs and CSPs by package construction. The CSP market is divided into laminate and leadframe (QFN) substrates. Details of stacked die CSPs and stacked package constructions are provided. Package-on-package (PoP) trends and growth projections are included. Estimates of the market for each package type are based on input from captive as well as merchant assembly operations. Key applications and drivers for unit volume growth are highlighted. A special section is devoted to the growth of the China domestic OSAT market. An economic analysis examines macroeconomic trends and their impact on the semiconductor packaging and assembly industry.

## Table of Contents

- 1 Industry and Economic Trends
- 1.1 Economic Trends
- 1.2 Semiconductor Sector

#### 2 Spotlight on China's OSATs

- 2.1 Activities to Develop Advanced Packaging
- 2.2 China Assembly and Packaging Facilities
- 2.3 Domestic OSATs
- 2.3.1 BIWIN
- 2.3.2 China Wafer Level CSP
- 2.3.3 Jiangsu Changjiang Electronics Technology
- 2.3.4 Nantong Fujitsu Microelectronics Co., Ltd.
- 2.3.5 Tianshui Huatian Technology Co., Ltd.

## 3 BGA Applications and Market Growth

- 3.1 Personal Computers
- 3.2 Set-Top Boxes, HDTVs, and Game Consoles
- 3.3 Network Systems, Telecom, and Servers
- 3.4 Automotive
- 3.5 BGA Market Projections

## 4 CSP Applications and Market Growth

- 4.1 Mobile Phones
- 4.2 Tablets
- 4.3 Automotive
- 4.4 Wearable Electronics
- 4.5 QFNs
- 4.5.1 Molded Interconnect Substrates
- 4.5.2 Cu Clip QFN
- 4.6 Laminate CSPs
- 4.7 Stacked Die CSPs
- 4.8 PoP Developments
- 4.8.1 Vertical Integration and PoP Evolution
- 4.8.2 PoP Drivers and Challenges
- 4.8.3 PoP Configurations, Features, and Trends
- 4.8.4 FOWL PoP
- 4.8.5 PoP Assembly and Challenges
- 4.9 CSP Market Projections

## 2015 BGA and CSP Bibliography

List of Figures

- 1.1. Monthly U.S. housing starts.
- 2.1. ECP construction.
- 2.2. Fan-in WLP structure with low bump.
- 3.1. Intel's 14nm Skylake processor.
- 3.2. Flip chip as a percentage of PBGA shipments.
- 3.3. Subcontractor share of PBGA shipments.
- 4.1. PoP market projections.

## List of Tables

- 2.1. Top Fifteen OSAT Facilities in China
- 2.2. Top IDM Packaging and Test Facilities in China
- 2.3. JCET Assembly Services
- 2.4. ECP Reliability Test Results
- 2.5. ECP Roadmap
- 2.6. Reliability Test Results for Fan-in ECP
- 2.7. Nantong Fujitsu Assembly Services
- 2.8. Tianshui Huatian Technology Assembly Services
- 3.1. PBGA Market Projections
- 4.1. Smartphone Packages
- 4.2. CSPs in Samsung's Galaxy S7 Edge
- 4.3. CSPs in Xiaomi Mi5
- 4.4. Packages in the Fitbit Charge HR
- 4.5. Packages in the Jawbone UP3
- 4.6. QFN Examples
- 4.7. FBGA Examples
- 4.8. LGA-Package Examples
- 4.9. Stacked Die CSP Examples
- 4.10. PoP Configurations
- 4.11. FOWL PoP Process Configurations
- 4.12. FOWL PoP: Process Pros and Cons
- 4.13. CSP Market Projections
- 4.14. Subcontractor CSP Shipments



Annual subscription – \$4,995 (4 issues) Single issue – \$2,500 Corporate license – \$8,500



4801 Spicewood Springs Road • Suite 150 Austin, Texas 78759 Tel: 512-372-8887 • Fax: 512-372-8889 tsi@techsearchinc.com • www.techsearchinc.com