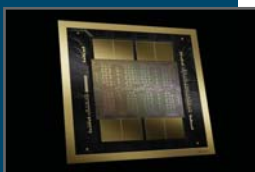
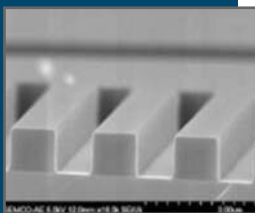
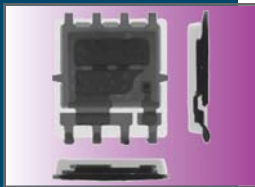


Advanced Packaging Update: Market and Technology Trends

Vol. 1-0424



This issue of the Advanced Packaging Update features a detailed financial analysis of the top 20 OSATs. Factors limiting growth in the electronics industry are discussed. Market forecast for ball grid arrays (BGAs) and chip scale packages (CSPs) are provided in units. Package examples are included. An update on the market for large body, high-density build-up substrates is provided, including capacity. The CSP market is divided into laminate (FBGA and FLGA) and leadframe (QFN) substrates. Stacked die package trends are included. Unit growth projections for Cu clip and molded interconnect substrates (MIS) are provided.

Table of Contents

1 Industry and Economic Trends

2 OSAT Financial Analysis

2.1 Market Overview

2.2 OSAT Market Performance

2.3 Company Highlights

ASE Amkor JCET TFME PTI Huatian UTAC

KYEC Chipbond ChipMOS

2.4 OSAT Performance Metrics

2.5 Outlook

3 BGA Applications and Markets

3.1 Major Applications for BGA Packages

3.1.1 Personal Computers

3.1.2 Servers, Modeling, and AI

3.1.2.1 Capacity Constraints to AI Growth

3.1.2.1.1 RDL and Bridge Alternatives

3.1.3 GPUs and Gaming CPUs

3.1.4 5G Infrastructure and Networks

3.1.5 Satellites

3.1.6 Automotive

3.2 BGA Market Projections

3.3 Large Body Substrate Supply and Demand

4 CSP Applications and Markets

4.1 Smartphones

4.1.1 Apple iPhone 15 Pro

4.1.2 Samsung Galaxy S23 Ultra

4.1.3 Samsung Galaxy S24 Ultra

4.1.4 Huawei Mate 60 Pro

4.2 Tablets and Laptops

4.2.1 Google Pixel Tablet

4.2.2 Microsoft Surface Pro 9

4.3 AR/VR

4.3.1 Apple Vision Pro

4.4 Smart Home

4.5 Wearables

4.6 Package Trends

4.6.1 WLPs

4.6.2 QFNs

4.6.2.1 Cu Clip QFN

4.6.3 Molded Interconnect Substrates

4.6.4 Laminate CSPs

4.6.4.1 FBGAs

4.6.4.2 FLGAs

4.6.4.3 Double-Sided FBGAs

4.6.5 Stacked Die CSPs

4.6.6 PoP Developments

4.7 CSP Market Projections

Partial List of Tables

1.1. End-Product Growth

2.1. Revenue of Top 20 Publicly Traded OSATs

3.1. Laptop and Desktop CPU Packages

3.2. Server CPU Packages

3.3. AI Packages

3.4. Silicon Interposer Supply and Demand

3.5. GPU and Gaming Processor Packages

3.6. PBGA/LGA Market Projections

3.7. Large Body FC-BGA Substrate Supply and Demand

4.1. Apple iPhone 15 Pro CSPs

4.3. Select CSPs in iPhone 15 Pro

4.4. Samsung Galaxy S23 Ultra CSPs

4.9. Select CSPs in Galaxy S24 Ultra

4.10. Huawei Mate 60 Pro CSPs

4.16. Main Chips in Apple Vision Pro's Board Side 1

4.21. Sensors in Apple Vision Pro

4.34. FO-WLP Examples

4.35. Molded FO-WLPs with Edge Protection

4.36. WLPs with Non-Standard Ball Pitch

4.40. QFN Cu Clip Projections

4.45. Double-Sided FBGA Examples

4.46. Stacked Die CSP Examples

4.47. Recent PoP Examples

4.48. CSP Market Projections



4801 Spicewood Springs Road • Suite 150
Austin, Texas 78759

Tel: 512-372-8887 • Fax: 512-372-8889

tsi@techsearchinc.com • www.techsearchinc.com

Single issue – \$2,500

Corporate license – \$8,750 (4 issues)