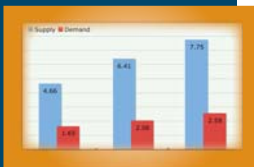
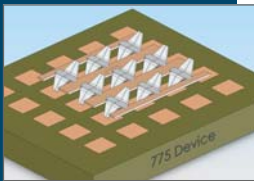
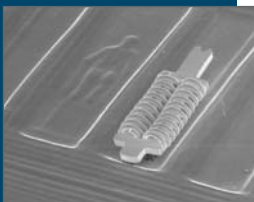
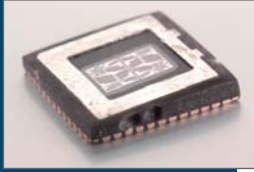


Advanced Packaging Update: Market and Technology Trends

Vol. 1, 2006



The first volume of the Advanced Packaging Update for 2006 features an assessment of the CAPEX expenditures by IC package subcontractors and a special update on laminate substrate capacity. An analysis of the build-up flip chip substrate shortage is provided. An explanation of the qualification time required for a new production line or new substrate supplier is included. Capacity for wire bond PBGAs and laminate CSPs is also reported. A section of the report is devoted to reliability issues, including a survey of issues with Pb-free solder balls. A special section on test sockets contains the latest information on fine pitch CSP sockets. Finally, new package developments are reported, including a leadframe-based package for image sensors.

Table of Contents

- 1 IC Package Assembly Capacity
- 2 Laminate Substrate Supply and Demand
 - 2.1 Flip Chip Build-up Substrate Supply & Demand
 - 2.2 PBGA and CSP Substrates
- 3 Pb-Free Reliability Issues
 - Altera, Freescale Semiconductor, Hewlett Packard, IBM, LSI Logic, STMicroelectronics, Xilinx
- 4 CSP Test Socket Developments
 - Advanced Interconnections, Altanova, Amphenol InterCon Systems, Antares ConTech, Ardent Concepts, AQL Manufacturing Services, Aries Electronics, CONECTL Test Corporation, Contech Solutions, Custom Interconnects, Emulation Technology, Enplas Tesco, E-tec Interconnect, Ever Technologies, Everett Charles Technologies, Exatron, Gold Technologies, Gryphics Interconnect Product Group, High Connection Density, High Performance Test, Ironwood Electronics, Johnstech International, Leeno Industrial, Loranger International, M&M Specialities, Multitest Elektronische Systeme, Phoenix Test Arrays, Plastronics Socket Company, Precision Contacts, Protos Electronics, Rika Denshi America, Robson Technologies, Sensata Technologies, SER Electronics, Synergetix, UMD Technology, Unitechno, VN-Tek, Yamaichi Electronics
- 5 New Package Developments
 - 5.1 New QFN Design for SiP and Image Sensors
- Appendix A: Fine Pitch CSP Test Socket Suppliers
- Appendix B: Laminate Substrate Suppliers

List of Figures

- 1.1. Capital expenditures for top four SATS companies.
- 2.1. Laminate build-up FC-PBGA substrate supply and demand.
- 2.2. WB PBGA substrate supply and demand.
- 2.3. Laminate CSP substrate supply and demand.
- 2.4. Combined WB PBGA and laminate CSP substrate supply and demand.
 - 4.1. CSP minimum pitch trends for mobile phones.
 - 4.2. Mated socket.
 - 4.3. The Quatrix™ QFN test socket contacts.
 - 4.4. The Quatrix™ LGA test socket contacts.
 - 4.5. Ardent's spring probe.
 - 4.6. Test socket for 0.4mm pitch QFN.
 - 4.7. Gemini probe.
 - 4.8. SuperSpring™ contact.
 - 4.9. SuperButton contact.
 - 4.10. Rolling contact design.
 - 4.11. QFN test socket.
 - 4.12. Mini probe pin.
 - 4.13. Ring contacts for Unitechno socket.
- 5.1. Multichip system-in-package QFN.
- 5.2. Thermal simulation result of a stacked chip.
- 5.3. RFMOD's image sensor QFN prior to mold.

List of Tables

- 3.1. Pb-free Solders and Surface Finishes at Selected Companies
 - 4.1. Fine Pitch CSP Test Sockets
 - 4.2. LGA and QFN Test Sockets
 - 4.3. Characteristics of Unitechno's Ring Contact Socket
 - 4.4. Yamaichi's 0.4mm Pitch Sockets


TechSearch
INTERNATIONAL

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