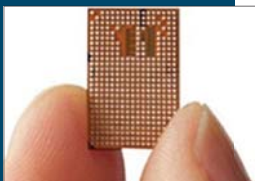
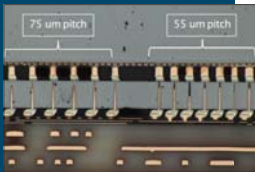
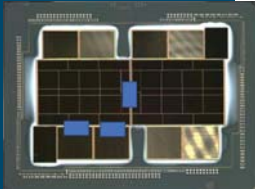


2022 Flip Chip and WLP: Trends and Market Forecasts



The market share for flip chip and WLP (fan-in and fan-out) continues to grow. This report covers end products and device types in a range of applications from high-performance to mobile and automotive. The latest technology developments and trends, including fine pitch bumping, flip chip assembly, substrates, hybrid bonding and new materials are discussed. Flip chip, fan-in WLP, and FO-WLP market projections include number of wafers and units by bump type. Capacity is provided by geographic region. Developments, applications, and market projections in panel fan-out are included.

Executive Summary

1 Technology Developments

- 1.1 Fan-in and Fan-out WLPs
 - 1.1.1 WLP Reliability
 - 1.1.2 WLP Pitch Trends
- 1.2 Panel FO-WLP Developments
 - Amkor, AOI, ASE, ESWIN, ChinaWLCSP, Nepes, PEP-I, PTI, Samsung
- 1.3 Panel Process Challenges
 - 1.3.1 Economics of Panels
 - 1.3.2 Technical Issues
 - 1.3.3 Overcoming Challenges for Panel FO
- 1.4 Copper Pillar and Microbumps
- 1.5 Hybrid Bonding
 - 1.5.1 Die-to-Wafer
 - 1.5.2 Wafer-to-Wafer
- 1.6 Flip Chip Bump Pitch and Substrates
 - 1.6.1 Silicon Interposers
 - 1.6.2 RDL Structures
 - 1.6.3 Embedded Bridge
 - 1.6.4 Build-up Substrates
 - 1.6.5 Glass Core Substrates
 - 1.6.6 FC-CSP Substrate Trends
 - 1.6.7 Leadframe and Molded Substrates
- 1.7 Underfill Material Trends
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 - 2.2.4.5 Pre-amps for HDDs

- 2.2.4.6 Processors for Smartphones
 - 2.2.4.7 RF Modules
 - 2.2.4.7.1 RF Modules in iPhone 13 Pro
 - 2.2.4.8 RF ICs
 - 2.2.4.9 Filters
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 - 3.1.4 Wearables
 - 3.1.5 Smart Speakers
 - 3.1.6 VR, Smart Home, and Dash Cam
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 - 3.3.2 FO-WLP Applications
 - 3.3.3 Future FO-WLP Applications



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