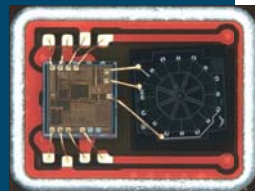


Quantifying the Impact of Heterogeneous Integration: Chiplets and SiP



New packaging solutions are being adopted to achieve the economic advantages previously met with silicon scaling. The role of heterogeneous integration, especially chiplets, is pivotal in this new era. A chiplet is a functional circuit block and includes physically realized and tested reusable IP blocks with a standard or proprietary communication interface between the blocks. This report describes the drivers for growth in each segment and package types for different applications. The market for heterogeneous integration is projected to grow 10% in number of packages from 2020 to 2025, reaching almost 54 billion packages. Smartphones, wearables, and consumer packages account for the largest number. The market for packages using chiplets is expected to show a CAGR of 104% from 2020 to 2025. A set of 122 PowerPoint slides is included with the detailed analysis.

Executive Summary

1 Introduction

- 1.1 What is Heterogeneous Integration?
- 1.2 What is System-in-Package?
- 1.3 What is a Chiplet?

2 Heterogeneous Integration

- 2.1 AI Accelerators
 - Alibaba, Baidu, Intel, Google, NVIDIA, Xilinx
- 2.2 Network Switches
- 2.3 Integrated Photonics
- 2.4 GPUs and CPUs
- 2.5 Drivers for Package Selection
- 2.6 Silicon Interposers
 - Samsung, TSMC
- 2.7 Embedded Bridge and FO Solutions
 - Amkor, ASE, IBM Research and AI Hardware, Intel, SPIL, TSMC, Tongfu Microelectronics
- 2.8 RDL Interposers
 - Samsung, TSMC
- 2.9 Laminate Substrate SiPs
 - IBM Assembly and Test Services, JCET, Intel
- 2.10 3D Heterogeneous Integration
 - 2.10.1 High Bandwidth Memory
 - 2.10.2 GLOBALFOUNDRIES
 - 2.10.3 Samsung
 - X-Cube, SAINT-S
 - 2.10.4 TSMC
 - 2.10.4.1 LT-SoIC

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 - 3.1.2 3D

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3.3.5 Samsung

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3.3.6.3 InFO-SoIs

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4.2.1 E-Compass Sensor Modules

4.2.2 Motion Sensor Modules

4.2.3 Pressure Sensor Modules

4.2.4 MEMS Microphones

4.2.5 Proximity and Ranging Sensor Modules



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