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## TechSearch International Forecasts Next Build-up Substrate Shortage

As demand for artificial intelligence (AI) training and inferencing hardware grows, the use of more high-bandwidth memory (HBM) stacks is driving the need for larger substrate body sizes. Server CPU body sizes and high-end network switch substrate sizes are also increasing. In its latest Advanced Packaging Update, TechSearch International projects tight supply for build-up substrates starting in 2028 and a shortage by 2029. A capacity and demand analysis is provided.

Recovery of smartphone and PC shipments made 2024 a reasonably good year for the top 20 OSATs with 5.2% revenue growth. OSAT financials for the top 10 are highlighted in the Update. Low growth rates for PCs, smartphones, and consumer products are projected, resulting in low unit-volume growth for ball grid array (BGA) and chip scale packages (CSPs). An analysis of applications using BGAs and CSPs is provided along with package examples from TechSearch International's recent teardowns.

The Update also describes high-performance package offerings from Intel Foundry Services (IFS) and TSMC, with a focus on demand for larger body sizes. Intel's new version of the Embedded Multi-Die Interconnect Bridge (EMIB) with through silicon vias in the bridge die is discussed. IFS's assembly services as an OSAT, its partnership with Amkor, and available substrate options are discussed. Applications of TSMC's chip-on-wafer-on-substrate (CoWoS®-R) with a redistribution layer (RDL) as the interposer and CoWoS®-L with a bridge in the RDL are described. The role of TSMC's System-on-Wafer (TSMC-SoW™) is also discussed.

The Update is a 97-page report with full references and set of more than 80 PowerPoint slides.

TechSearch International, Inc., founded in 1987, is a market research leader specializing in technology trends in microelectronics packaging and assembly. Multi- and single-client services encompass technology licensing, strategic planning, and market and technology analysis. TechSearch International professionals have an extensive network of ~20,000 contacts in North America, Asia, and Europe. For more information, contact TechSearch International at tel: 512-372-8887 or see www.techsearchinc.com. Follow us on LinkedIn.