

Kulicke & Soffa Collaborates with UCLA

To Further Extend Advanced Packaging Technology and Solutions

SINGAPORE, Aug. 8, 2023 /PRNewswire/ -- [Kulicke and Soffa Industries, Inc.](#) (NASDAQ: KLIC) ("Kulicke & Soffa", "K&S", "we" or the "Company") announced its expanded collaboration with The University of California, Los Angeles, Center for Heterogeneous Integration and Performance Scaling (UCLA CHIPS) to deliver cost-effective advanced solutions which are needed within Artificial Intelligence (AI), high-performance computing (HPC) and data-center applications today. As the need for leading-edge packaging technology moves into higher-volume markets, yield, throughput and productivity are becoming increasingly important.

K&S joined UCLA CHIPS as a charter member in 2016 to develop ultrafine pitch micro-bump interconnect solutions. Shortly after, thermocompression bonding (TCB) at 30 μ m micro-bump pitch became feasible. By leveraging formic acid treatment, K&S has demonstrated 10 μ m pitch capability in TCB. As heterogeneous chiplet packaging opportunities expand into higher-volume markets, K&S innovations have enhanced development engagements with key commercial customers, capable of enabling this broad and long-term industry transition.

Kulicke & Soffa's innovative fluxless process eliminates contamination concerns while ensuring interconnect integrity through an integrated delivery platform. The Company's high-accuracy, production-proven TCB portfolio is capable of supporting the majority of interposer-based, and 3D heterogeneous integration applications in the market today. K&S and UCLA's ongoing collaboration seeks to further develop manufacturable Cu-to-Cu solutions capable of sub-5 μ m pitch. The advantage of this TCB approach is that it is independent of dielectric specifics, and meets mil spec shear force, temperature cycling and moisture ingress standards.

"Capable advanced packaging solutions are critically necessary to overcome well-known node-shrink challenges and extend package-level transistor density. We continue to push the boundaries of technology and deliver high accuracy, high-throughput, and high-yield solutions which will accelerate the broader industry's transition to heterogeneous integration. We look forward to sustaining our leadership and technical progress as we continue broadening our advanced packaging solutions," said Bob Chylak, Kulicke & Soffa's Senior Vice President and Chief Technology Officer.

AI, HPC and data center processors are transitioning to interposer and 3D heterogeneous approaches due to the rising design costs and yield challenges with the mature monolithic process. According to Yole Group, a market research & strategy consulting company, the 2.5D and 3D packaging volume is expected to grow at about 15% CAGR, reaching over 10 billion units in 2028.

In addition to the heterogeneous transition, TCB is a pervasive technology and is already utilized in a growing set of semiconductor devices such as application processors, silicon photonics (SiPh), CMOS image sensors, high bandwidth memory (HBM), processor-memory integration, and logic-memory integration, providing many long-term opportunities for K&S micro-bump interconnect solutions. Through close engagements with industry-leading fabless, foundry, IDM

and OSAT customers, K&S is providing advanced packaging solutions which directly support this significant industry transition.

"It has been a great journey driving innovation to this very capable process over the past seven years," said Subramanian S. Iyer, Professor and Director of UCLA CHIPS housed in the UCLA Samueli School of Engineering. "While existing TCB technology extends beyond today's uses, we are excited to further extend our collaboration with K&S and achieve the next milestone of below 5µm pitch. We look forward to enabling future generations of devices by scaling performance with advanced packaging."

Chan Pin Chong, K&S's Executive Vice President, Products and Solutions said, "As the semiconductor industry aggressively pursues more complex assembly and packaging approaches, TCB continues to be a leading micro-bump solution for fine-pitch and Cu-to-Cu interconnect processes. With the majority of high-volume applications at 35µm pitch today, our demonstrated 10µm fluxless TCB capability is well positioned to support the emerging needs of heterogeneous applications of tomorrow. With our collaboration and continuous development efforts with UCLA, we are confident that K&S micro-bump interconnect solutions will deliver exceptional value to support the rapidly evolving industry."

About Kulicke & Soffa

Founded in 1951, Kulicke and Soffa Industries, Inc. specializes in developing cutting-edge semiconductor and electronics assembly solutions enabling a smarter and more sustainable future. Our ever-growing range of products and services supports growth and facilitates technology transitions across large-scale markets, such as advanced display, automotive, communications, compute, consumer, data storage, energy storage and industrial.

Cautionary Statement Regarding Forward-Looking Statements

This press release contains statements relating to future events and our future results. These statements are "forward-looking" statements within the meaning of the Private Securities Litigation Reform Act of 1995. These statements include, but are not limited to, statements regarding the market for thermocompression bonding solutions and the performance and competitiveness of our particular solutions. While these forward-looking statements represent our judgments and future expectations concerning our business, a number of risks, uncertainties and other important factors could cause actual developments and results to differ materially from our expectations. These factors include, but are not limited to, the execution and effect of our business strategy, future business decisions made by us and our competitors, the effects of macroeconomic headwinds on our business and industry, and the other factors listed or discussed in our Annual Report on Form 10-K for the fiscal year ended October 1, 2022, filed on November 17, 2022, and our other filings with the Securities and Exchange Commission. Kulicke and Soffa Industries, Inc. is under no obligation to (and expressly disclaims any obligation to) update or alter its forward-looking statements whether as a result of new information, future events or otherwise.

[About the UCLA Center for Heterogeneous Integration and Performance Scaling](#)

Established in 2015 at the UCLA Samueli School of Engineering, the UCLA Center for Heterogeneous Integration and Performance Scaling (UCLA CHIPS) aims to address the dramatic changes taking place in the electronic hardware arena. UCLA CHIPS is an interdisciplinary university-led consortium composed of industrial partners and consortia, universities and government agencies.

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