



## Ansys Collaborates with TSMC to Deliver Thermal Analysis Solution for 3D-IC Designs

October 27, 2021

TSMC collaborated with Ansys using Icepak™ as thermal reference for the TSMC 3DFabric™ technologies:

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Fluid\_streamlines

### / Key Highlights

- The companies collaborated to deliver a comprehensive hierarchical thermal analysis solution for TSMC 3DFabric using RedHawk-SC Electrothermal
- TSMC enabled Ansys RedHawk-SC™ for power integrity (EM/IR) signoff of 3DFabric designs

[TSMC](#) and [Ansys](#) (NASDAQ: ANSS) collaborated to create a comprehensive thermal analysis solution for multi-die designs built with TSMC 3DFabric™, TSMC's comprehensive family of 3D silicon stacking and advanced packaging technologies. This solution is built on Ansys tools to simulate the temperature of 3D and 2.5D electronic systems containing multiple chips stacked closely together using the advanced TSMC 3DFabric technologies. Careful thermal analysis prevents these systems from failing due to over-heating and improves their lifetime reliability.

TSMC collaborated with Ansys using Icepak™ as reference of thermal analysis for TSMC 3DFabric technologies. Ansys and TSMC also collaborated to develop a high-capacity hierarchical thermal solution, using Ansys RedHawk-SC Electrothermal™, to analyze complete chip-and-package systems with high-fidelity results. An Ansys paper on this solution, titled "*A Comprehensive Hierarchical Thermal Solution for Advanced 3DIC Systems*," was recently presented at TSMC 2021 Open Innovation Platform® (OIP) Ecosystem Forum on October 26, 2021.

TSMC extended the collaboration of the Ansys RedHawk family to include RedHawk-SC™ for electromigration and voltage drop (EM/IR) signoff of TSMC-SolC™ technology – the most comprehensive chip stacking technology included in 3DFabric.

"We work closely with our OIP ecosystem partners to enable next-generation designs with solutions benefiting from the significant power, performance and area improvements of TSMC's advanced process and 3DFabric technologies," said Suk Lee, vice president of the Design Infrastructure Management Division at TSMC. "This collaborative effort with Ansys to deliver a thermal solution flow for full chip and package analysis is of great value to our customers."

[Ansys Icepak](#) is a simulation software product that uses computational fluid dynamics (CFD) to simulate airflow, heat-flow, temperature, and cooling of electronic assemblies. [Ansys RedHawk-SC Electrothermal](#) is a simulation software product that solves multiphysics power integrity, signal integrity, and thermal equations for 2.5D/3D multi-die IC systems. [Ansys RedHawk-SC](#) is a power integrity and reliability analysis tool for semiconductor designs that is certified by TSMC for signoff on all finFET process nodes, including the latest 4nm and 3nm.

"Ansys believes that the adoption of 3D-IC technologies holds huge potential to benefit the semiconductor industry and our customers," said John Lee, vice president and general manager of the electronics and semiconductor business unit at Ansys. "We continue to work hand in hand with TSMC to provide multiphysics platforms that are closely aligned and verified with the advanced TSMC 3DFabric technologies."

### / About Ansys

If you've ever seen a rocket launch, flown on an airplane, driven a car, used a computer, touched a mobile device, crossed a bridge or put on wearable technology, chances are you've used a product where Ansys software played a critical role in its creation. Ansys is the global leader in engineering simulation. Through our strategy of Pervasive Engineering Simulation, we help the world's most innovative companies deliver radically better products to their customers. By offering the best and broadest portfolio of engineering simulation software, we help them solve the most complex design challenges and create products limited only by imagination. Founded in 1970, Ansys is headquartered south of Pittsburgh, Pennsylvania, U.S.A. Visit [www.ansys.com](http://www.ansys.com) for more information.

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