



Ansys and TSMC Enable a Multiphysics Platform for Optics and Photonics, Addressing Needs of AI, HPC Silicon Systems

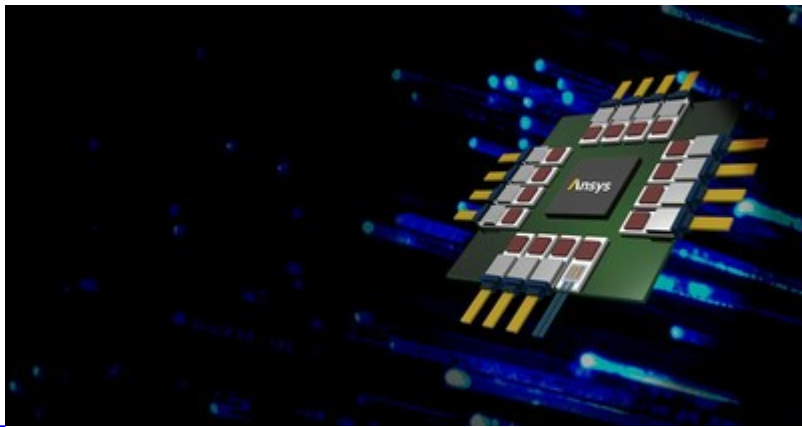
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Collaboration on TSMC's COUPE silicon photonics platform dramatically speeds chip-to-chip and machine-to-machine communication for cloud, datacenters, HPC, and AI chips

/ Key Highlights

- Ansys and TSMC deliver a high-fidelity multiphysics solution to address design challenges for artificial intelligence (AI), datacenter, cloud, and high-performance computing (HPC) chips
- The combined effort covers a broad range of Ansys multiphysics simulation solutions, including semiconductor, thermal, electromagnetics, photonics, and optics

PITTSBURGH, April 24, 2024 /PRNewswire/ -- [Ansys](#) (NASDAQ: ANSS) today announced a collaboration with TSMC on multiphysics software for TSMC's Compact Universal Photonic Engines (COUPE). COUPE is a cutting-edge Silicon Photonics (SiPh) integration system and Co-Packaged Optics platform that mitigates coupling loss while significantly accelerating chip-to-chip and machine-to-machine communication.



TSMC COUPE, along with Ansys multiphysics solutions that are integrated with Synopsys' 3DIC Compiler unified exploration-to-signoff platform, enables the next generation of silicon photonics and co-packaged optics designs for applications in AI, datacenter, cloud, and HPC communications. The work spans multiple areas, including fiber-to-chip coupling, integrated electronic-photonics chip design, power integrity verification, high-frequency electromagnetic analysis, and critical thermal management.

TSMC COUPE integrates multiple electrical ICs with a photonic IC and fiber optic connections into a single package. These include [Ansys Zemax™](#) for optical input/output simulation, [Ansys Lumerical™](#) for photonic simulation, [Ansys RedHawk-SC™](#) and [Ansys Totem™](#) for multi-die power integrity signoff, [Ansys RaptorX™](#) to model high-frequency electromagnetic analysis between dies, and [Ansys RedHawk-SC Electrothermal™](#) for vital thermal management of the multi-die heterogeneous system. Additionally, Lumerical allows custom Verilog-A models for electronic photonic circuit simulations, which work seamlessly with the TSMC Modeling Interface (TMI) and are co-designed with TSMC's Process Design Kit (PDK).

"By providing a good silicon photonics integration system we can address both critical issues of energy efficiency and computing performance to support the explosive growth in data transmission that comes with the AI boom," said Dan Kochpatcharin, head of the design infrastructure management division at TSMC. "We have aligned closely with our Open Innovation Platform® (OIP) partners like Ansys to provide our customers with a solution to the design challenges in this breakthrough technology, enabling their designs to achieve a new level of performance and energy efficiency."

"Ansys' multiphysics platform for TSMC's COUPE technology underscores our focus on delivering the most comprehensive multiphysics portfolio with the best solution for every need," said John Lee, vice president and general manager of the semiconductor, electronics, and optics business unit at Ansys. "Ansys is a leader in delivering a deep and broad portfolio of integrated multiphysics simulation solutions and platforms. Together, TSMC and Ansys are enabling the next wave of technological innovation."

/ About Ansys

Our Mission: Powering Innovation that Drives Human Advancement™

When visionary companies need to know how their world-changing ideas will perform, they close the gap between design and reality with Ansys simulation. For more than 50 years, Ansys software has enabled innovators across industries to push boundaries by using the predictive power of simulation. From sustainable transportation to advanced semiconductors, from satellite systems to life-saving medical devices, the next great leaps in

human advancement will be powered by Ansys.

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