

Synopsys Digital and Custom Design Platforms Certified for TSMC's Latest 3nm Process Technology

Collaboration Delivers Power and Performance-Optimized Methodologies for Next-Generation HPC, Mobile, 5G and AI Designs

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Highlights of this Announcement:

- Synopsys design solutions certified for the latest version of TSMC's 3nm process technology DRM and SPICE models
- Synopsys and TSMC have collaborated on advanced design enablement using Synopsys' Fusion Design Platform and Custom Design Platform so mutual customers can realize maximum PPA benefits from TSMC's advanced process technologies
- Reference methodology benefits already validated across mutual-customer designs, increasing number of successful tapeouts

[Synopsys, Inc.](#) (Nasdaq: [SNPS](#)) today announced that TSMC has certified Synopsys' [digital and custom design solutions](#) based on TSMC's latest design-rule manual (DRM) and process design kits for its advanced 3-nanometer (nm) process technology. This certification results from extensive, multi-year collaboration to deliver co-optimized tools, flows and methodologies that enable customers to achieve the process' maximum entitlement of power, performance and area (PPA), accelerating the next generation of innovations in high-performance computing (HPC), mobile, 5G and AI chip designs. To learn more about Synopsys' certified solutions, the numerous test chips already completed at these nodes, how to deploy Synopsys' design platforms and more, visit Synopsys' booth during the [TSMC 2021 Online Tech Symposium](#) on June 1-2.

"TSMC's leading-edge technology required new levels of EDA collaboration and innovation to deliver on the high performance and low-power goals of the 3nm process technology," said Suk Lee, vice president of the Design Infrastructure Management Division at TSMC. "Our long-term collaboration with Synopsys has helped accelerate access to, and the maximization of the benefits from, TSMC's latest process offering. We will continue to work closely together to enable next-generation designs for HPC, Mobile, 5G, and AI applications."

Synopsys' highly integrated Fusion Design Platform is a critical part of this successful advanced-node collaboration, delivering comprehensive, full-flow design convergence and tight signoff correlation for TSMC's 3nm technology. Synopsys' [Fusion Compiler™](#) and the [IC Compiler™ II](#) place-and-route product, achieve optimized timing quality-of-results (QoR) through new global and detail-route technology innovations. Full-flow, total-power optimization advancements and concurrent-legalization-and-optimization technology enable the achievement of the required total-power profiles and the overall optimized PPA design metrics.

Other implementation technologies deployed as part of the 3nm collaboration include support for advanced routing with coloring and via-pillar consideration and innovative flip-flop optimization that aids both performance-focused and low-power designs. Additionally, the Design Compiler® NXT synthesis product, a key component of the Fusion Design Platform, has been enhanced to provide a more convergent design flow through tighter timing correlation to IC Compiler II, benefiting all designs targeting the N3 process.

Synopsys' 3nm collaboration with TSMC also includes PrimeTime® support for low-voltage variation and

supports TSMC's placement rules to enable convergent ECO closure during both implementation and signoff. Synopsys' PrimePower supports 3nm physical rules for power signoff, including leakage and dynamic power along with StarRC™ extraction-modeling enhancements to deliver the needed accuracy.

Additional signoff solutions certified for TSMC 3nm technology include NanoTime custom timing signoff, ESP custom equivalence verification and QuickCap® NX parasitic field solver solution. Synopsys' IC Validator™ physical signoff has been enhanced to support all advanced-process requirements, including new dummy-fill features for improved density, layout-dependent effects for layout-versus-schematic checking, and enhanced delta-voltage rule-debug efficiency for DRC.

The Custom Compiler™ design and layout solution, part of the Synopsys Custom Design Platform, delivers improved productivity to designers using TSMC advanced process technologies. Numerous enhancements to Custom Compiler, validated by early 3nm users including the Synopsys DesignWare IP team, reduce the effort to meet 3nm technology requirements. The Synopsys PrimeSim™ HSPICE®, PrimeSim™ SPICE, PrimeSim™ Pro and PrimeSim™ XA simulators, as part of the PrimeSim™ Continuum solution, deliver improved turnaround time for TSMC 3nm designs and provide signoff coverage for circuit simulation and reliability requirements.

"Both the ecosystem and our customers benefit from TSMC's and Synopsys' close collaborations to push the achievable limits and accelerate access to each new technology process," said Shankar Krishnamoorthy, general manager and corporate staff for the Digital Design Group at Synopsys. "Our latest digital and custom R&D collaborations for the 3nm technology have delivered new levels of technology innovation to overcome the challenges of the process and thus open up a new chapter of opportunities for our mutual customers to deliver on their advanced-product roadmaps in a timely manner."

Synopsys technology files are available from TSMC for the 3nm process technology. For a full list of the Synopsys digital and custom platform solutions certified by TSMC, please visit: www.synopsys.com/tsmc.

About Synopsys

Synopsys, Inc. (Nasdaq: SNPS) is the Silicon to Software™ partner for innovative companies developing the electronic products and software applications we rely on every day. As an S&P 500 company, Synopsys has a long history of being a global leader in electronic design automation (EDA) and semiconductor IP and offers the industry's broadest portfolio of application security testing tools and services. Whether you're a system-on-chip (SoC) designer creating advanced semiconductors, or a software developer writing more secure, high-quality code, Synopsys has the solutions needed to deliver innovative products. Learn more at www.synopsys.com.

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