Synopsys TCAD Now Offers Atomic-level Accuracy

Synopsys Taurus Process Atomistic Simulation Accelerates Sub-90-nm Process Development and Yield

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Synopsys, Inc. (NASDAQ: SNPS), the world leader in semiconductor design software, today announced Taurus™ Process Atomistic, a new process simulation tool for sub-90-nanometer semiconductor device manufacturing. Taurus Process Atomistic enables semiconductor manufacturers to accelerate the development of semiconductor processes and improve yield. Compared with traditional process modeling techniques, Taurus Process Atomistic offers up to 40% faster and more accurate simulation of nanoscale semiconductor device structures -- reducing the need for costly and time-consuming test silicon runs.

As semiconductor manufacturing scales below the 90-nm node, the tools needed to model and simulate process technology and behavior must consider physics effects that are significantly more complicated than previous generations. Taurus Process Atomistic performs a simulation of the diffusion of atoms within a transistor, which determines the transistor's ability to carry electrical current. In addition to enabling successful process development, the precise simulation of these effects is critical to the ability to characterize transistor power and performance.

"Taurus Process Atomistic is a cornerstone product of our advanced TCAD toolset. By improving the ability to accurately model advanced processes, we are improving our customers' ability to develop chips that will meet yield and performance expectations," said Don MacMillen, vice president of engineering in Synopsys' New Ventures business unit.

Taurus Process Atomistic offers a unique combination of accuracy, simulation speed and integration. Because the number of atoms in each transistor goes down with feature size, atomistic simulation times decrease with each process generation, offering a speed improvement of orders of magnitude over traditional techniques. Taurus Process Atomistic is used by process technology integration teams to more accurately predict certain characteristics and variations of ultra-shallow junctions that impact transistor performance and leakage.

"Accurate modeling of silicon junctions has always been a difficult process, yet their reliability directly impacts our chip performance and yield," said Takako Okada, research scientist in the Toshiba Advanced LSI Technology Laboratory. "We have found that Taurus Process Atomistic is a unique and valuable tool for accurately predicting when and where junction defects or dislocations will occur. We have successfully used it, along with other Synopsys technology computer aided design (TCAD) products, to optimize manufacturing steps in order to minimize defects and therefore increase manufacturing yield."

"We believe that an understanding of the impact of defects on dopant diffusion provides great advantages in predictive modeling," said Taiji Noda, engineer, Matsushita Electric Industrial Company. "We have used Taurus Process Atomistic for accurate prediction of dopant behavior required for the fabrication processes of advanced devices for sub-45 nanometer technology."

Pricing and Availability

Taurus Process Atomistic is available now. U.S. list price begins at $63,000 for a perpetual license.

About Synopsys

Synopsys, Inc. is the world leader in electronic design automation (EDA) software for semiconductor design. The company delivers technology-leading semiconductor design and verification platforms to the global electronics market, enabling the development of complex systems-on-chips (SoCs). Synopsys also provides intellectual property and design services to simplify the design process and accelerate time-to-market for its customers. Synopsys is headquartered in Mountain View, California and is located in more than 60 offices throughout North America, Europe, Japan and Asia. Visit Synopsys online at http://www.synopsys.com/.

SOURCE: Synopsys, Inc.

CONTACT: Susan Lippincott of Synopsys, Inc., +1-512-372-7644, or susanl@synopsys.com; or Sarah Seifert of Edelman, +1-650-429-2776, or sarah.seifert@edelman.com, for Synopsys

Web site: http://www.synopsys.com/