

# Toshiba Standardizes on CCS Technology at 65nm to Improve Accuracy and Designer Productivity

Composite Current Source Models Deliver 2X Tighter Accuracy and Reduce Characterization Cost by 80 Percent

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MOUNTAIN VIEW, Calif., Nov. 6 /PRNewswire-FirstCall/ -- Synopsys, Inc. (NASDAQ: SNPS), a world leader in software and IP for semiconductor design and manufacturing, today announced that Toshiba Corporation has standardized on the open source Liberty™ Composite Current Source (CCS) modeling technology for its CMOS5/TC320C 65-nanometer (nm) production libraries. Using these high accuracy libraries within Synopsys' Galaxy™ Design Platform, Toshiba engineers can improve system-on-chip (SoC) design by minimizing guard-band margins during design implementation and sign-off. The powerful CCS voltage and temperature scaling technology further boosts designer productivity by simplifying low power design flows.

"During our early stages of 65-nanometer flow development, it was clear to us that current source modeling was necessary," said Takashi Yoshimori, technology executive of SoC Design, Semiconductor Company, Toshiba Corporation. "We extensively evaluated CCS along with other current source formats. CCS was able to meet our criteria for stringent accuracy and scaling requirements. CCS tightened the delay calculation accuracy by over two-fold from 5 percent vs. the HSPICE® simulation tool to 2 percent. Furthermore, the voltage and temperature scaling capabilities makes CCS very adaptable, simplifying design flows, especially for multi-voltage designs. This improves our designer productivity and reduces the number of library corners and characterization cost."

CCS modeling technology, part of the open-source Liberty library modeling standard, enables highly accurate and comprehensive modeling of nanometer effects that encompass timing, signal-integrity, and power. CCS modeling technology enables voltage variation modeling, simplifying advanced low-power design flows such as multi-Vt and multi-Vdd as well as dynamic voltage and frequency scaling. CCS is fully supported throughout Synopsys' Galaxy Design Platform. There is significant industry-wide momentum behind CCS modeling technology with libraries available from leading foundries, intellectual property vendors and integrated device manufacturers.

"There is a clear need for a single current source model to meet the semiconductor industry's modeling requirements at 65 nanometers and below," said Antun Domic, senior vice president and general manager of the Implementation Group at Synopsys. "With the flurry of Liberty CCS-enabled IP coming online and support from industry leading companies such as Toshiba, we expect Liberty to remain the standard for library modeling in the industry."

## About Synopsys

Synopsys, Inc. (NASDAQ: SNPS) is a world leader in electronic design automation (EDA) software for semiconductor design. The company delivers technology-leading system and semiconductor design and verification platforms, IC manufacturing and yield optimization solutions, semiconductor intellectual property and design services to the global electronics market. These solutions enable the development and production of complex integrated circuits and electronic systems. Through its comprehensive solutions, Synopsys addresses the key challenges designers and manufacturers face today, including power management, accelerated time to yield and system-to-silicon verification. Synopsys is headquartered in Mountain View, California, and has more than 60 offices located throughout North America, Europe, Japan and Asia. Visit Synopsys online at <http://www.synopsys.com/>.

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