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Silvaco Announces Viola 10X – An Order of Magnitude Faster Characterization for Nanometer Silicon

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Timing and Power Characterization of Standard Cell Libraries, I/O Pads and Memories Accelerated by 10X through Intelligent Optimization Technology

SANTA CLARA – May 28, 2019 – Silvaco Inc., a leading global provider of software, IP and services for designing chips and electronic systems for semiconductor companies, today announced Viola 10X, a scalable semiconductor intellectual property (IP) characterization and modeling tool which is the latest addition to the Silvaco Foundation IP product line.

By leveraging new Intelligent Optimization delivering 10X faster performance and embedding Silvaco's SmartSpice simulator and Jivaro-A reduction technology, the fully automated Viola 10X flow delivers accurate modeling and characterization of standard cell libraries, input/output (I/O) pad circuitry and digital memories for designs targeted at nanometer process nodes.

Viola 10X is an advanced characterization system that automatically performs static structural analysis on transistor-level netlists of standard cells and complex custom cells or macros. It uses the results of this analysis to set up complete characterization constraints and then leverages the foundry-certified, highly accurate and accelerated SmartSpice simulator to increase the overall throughput of timing, power, noise and statistical static timing analysis (SSTA) model generation. Viola 10X not only offers faster characterization capabilities, it supports all industry-standard model formats and includes a closed-loop model validation flow that allows users to seamlessly launch third-party tools to verify the generated models.

"Certus provides the most advanced solutions for optimizing area, power, Electro-Static-Discharge (ESD) protection, features and performance of I/O circuits," said Stephen Fairbanks, Director at Certus Semiconductor. "With Viola 10X, we met the tight development and characterization schedule for our client, a leading provider of IoT sensors. Its 10X-faster throughput makes no compromises in accuracy and enables optimization of the area, power, and performance of I/O pad circuitry."

"With Viola 10X developers no longer need in-depth knowledge of a circuit's electrical operation to properly set up a characterization run. Manual modeling efforts are eliminated which leads to reduced delay in model development and excludes human errors," said Ole Christian Andersen, General Manager of the EDA Division at Silvaco. "The technology in Viola 10X extracts functionality, identifies all electrical arcs, and optimizes the complete characterization methodology for efficiency and accuracy, significantly reducing the time and effort to create models and delivers 10X faster characterization through the use of Silvaco's Intelligent Optimization technology."

Viola 10X: Faster, More Reliable Model Sign-off

At the heart of Viola 10X are Silvaco's proprietary circuit-function recognition, vector generation, SmartSpice simulation and Jivaro-A reduction technologies. Each contributes to the ease of setup, accelerated characterization throughput and quality of model sign-off in Silvaco's characterization solution:

- Leveraging intelligent algorithms, Viola 10X automatically recognizes and models the functionality of standard cells and generates an efficient vector set for all timing arcs. By eliminating time-consuming, manual analyses, Viola 10X dramatically reduces the time required to set up and characterize I/O pads across a wide range of functional modes, process points, supply voltages and junction temperatures. The ability to efficiently handle the increasing number of process, voltage, temperature (PVT) points and operating modes is critical to nanometer design success.
- The smart topology-driven vector generation of Viola 10X features unique structure-based vector optimization and an intrinsic, simulation-induced constraint acceleration algorithm. These features eliminate vector redundancy and avoid unnecessary simulation while maintaining characterization accuracy. Viola 10X also offers a flexible methodology, allowing the user to supply a vector set and its sequence for specific measurements.
- Viola 10X supports commercially available SPICE simulators, including Silvaco's SmartSpice. When used in conjunction with SmartSpice, the optimized vector generation capabilities of Viola 10X deliver an order-of-magnitude faster throughput than previous generations of Viola, without any loss of accuracy. SmartSpice is a full SPICE simulator in wide use by analog/mixed-signal designers, foundries and IP developers down to 5nm.
- Jivaro-A is the industry-leading RC parasitic reduction technology for layout parasitic extraction (LPE). Its circuit optimization is based on accuracy requirements, stability of simulation, realistic values, reliability of analysis and verifiability. Jivaro-A is not a simple data crunching or filtering tool. Optimized for SPICE netlists, it reduces simulation time, increases accuracy compared to built-in reduction of circuit simulators and offers blazing fast processing.

Pricing and Availability
Viola 10X is available now. Contact Sales@Silvaco.com for more details.

56th Design Automation Conference
Silvaco will showcase its suite of solutions from Atoms to Systems at the 56th Design Automation Conference (DAC) in Las Vegas, Nevada, June 3 – 5. Silvaco technology experts will be available to discuss and demonstrate our broad portfolio of smart solutions with emphasis on new products and capabilities such as Viola 10X.

About Silvaco, Inc.

Silvaco Inc. is a leading EDA tools and semiconductor IP provider used for process and device development for advanced semiconductors, power IC,

display and memory design. For over 30 years, Silvaco has enabled its customers to develop next generation semiconductor products in the shortest time with reduced cost. We are a technology company outpacing the EDA industry by delivering innovative smart silicon solutions to meet the world's ever-growing demand for mobile intelligent computing. The company is headquartered in Santa Clara, California and has a global presence with offices located in North America, Europe, Japan and Asia.

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