

ProPlus Design Solutions Introduces Latest Generation 1/f Noise Measurement System

The Associated Press

ProPlus Design Solutions, Inc. (www.proplussolution.com), the global leader for SPICE modeling solutions and the leading technology provider for design for yield (DFY) applications, today announced it is shipping 9812D, the latest generation wafer-level, 1/f noise measurement system, to select customers.

9812D improves upon 9812B, the industry's de facto standard 1/f measurement system used worldwide for more than a decade by leading foundries, integrated device manufacturers (IDMs) and research organizations. With an industry-proven system architecture as its foundation to ensure highly accurate measurement and a frequency range that exceeds 10 Megahertz (MHz), it has a built-in dynamic signal analyzer (DSA) with multi-threaded processing for improved performance and reduced cost.

"Noise is a key figure of merit for semiconductor process quality and also an intrinsic characteristic impacting circuit performance," affirms Dr. Zhihong Liu, executive chairman of ProPlus Design Solutions. "9812B has been a great product for 1/f noise measurement, leading the industry for more than 10 years. To meet the new challenges at 28 nanometer (nm) and beyond, we worked with leading foundries on significant improvements of the 1/f system, giving birth to a new 1/f noise system 9812D, a product we believe will rapidly become the new standard."

Introducing 9812D

The 9812D product is motivated by the needs of wafer fabs and circuit designers. Leading wafer fabrication facilities use 7*24 1/f noise measurement data to assess process quality. A three-to-10X throughput improvement of the 9812D system means faster data collection and early detection of process issues, which if undetected, could result in significant financial losses. The 9812D increases return on investment by integrating DSA, eliminating the need for expensive external signal processing equipment. This reduces the up-front investment, set-up risk and time.

Increasingly, circuit designers are interested in 1/f noise data at higher frequencies and 9812D pushes the range for reliable and accurate measurement to 10MHz. They are concerned also about variation effects at leading-edge process nodes, increasing the need for statistical noise models. Generating statistical noise models requires massive amounts of data collection that is particularly challenging at low frequencies.

The 9812D system's proprietary technology enables fast, accurate data collection in the range of 1hertz (Hz) to 10MHz, making the generation of accurate statistical

noise models practical.

The 9812D low-frequency 1/f noise measurement system is designed to measure low-frequency noise characteristics of on-wafer or packaged semiconductor devices, including MOSFETs, bipolar junction transistors (BJTs), junction field effect transistors (JFETs), diodes and diffusion resistors.

In addition to frequency domain measurement, 9812D can measure device noise in the time domain and can be used to perform on-wafer auto measurement for flicker (1/f) noise and Radom Telegraph Signal (RTS) analyses.

The new system inherited features of 9812B, including the industry's best measurement accuracy. Its accuracy has been tested for all types of technologies, including the most advanced process nodes at 28nm and below and has an extended measurement bandwidth that exceeds 10MHz. 9812D has a true 10MHz bandwidth that can accurately measure 1/f noise without roll off to a much wider frequency than any other solutions.

By integrating a high-performance DSA, the 9812D system delivers high-measurement throughput with three-to-10X improvement over the 9812B. It targets requirements of statistical noise analysis of large amounts of data and 7*24 process monitoring at advanced technologies. The tight DSA integration allows the user to achieve cost-effective, high-performance and high-quality results.

9812D is also the only available system that can take up to 100V from the Source-Measure Unit (SMU) for high-voltage device noise measurement, and has the lowest current level for low-current noise measurement such as MOSFETs under weak inversion conditions.

Unlike other solutions with one built-in voltage low-noise amplifier (LNA), 9812D has multiple built-in voltage and current LNAs. This ensures the highest possible accuracy for low-impedance device under test (DUT), such as, BJT, IC resistors and diodes, and high-impedance DUT, such as MOSFET in weak inversion and JFETs.

New NoiseProPlus software drives the noise system and delivers enhanced usability and easier setup for full current-voltage characteristics, 1/f and RTS noise measurement and graphical analysis of measured data. It can control a semiautomatic probe station for multi-die, multi-device and multi-type statistical noise measurements, and has been optimized for fast processing and analysis of massive noise data.

Availability

ProPlus Design Systems is accepting orders now for 9812D. Shipping will begin in March. Pricing is available upon request.

For more information, go to: www.proplussolutions.com/en/pro1/110.html.

About ProPlus Design Solutions

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ProPlus Design Solutions, Inc. delivers Electronic Design Automation (EDA) solutions that enhance the link between design and manufacturing. It provides unique Design for Yield (DFY) solutions that integrate device modeling software, a parallel SPICE engine and statistical analysis algorithms. Products include: BSIMProPlus?, a leading device modeling technology platform for nanometer device fabrication, NanoSpice?, a full-chip parallel SPICE simulator with full-chip capacity and SPICE accuracy for transistor-level statistical simulation and analysis, and NanoYield?, a DFY platform to meet performance and yield optimization challenges of advanced memory, analog and digital circuit designs. ProPlus Design Solutions has R&D centers in the San Jose, Calif., Beijing and Jinan, China, and offices in Tokyo, Japan, Hsinchu, Taiwan, and Shanghai, China. More information about ProPlus Design Solutions can be found at www.proplussolution.com.

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