

DIGITAL INDUSTRIES SOFTWARE

Solido Variation Designer

Fast and accurate variation-aware design and verification

Benefits

- Comprehensive variation-aware design
 - Supports analog, RF, mixed-signal, memory and standard cell design
 - Identifies design weaknesses undetectable by other methods
 - Improves design quality and time-to-market
 - Uses machine learning to accelerate simulation
 - Trusted by top semiconductor companies and foundries
- Fast, accurate and thorough
 - 1000X+ faster than brute force simulation
 - Full coverage verification across PVT and Monte Carlo

Introduction

Siemens Digital Industries Software is the leader in variation-aware design software for memory, standard cell and analog/RF custom IC design. Its production-proven Solido™ Variation Designer™ software is used by thousands of designers to produce the most competitive products in the high-performance computing, internet of things (IoT), automotive and mobile industries. The solution helps meet aggressive low-power demands and adapts to the challenges of smaller, more advanced technology nodes without compromising product quality, yield or performance.

Solido Variation Designer is the world's most advanced variation-aware design solution that utilizes machine learning to deliver unprecedented speed, accuracy and variation coverage. To meet specifications and to stay competitive in designing the best-performing quality IC, designers need to perform extensive SPICE simulations to account for all potential design variation. Variation Designer enables full design coverage in orders-of-magnitude fewer simulations, but with the accuracy of brute force techniques.

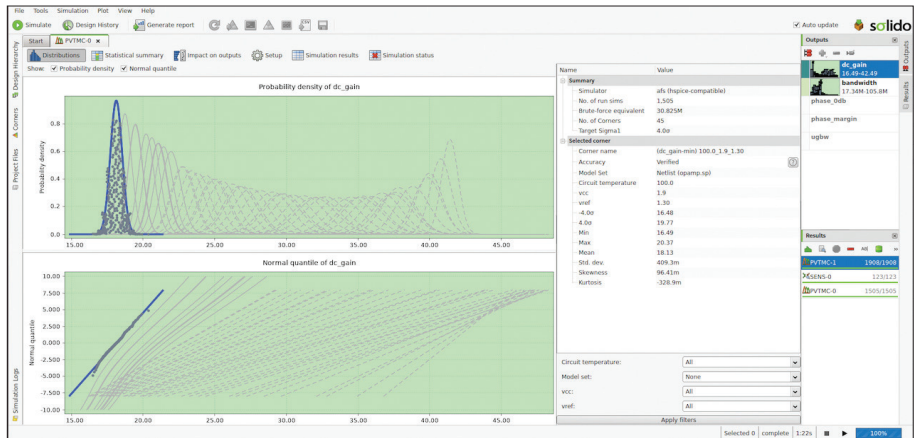
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Benefits *continued*

- Brute force Monte Carlo and SPICE accurate high-sigma verification
- Variation-aware design sensitivity, debugging and optimization
- Easy to use and deploy
 - Intuitive GUI for interactive design and analysis
 - GUI or batch mode
 - Works with all process technologies
 - Integrated with leading design environments
 - Supports all commercial and in-house SPICE simulators

Solido Variation Designer	
PVTMC Verifier Fast, full, sign-off level verification coverage	Fast PVT 2-50X faster verification across corners
High-Sigma Verifier Next-generation high-sigma verification	Monte Carlo 3 σ verification and corner extraction
High-Sigma Monte Carlo MC and SPICE accurate high-sigma verification	DesignSense Variation-aware design sensitivity
Hierarchical Monte Carlo Full-chip memory statistical variation	Cell Optimizer Automated variation-aware cell-level optimization



PVTMC Verifier: full coverage of PVT and Monte Carlo at 3-sigma and high-sigma.

Solido Variation Designer is a comprehensive suite of tools for variation-aware design and verification. Designers have the flexibility to select the best tool based on the design type, design phase, targeted accuracy and sigma requirement. The tools operate on semiconductor ICs across memory, analog, RF, mixed-signal and standard cell design. The tools include:

- PVTMC Verifier: Full sign-off level verification coverage across process, voltage, temperature (PVT) and Monte Carlo (MC) variation that is 10-1,000,000X faster than brute force simulation. It identifies the worst-case corner for any target sigma and finds design sensitivities to variation
- High-Sigma Verifier: Quickly verifies any circuit to high-sigma intelligently in a single pass with perfect Monte Carlo and SPICE accuracy. It automatically detects and solves complex binary and multi-modal outputs and it is fast at any sigma. Its advanced automation makes it easy to deploy to a wide user base in interactive mode and it is robust for use in large-scale, automated batch flows
- High-Sigma Monte Carlo: Delivers perfect Monte Carlo and SPICE accuracy out to high-sigma in just thousands of simulations. Its production-proved, self-verifying technology has been trusted for over a decade to deliver reliable, golden verification quality results
- Hierarchical Monte Carlo: Full-chip memory verification. It uses hierarchical, structurally-correct Monte Carlo samples to achieve full-chip simulation accuracy from a simplified memory slice

Solido Variation Designer

ANALOG/ MIXED-SIGNAL VERIFICATION

- Fast PVT: 2-50X faster than brute force simulation across PVT and other operating conditions (such as load, bias and operating mode) with the same accuracy. It identifies design sensitivity to these operating conditions
- Monte Carlo: 3-sigma Monte Carlo verification and statistical corner extraction with interactive visualization
- DesignSense: Variation-aware sensitivity analysis. It enables rapid and precise variation debugging by sweeping device sizings at worst-case PVT and statistical corners. The tool visualizes trade-offs and opportunities to improve the design
- Cell Optimizer: Automated variation-aware optimization. It efficiently optimizes designs across worst-case PVT and statistical corners, improving yield while delivering the best possible performance, power and area

Variation designer specifications

Foundry support

- Supports all leading foundries
- Works with all process technologies

Simulator support

- Supports all commercial and in-house SPICE simulators

Design flow integration

- Integrated with leading design environments
- Standalone command line flow

Grid computing support

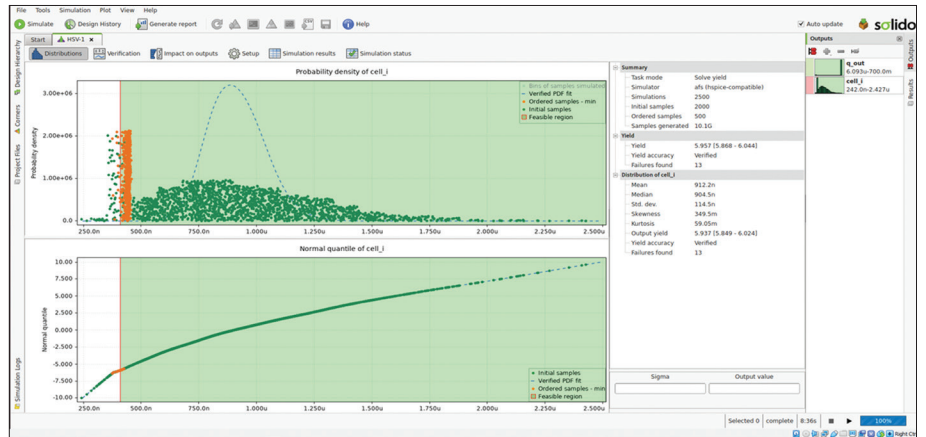
- Supports leading computing cluster management platforms

Operating platform support

- Arm
- x86

Operating systems

- Linux®



High-Sigma Verifier: intelligent, fast, accurate, and verifiable high-sigma results.

Siemens Digital
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