

PrimeSim Pro

**PrimeSim Pro
delivers
industry-leading
performance and
capacity for DRAM,
flash memory
and mixed-signal
verification for
discrete memories**

Overview

PrimeSim Pro, an essential part of the PrimeSim Family, represents a next-generation FastSPICE architecture for fast and high-capacity analysis of modern DRAM and Flash memory designs. The new architecture is highly optimized to handle full-chip memory and CMOS image sensor designs with high bandwidth, large power delivery networks and strict density requirements. Additionally, PrimeSim Pro has a unique heterogeneous GPU acceleration for superior performance.

PrimeSim Pro is fully integrated with PrimeWave, a modern and open design environment that encapsulates analysis and display requirements to improve productivity. PrimeSim Pro is a key engine inside PrimeSim Reliability analysis, a set of comprehensive solutions (fault simulation, static circuit check, IR/EM, variation) that analyze the full spectrum of a product life cycle, from early-life to end-of-life.

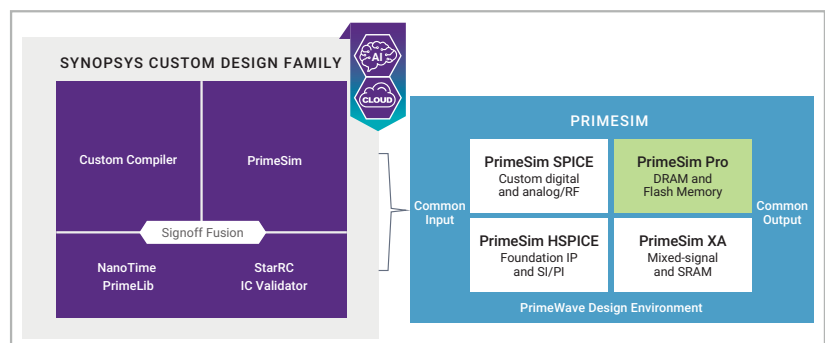


Figure 1: Unified Workflow for Full Lifecycle Verification

Benefits

- Delivers the highest runtime while maintaining accuracy using proprietary partitioning, synchronization techniques and accurate modeling.
- Innovative RC optimization techniques with compensation schemes to provide fast, accurate simulation results for fully extracted power networks.
- Enhanced parallel scalability with cutting edge algorithms for matrix level parallel partitioning and solving.
- Innovative full-chip verification flows that significantly reduce TAT for multiple vector timing simulation.
- Comprehensive dynamic circuit check feature set integrated with PrimeWave for design debug.
- Built on the golden HSPICE device model library, guaranteeing device model correlation between all PrimeSim engines.
- Cloud-ready, built-in container support for running the tool in a container as well as Synopsys cloud environment.

Unique GPU Solver Technology to Deliver Faster Performance

With the rapid advancements in heterogeneous acceleration technologies using GPU it is now possible to turn that processing power into faster simulation performance. PrimeSim Pro with its unique heterogeneous architecture, can achieve significant run time gain through the implementation of an optimized GPU matrix solver combined with a special parallel partition approach for dense blocks with high accuracy requirements such as power delivery network timing simulation or large RC mesh simulation.

Comprehensive Mixed-signal Simulation with VCS PrimeSim AMS

PrimeSim Pro is tightly integrated with Synopsys VCS® digital simulator at the kernel level, enabling better performance and rich feature set. This mixed-signal solution delivers the highest throughput by combining the fastest transistor-level engine and the fastest digital engine. VCS PrimeSim AMS offers a flexible use model that allows for a broad mixture of mixed-signal modeling languages and abstractions levels. The table below summarizes some of the capabilities of this mixed-signal flow.

Mixed-Signal Modeling Languages	SystemVerilog, VHDL, SPICE, Verilog-A, Verilog-AMS
Behavioral Modeling	Verilog-A, Verilog-AMS, Real Number Modeling, SystemVerilog Net types
Advanced Mixed-Signal features	AMS testbench, multi-technology simulation, Monte Carlo, save and restore, support for digital and analog postlayout designs (SPF, SPEF, SDF), fault simulation of mixed-signal designs together with PrimeSim Custom Fault
Mixed-Signal solution based on industry standards	SystemVerilog LRM, UPF Low Power standard

Table 1: VCS PrimeSim AMS is integrated with both PrimeWave Design Environment for design and verification, as well as the Verdi AMS Debug Environment for advanced digital and mixed-signal debug.

ISO 26262 TCL-1 ASIL D Certified

PrimeSim Pro tool can be used in the development of safety-related elements according to ISO 26262, with allocated safety requirements up to a maximum Automotive Safety Integrity Level D (ASIL D), if the tool is used in the context of a tool chain and in compliance of the PrimeSim Pro Functional Safety Manual

For more information about Synopsys products, support services or training, visit us on the web at: synopsys.com, contact your local sales representative or call 650.584.5000.