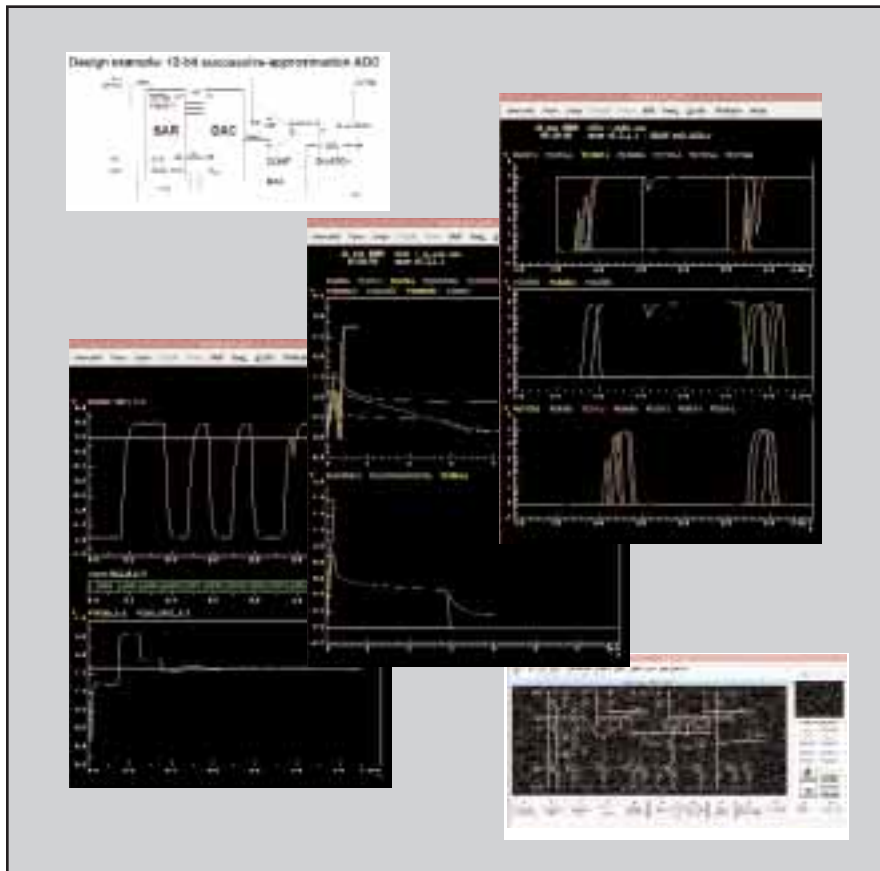


Eldo

D A T A S H E E T



The Eldo™ simulator offers numerous simulation and modeling options that deliver high-performance and high-speed simulation with the accuracy required by the user.

Benefits:

- 3X to 10X gain in simulation speed over other commercial SPICE simulators
- Foundation for top-down methodology with Analog & Mixed-Signal HDL languages and RFIC simulation
- Eldo models available for DSM foundry processes (TSMC, UMC, Chartered, ST, AMS, etc.)

Major product features:

- Standard and advanced transistor models for CMOS, bipolar, SOI, or GaAs
- Extraction language for automatic characterization
- Multiple simulation algorithms to provide the optimal combination of speed and accuracy
- Point tool for SPICE replacement
- Tight integration to frameworks and digital simulators from Mentor Graphics and Cadence Design Systems

High-Performance Circuit Simulation

Verification of A/MS (Analog/Mixed-Signal) circuits and SoC (System on a Chip) designs have reached the limit of classical SPICE simulation techniques.

The Eldo simulator is the simulator of choice for IC silicon vendors and Fabless design centers for four reasons: **speed, accuracy, convergence, and capacity.**

When compared to other commercial or internal SPICE simulators, users report a 3X to 10X speed ratio without experiencing a compromise of accuracy, compared to silicon. Eldo provides the best-in-class convergence for all problems. Designers worldwide use Eldo on designs ranging from the lowest complexity of a single cell to systems of up to 300,000 transistors or more.

The Eldo analog IC and system simulator speeds the design and verification of complex A/MS circuits, whether used as a point tool or within a Mentor Graphics or Cadence framework.

Eldo offers a wide range of optimized, built-in device models, including the latest MOS models (BSIM3v3, BSIM4, Philips MOS MM9, EKV, HVMOS), and Bipolar models (VBIC, MEXTRAM, HICUM), plus many vendor-proprietary models. With Eldo, designers also have access to a large macromodel library, including dispersive lossy-coupled transmission lines and frequency-dependent scattering parameters.

Eldo gives access to a powerful MEASURE language for automatic characterization of the design during simulation runtime.

Unprecedented Performance through State-of-the-Art Analog Simulation Algorithms

Eldo combines Newton-Raphson (NR) and One-Step Relaxation (OSR™) techniques using a unique partitioning algorithm. It groups the circuit into individual strongly-coupled node blocks solved using NR iterations, and loosely-coupled nodes solved using OSR. As circuit size increases, this algorithm improves the simulator efficiency and overall simulation speed by allowing different accuracy levels for different parts of the design.

Designers using traditional SPICE-like simulators often resort to tightening error tolerances and step size when higher accuracy is required. Unfortunately, this can dramatically increase simulation time — an option that is not feasible for large circuits. The product's Integral Equation Method, based on a patented algorithm, analyzes the circuit, and provides a larger stability range, higher accuracy, and greater simulation speed.

The Eldo simulator's numerous analysis modes — DC, AC, transient, transient noise, and switched capacitor analysis — reflect the latest design technologies. With the help of the latest homothopy algorithms, Eldo provides extraordinary DC convergence.

Behavioral model descriptions, macromodels, and built-in functional models can be freely mixed with device models in a system description. Built-in models include S and Z-domain filter, S,Y,Z scattering parameter, and lossy dispersive transmission line models.

Tools for simulation scripting, circuit optimization, and yield analysis are built around the simulator.

Powerful Waveform Analysis with Xelga

The Xelga™ graphical post-processor provides all graphical basic functions such as zoom, data measurement, curve tracing, and parametric plotting. Xelga operates on both analog and digital signals — the ideal solution for analog and mixed-signal applications. Xelga can even be used to visualize signals generated in a mixed-signal simulation with ADVance™ MS, ModelSim™ or Verilog®-XL. Additionally, windowing, FFT/IFFT, signal-

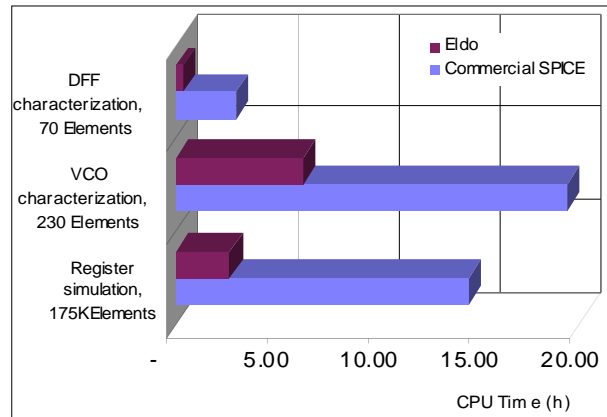


Fig 1: Simulation speed comparison between Eldo and a commercial SPICE simulator

to-noise calculation, Chirp-Z, and convolution are built-in features.

Typical characteristics such as power consumption, 3dB frequency, settling time and propagation delay can be extracted by the Xelga waveform processor.

If the functionality of the predefined macros is not satisfactory, the waveform processing language provides the opportunity to develop such functions.

Xelga features include analog and digital data processing and viewing, with multiple graphic signal frames, and overlays for easy comparison of simulation results. Xelga also features editing of screen layout and measurement functions on complete waveforms, or over a specified interval.

Large Designs, Fine Detail

With the capacity to handle the largest designs at the finest level of detail and the accuracy to detect design errors early in the development cycle, Eldo is the right tool for DSM design in the new millennium. Its ease-of-use and improved convergence allow a designer to focus on analyzing results, not on driving the tools. Used as the core technology of ADVance MS, Eldo provides a smooth path to analog and mixed-signal top-down design techniques using SPICE, Verilog, VHDL, and VHDL-AMS languages.

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