

**SIEMENS**

*Ingenuity for life*

# Analog FastSPICE platform

## Features and benefits

### Fastest Nanometer-Accurate Circuit Simulation

- Certified to FinFET process by leading foundries
- > 5x faster than traditional SPICE
- > 2x faster than parallel SPICE
- Includes AFS eXTreme technology
- > 3x faster than post-layout SPICE
- > 100M-element capacity

### Fastest Mixed-Signal Simulation

- Supports all leading digital solvers
- Best-in-class usability, allowing maximum reuse of verification infrastructure
- Advanced verification and debug capabilities to improve verification coverage

### Fastest Full-Spectrum Device Noise Analysis

- Includes all device noise sidebands/harmonics
- Transient noise within 1–2 dB silicon data
- PSS and pnoise with > 100K-element capacity

### Fastest Variation-Aware Design and Verification

- Improved design quality and time-to-market
- SPICE accurate, high-sigma verification
- > 1000x faster than brute force simulation
- Easy to use and deploy

Nanometer-scale analog, RF, mixed-signal, and custom-digital circuit design is extraordinarily demanding. Designers must worry about a myriad issues, from tight specifications to intensive physical effects. Successful design demands a fast, full-featured verification platform that never sacrifices accuracy. The Analog FastSPICE™ (AFS™) Platform uniquely delivers.

With foundry-certified accuracy by the world's leading foundries, the AFS Platform delivers nanometer SPICE

accuracy > 5x faster than traditional SPICE and > 2x faster than parallel SPICE simulators. For large post-layout circuits, the new AFS eXTreme technology delivers over 100M-element capacity and >3x faster than post-layout simulators. The AFS Platform also offers the fastest mixed-signal simulation with Symphony. For silicon-accurate characterization, the AFS Platform includes the industry's only comprehensive full-spectrum device noise analysis and integrates with Solido Variation Designer delivering full



# Analog FastSPICE platform

variation-aware design coverage in orders-of-magnitude fewer simulations, but with the accuracy of brute force techniques.

Design teams at over 175 semiconductor companies worldwide rely on AFS to design their nm-scale ADCs, DACs, PLLs, high-speed I/O, high-speed clocking, CMOS image sensors, memories, and RFICs. AFS customers include the world's leading suppliers of consumer electronics, mobile communications platforms, application processors, server ICs, network processors, image sensors, and automotive ICs. As a single executable, AFS operates either standalone from the command line or integrated with industry leading analog design environments. It uses standard compute platforms from a single core up to 32 cores. AFS supports standard SPICE netlist formats, standard foundry models, and produces outputs in industry-standard formats. Design teams can choose the most appropriate license configuration for their needs. AFS Platform features include: AFS Circuit Simulator, AFS eXTreme technology, AFS Transient Noise Analysis, AFS RF Analyses, Symphony, and Solido Variation Designer.

## AFS Platform Functionality

### AFS Circuit Simulator

Nanometer SPICE accuracy  
> 50M-element capacity  
> 150 dB transient dynamic range  
> 5x faster than traditional SPICE  
> 2x faster than parallel SPICE  
DC, transient, AC, and noise analyses  
Monte Carlo, alter, and sweep support

### AFS eXTreme Technology

Nanometer SPICE accuracy  
>100M-element capacity  
>3x faster than post-layout SPICE  
Transient, transient noise, RF, and mixed-signal analyses

### Solido Variation Designer

Full coverage PVT and Monte Carlo verification  
SPICE-accurate high-sigma verification  
1000x faster than brute force simulation  
Full-chip memory and cell-level verification  
Comprehensive verification of full cell libraries  
Powerful design sensitivity, debugging, and optimization AFS Transient Noise Analysis

### AFS Transient Noise Analysis

Full-spectrum accuracy to noise floor  
Device noise analysis for any circuit type  
> 50M-element capacity  
Validated to within 1–2 dB of silicon

### AFS RF Analyses

Shooting Newton (SN) and Harmonic Balance (HB) analyses  
Single-tone PSS, Full-Spectrum pnoise, oscnoise, and sampled pnoise  
> 100K element PSS convergence, no maxsideband  
Multi-Tone HB for LNA, PA, Mixer, and TX/RX chain for IPn and P1dB

### Symphony Mixed-Signal Platform

Digital HDLs: Verilog, SystemVerilog, VHDL  
SPICE and Verilog-A support  
Monte Carlo, alter and sweep support  
Hi-Z detection and Transient Noise analysis  
Checkpoint-Restore

## EZwave™ Waveform Processor

Fast and intuitive waveform viewing  
Customizable waveform calculator  
Broad application-specific measurement tools

## AFS Platform Specifications

### Input/Output

Leading SPICE netlist formats  
DSPF back-annotation  
VCD, .vec  
FSDB, tr0, PSF, Nutmeg

### Model Support

BSIM3, BSIM4, BSIMSOI, BSIM-CMG  
MOS11, PSP, HiSIM, HiSIM-HV  
MOS1, MOS3, JFET, Diode, Juncap  
S-parameter, W element, bsource  
Verilog-A, Verilog-AMS  
Gummel-Poon, HICUM  
Mextram, VBIC

## AFS Platform support

Leading EDA design environments  
Standalone command line  
Commercially available Cloud offerings

## Hardware Requirements

Single-core or multi-core systems  
Minimum memory recommendation:  
2 GB of disk space for simulation  
2 GB of physical memory (RAM)  
2 GB of swap space (virtual memory)  
Operating System: Linux®

**Siemens Digital Industries  
Software** [siemens.com/eda](https://www.siemens.com/eda)

Americas +1 314 264 8499  
Europe +44 (0) 1276 413200  
Asia-Pacific +852 2230 3333

© 2020 Siemens. A list of relevant Siemens trademarks can be found [here](#). Other trademarks belong to their respective owners.