

Analog FastSPICE platform

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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 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 HPHHFROR

- 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 noise, oscnoise, and sampled noise
- > 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
- FSD, 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®

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