

CELL CHARACTERIZATION AND MODELING

AccuCell

AccuCell is an accurate, automated, fast and flexible software tool for characterizing and validating standard cell, I/O and custom cell libraries.

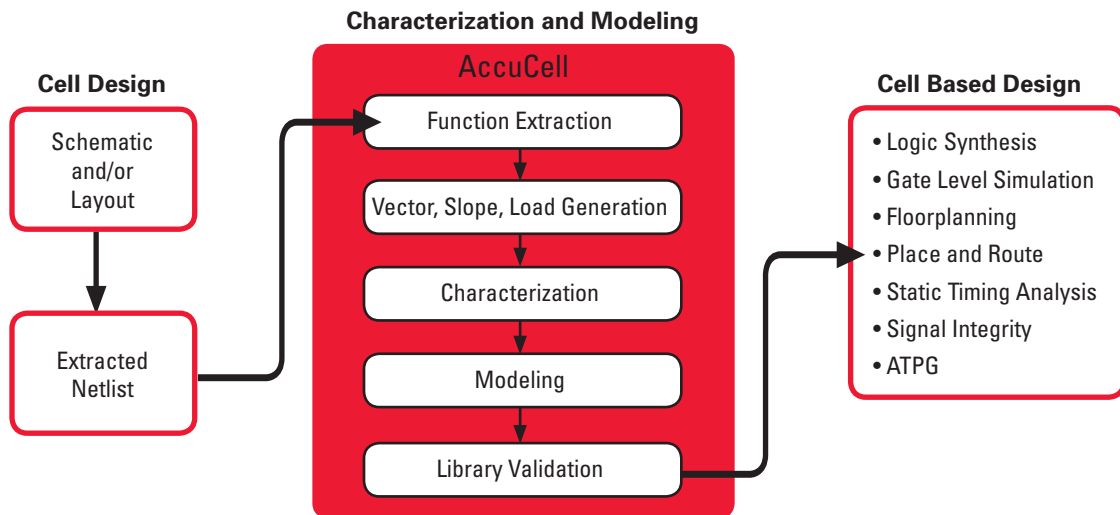


- **Generates accurate single-pass, state-dependent timing, power, leakage and noise Liberty™ .lib libraries for advanced VDSM technologies**
- **Supports the latest designs in both static and dynamic cells**
- **Automatic slope and load Table Selection (ATS) for easy setup of config file**
- **State-of-the-art automatic function recognition and vector generation for easy setup of config files**
- **Characterization can be run in parallel on either multi-core machines or over a network by using Sun Grid Engine (SGE)**
- **Includes fast API-based SmartSpice characterization engine**

Automation and Ease of Use

- Powerful scripting environment permits specification of all cell and simulator characterization and library creation options
- Powerful multi-corner characterization mode for single-pass characterization of all conditions
- Netlist screening option for valid input circuits traps and avoids timely errors
- Support the latest in both static and dynamic styles (multi-voltage, multi-clock, clock enable, gated clock, multi-data, scan enable, one-hot mux, multi-output) cells
- Automated setup from an existing .lib template for easy library re-characterization
- Automatic state-based input pin capacitance measurement with multiple reporting options
- Automated maximum capacitance and slope determination with or without variable slew or delay degradation
- Automatic slope and load Table Selection (ATS) option for easy setup of characterization conditions with optional over-sampling or fixed table size optimization

AccuCell Cell Characterization and Modeling



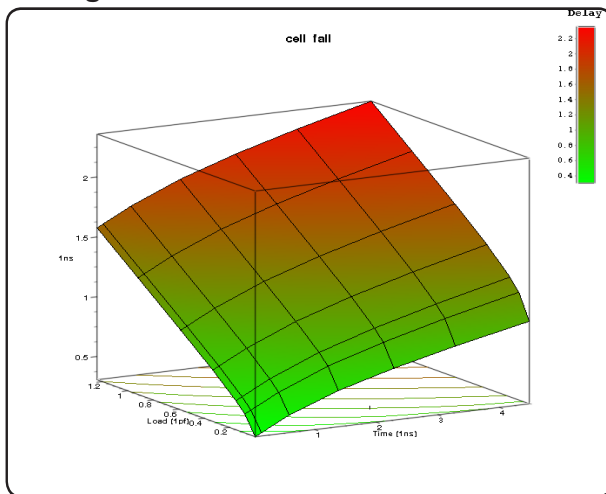
Advanced Capabilities

- Advanced SOI and un-buffered input options
- Supports advanced multi-point slope or active-driver input stimulus for accurate VDSM characterization
- "ASIC" flow for simplified unified cell library characterization conditions
- Support for active loads for accurate low voltage measurement and user defined passive and active non-linear loading effects
- Advanced fast evaluation of setup & hold, recovery & removal and minimum pulse width characteristics with extension characterization options supports both static and dynamic storage circuits with level, edge and pulsed inputs with multiple clocks
- Tri-state driver characterization supports both conductance or current measurement
- State-of-the-art strength and state-based Ordered Binary Decision Diagram (OBDD) method automatically extracts cell functions and generates optimal vectors required for accurate SPICE characterization of the latest VDSM effects including simultaneous switching.
- .lib noise support for advanced VDSM technologies

Fast & Accurate

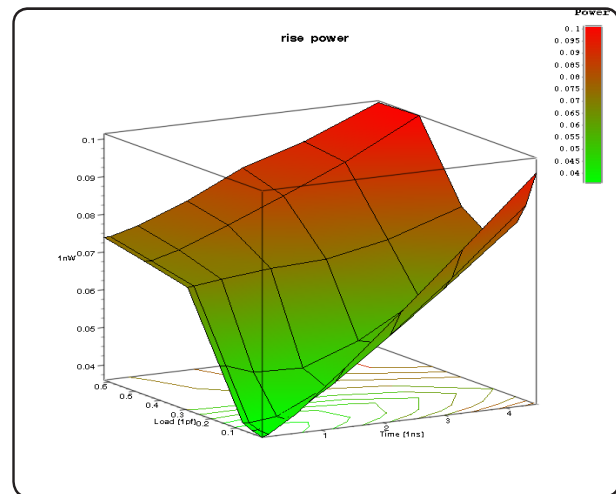
- Concurrent timing and power characterization results in near zero overhead for power library generation
- Support of multi-threaded and SUN Grid based environments provides near linear speed-up
- Includes fast API-based SmartSpice characterization engine with 100% HSPICE and SPECTRE compatibility for all public models
- Supports HSPICE, SPECTRE and ELDO as external simulators
- Automatic vector sizing option for optimal SPICE characterization run-times

Timing



Automatic Table Selection (ATS) identifies optimal slope and load tables for timing arcs.

Power



State-dependent power analysis considers all power effects.

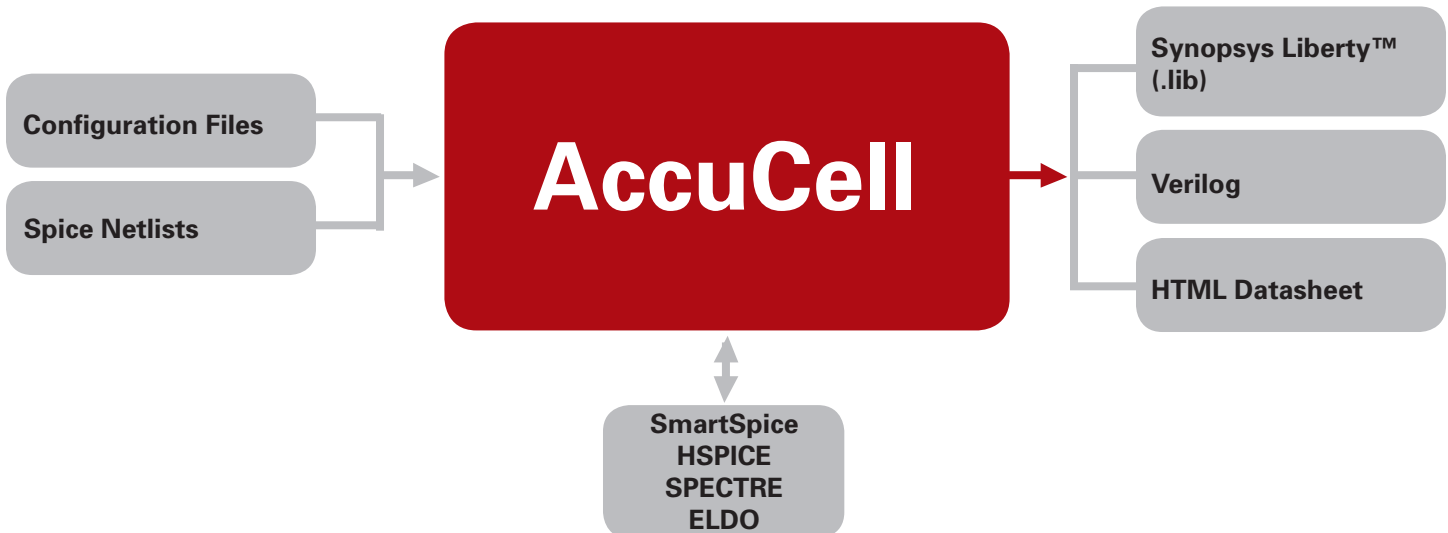
Flexibility & Industry Standard Output

- Flexible simulation bypass, debug and reporting options enable rapid validation of scripting solution and root cause analysis of characterization difficulties
- Generates accurate single-pass, state-dependent timing, power and leakage Liberty .lib libraries
- Automatically generates Mentor ATPG format test library
- Selectable and customizable verilog modeling options for support of various simulator and regression / back-annotation verification methods
- Automatic HTML cell library datasheet generation. Datasheet includes: optional AVG power and MAX frequency reporting, optional user schematic, symbol and truth table info, optional physical cell details and cell description sections
- Powerful table-based user defined vector scripting option enables customization of unique characterization requirements
- Flexible characterization and reporting options for optional state-based leakage, switching, hidden and average power analysis
- Support for user defined I-V, glitch, noise immunity and noise propagation options

QA & Validation Capabilities

- Automatically generates verilog testbench with vectors for function verification
- Special audit mode options for advanced access to all run-time info for QA validations
- Graphical .lib viewer for QA analysis and comparison of timing and power result details

AccuCell Inputs/Outputs



SILVACO

HEADQUARTERS

4701 Patrick Henry Drive, Bldg. 2
Santa Clara, CA 95054 USA
Phone: 408-654-4309
Fax: 408-496-6080

JAPAN jpsales@silvaco.com
EUROPE eusales@silvaco.com
KOREA krsales@silvaco.com
TAIWAN twsales@silvaco.com
SINGAPORE sgsales@silvaco.com

CALIFORNIA sales@silvaco.com
408-567-1000
MASSACHUSETTS masales@silvaco.com
978-323-7901
TEXAS txsales@silvaco.com
512-418-2929
ARIZONA azsales@silvaco.com
480-947-2900

WWW.SILVACO.COM

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