Mentor is the leader in variation-aware design and characterization software for memory, standard cell, and analog/RF custom IC design. Its production-proven Solido Variation Designer and Solido ML Characterization Suite are used by thousands of designers to produce the most competitive products in the high-performance computing, Internet of Things (IoT), automotive, and mobile industries. The solution helps meet aggressive low-power demands and to adapt to the challenges of smaller and more advanced technology nodes without compromising product quality, yield, and performance.

Solido Variation Designer provides brute force accuracy in orders-of-magnitude fewer simulations enabling customers to get full design coverage producing high-performance designs. The resulting shorter time-to-market and fewer factory respins give customers the edge in any market.

The machine learning technology driving Solido ML Characterization Suite boosts accuracy where needed while saving simulations in other areas, enabling the software to deliver production-accurate Liberty™ models while reducing characterization time and resources.
**Solido Variation Designer**

Solido Variation Designer is the world’s most advanced variation-aware design solution that utilizes machine learning to deliver unprecedented speed, accuracy, and variation coverage. To meet specifications and to stay competitive in designing the best-performing quality chip, designers need to perform extensive SPICE simulations to account for all the potential design variation. Variation Designer enables designers to get full design coverage in orders-of-magnitude fewer simulations, but with the accuracy of brute force techniques.

**Variation Designer for Memory Design** provides full chip memory and cell-level statistical verification:

- Verify full-chip memories with perfect statistical accuracy
- Improve design coverage while reducing the number of simulations
- High-sigma verification of columns, bitcells, sense amps, and other memory blocks
- Used by most top semiconductor companies and certified by leading foundries

**Variation Designer for Analog/RF Design** provides statistical and PVT verification and debugging:

- 2-50x faster verification across PVT corners
- Unprecedented coverage of process variation and operating conditions
- Fast, accurate 3-sigma corner extraction and verification
- Rapid interactive design and debug with Monte Carlo and SPICE accuracy
- Increase design coverage while reducing the number of simulations

**Variation Designer for Standard Cell Design** provides statistical verification and sizing of cell libraries:

- Powerful command line interface for batch mode operation
- Improve design coverage while reducing the number of simulations
- Monte Carlo- and SPICE-accurate, high-sigma verification of standard cell libraries
- Fast cell library optimization across high-sigma statistical and PVT variation
- Used by top semiconductor companies and certified by leading foundries

[www.mentor.com](http://www.mentor.com)
**Solido ML Characterization Suite**

The ML Characterization Suite provides fast, accurate library characterization tools powered by machine learning. This suite significantly reduces standard cell and memory characterization time and resources, while delivering production-accurate Liberty models and statistical data, as well as validating and transforming existing Liberty files. It achieves these using machine learning technology which adaptively models the full characterization space, boosting accuracy where needed to achieve production targets, while saving large amounts of simulation time in other areas.

---

**Analytics:**
- Validates existing Liberty files using machine learning to find and visualize trends & outliers
- Quickly identifies characterization quality issues
- Improves quality of libraries and of characterization infrastructure

**Generator:**
- Reduces characterization time by 30-70%
- Produces new .libs instantly for additional PVTs
- Works with all Liberty data types (NLDM, CCS, ECSM, AOCV, POCV, LVF)

**Transformer:**
- Performs fast, correct transformations on Liberty files
- Prevents re-characterization when Liberty file modifications are required
- Merges and margins libraries, then re-verify them with Analytics (where available)

**Statistical Characterizer:**
- Generates Monte Carlo-accurate LVF, AOCV, and POCV data within production run times
- Over 1000x faster than brute force Monte Carlo
- More accurate than error-prone sensitivity-based methods
- Further reduce statistical characterization time by 2X or more by using Generator

---

For the latest product information, call us or visit: www.mentor.com

©2018 Mentor Graphics Corporation, all rights reserved. This document contains information that is proprietary to Mentor Graphics Corporation and may be duplicated in whole or in part by the original recipient for internal business purposes only, provided that this entire notice appears in all copies. In accepting this document, the recipient agrees to make every reasonable effort to prevent unauthorized use of this information. All trademarks mentioned in this document are the trademarks of their respective owners.