

SaberEXP

A piecewise linear circuit simulator for power electronic systems

Overview

SaberEXP is a piecewise linear (PWL) circuit simulator for power electronic and mechatronic systems that enables early design exploration and first-pass success. With simplified models and minimal simulator calibration parameters, SaberEXP is simpler and more robust to use than SPICE-like tools. It is built from numerical methods for PWL systems without integration error, producing faster results for stiff power electronic circuits in both time and frequency domains.

Early Design Exploration for Power Electronics

- **High-speed mixed mode solver:** Combines an event queue for event-driven and digital signals with a fast analog PWL solver, caches and reuses recurring circuit topology calculations, analytical solving of temporal signals is based on the circuit time constants
- **Generic high-abstraction models:** PWL analog models with discrete regions of linear operation in electrical, mechanical, thermal, magnetic, continuous control and digital domains

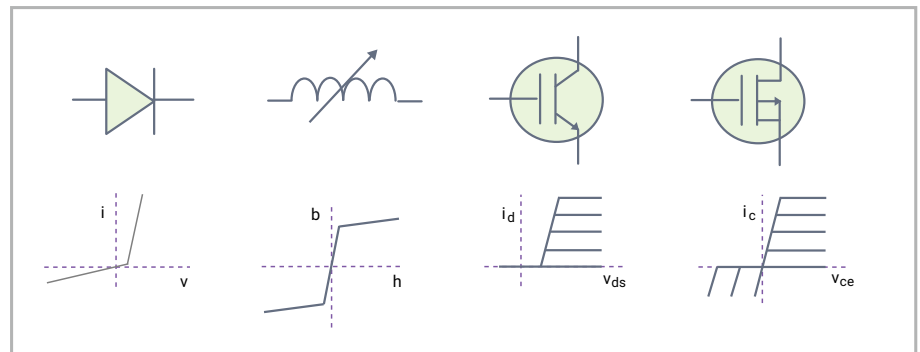


Figure 1: Piecewise linear diode, saturating inductor, IGBT and MOSFET models

- **Integrated simulation environment:** Allows simulation of complex multi-physics behaviors in time and frequency domains, provides parametric and statistical design capabilities for optimizing and verifying system robustness, analyzing results with a suite of measurement and waveform calculation tools

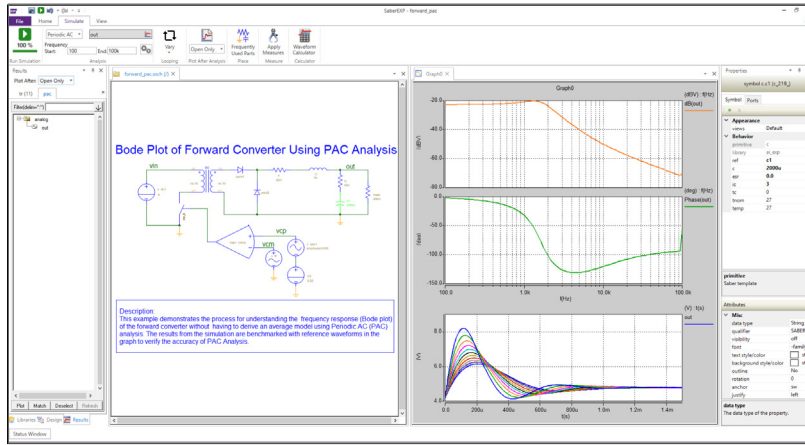


Figure 2: SaberEXP user interface

Graduating Designs from SaberEXP to SaberRD

SaberEXP's high abstraction models and PWL solver provide accuracy and convergence for small to medium complex designs. Once users complete the concept and design exploration using SaberEXP, designs can be exported into the Saber™ integrated environment for physical modeling and simulation—SaberRD. Exporting SaberEXP designs into the SaberRD environment allows users to further evolve their designs by adding more device specific details. Design export from SaberEXP into SaberRD, is performed through automatic model mapping, producing a SaberRD equivalent design which can be readily used and further evolved.

The SaberEXP to SaberRD integration provides a comprehensive solution for graduating designs from concept to detailed design implementation, validation, reliability analysis and functional safety verification.

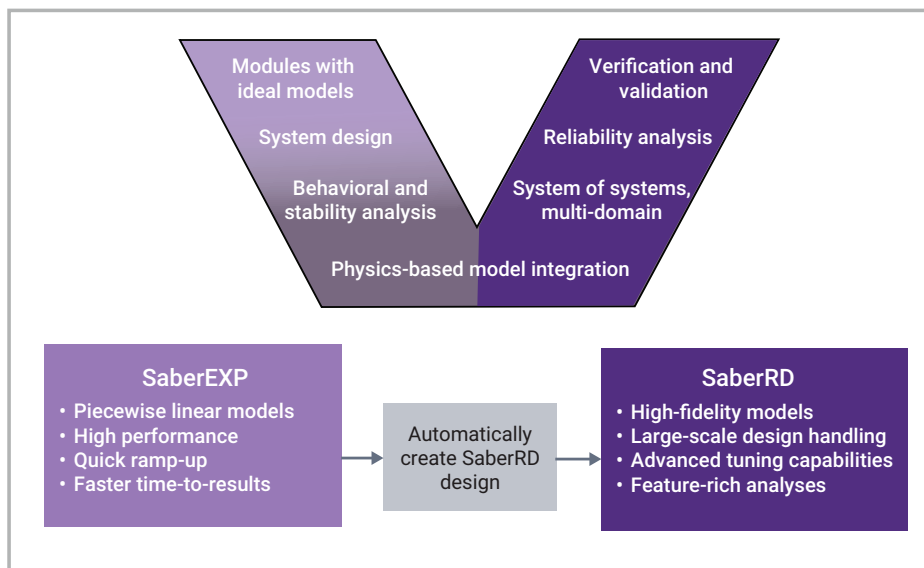


Figure 3: Typical product development V-diagram

Supported Operating Systems

- Windows 10

For more information about SaberEXP and the rest of the Saber product family, visit us on the web at [synopsys.com/saber](https://www.synopsys.com/saber) or contact your local sales representative.