



SPEED2000

Simulation Package for Electrical Evaluation & Design

Use SPEED2000 to:

- Perform pre-layout and post-layout electrical analyses
- Analyze power and ground distribution systems
- Simulate simultaneous switching noise (SSO, ground bounce)
- Perform transient analysis to obtain voltage and current responses in all circuits and geometries
- Evaluate different decoupling schemes
- Identify package and board resonance and radiation harmonics
- Analyze interconnect discontinuities for signal transmission, reflection, delay, distortion and skew
- Analyze signal return path discontinuities
- Evaluate electromagnetic coupling between different geometries (planes, traces, and vias)
- Perform what-if comparisons to optimize electrical performance

SPEED2000 is a versatile electrical simulation software tool for the analysis and design of high-speed electronic systems for companies in the computer, semiconductor, graphics, networking, communications, and consumer electronics markets. It provides fast and accurate electrical analysis of leading-edge integrated circuit (IC) packages and printed circuit boards (PCBs). SPEED2000 combines circuit and transmission line simulations with a fast, special-purpose electromagnetic (EM) field solver that computes dynamic electromagnetic interactions within IC package and board structures.

○ Advanced Analysis Techniques

○ Fast and Accurate

SPEED2000 uses extremely efficient, patented simulation technologies.

With SPEED2000, the simulation of 3D EM fields in multiple power and ground planes is two to four orders of magnitude faster than conventional algorithms. SPEED2000's fast simulation speed makes the EM analysis of an entire chip package or PCB possible for the first time ever in the EDA industry.

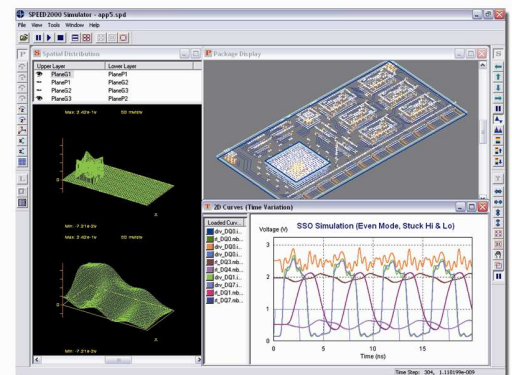


FIGURE 1. 3D system level simulation involving chip, package and board for power delivery analysis and signal integrity verification

○ Simulation and Visualization Power

Traditional signal integrity tools treat power and ground planes as ideal with fixed voltages. This approach is no longer adequate in today's high-speed applications. SPEED2000 takes into account various EM interactions inside packages and boards. These include power and ground voltage fluctuations (simultaneous switching noise), coupling between vias and traces, and interactions between circuits and packages. SPEED2000 displays transient voltages and currents as well as spatial variations of voltages between metal planes to instantly clarify where noise is generated, how noise propagates, and whether noise is within the required margin.

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○ Proven Technology

Full wave electromagnetic analysis used in SPEED2000 simulates dynamic wave propagation and electromagnetic interactions that other analysis tools using static or quasi-static methods fail to take into account. With the unique processes of our patented technologies in SPEED2000, accurate simulation results are achieved without resorting to excessive computation resources. Simulation results have been validated both analytically and experimentally - many of them by our customers. Some of these results have been published in open literature. Visit our website to see the success stories from our customers who have used Sigrity technology to "achieve what others can't".

○ Interfaces

- User-friendly and intuitive graphical interface built with Windows 2000/XP 32-bit and 64-bit
- SPD, BRD/MCM, DSN, NDD, ASC, and RIF file formats for interfacing with layout systems from Cadence, Mentor Graphics, Zuken, etc.
- Circuits in SPICE format, including HSPICE encrypted device models, and IBIS models

○ One-Step Solution

Along with accuracy and efficiency, SPEED2000 provides a much simpler analysis flow for complex power and signal system designs. Unlike traditional electromagnetic field solvers, once the user provides the layout data, SPEED2000 directly provides final voltage and current waveforms without requiring the user to go through the model building and extraction procedures. Therefore customers say SPEED2000:

- "Significantly reduced the effort involved in model building, integration and simulation."
- "Significantly reduced the turnaround time for each potential solution allowing for more options to be investigated within a given schedule."
- "Sigrity's method offering an integrated tool is the most cost-effective approach."
- "The integration of modeling and simulation is the trend for future power delivery design."

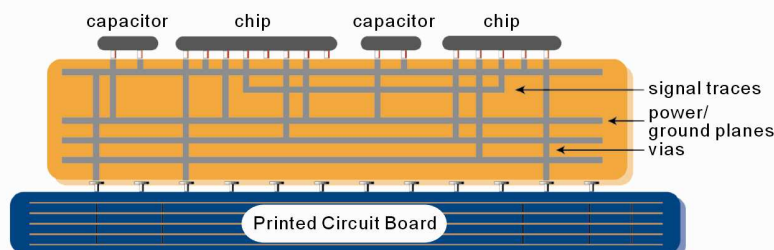


FIGURE 2. SPEED2000 does what conventional signal integrity tools and traditional field solvers cannot - simulating circuit and transmission line effects while modeling various interactions between interconnects and complex 3D fields inside multi-layer plane structures.