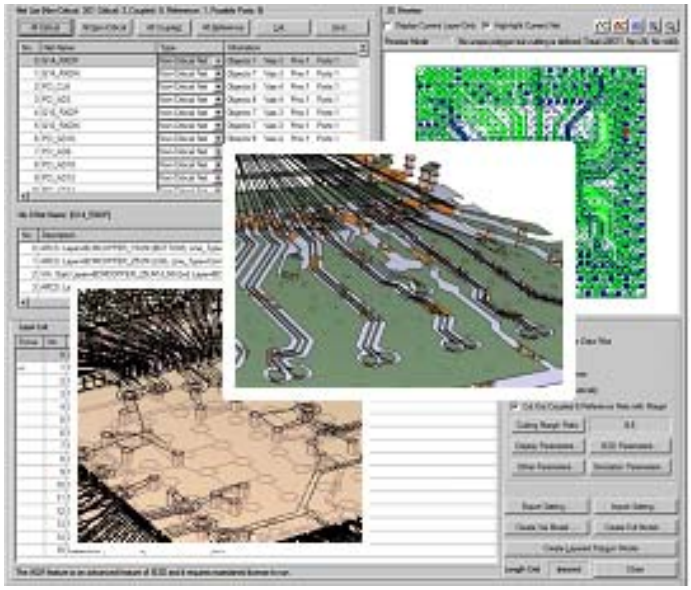
IE3D-SI

Full-Wave 3D EM Simulation

D A T A S H E E T



IE3D-SI's full wave simulation can accurately model complex structures on packages, PCBs and IC/MMIC circuits for optimized system performance

Major product benefits

- Reliable simulation results that match measurement reduce your EM design costs by avoiding expensive design iterations
- More simulations-per-hour provides design convergence and improves overall design quality by verifying more design issues in less time
- Simulating even your largest structures in the smallest memory available reduces your EM design risks with precise modeling of geometries, and without time-consuming error prone design partitioning

Overview: Full Package, PCB, and Circuit Solution

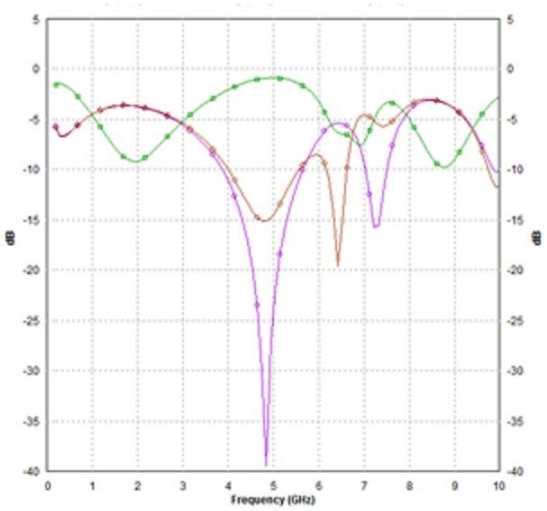
Today's high-frequency IC, MMIC, package, and PCB designs need accurate full-wave electromagnetic (EM) circuit models to confidently converge on a final physical implementation that will satisfy your target performance requirements. IE3D-SI is the industry's leading full-wave 3D EM design and verification solution proven to meet the capacity and run-time performance demands for complete package, PCB, or circuit-level simulation and modeling. The results are EM-accurate, enabling design and signal integrity (SI) engineers to design and verify even their largest designs with the highest level of confidence. Automatic 3D geometry model creation features full support for modeling entire interconnect paths on packages and boards, including bond wires, solder balls and bumps, vias, and routing traces. Proprietary non-uniform mesh generation and adaptive curve fitting ensure fast and accurate simulation results for these broadband applications.

High Capacity

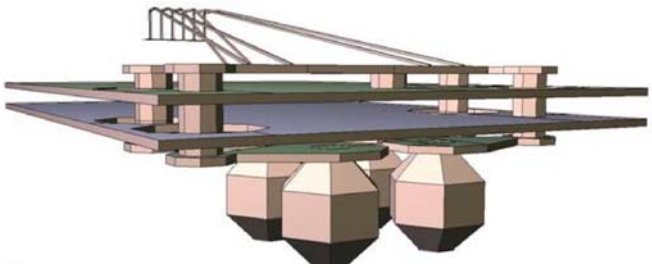
Using other commercial EM tools forces engineers to simplify and/or reduce the size of the structure to be modeled. In many cases, layer stack-ups and adjacent metal structures must be trimmed away before the tool can attempt to complete the simulation. As a result, the engineer gives up too much accuracy with these approaches, which are too limiting, very time-consuming, and totally inadequate for capturing all the important parasitic coupling and electrical characteristics of the complete structure. Unfortunately, the designer is left with a poor choice to widen design margins, which leads to under realizing system performance goals and requiring more area or I/Os than necessary. Today, IE3D-SI features distributed computing technology, which simulates the full structure with the optimal solution in a reasonable length of time.

Auto 3D Geometry Modeling & Meshing

One of the biggest challenges accompanying very large EM structure simulation is for the user to quickly and accurately build a full 3D geometry model. Secondly, generating an EM mesh for such a structure that fits into allowed computer memory without overwhelming the EM engine has long been an unbroken design barrier. IE3D-SI is the first industrial solution that has successfully shattered this design barrier with integration into a variety of popular layout design tools. Full 3D geometry models of bond wires, solder balls, bumps, vias traces, and dielectric layers are automatically extracted directly from the layout data and meshed to ensure proper handling by the IE3D-SI EM engine. Now, design and signal integrity engineers have easy access to an accurate EM solution to improve and verify a design's final performance as part of their overall EM design practice.



IE3D-SI generates S-parameter models for time and frequency domain simulations.



Process Engineering from Assembly Documentation

EM Modeling & Time Domain Simulation

IE3D-SI delivers multiport S-parameter models (Touchstone Format) and broadband RCLK Spice sub-circuit models ready to be plugged into time- or frequency- domain circuit simulators. These models can be directly read into HyperLynx, the industry leading SI and PI analysis tool, or other time domain simulators for thorough and effective time domain simulations required in DDRx or SerDes designs.

Layout Tools Supported

- Mentor Graphics Expedition and PADS
- Cadence Allegro Package Designer and CDNSiP
- GDSII
- AutoCad DXF
- Gerber

System Requirements

- Windows 32-bit systems
- Windows 64-bit systems
- Linux 32-bit systems (IE3D engine only)
- Linux 64-bit systems (IE3D engine only)

To learn more, call Mentor Graphics or visit our web site at www.mentor.com/electromagnetic-simulation

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