

ANSYS SIwave

ANSYS simulation technology enables you to predict with confidence that your products will thrive in the real world. Customers trust our software to help ensure the integrity of their products and drive business success through innovation.

Power integrity, signal integrity and EMI

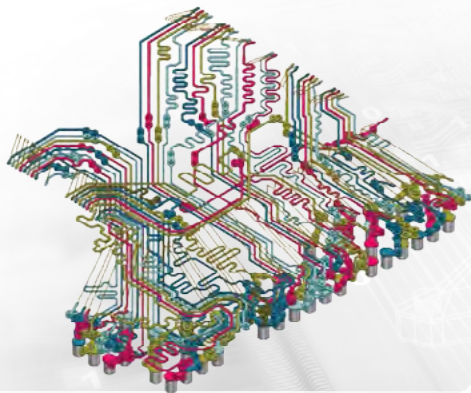
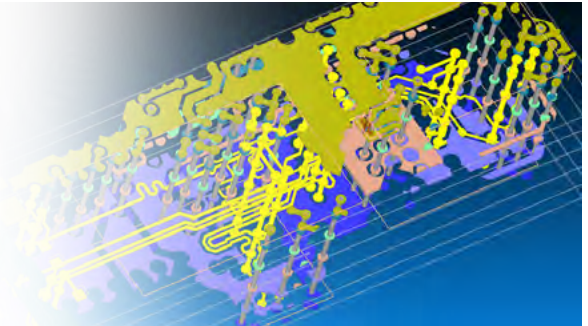
SIwave is a dedicated tool for electrical analysis of full PCB and complex electronic packages. SIwave solves interrelated PI, SI, and EMI challenges to deliver predictive analysis for your design. It provides solutions in both the Time & Frequency domains.

3D Power Integrity Electronic Package Design

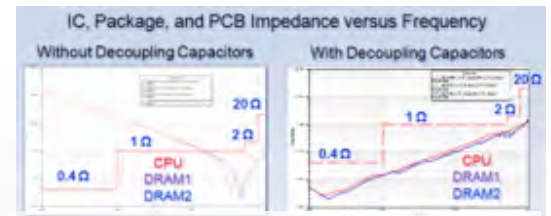
Access a streamlined 3D design flow that enables complete package system analysis using sign-off verification for package power integrity.

Integrated with layout tools

Seamless integration with EDA layout tools to create customized signal integrity, power integrity and EMI design flows.



SIwave – DC: Engineers from Sarcina Technology LLC used ANSYS SIwave to extract DDR3 electrical models for both a PCB and its daughter card to analyze the performance of application-specific ICs used in Big Data applications and the Internet of Things.



SIwave – PI: Fully automated de-coupling analysis used to improve noise margins on signal nets due to power fluctuations caused by large transient currents ($v = L \cdot di/dt$).



SIwave: LSI Corporation used ANSYS Chip Signal Model and ANSYS SIwave to show that voltage swings on the signal network of a DDR parallel interface circuit were coupling to the power supply of the PLL, resulting in phase error between the PLL reference clock and output clock.

Additionally fast PCB and PKG characteristic impedance scanning was performed to quickly determine problems due to routing and stackup.

Solver Technology

- Hybrid (MoM) 2.5D AC Electromagnetic solver
- Finite Element based DC resistance solver

Geometry Entry and Import

- SIwave GUI & Electronics Desktop 3D Layout GUI
- ECAD Translation (Altium, Cadence, Mentor, & Zuken)
- MCAD (.sat) Generation from ECAD

Electromagnetic Analysis

- DC Voltage, Current and Power Analysis for PKG/PCB
- DC Joule Heating with ANSYS Icepak
- Passive Excitation Plane Resonance Analysis
- Driven Excitation Plane Resonance Analysis
- Automated Decoupling Analysis
- Capacitor Loop Inductance Analysis; AC SYZ Analysis
- Near-Field EMI Analysis
- Far-Field EMI Analysis
- Characteristic Impedance (Z_0) PKG/PCB Scan
- TDR Analysis
- Steady State AC (LNA) Analysis

Circuit Analysis

- Transient IBIS Circuit Analysis
- SerDes IBIS-AMI Circuit Analysis
- Synopsys HSPICE Integration

Virtual Compliance

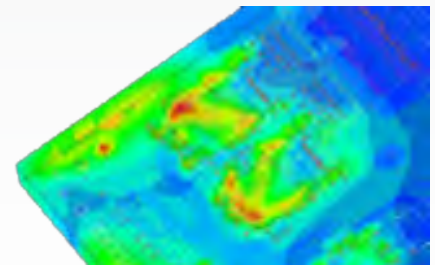
- DDRx, GDDRx, & LPDDRx

High Performance Computing

- HPC SYZ Frequency Sweep Distribution
- Multi-processing

ANSYS Multiphysics solutions

help cross-functional engineering organizations predict the performance of complex products influenced by multiple physics and improve their designs through simulations of the interactions between physics.



Current flow and thermal analysis simulations once performed separately can be combined in a multiphysics-based board-level electrothermal cosimulation via linkage between SIwave and ANSYS Icepak.

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