Notus

Multi-physics Analysis Platform for PI/SI/Thermal of Chip, Package and PCB

Highlights

1

Notus is a simulation platform for signal integrity, power integrity and thermal analysis of chip, package and board. Notus uses a variety of electromagnetic technologies to provide complete simulation process of different applications.

2

Notus DC provides the comprehensive DC power analysis to ensure the end-to-end voltage drop margin of each device and the stable supply of the power distribution network.

3

With Notus AC simulation, the frequency domain impedance of the power supply network is extracted, and is analyzed to improve the performance of the system.

4

Decoupling capacitor optimization analysis helps designers quickly obtain the best capacitor decoupling and layout scheme

5

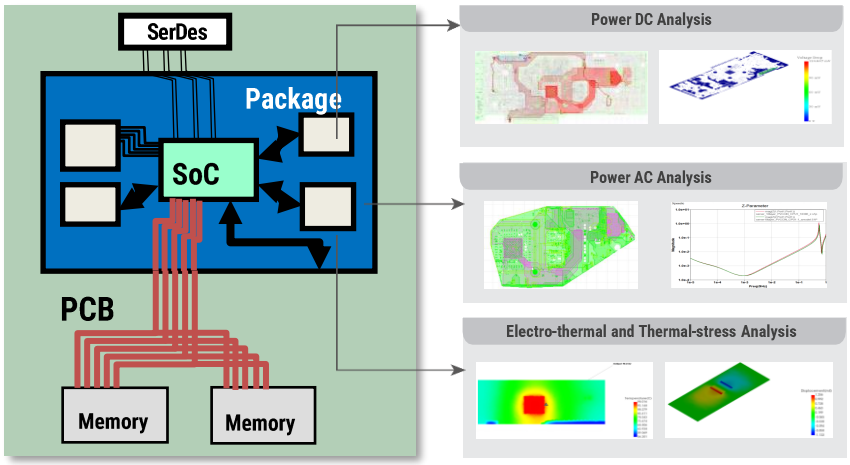
Electro-thermal co-simulation can simultaneously consider the effects of device and Joule heat to accurately evaluate the temperature changes of the system, and obtains the thermal stress analysis results. Thermal Hotspot prediction can rapidly predict thermal simulation outcomes for different power consumption scenarios of multiple chips on the board, 100× + speedup.

6

Notus provides a fast and accurate electromagnetic field modeling solution for signal buses. Circuit topology extraction and simulation provides a solution to quickly check the quality of signal waveforms.

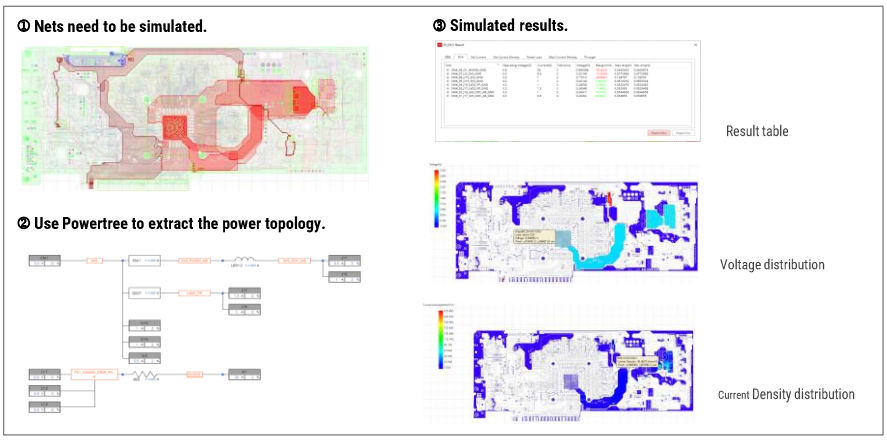
Overview

- Notus is a comprehensive platform to help resolve signal/power integrity and thermal related issues of the electronic product design. It integrates different workflows, including DC analysis, AC analysis(OPI supported), electro-thermal analysis ,thermal-stress analysis, signal topology extraction which can help users conduct the simulation easily.
- Notus is based on different multiple electromagnetic engines and AI-based meshing technology. It can meet the efficiency and accuracy requirements of the complex system-level power, signal integrity and thermal simulation.



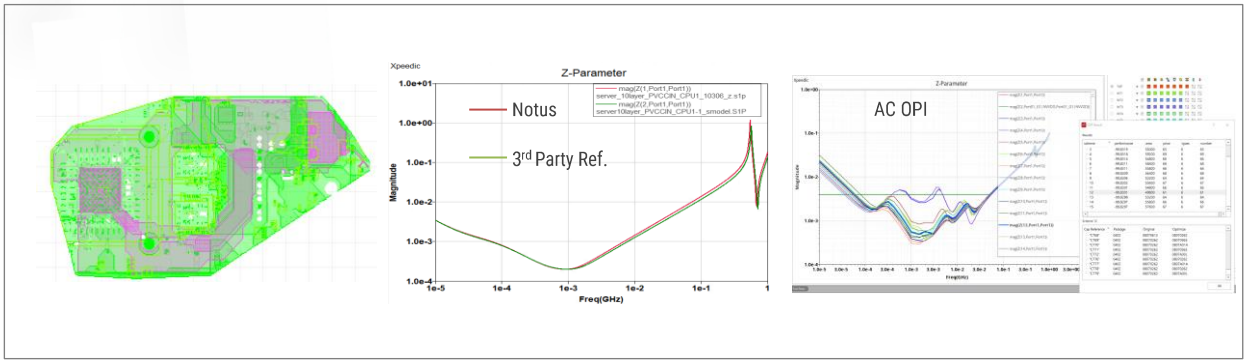
Power DC Analysis

- Notus DC provides comprehensive DC power analysis for low-voltage, high-current PCB and package products.
- Notus DC can analyze the end-to-end voltage drop, the current density and the current of Vias, Bump/Ball and Wirebond.
- Powertree helps to set up the VRM/Sink/Component Model easily based on extracted power topology.



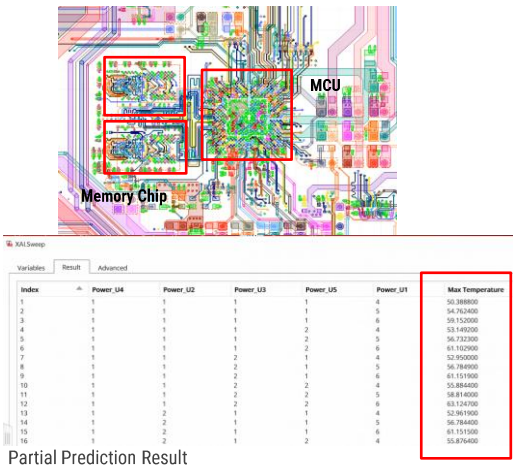
Power AC Analysis

- AC analysis for frequency domain impedance and decoupling capacitor optimization.
- OPI can optimize the values and locations of decoupling capacitors to ensure the optimal performance of PDN and reduce the cost of redundant decoupling capacitors.

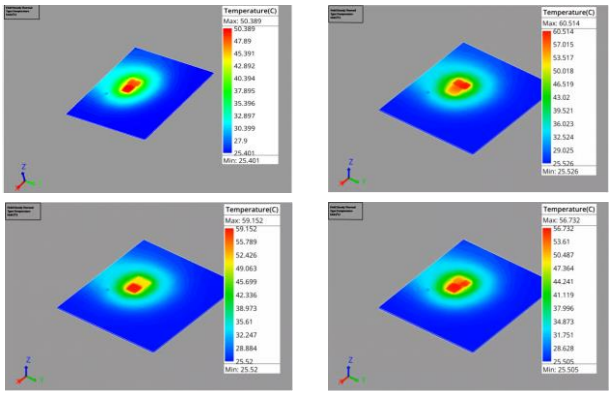


Electro-thermal and Thermal-stress Simulation

- Electro-thermal co-simulation can simultaneously consider the effects of device heat and Joule heat to accurately evaluate the temperature changes of the system. The introduction of CFD algorithms is beneficial for simulating real thermal environment , which helps improve the simulation accuracy.
- Temperature change may cause thermal-stress issues which may bring PKG/PCB deformation risks, Notus can help conduct thermal-stress evaluation.
- Thermal Hotspot prediction is realized using self-developed AI algorithms. It can rapidly predict thermal simulation outcomes for different power consumption scenarios of multiple chips on the board, 100× + speedup.



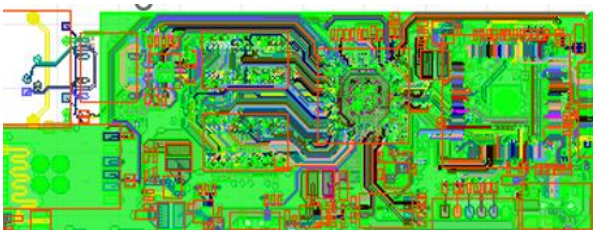
Partial Prediction Result

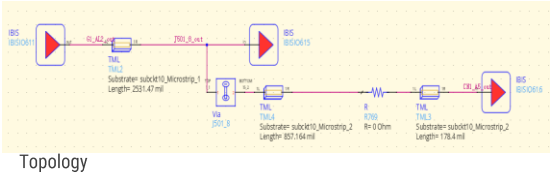


Partial Prediction Temperature Distribution

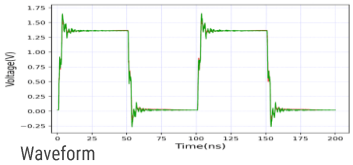
Signal Topology Extraction and Simulation

- This feature provides a solution to quickly check the quality of signal waveforms.
- Notus can automatically extract the interconnect models to create the circuit topology for time-domain simulation.





Topology



Waveform