

Sphinx 3D Path Finder "3DPF"

Path Finding is a process of evaluating alternatives to determine the optimum solution. "3DPF" is that tool for 3D structures using TSV, CGA and Wire Bond.

Sphinx 3D Path Finder (3DPF) was specifically created to analyze vertical interconnects such as wire bonds, vias, Thru Silicon Vias (TSV), Column Grid Arrays (CGA) etc. These structures have cylindrical cross section and therefore 3DPF is optimized for these kinds of geometries. The analysis of the planar structures is included as well. The goal of 3DPF is to enable a user to do "what if" analysis as the design is being created, as opposed to verification post layout. The easy to use GUI provides an environment for quickly creating a structure based on a via grid, analyzing it, looking at the port response and making the required design changes.

3DPF supports single and multi-layered structures. Currently multi-layered stack can be analyzed (TSV-ILD-TSV-ILD) by creating individual touchstone files and concatenating them together through spice or other circuit simulator. IdEM can be used to create spice netlists of touchstone files, if necessary, so that the simulation can be done in Spice. Today, some circuit simulators support touchstone files which can be directly used for simulation. Structures used in 3D integration as shown in Figure 1 can be analyzed using 3DPF. It is important to note that 3DPF will provide an efficient solution framework for a structure that contains several vertical interconnects (vias, TSVs, CGA...).

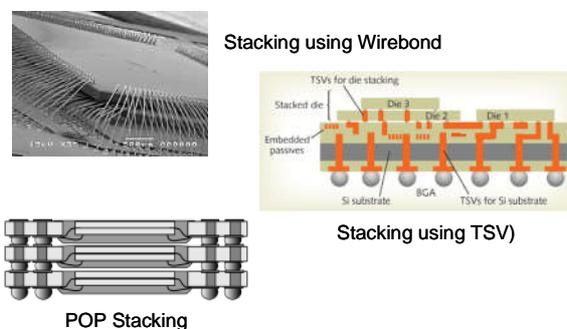


Figure 1: 3D stacking of ICs

V1.0 focuses on single tiered structures and is available for purchase.
V2.0 focuses on multi-tiered structures and will be available in Q1 2013.
Both versions will be available for sale at different price points.

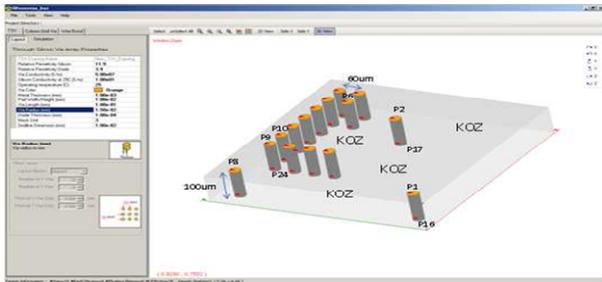
Benefits to users:

- Supports multiple 3D structures for IC stacking and interposer that include TSV, Column Grid arrays and Wire Bond
- Supports arrayed, staggered and custom configurations
- Allows users to try various configurations and determine proximity effects based on signal:ground ratio long before implementation begins
- Assess impact of package on 3D stack using the Sphinx product suite
- Outputs: Touchstone files, RLGC files and conversion into spice netlists. Touchstone and RLGC viewers included

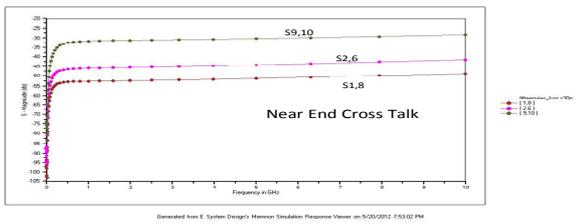
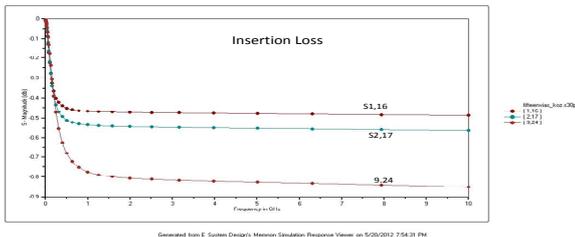
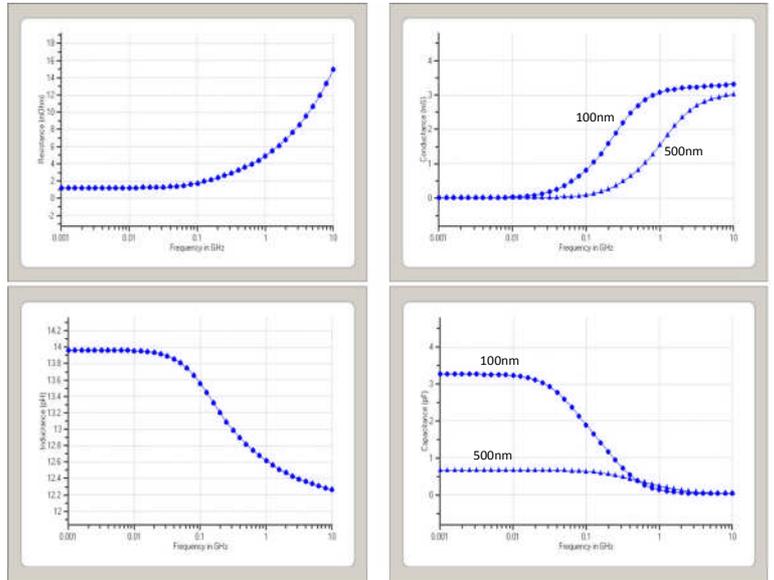
The following are a few examples created and analyzed by "3DPF". These and other examples are fully documented in our Sphinx 3D Path Finder Example document.



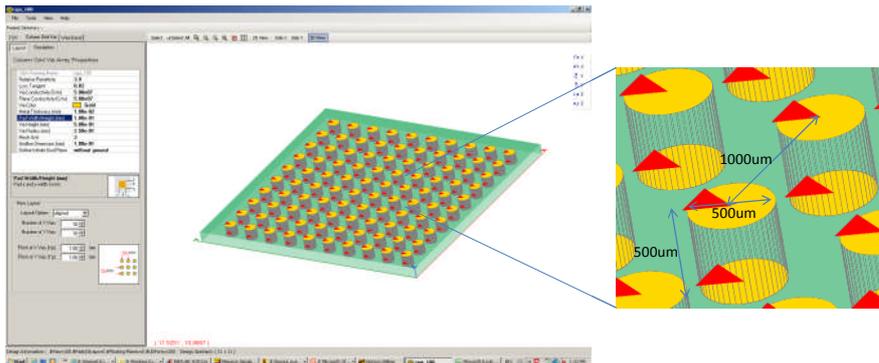
KOZ on custom TSV array and impact on IL, NEXT/FEXT



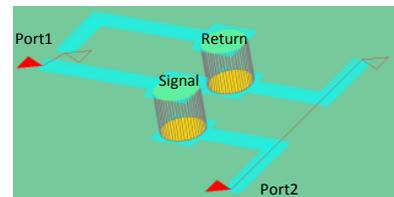
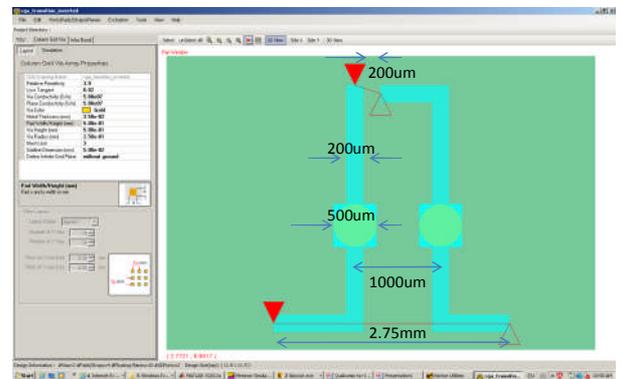
2 TSV and varying oxide thickness (RLGC graphs)



Generating PEEC Models on the fly



Transition through Column Grid Array



For more information: info@e-systemdesign.com
Patent pending

