HyperLynx Analog

HyperLynx Analog provides a complete simulation environment integrated into the PCB design flow. HyperLynx Analog allows the user to prepare all aspects of simulation for both basic and complex analysis while seamlessly driving the PCB layout design system.

Major product benefits:

- Achieve first pass design success to eliminate prototype iterations

- Eliminate design transcription errors and expedite time to market with one common schematic for simulation and PCB layout

- Ensure design quality and yield by using advanced analyses

- An intuitive interface accelerates the learning curve

- Perform full board functional simulation using industry standard languages: SPICE, VHDL, Verilog, Verilog-A, VHDL-AMS and Verilog-AMS

- Easy-to-use drag-and-drop waveform display coupled with comprehensive waveform analysis

Overview

HyperLynx®Analog is a Printed Circuit Board (PCB) functional simulation environment that extends Mentor Graphics'® DxDesigner™ into a design creation and functional verification cockpit. The combined DxDesigner and HyperLynx Analog solution promotes using the same schematic for both design entry and simulation significantly reducing design cycle time while eliminating design transcription errors. HyperLynx Analog provides a scalable solution allowing the engineer to satisfy capacity and performance needs through the selection of simulation engines

HyperLynx Analog allows the design team to verify the functionality of the design before proceeding to physical layout thus minimizing the costs and time associated with the traditional prototyping and debugging cycles. Leveraging functional simulation early in the design process enables the design team to explore alternate circuit topologies as well as control component costs and manufacturing yield that would be impossible to achieve with common prototype based processes.

HyperLynxAnalog can be used with any flow that includes DxDesigner, such as Expedition Enterprise, PADS, Cadence Allegro or Zuken flows.

Mentor Graphics®

Easy-to-Use Environment

HyperLynx Analog makes functional simulation available to more than just analog experts:

Guided Simulation – The flow-centric tool bar leads the engineer through the simulation process.

Project Browser - HyperLynx Analog adds a test bench browser that supports multiple test benches per design block. The user may create multiple design blocks in DxDesigner, and functionally verify them under various conditions with all available analyses. The design blocks can then be directly used to form the complete PCB layout design. The test bench browser supports fast navigation of the simulation models, control files and results.

Sources Definition – HyperLynx Analog allows the engineer to define simulation sources outside of the schematic maintaining the schematic content integrity for the PCB layout process. In addition, the design engineer may set up different source configurations for multiple test benches and simulation runs.

Centralized Simulation Control - HyperLynx Analog provides a single dialog to setup DC, AC, Transient analyses and then extend the basic simulations to Parametric Sweeps, Monte Carlo, Noise and Sensitivity Analysis without learning complex commands. The simulation control dialog also provides hierarchical navigation to quickly add design nodes for waveform display.

Rapid import of web based simulation models - HyperLynx Analog supports a rich feature set to allow design engineers to access the latest components available through the internet. After downloading and importing a new simulation model, the engineer can simply select it in the library browser and drag it into the schematic automatically creating a fully functional symbol ready for simulation. Alternately, the design engineer may map the new simulation model to a preexisting symbol from their library.

Model Editing - To support expert users, HyperLynx Analog provides syntax-sensitive text editors allowing the engineer to easily create or edit simulation models. To edit a model, the user simply selects a symbol in the schematic and pushes into the associated model, or selects the model in the library browser.
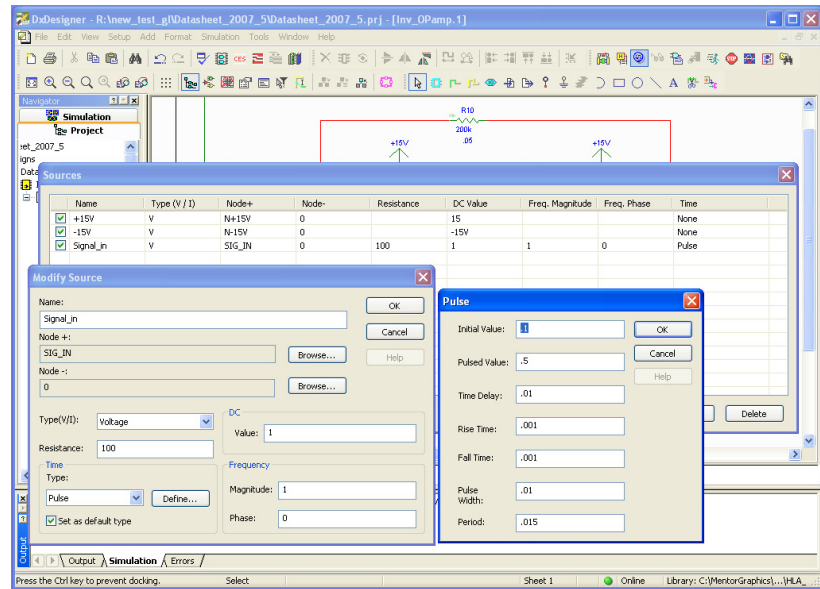
Define simulation sources easily using a spreadsheet format, and avoid cluttering the schematic with this simulation-only information.

Complete Modeling Solution

Quality models provided in an intelligently partitioned library unleash the power of the design team to leverage their experience and creativity to move designs quickly to market.

By maintaining SPICE standards, HyperLynx Analog easily imports component vendor's web-based models for quick inclusion into the design. HyperLynx Analog also supplies a native PSpice model conversion utility. These features significantly reduce a key simulation barrier, and make simulation feasible for the broad range of design teams.

Scalable Simulation Options

Today's PCB designs span a wide range of technologies. Simulating these diverse designs requires a range of simulation algorithms.

HyperLynx Analog provides a flexible solution, adapted to your needs, from an embedded SPICE simulator for quick analyses to the IC market-proven Eldo SPICE-based simulation engine for extreme capacity and blistering performance:

- The built-in simulator includes SPICE support with improved convergence and performance compared to other commercial SPICE simulators.

- The Eldo simulation engine option adds HSPICE compatibility and IBIS support and even better convergence and performance. A Verilog-A option is also available.
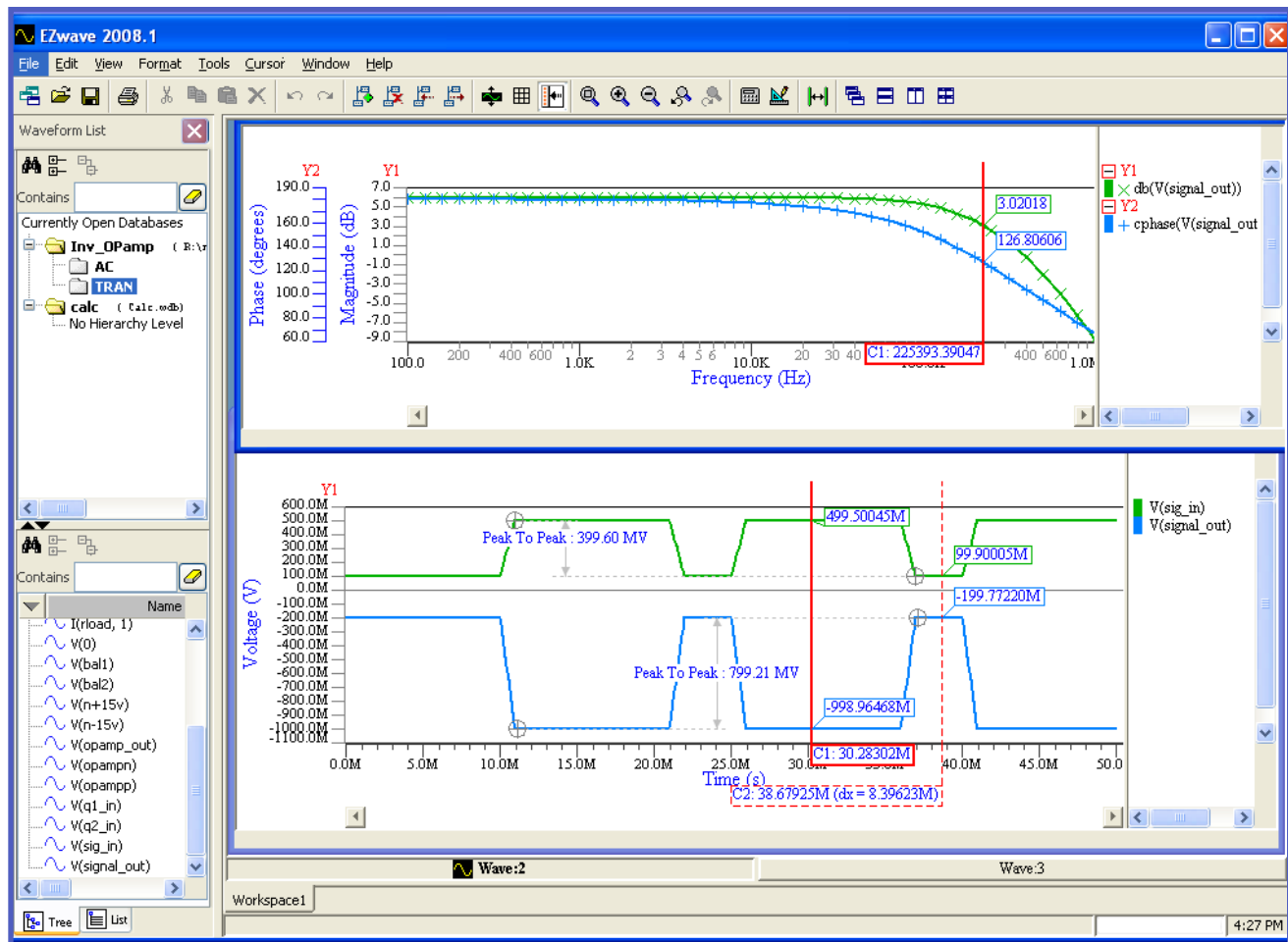
• Optionally, HyperLynx Analog extends into the truly mixed-signal domain board systems design. The Questa ADMS single kernel, co-simulation engine provides industry standard language based mixed-signal simulation using the SPICE, VHDL, Verilog, Verilog-A, VHDL-AMS and Verilog-AMS languages

These simulator options enable HyperLynx Analog to scale to your simulation needs, using standard languages that span SPICE through IBIS, VHDL, Verilog, Verilog-A, VHDL-AMS and Verilog-AMS.

HyperLynx Analog can collaborate with HyperLynx Signal Integrity to extract the PCB trace parasitic models from the physical layout and incorporate them into the functional simulation when using either the Eldo or Questa ADMS simulation kernel upgrades. The added accuracy obtained through inclusion of trace parasitics in the functional simulation provides the final element necessary to insure first pass design success and provide your business with a significant competitive advantage.

Improving Design Quality and Manufacturability

Of course, HyperLynx Analog provides the standard DC, Transient and Frequency analyses.

HyperLynxAnalog also includes the advanced analyses in the core package. A sophisticated Parametric Sweep analysis that allows sweeping component values as well as sources facilitates fast optimization of component values.

With greater emphasis on reducing scrap and manufacturing costs, designs must use components with proper tolerances so that they will function properly across manufaturing runs. Statistical Monte Carlo and Worst Case analyses enable the engineer to identify components that most affect circuit performance and predict likely design yields by considering tolerance variations across components. Using these techniques, the engineer can balance costs of components that have tight tolerances against the impact on circuit and manufacturing performance.
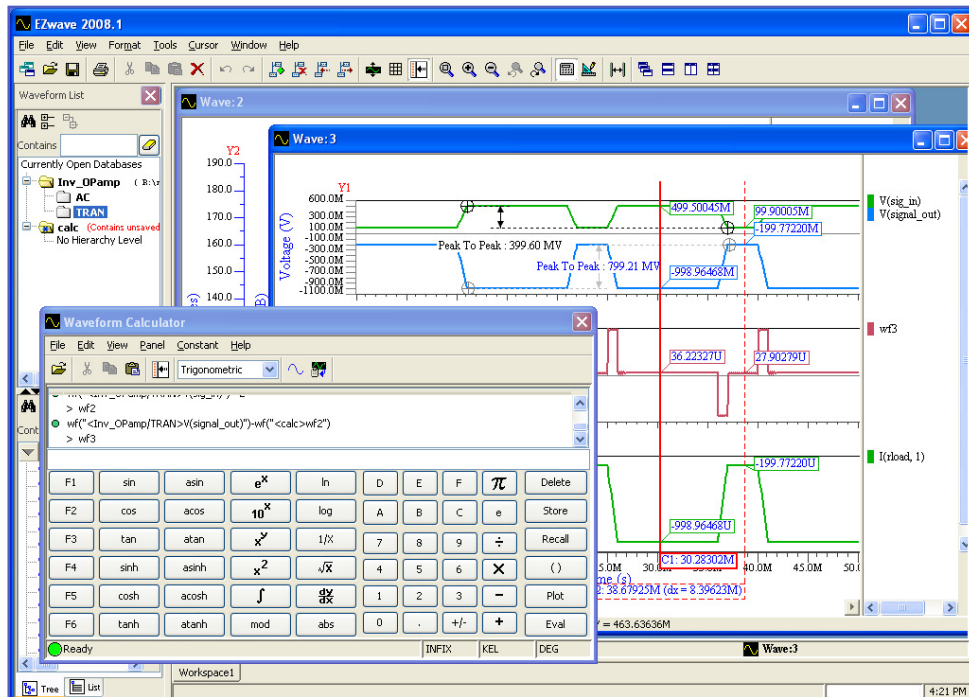
Use built-in measurement tools and the waveform calculator to perform sophisticated post-processing analysis of the results.

Advanced Results Analysis

The waveform viewer serves as an interactive measurement tool for design analysis and verification that works on a unified waveform database with digital and analog simulation data saved in a single compact and efficient representation.

The waveform analyzer allows side-by-side comparison of multiple simulation runs while also providing easy navigation of all of the nodes in the design using either a hierarchical or flat representation.

Measurements between transition points through the use of multiple cursors and interactive event search, creation of special diagrams and charts (eye diagram, smith chart, XY plot,…), and waveform post-processing using built-in (complex, logic, mathematical, trigonometric, etc) or user-defined functions are some of the rich features provided by the high-capacity EZwave for HyperLynx waveform display and analysis engine.

System Requirements

Windows XP or,
Windows Vista (32-bit and 64-bit)
Linux

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