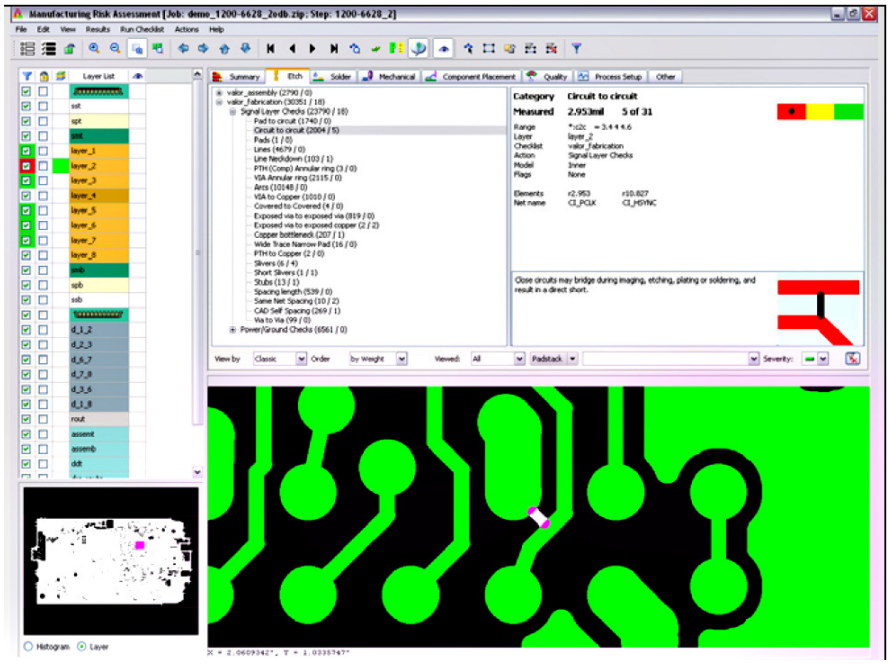
Valor NPI

Concurrent DFM Validation in PCB Layout Design

Manufacturing

D A T A S H E E T



Concurrent DFM validation identifies the manufacturing problems and indicates the severity.

BENEFITS

- Concurrent DFM optimization in design
- Leading DFM technology for minimum design-revision spins in NPI and ramp-to-volume
- Final generation and validation of the PCB product-model for manufacturing
- Supports PCB fabrication, assembly and test
- An integrated NPI flow from designer's desktop into process preparation

Overview

Getting complex, modern PCBs to volume production and to market on time is the responsibility of not only the manufacturer but also the printed circuit board (PCB) layout designer and NPI engineer. Decisions made in the PCB directly affect the success of your new product introduction (NPI) process. Any problem found by your supply chain will cause a delay at minimum, or worse, costly scrap. And if designs are reviewed differently by the PCB fabrication or assembly supplier than by the designer using EDA tools, DFM risk remains high. As a result, leading electronic design companies have found that "left-shifting" Valor NPI technology concurrently into their PCB design process saves expensive revision spins and improves the quality of the final product.

Concurrent DFM Validation

At each successive step of the NPI process, the cost of rectifying a problem increases tenfold. You certainly wouldn't want to find tombstoning caused by traces under a small passive device after you had prototype PCBs fabricated. Nor would you really want to wait to find the location of DFM problems after you have completely placed and routed a PCB and output manufacturing data. It is better to find and fix DFM issues during the design phase.

Concurrent DFM verification is the most efficient way to incorporate manufacturing optimization into your PCB design process. Identify the opportunity for fabrication and assembly improvement during placement, and avoid having to re-route the PCB. You can even automate the intervals for DFM verification and review results in a timely manner so the design

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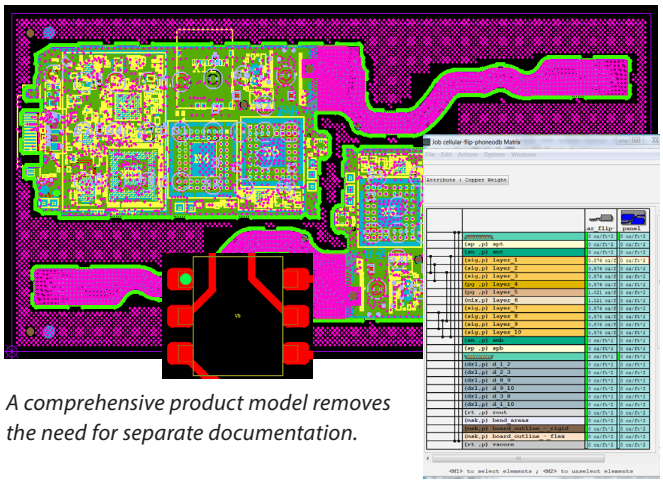
flow is streamlined and efficient. If an error is identified, a single click takes you to the location on your PCB design so that you can make the required changes.

Intelligent, Integrated NPI Product-Model

Your PCB, when fabricated, assembled and tested, cannot be better than the product-model data you hand-off to the manufacturing process engineers. Effective DFM and preparation of a comprehensive, intelligent model of exactly what you want manufactured go hand-in-hand.



A comprehensive product model removes the need for separate documentation.

All available data critical for manufacturing is extracted automatically from the CAD system and transferred to the Valor NPI database for completion. Additional content such as supply-chain level parts data from the unique Valor Parts Library, data defining surface finishes, the exact assembly-panel to be fabricated, and all data normally held in disconnected drawings and documentation is instead integrated into the single highly structured Valor NPI model of exactly what will be manufactured.

The enriched model of your PCB delivered from the Valor NPI database ensures that all your manufacturing suppliers, prototype or volume, build from the same product-definition. Your Valor NPI PCB product model contains everything your manufacturers need, but not more, while at the same time eliminating the need for a complex package of drawings, documents and "side-files."

Comprehensive DFM Analysis

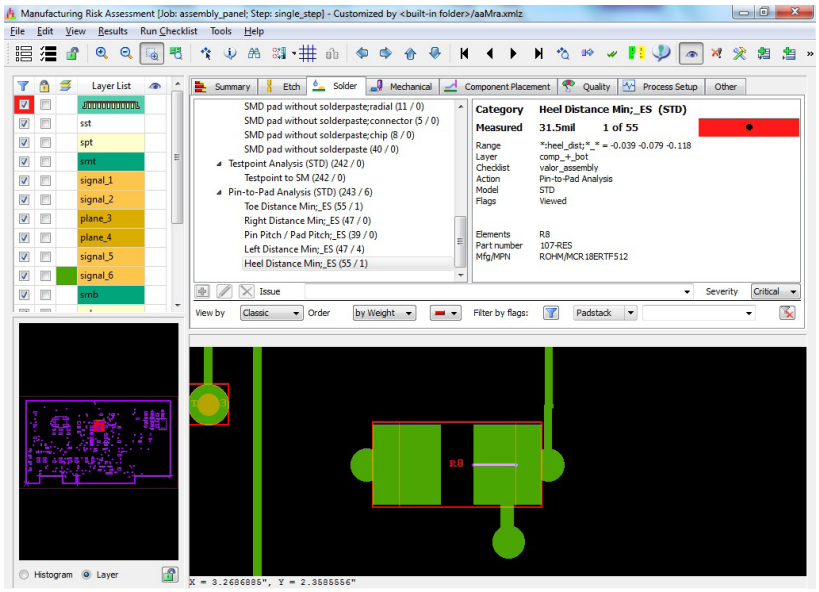
But is your product fully manufacturable? Your NPI flow is only as good as the DFM tools you use. Today's miniaturized, high-layer count designs cannot be reliably reviewed manually. Simple DFM tools do not check all manufacturing process factors. Valor NPI verification software, based on 64-bit processing technology, analyzes your rigid or rigid/flex PCB, or substrate design, quickly with more than:

- 265 fabrication checks
- 365 assembly checks
- 40 advanced substrate checks
- 80 micro-via checks
- 35 panel checks

In addition, DFM validation checks your design netlist against the manufacturing data to ensure there are no connectivity errors. The tool validates that your BOM matches the design, and that all components in your approved vendors list (AVL) are an acceptable physical match.

Understand the Manufacturing Risk

DFM validation not only identifies where your PCB design is in direct violation of your supplier's manufacturing capabilities, it also shows where low yield or field failures may occur by using color severity indicators of red, yellow, and green. DFM validation further categorizes and prioritizes the design-change requirements so that you may easily resolve the most critical first, either by direct cross-probing to CAD, or by customized and filtered reports. The weight assigned to each check is user definable, enabling you to decide how the results should be prioritized. After all, your



Manufacturing Risk Assessment of yield and product reliability.

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technology and suppliers' processes are probably different to the next company's.

Synchronized with Your Supply Chain

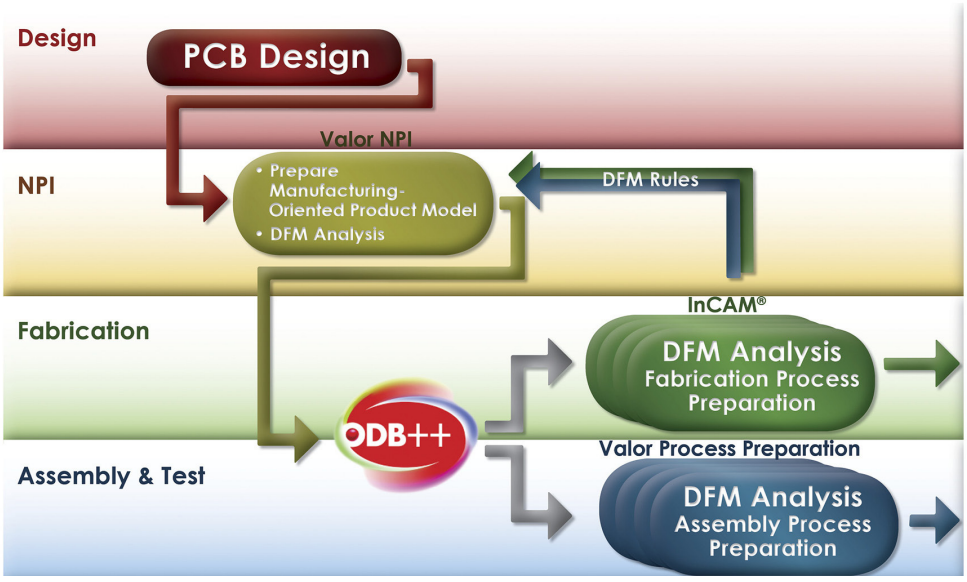
The Valor NPI DFM technology was developed by the same people that created the DFM verification tools used by more PCB fabricators and contract assembly companies than any other system. By collaborating with the DFM experts in your manufacturing supply chain you can truly left-shift the manufacturing process constraint-rules into your design and NPI operations.

By using the same rules and even the same settings to simulate how your suppliers will review your design, you will minimize call-backs and engineering-change requests from you manufacturers, taking cost and time out of the full NPI cycle.

Enhanced PCB Product-Model Hand-Off

Valor NPI consolidates all data and information defin-ing exactly what is to be fabricated, assembled and tested—your intentions for what you expect to come back from the manufacturers. The primary source for the data is the CAD database but, as part of the NPI flow, all other information from your manufacturing documentation team can be directly integrated and verified as structured data without having to produce documents and side-files in the first place. The result-ing ODB++ data package handed off to the process engineers for fabrication, assembly, and test contains everything their software tools need to know about your product, ready for accurate and fast onward process preparation. Before hand-off, you have unlimited ODB++ viewing capabilities on your Valor NPI network, for sharing and reviewing amongst your design and NPI team.

Best-Practice NPI Flow



OS Support

- RedHat 5 and 6 x86/x64
- Linux SUSE 11 x86
- Windows x86/x64

Visit http://go.mentor.com/valor-npi-vlab to test drive Valor NPI. See how easy it is to compile and verify your product-model data before handing-off to manufacturing.

For the latest product information, call us or visit: www.mentor.com/valor

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