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 new product introduction (NPI) engineer. Many steps need to be coordinated in the NPI process, from optimizing designs for manufacturing to communicating the PCB product model completely and clearly.

Decisions made during PCB layout directly affect the success of your 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, yield, cost, and reliability risks remain 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.

Integrated Xpedition DFM

Xpedition DFM validation brings you a competitive edge by running hundreds of categories of DFM analysis while you are still in layout. Get the benefits of DFM in the Xpedition environment without having to be a manufacturing process expert!

Additionally, you can run incremental DFM analysis at various stages of the PCB design process. By running them incrementally, you identify the potential manufacturing issues and areas for improving the design before advancing to the next stage. This avoids the pitfall of having to circle back to an earlier stage of the layout process to remedy an issue found at final DFM review.
Intelligent, Integrated NPI Product Model

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

All available data critical for manufacturing is extracted automatically from Xpedition, including material zones for rigid-flex circuits, and read into Valor NPI for streamlined DFM analysis.

DFM rules setup has never been easier.

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.

Manufacturing Process-Driven, Automated DFM Analysis

Each manufacturing process employed by your manufacturing partners has their own process capabilities requiring their own set of DFM rules. Valor NPI is the only DFM system that captures the technology inherent in the PCB design and the Valor Parts Library and associates it with appropriate manufacturing processes to automatically select which DFM rules and values to apply. The result is an intelligent and automated analysis that provides an extremely efficient and effective DFM process.

Comprehensive DFM Analysis

How manufacturable is your design? 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 analyzes all of your design technologies—FR4, rigid/flex, flex and even packaging substrates—with more than 900 DFM checks. Each of these checks helps you to optimize your design for manufacturing during the initial design process.

DFM validation further categorizes and prioritizes the design-change requirements so that you may easily resolve the most critical issues first, either in Xpedition Hazard Explorer or by cross-probing between Valor NPI and Xpedition. The weight assigned to each check is definable, enabling you to decide how the results should be prioritized.

Beyond the DFM analysis, Valor NPI checks your design netlist against the manufacturing data to ensure there are no connectivity errors. Valor NPI also validates that your manufacturing 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 beyond your supplier’s manufacturing capabilities, it also shows where low yield or field failures may occur by using severity indicators of red, yellow, and green. By having this visibility during the design stage, designers...
can optimize their designs for manufacturing during the initial design stage, accelerating their ramp-to-volume cycle.

Panel Design and Optimization
Eliminate the need for other software tools to be used for the creation and optimization of your assembly panels, regardless of PCB shape. Include fiducials, tooling holes, breakaway tabs and v-score features to create a complete assembly panel model. You can identify the lowest cost fabrication panel configuration as well, all in a matter of minutes. Communicate the panel design as data to your suppliers, eliminating cycles for them to recreate and send back to you for approval.

Enhanced PCB Product Model Handoff
Valor NPI consolidates all data and information defining exactly what is to be fabricated, assembled and tested—what you expect to come back from the manufacturers. The original source for the data is Xpedition, but as part of the NPI flow, all other information from your manufacturing documentation team can be directly integrated and verified as structured data, eliminating the need for legacy drawings and documents to be created and validated by your team.

The resulting ODB++ data package contains everything the fabrication, assembly, and test software tools need to know about your product for them to proceed efficiently and promptly with their process preparation. You also have unlimited ODB++ viewing capabilities on your Valor NPI network, for sharing and reviewing PCB designs amongst your team.

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 your new product introduction cycle.

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.