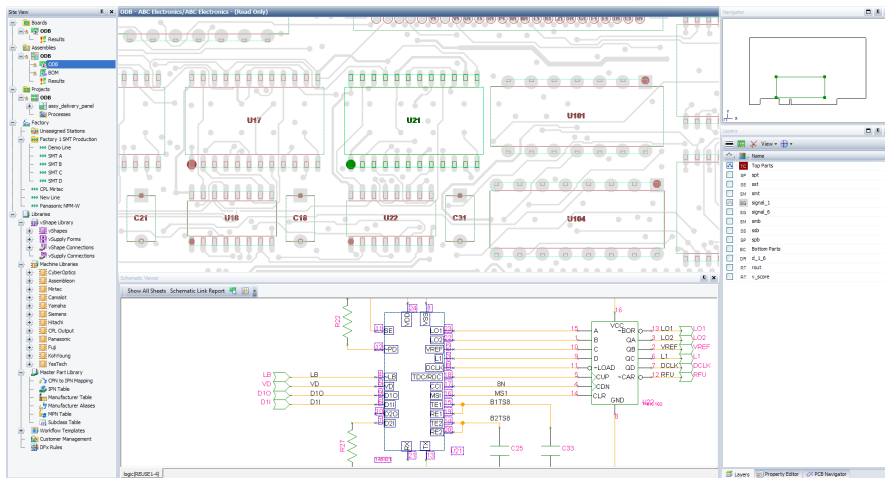


Valor Process Preparation Complete Engineering Solution for PCB Assembly and Test

PCB Manufacturing

D A T A S H E E T



The Valor Process Preparation solution is a complete engineering solution for PCB assembly and test, including upfront critical DFA analysis, BOM validation, workflows for stencil design, SMT programming and line balancing, test and inspection engineering, documentation and work instructions, and box-build or hand-assembly operations.

Overview

The Mentor Graphics Valor Process Preparation software provides a complete engineering solution for DFx, process development, and test engineering that will drive your PCB assembly operations to higher profitability. This is achieved with new breakthroughs in process automation and workflows that improve both efficiency and quality. The Process Preparation module's unique approach creates a single, central database of all manufacturing process definitions (MPD) and engineering data, leveraging ODB++ and simple bill of materials (BOM) files. The true client-server application reduces work in process (WIP), increases overall equipment effectiveness (OEE) and ensures you can achieve a streamlined flow in your production process, including SMT, THT, stencil design, hand work, box build, electrical test, and both optical and X-ray inspections. It is easily configured for user type and workflow, including data preparation, DFA analysis, documentation, SMT programming, test and inspection engineering, and stencil design—all in one seamless, cohesive solution.

The Perfect MPD

The Valor Process Preparation solution delivers a complete, comprehensive, and synchronized MPD to your production floor, which includes:

- Manufacturing process steps
- Balanced lines
- Common set-ups
- Optimized feeders
- Optimized SMT programs
- Virtual sticky tape

KEY FEATURES

- The only single solution that supports assembly, test, and inspection requirements along with the associated part and package libraries to increase engineering efficiencies.
- Ability to provide complete placement and part data for multi-vendor SMT machines through a repeatable process. Optimized SMT programs that contain machine-specific part data can be automatically created from a neutral source to improve repeatability in the assembly of new products.
- Virtual sticky tape and optimized product grouping algorithms increase line utilization for quicker product change-over.
- Use your own templates based on the type of process, so that any product using that process flow can have high quality, highly detailed work instructions created with far less manual effort.
- Use the intelligent schematic data cross-linking to the layout to understand the effect of unplaced test probes that is not possible with purely layout data alone.
- SMT shape auto-generation provides ability to create repeatable package data for multiple SMT vendors.

- Integrated stencil design
- Test and inspection programs
- Optimized ICT test fixtures
- Manual assembly planning
- Documentation and work instructions

The net result of the perfect MPD is a streamlined process flow with higher yields, greater throughput and improved ability to respond to the changing needs of your customers.

Four-Step Approach

The Valor Process Preparation module's unique approach to process engineering comprises four steps, all accomplished with centralized data:

- 1. Define the Product:** Create a virtual PCA, neutralized and validated, in a BOM-centric standardized format. The lean data model allows quick change management.
- 2. Define the Resources:** Create virtual assembly line and simulation models for automatically generating exact machine data on demand.
- 3. Define the Process:** Generate optimized output and documents for assembly, test, and inspection machines, plus manual work cells perfectly matched to available resources and to the product model.
- 4. Define the Production Plan:** Use in conjunction with the Valor Production Planning tool to optimize distribution of work orders across multiple lines for efficient factory load balancing and better on time delivery for high-mix and ultra-high mix production environments.

Data Preparation

Quickly import your ODB++, intelligent CAD data, Gerber data, and BOM files. Built-in error checking, learning library, and profiles for each design center make short work to accurately create a complete data model of the PCB assembly, fully optimized for manufacturing. All part numbers and attributes are placed in a central Master Part Library (MPL) which supports all manufacturing processes, test,

and inspection. One common data model is used for all processes, created from a single data preparation source. The workflow is highly streamlined and repeatable, making it ideal for new product introductions. Accurate, validated data is the first step toward right-first-time production.

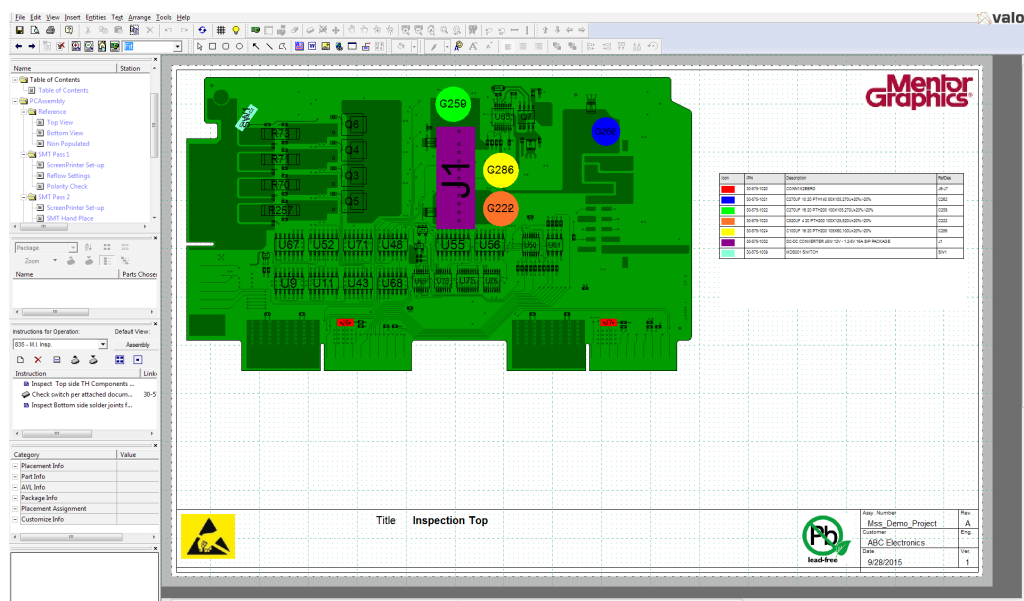
Manufacturing Analysis

Complete and accurate manufacturing assembly analysis is essential for right-first-time production. The manufacturing analysis process is highly repeatable and extensive, and it will ensure that the PCBA can be assembled according to your process limitations with high quality.

DFA analysis is highly automated and quickly provides accurate information that is suitable for quoting purposes. DFA will provide excellent objective feedback to the PCB design team to ensure a more manufacturable design. If the design is frozen, DFA gives the process engineer a clear warning of what issues to expect in production. The goal is always to eliminate manufacturing risk as far in advance as possible.

Assembly Documentation

The template-driven documentation editor makes creating work instructions fast and accurate. Because each SMT, THT, and hand-assembly process is synchronized to its corresponding work instruction, errors in the production process are eliminated. Each



Work instructions can be quickly and easily generated in a consistent manner through the template-based documentation solution.

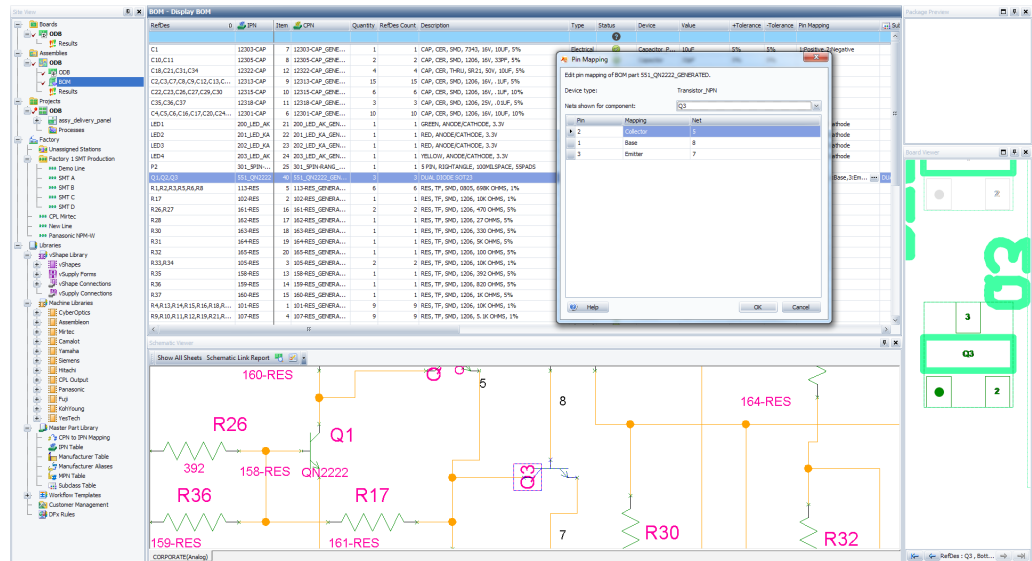
document is automatically updated after revision to the BOM. The document output can be a read-only PDF set, or interactive data based on the CAD attributes, when used with the Valor Document Viewer tool.

SMT Programming

With the Valor Process Preparation solution, there is just one centralized programming resource and one centralized part library for all SMT gear in your factory. This avoids the use of machine specific libraries or multiple programming tools, and therefore creates maximum flexibility when planning which product will run on which lines. Jobs are easily portable using the Intelligent programming system that creates machine-specific shape and supply form data as needed though the auto-generation option, whenever new part data is required. Individual SMT machines are configured for accurate simulation and optimized performance. Programming can occur for one product at a time or for strategically created product families to reduce the change-over times. Both high-volume production or high-mix environments are supported. Fixed feeder sets-up are fully supported.

Test and Inspection Engineering

Create machine-specific ICT, FPT, AOI, and AXI output files for supported platforms. The product data model, now including intelligent schematic data, and the MPL are optimized to support test and inspection programming and fixture design. Quickly optimize probe placement using probe reduction strategies. Leverage boundary scan analysis alongside ICT and flying probe capability. Set electrical attributes accurately with BOM to schematic cross-linking.



Automated DFT analysis avoids manual intervention and the generated reports show testability as opposed to accessibility through predicted DPMO and yield results. Quickly identify all components that are to be included in the AOI and AXI inspection programs.

Stencil Design

Technology rulesets, based on the type of SMT process being used, will create optimal stencil designs in a streamlined and repeatable manner. Creating stencil designs in-house reduces errors and shortens the review cycle between the manufacturer and the stencil supplier. The stencil design uses the same common data set as all other processes keeping the entire process preparation workflow streamlined and error free. Output is either ODB++ or 274X Gerber files.

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

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