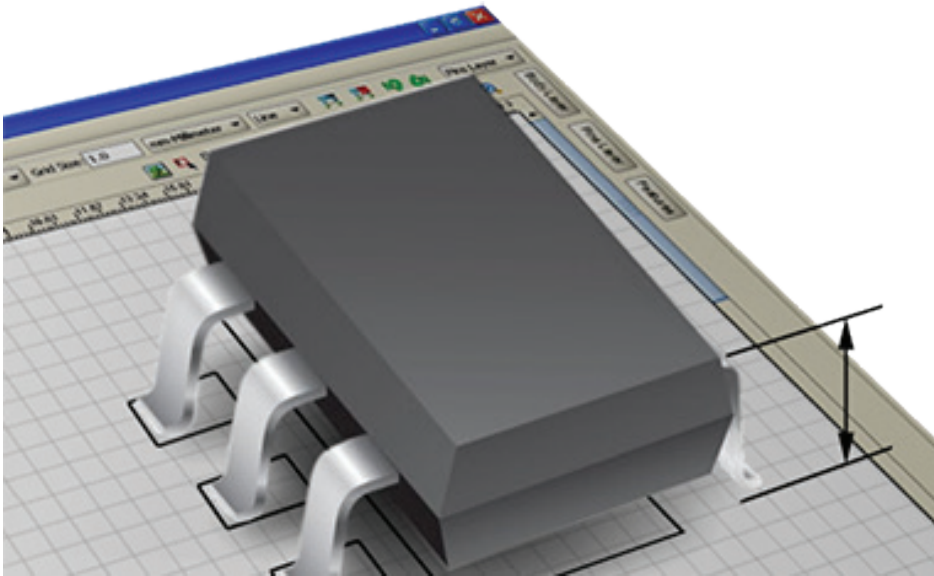


Valor Parts Library

Virtual parts for optimizing the PCB manufacturing process



Valor Parts Library enables comprehensive assembly level DFM and accelerates the manufacturing programming process.

Overview

The Valor Parts Library (VPL) provides physically accurate models of electronic components used as a digital twin for PCB Design for Manufacturing (DFM) as well as assembly, inspection and test applications.

The VPL contains more than 35 million manufacturer specific part numbers, including the dimensioned package model for each part. All information about the physical package is derived from the part manufacturer's datasheet. Package names are based on the recognized JEDEC JES-D 30B standard.

What is VPL?

The Valor Parts Library is a combination of software, access to part library content, part content creation services and automation tools created by the Valor division of Mentor to facilitate the New Product Introduction (NPI) process of printed circuit boards. Additionally, customers may choose to create their own VPL content with the part creation tools Valor provides. This is particularly useful when working with proprietary parts.

Benefits

- Accurate physical models of your electronic components
- "As-built" representation enables realistic documentation and accurate Design for Assembly (DFA) analysis
- Enables comprehensive Approved Vendor List (AVL) validation to assure all qualified parts are acceptable for manufacturing use
- Used to automatically generate SMT part libraries
- Removes cost and process bottleneck of researching component data
- Users can also create custom attributes for individual part numbers

How is VPL Used?

The Valor Parts Library is used primarily for two applications, PCB DFM and Process Preparation – the front-end engineering steps taken by PCB assembly operations.

PCB DFM

With Valor NPI users can perform comprehensive assembly DFM analysis of a PCB design using the Valor Parts Library. The VPL enables customers to identify potential solderability issues with their component footprints that otherwise could not be determined without having to build physical prototypes. The VPL, when used with Valor NPI detects footprints that have insufficient heel, toe and side spacing for proper solder filleting.

Another DFM application benefit of using the VPL is for validation of the Approved Vendor List (AVL) for qualified parts. Often times the PCB CAD library is created for the initial manufacturing part number requested by the engineer. However, as you wish to expand your sourcing options, alternative parts are searched. The challenge many companies face is that although the electrical properties of these like components can be identical, the physical packages can vary in dimension. The only way to systematically identify if any of the alternate parts will present a problem in manufacturing is to run the Alternate Parts Analysis in Valor NPI using VPL content.

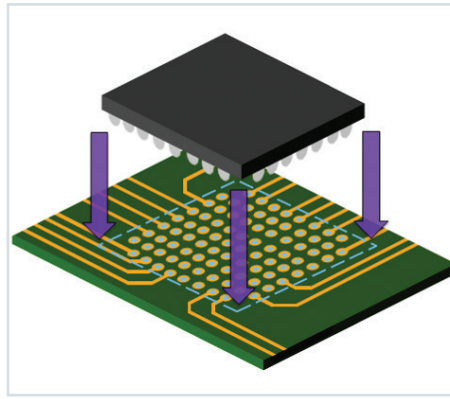


Figure 1 - Valor Parts Library shows how components will actually fit on footprints

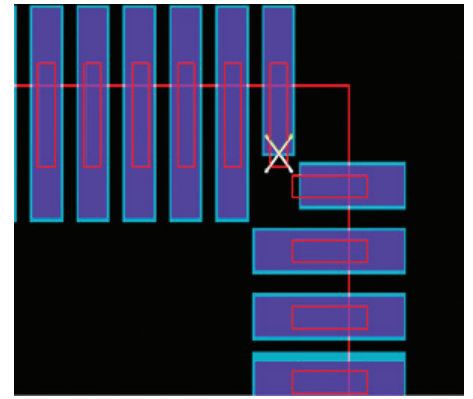


Figure 2 - Pin contact area derived from component manufacturer's datasheet illustrates potential manufacturing issues not able to be identified otherwise

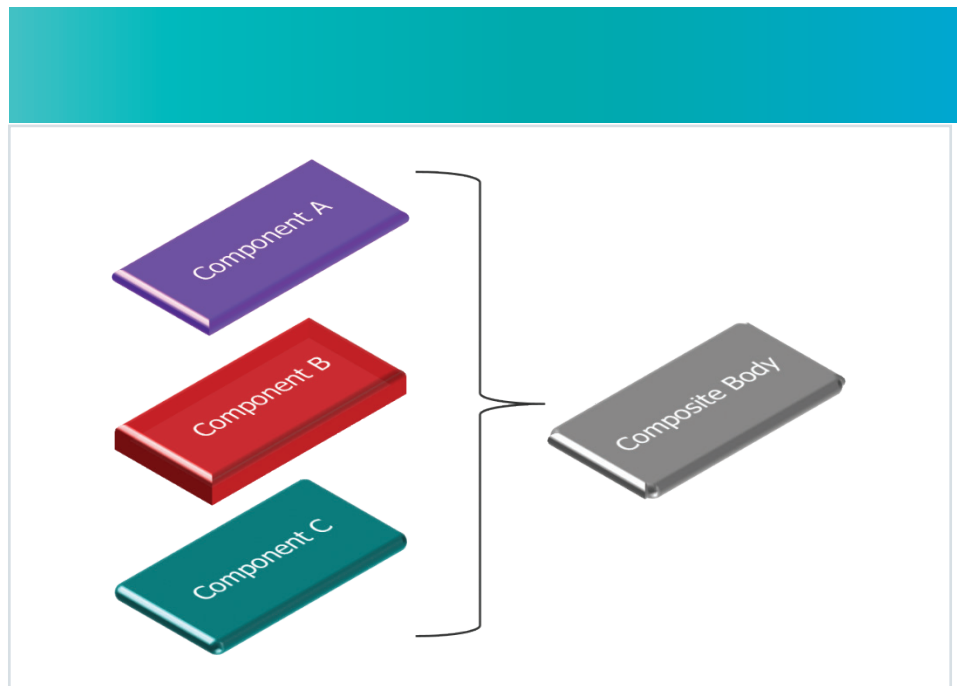


Figure 3 - Alternate parts can be different in body and pin contact. Only VPL can tell you if those differences are problematic.

Process Preparation

As manufacturers prepare their PCB designs for the manufacturing process, there are several steps that can benefit from the Valor Parts Library content.

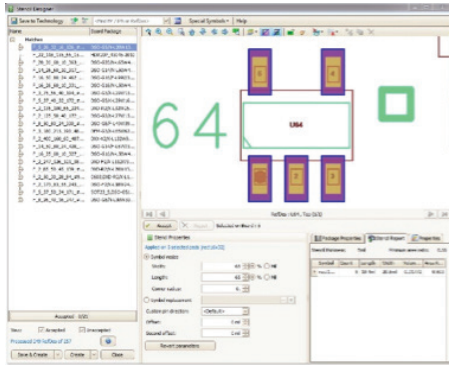


Figure 4 - VPL content facilitates more precise and efficient stencil generation

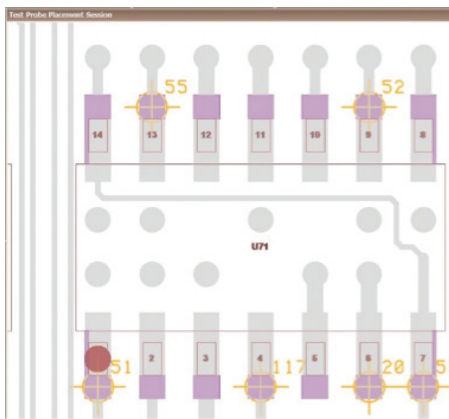


Figure 5 - Test probe placement can be optimized with the accurate pin contact information provided by VPL

Virtual Sticky Tape (VST) is a proven way to correct SMT component rotations and positions before running a first article. It simulates the process of the component being picked up by the machine from the feeder and placing it on the board. When VPL data is used as the source for the SMT part information, the review process using VST is much quicker than if machine libraries are used for the validation.

The Stencil Design module reduces time to market by allowing the PCB assembler to create the stencil data instead of performing a back and forth validation process with their stencil vendor. As VPL contains the actual pin contact area, the stencil design module can display this data so that the user has copper, solder mask, paste, stencil opening and pin contact data to determine the exact stencil aperture for optimum results.

Most PCB factories support more than one SMT vendor, each having their own part library format and requirements. This creates significant inefficiencies and room for error as the same part must be created for each of the various SMT platforms in use. There is significant value in using a single source for that part data. VPL can be used to create machine specific part data through Valor Process Preparation. Auto-generation algorithms transform the VPL data into machine specific part data that can be included with the placement data to allow the SMT vendor software to create the final program. This provides a repeatable process for part data creation that does not rely on individual methods of part data creation.

The time to bring an inspection program on-line is usually dictated by the number of new parts. When the source data is simple centroid information there is no alternative other than to slowly create enough information to make an inspection profile for the new part. Valor Process Preparation can use VPL to create the regions of interest for new parts that can significantly reduce the time needed to create inspection profiles for new parts. VPL can also be used to provide both footprint and package data to allow faster program generation time for AXI inspection.

Test programming also requires libraries to be created for new parts, which involves laboriously creating package outlines. When VPL is available those parts are automatically enveloped to create an optimum package outline. No part creation work is needed from the test engineer - the outline is immediately ready for use.

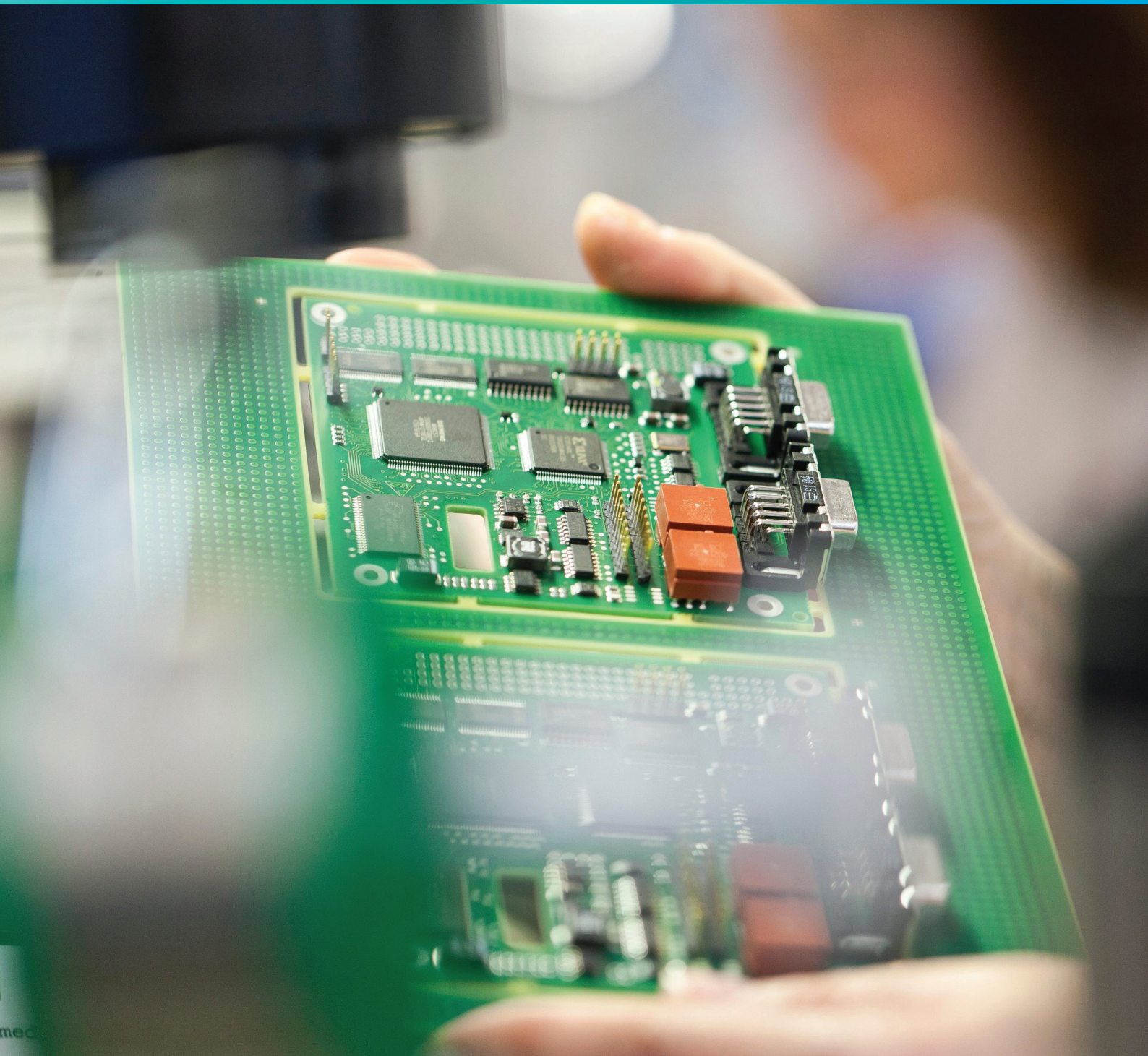
Benefits of VPL

The Valor Parts Library, when used with Valor NPI or Process Preparation offers companies:

- Streamlined Design-through-Manufacturing process
- More accurate DFM analysis than using CAD data
- Simplifies the part library management process
- More complete manufacturing product model
- Consistency of part data across all applications

System Requirements

- RedHat 6 and 7 x86/x64
- Windows x86/x64
- Oracle or SQL



Siemens PLM Software
www.siemens.com/plm

Americas +1 314 264 8499
Europe +44 (0) 1276 413200
Asia-Pacific +852 2230 3333

©2019 Siemens Product Lifecycle Management Software Inc. Siemens, the Siemens logo and SIMATIC IT are registered trademarks of Siemens AG. Camstar, D-Cubed, Femap, Fibersim, Geolus, GO PLM, I-deas, JT, NX, Parasolid, Solid Edge, Syncrofit, Teamcenter and Tecnomatix are trademarks or registered trademarks of Siemens Product Lifecycle Management Software Inc. or its subsidiaries in the United States and in other countries. Simcenter is a trademark or registered trademark of Siemens Industry Software NV or its affiliates. All other trademarks, registered trademarks or service marks belong to their respective holders.
76241-A2 1/19 Y