A Comprehensive, Powerful, DFM Solution

PCB designs that pass standard design rule verification within the PCB CAD system, may unknowingly contain critical flaws that derail an expedient transition to manufacturing and assembly. Commonly, the flaws are discovered prior to production when design data is being processed for PCB manufacturing or assembly. In many cases, these flaws result in costly time to market delays as designs are updated and reprocessed to address issues detected in pre-production. While manufacturers are fully capable of addressing minor issues, their resolutions are rarely fed back into the source CAD data resulting in additional rounds of modifications on design respins. In worse case scenarios, design intent may unknowingly be sacrificed when the manufacturer alters your source design files prior to production.

Economical and Intuitive

There are an array of Design For Manufacturing (DFM) solutions to analyze a design for potential flaws. Most are available only to companies with surplus budgets and dedicated staff. For the average Engineer with limited resources and lack of DFM analysis tools, the only option is to hope for the best when transferring their design to PCB fabrication and assembly. DFMStream can be implemented for a fraction of the annual software maintenance contract typically assessed for more expensive DFM solutions. This enables engineering organizations to outfit entire design teams with DFMStream ultimately reducing engineering costs, staffing and bottlenecks when assimilating design data into manufacturing.

DFMStream

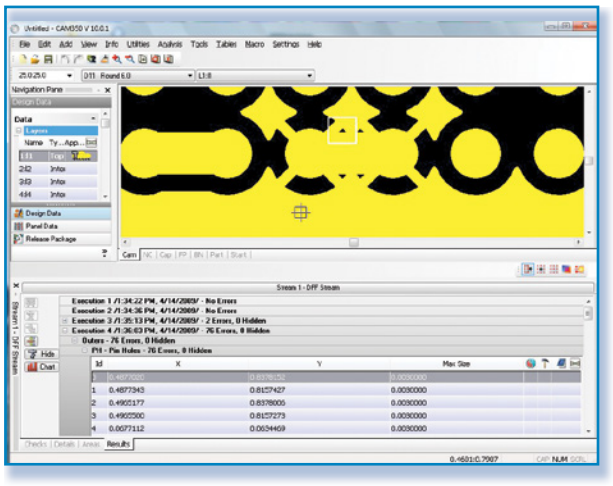
DFMStream supplies you with the best tools DownStream has to offer for fast, thorough DFM analysis.

DFMStream is a powerful, yet easy to use suite of manufacturing analysis tools that are both comprehensive and affordable. DFMStream is designed for engineers and designers who appreciate the benefits of manufacturing analysis and want to conduct it in a robust environment, with ease and sensibility at any phase of the PCB design process.

Features and Functionality

DFMStream analysis will identify design content with the potential to result in low manufacturing or assembly yields, or costly scrap. Use DFMStream's analysis tools to identify:

- Less than minimal spacing between design objects including pads, tracks, copper, drills, vias of all types including blind, buried, laser and back drilled.
- Less than minimal annular rings of pad, copper, or mask.
- Less than minimal spacing between SMD or Through hole pads or parts.
- Copper and mask slivers and pin holes.
- Acid traps, solder bridge potential, isolated or starved thermal reliefs or trace antennas.
- Minimal mask spacing, missing paste, missing solder mask, extra mask areas, or poor mask to pad ratios.
- Overlapping, coincidental or redundant drills, mill path errors and poor drill to board thickness ratio.
- And many other error types.



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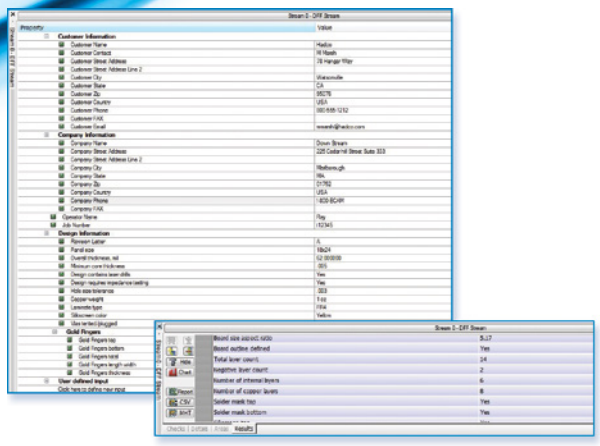


Core Features and Functionality

Finalizing the PCB design data for release-to-manufacturing is a critical and often fragile step within the new product introduction (NPI) process. DFMStream offers comprehensive analysis for all major PCB design tools, Gerber files, intelligent manufacturing files, and NC data to ensure the content supplied to the manufacturer will minimize costly delays.

Analyze Data from Multiple Sources

DFMStream can accept design data in several commonly available formats. Import your design directly from the most popular PCB CAD systems including Mentor Graphics PADS or Xpedition; Cadence Allegro or OrCAD PCB Editor; Zuken's CR5000, CR8000, or CADstar; Altium Designer; and several others. Industry standard file format support includes ODB++, IPC-2581, Gerber, DXF, Excellon, Sieb & Meyer, HPGL and many others.

Design Analyzer

Use Design Analyzer to correlate features within a PCB design such as min trace width/spacing, number of layers, board size, and drill/via technologies, to the requirements of your preferred PCB fabricator. This guarantees submitted designs will be fabricated without hidden costs or unexpected delays. Use Design Analyzer's design reports containing all information required by a PCB fabricator for cost and delivery estimates of the fabricated PCB. Working collaboratively with the report in hand, PCB fabricators can make recommendations for design changes that result in significant cost and time savings while maintaining design intent. Design Analyzer bridges the gap between engineer and PCB fabricator by extracting key information about the PCB and presenting it in an easy to read format.

"Streams" Driven Analysis

Manage the myriad of checks and the analysis process using the Streams methodology. Checks are organized into layer types and sub categories to simplify selection of checks to perform and setting the corresponding parameters. Use the Streams methodology to define the type and order or "Stream" of checks to be performed. A stream of analysis can include netlist or layer comparison, design rule verification, fabrication and assembly checks on the entire design, a specific layer or a region of the design. This dramatically reduces set up and execution of the analysis. Analysis streams can be saved and recalled for use on any design. Streams definitions can be defined for a specific PCB technology, vendor capability, or unique design requirement.

Hierarchical Analysis

For many designs, different regions or layers of a PCB have unique constraints and subsequently require a custom analysis. Use DFMStream's unique rule hierarchy to tailor an analysis to bare board construction, board density, or component technology.

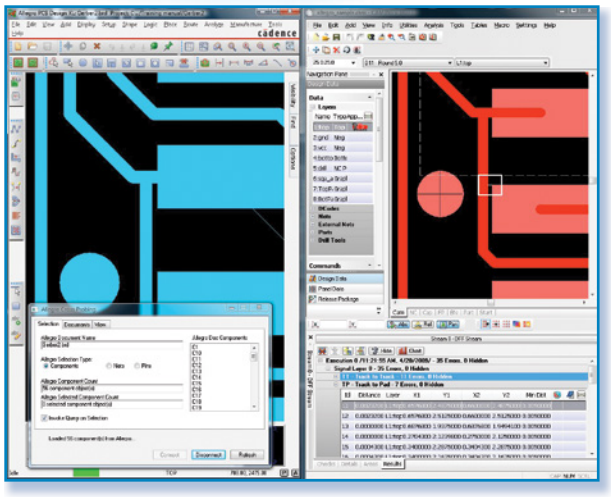
PCB Fabrication Analysis

DFMStream's analysis will detect specific design content that may have an adverse effect on PCB fabrication. Features less than minimal spacing, acid traps, minimal annular rings, minimum features sizes, copper and mask slivers, are just a few examples of the fabrication analysis available. Drill related analysis include minimal distances between drills, pads without drills, mill path errors, coincident or overlapping drills and others.

PCB Assembly Analysis

DFMStream's analysis will detect specific PCB content that may have an adverse effect on PCB assembly. Solder and paste mask features less than minimal mask spacing, missing masks, extra mask, minimal mask annular rings, and mask size to pad size ratios are examples of mask analysis available. Silkscreen related analysis include ink over pads, ink over mask exposures and other checks. Less than minimal part spacing, pad spacing between adjacent parts, and minimal spacing between component pads and adjacent vias, drills, and copper objects are examples component related analysis.

DFMStream



Design Delta Analysis

Use DFMStream's Design Delta analysis to compare PCB design data from independent sources to identify differences. For example, compare a Netlist extracted from Gerber and NC data against an IPC-D-356 netlist generated from the PCB CAD design. Compare the results to ensure Gerber, NC, and ODB++ data were extracted correctly and without loss of design intent. DFMStream's Design Delta analysis options include layer against layer; Gerber against ODB++; Gerber against NC drill; design revision against design revision and many other combinations.

Error Charting

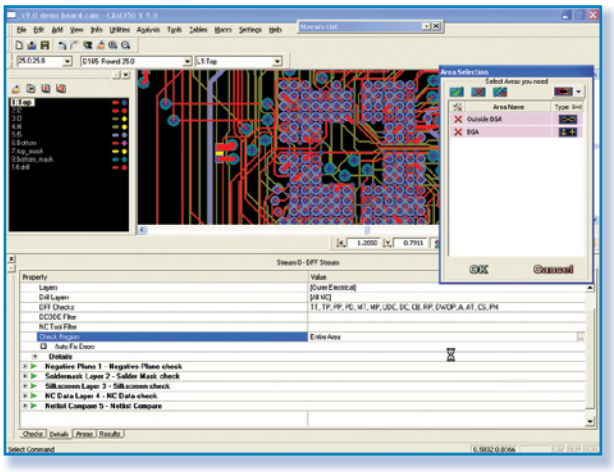
Large scale analysis can often result in a large number of reported failures. Viewing the results of large scale analysis in chart form allows you to get to the root of the failure and quickly ascertain a remedy. Charting allows you to review specifics of the failures to identify trends or unexpected results. DFMStream's charting feature reports the exact nature of the error and the PCB features related to that error. The charting function groups common errors so they can be quickly identified and resolved in DFMStream or the source PCB CAD tool.

PCB CAD Crossprobing

DFMStream's crossprobing facilitates visualization of DFM analysis errors in their native PCB Design tools. Using the crossprobing feature, select errors within DFMStream or its reports and zoom to the error location in the design from within the native PCB Design tool. This expedites the process of finding and correcting errors in the source PCB design. DFMStream's crossprobing is compatible with leading PCB CAD tools such as Mentor Graphics PADS or Xpedition; Cadence OrCAD PCB Editor or Allegro.

PCB Panel Design

While focused primarily on analysis, DFMStream also offers multi-image PCB panel design to quickly create a multi-image PCB panel. Use the automated panel wizard, enter a few basic parameters to have the panel layout designed for you with minimal material waste. Use the design merge features and create custom panels with images from multiple PCB designs.



Scalable DFM analysis

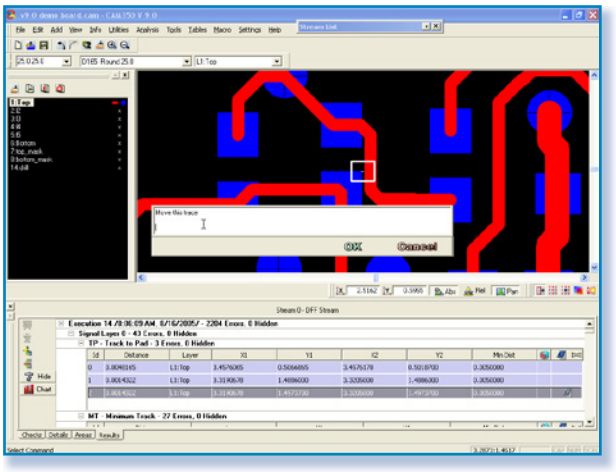
DFMStream comes in two configurations to meet your DFM analysis needs.

Choose DFMStream200 if your DFM analysis is exclusively for Gerber data and your designs typically do not have advanced constructs like blind and buried vias, laser vias and back drilling. Analysis depth is limited because design data is basic PCB elements such as flashes, draws and line elements.

For a full description of the DFM 200 Checks click here.

Choose DFMStream500 if your DFM analysis will be performed on intelligent design data such as PCB CAD imports, ODB++, or IPC-2581. You should also choose this configuration if your designs typically have advanced constructs like blind and buried vias, laser vias and back drilling. Analysis depth and breadth is expanded to include intelligent data such SMD or through hole pads, different types of vias, plated or unplated holes, and other design elements.

For a full description of the DFM 500 Checks click here.



Fabrication Modules	DFMStream-500	DFMStream-200
Import	x	x
Information	x	x
Export	x	x
Modification	x	x
Optimization	x	x
Design Rule Check (DRC)	x	x
Basic NC Editor	x	x
Fast Array Module	x	x
ODB++ Import	x	x
IPC2581 Import	x	x
Release Package Navigator	x	x
DXF Interface	x	x
Crossprobing Interface	x	x
Basic Streams DFM	x	x
Macro Debugger	x	x
ODB++ Export	x	x
IPC2581 Export	x	x
Design Analyzer	x	x
Advanced Streams DFM	x	Opt
Panel Editor	Opt	Opt
Advanced NC Editor	Opt	Opt
Direct CAD Interface (Out Only)	Opt	Opt
Reverse Engineering	Opt	Opt
Flying Probe Editor	Opt	Opt
Bed of Nails Editor	Opt	Opt
Direct CAD Interface (In Only)	Opt	Opt
Camtek AOI	Opt	Opt

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DownStream Technologies, LLC
225 Cedar Hill St.
Suite 333
Marlborough, MA 01752
US: (800) 535-3226
Outside the US: (508) 970-0670