



# CAM350

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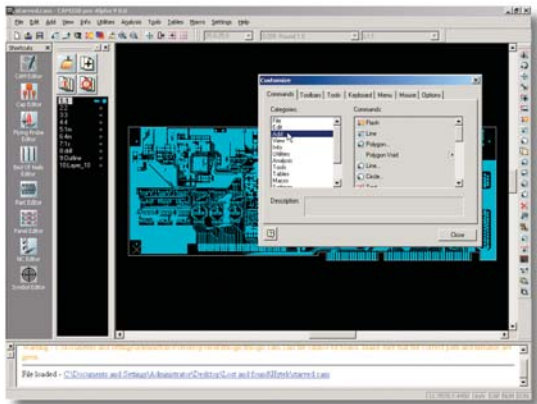
## Release 9



## THE CHALLENGE

The challenge for today's electronic product manufacturer is clear - send better products to market faster and more cost-effectively - before the competition.

In order to meet that challenge, the entire product development process must be optimized, including the PCB design and fabrication process. Specifically, this means complete verification of a PCB design and careful transition of the data into the fabrication process.



CAM350's Graphical User Interface (GUI) makes post processing PCBs for fabrication quick and easy.

*CAM350 provides verification, optimization and output generation to efficiently post-process PCBs for fabrication*

## THE SOLUTION

CAM350® - the industry-standard solution for PCB post-processing provides powerful verification, optimization and output generation to efficiently drive the PCB fabrication process.

CAM350 can be used to detect and correct PCB fabrication issues early in the design process, drastically reducing costly design re-spins, as well as accurately preparing, optimizing and processing the Gerber and drill data for increased productivity, faster turnaround and higher quality manufacturing of bare PCBs.

## CAM350 - A Complete PCB Post-Processing Solution

Built to meet the needs of both the PCB Designer and CAM Engineer, CAM350 is a complete PCB Fabrication Flow that streamlines the transition of engineering data into a physical PCB. This powerful solution provides superior price/performance value in an easy-to-use product suite and delivers fast and accurate results.

Many organizations now recognize that problems arising during the PCB fabrication process could have been easily avoided if detected earlier. These problems impact product delivery schedules by causing costly design re-spins or worse, bare-boards that have been manufactured incorrectly resulting in faulty products.

CAM350 streamlines the process by verifying a PCB design for fabrication during the design process - greatly increasing the design's chances of successful fabrication. The powerful Design for Fabrication (DFF) functionality analyzes fabrication rules in the PCB design domain, verifies the PCB database and locates any issues before release to manufacturing. It also automates the CAM process by preparing and optimizing the design files for fabrication by managing data input and preparation, through analysis, test, mill and drill to final bare-board production. CAM350 features a variety of key functionality to increase productivity throughout the entire PCB design and fabrication process.

### Key Functionality Included in CAM350

**Import / Export Formats** - CAM350 offers a variety of import and export capabilities including ODB++, Gerber, IPC-356, Excellon, DXF, Sieb and Myers as well as the option to directly import many CAD databases.

**Optimization** - Optimize the design files using draw-to-custom, draw-to-flash, and draw-to-raster polygon conversion, netlist extraction, silkscreen clipping, redundant pad and data removal, and teardropping.

**Design Rule Checking (DRC)** - In order to meet the original intent of a PCB design, design rules must be verified. Checks include spacing, annular ring, histogram, copper area calculation, layer compare, net and more.

**Basic NC Editor** - For NC-Mill and Drill Data - Import, export, and creation capabilities are included, as well as some editing capabilities to change drill tool definitions, add basic mill paths to assembly panels, and to change break tabs.

**Quote Agent** - Designed to extract the necessary information from the PCB design to accurately quote manufacturing costs.

**Macro Debugger** - Macro Script development allows the user to set watch points and intelligent break points, analyze variables, and more.

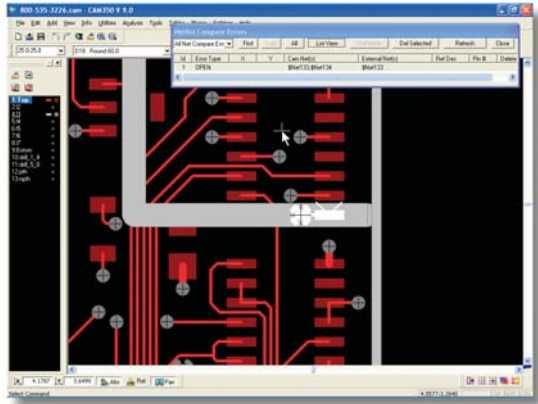
**Bi-Directional DXF Support** - This feature offers bi-directional AutoCAD and DXF support. It handles filled solids, true text, blocks, nested blocks, and builds aperture tables automatically.

**Fast Array Module** - Automates the sub-panel process to quickly array a PCB or group of PCBs on a panel to feed fabrication and assembly processes.

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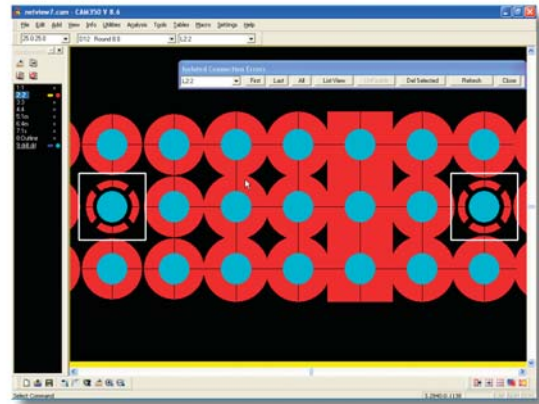
*If increasing productivity, reducing design re-spins, and improving communication is important to your PCB development process, then CAM350 is for you.*

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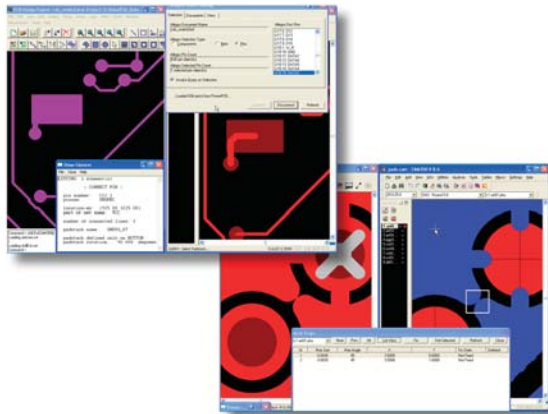
### Graphical Netlist Compare

Enhanced Netlist comparison process allows users to view errors graphically instead of producing text reports.



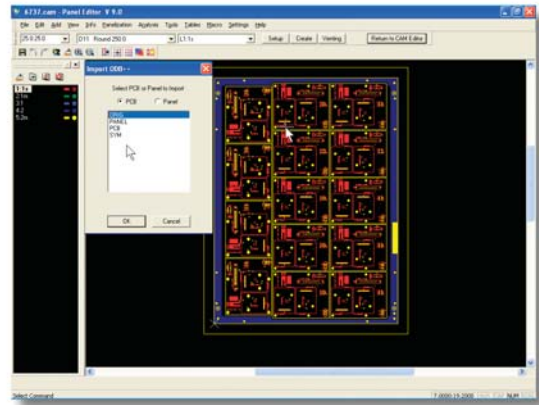
### DFF Audit

Analyzes the PCB design for acid traps, copper and mask slivers, solder bridges, starved thermals, and more before the design goes to manufacturing.



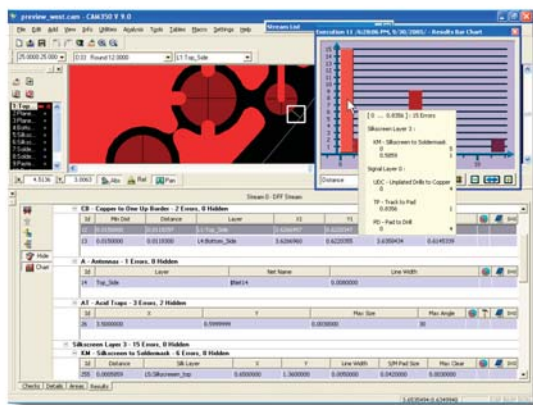
### Crossprobing

Errors detected in CAM350 are highlighted in CAD software (PADS Layout and Allegro) allowing for quick and easy correction of problem.



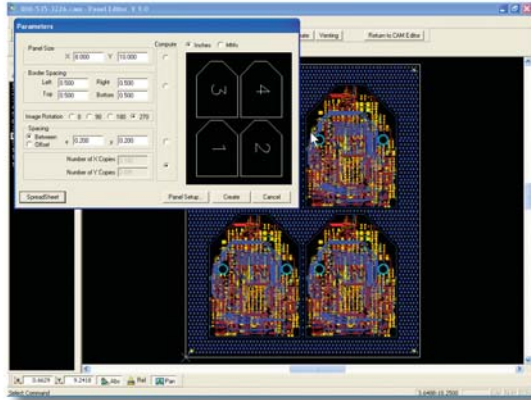
### ODB++ Import & Export

The defacto standard for intelligent data exchange in EDA. ODB++ is an intelligent format that captures all the CAD/EDA, assembly and PCB fabrication knowledge in one single database. This format replaces individual Gerber, drill, and aperture files, and adds details such as components and nets.



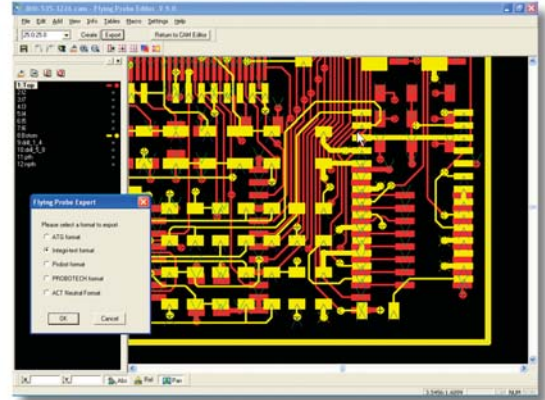
### Streams Rule Check

Users can define a series of various verification steps (streams) for DRC, DFF and Netlist Comparisons, execute all of them with the touch of a button and reuse over again on other designs.



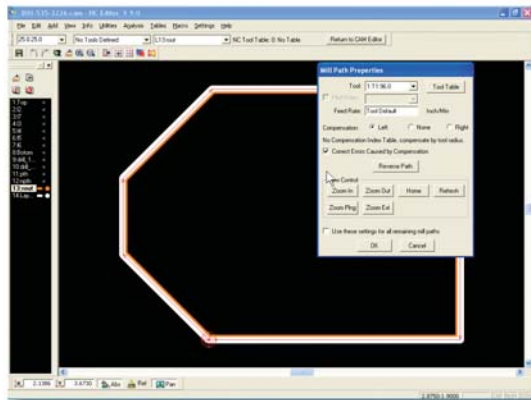
### Panelization

Panel Editor streamlines and eases the panelization process and allows users to store and recall standard panel templates.



### Flying Probe Editor

A powerful graphical editor and filtering option that allows the user to extract all the necessary data like nets, test-points, and adjacency information quickly and efficiently.



### Advanced NC-Editor

Allows for the manipulation of NC drill and mill data in PCB designs. Add drill hits and mill paths, as well as advanced canned NC routines such as drill text, mill circles, operator messages, pilot holes, etc.

### Bed-of-Nails Editor

Produces all files necessary to build a single- or double-sided clamshell test fixture. A graphical editor and filtering options gives the user complete interactive control of the test point information.

### Reverse Engineering

Unique to CAM350, Reverse Engineering allows the user to start with non-intelligent Gerber data and work it back into an intelligent CAD database.

## Key Benefits of CAM350

The PCB design and manufacturing cycle is a complex process, broken down into several distinct operations. CAM350 offers the following specific benefits throughout the process:

- Less Design Re-spins, Scrap and Faulty Boards
- Increased Productivity
- Faster Turnaround and Higher Throughput
- Increased Automation and Optimization
- Improved Quality and Database Management
- Quicker Time-to-volume Production of Bare-boards

CAM350 Modules	Design Family Configurations			
	C350-765	C350-465	C350-270	C350-110
Import	✓	✓	✓	✓
Information	✓	✓	✓	✓
Export	✓	✓	✓	✓
Modification	✓	✓	✓	✓
Optimization	✓	✓	✓	✓
Design Rule Check (DRC)	✓	✓	✓	✓
Basic NC Editor	✓	✓	✓	✓
Quote Agent	✓	✓	✓	✓
Fast Array Module	✓	✓	✓	✓
ODB++ Import	✓	✓	✓	✓
ODB++ Export	✓	✓	✓	Option
DXF Interface	✓	✓	✓	Option
DFF Audit	✓	✓	✓	Option
Macro Debugger	✓	✓	✓	Option
Crossprobing - PADS	✓	✓	✓	Option
Crossprobing - Allegro	✓	✓	✓	Option
Streams Rule Check	✓	✓	✓	Option
Panel Editor	✓	✓	Option	Option
Advanced NC Editor	✓	✓	Option	Option
DirectCAD Interface (Out Only)	✓	Option	Option	Option
Reverse Engineering	✓	Option	Option	Option
Flying Probe Editor	✓	Option	Option	Option
Bed of Nails Editor	✓	Option	Option	Option
<i>DirectCAD Interface (In Only)</i>	Option	Option	Option	Option
<i>Camtek AOI</i>	Option	Option	Option	Option

CAM350's modularity allows for the configuration of a solution to meet the exact needs of any organization. CAM350-110 and CAM350-270 are pre-configured solutions based on the typical needs of a PCB Designer. CAM350-465 and CAM350-765 are pre-configured solutions based on the typical needs of a CAM Engineer. These solutions can be purchased "as-is" or you may build a CAM350 solution based on your specific requirements.

DownStream Technologies is a progressive software company focused on helping engineering organizations automate the PCB Release Process. Our tools redefine how engineering professionals post-process PCB designs to create and distribute all the deliverables required for a complete PCB assembly release package.

CAM350® provides verification, optimization and output generation to efficiently drive PCB fabrication.

BluePrint for Printed Circuit Boards™ works with CAM350 and PCB CAD systems to help users quickly produce comprehensive electronic drawings to drive PCB fabrication, assembly and inspection.



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