



Release Highlights for CAM350 / DFMStream 12.1

Introduction

CAM350/DFMStream Release 12.1 is the latest in customer driven releases. All new features and enhancements were requested by existing customers. Over the preceding year, DownStream Technologies queried our customer base for new ideas or enhancements to existing features. Each release of CAM350/DFMStream contains many user requested features as well as quality enhancements.

New Functionality

The following functional enhancements are contained in Release 12.1.

- **General CAM350 Updates**
 - Refreshed User Interface**
 - Set Hole Type in NC Tools Table**
 - Drill Layer Name for Each Tool Table**
 - IPC-2581 Revision B Import/Export Support**
 - ODB++ Version 8.0 Support**
 - Complex Stencil Shapes in Aperture Table**
- **DFMStream Updates**
 - New DFM Stream Look and Feel**
 - New Default Stream Option**
 - Select and Manage Errors in Results View**
 - Multi-threading Support Leads to Improved Processing Speed**
 - Preprocess – Improved Laser Via Detection**
 - Preprocess – Global Fiducial Detection**
 - Preprocess – Netlist Extract Added to Preprocess**
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 - Signal Layer - Same Net Spacing Checks**
 - Negative Plane - Additional Negative Plane Checks**
 - Negative Plane - Annular Ring Check Definition Expanded**
 - Netlist Compare - No Connect Nets**
 - Netlist Compare - Support for Plated Mill Routes**
 - Soldermask - Ignore Non-plated Holes for Missing Copper and Missing Pad Checks**
 - Results - Report Check Results Having No Errors**

General CAM350 Updates

Refreshed User Interface

Updated User Interface Look and Feel

The user interface was refreshed to comply with current MS Windows styles. Panes can now be docked to any part of the application frame. In addition, use the auto-hide feature to have panes disappear from view when not in use.

Set Hole Type in NC Tools Table

New option to set the hole type in the NC tool table

A new option was introduced in the NC tool table in the Tolerance data section. Select the option to define a drill as Through drill, backdrill, dual drill, via, laser via, blind via, buried via, or a combination of the choices. (56952)

Drill Layer Name for Each Tool Table

NC tool tables display drill layers assignment

The NC tool table dialog was updated to display the drill layers referenced by the tools in the table. (57523)

IPC-2581 Revision B Import/Export Support

IPC-2581 revision B import and export fully supported

The B revision of the IPC-2581 file format is currently available and supported by several PCB CAD vendors. The import/export functions for IPC-2581 are now compatible with this newest revision.

ODB++ Version 8.0 Support








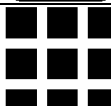
ODB++ version 8.0 fully supported

Version 8.0 of the ODB++ file format is currently available and supported by several PCB CAD vendors. The import/export functions for ODB++ are now compatible with this newest version.

Complex Stencil Shapes in Aperture Table

Define aperture shapes commonly used in solder paste stencils

The aperture table was updated to support aperture shapes for stencil as shown in the table below. Each shape can be customized with variable parameters including line widths, round or square corners, width, height and so on. (57022)

Home Plate		Radius Home Plate	
Inverted Home Plate		Cross	
Flat Home Plate		Dogbone	
Radius Inverted Home Plate		D-Pack	

DFMStream Updates

New DFM Stream Look and Feel

The DFM Stream pane updated...

The DFM Stream pane was updated to streamline the user interface. The Streams RC dialog functions solely as a Streams list manager. All streams options were integrated into the Options dialog. Multiple Streams can be managed from one common versus multiple Streams panes. In addition, more commands are available from the pop-up menu in the results tab.

New Default Stream Option

Set a preferred Stream file as the default Stream (or Streams) to open

Assign a default stream file to be opened each time a new DFM Stream session is started. Define a default stream, export it to a file and use it as the default Stream. Create a default stream file with streams for various technologies and reuse them across multiple designs.

Select and Manage Errors in Results View

Error markers can be selected and acted upon from the results view

Enable Error Select mode in the results toolbar to select errors in results view. Select errors individually or by area selection and then perform actions on them. Switch between Error only or PCB and Error display modes to facilitate selection.

Multi-threading Support Leads to Improved Processing Speed

Enhanced support for multi-core processors leads to shorter analysis cycle

Several of the core algorithms for DFM analysis were updated to take advantage of multi-threading for faster overall execution. For some design samples, analysis processing was 3 to 5 times faster with this release on the same computer using the previous release.

Preprocess – Improved Laser Via Detection

Use size threshold and layer traversal for detecting laser vias

New option for laser vias to be more correctly identified using a diameter threshold and the layers traversed. Through vias greater than the specified diameter are set as (through) vias. Through vias of the specified size or less are set as laser vias. Vias with a diameter less than the specified size that traverse two layers are set as laser vias. (57488)

Preprocess – Global Fiducial Detection

Use pad characteristics to derive fiducial status

New option for detection of fiducials. Any pair of coincident pads on opposing outer electrical layers, having no connections to a net, are identified as global fiducials. (56984)

Preprocess – Netlist Extract Added to Preprocess

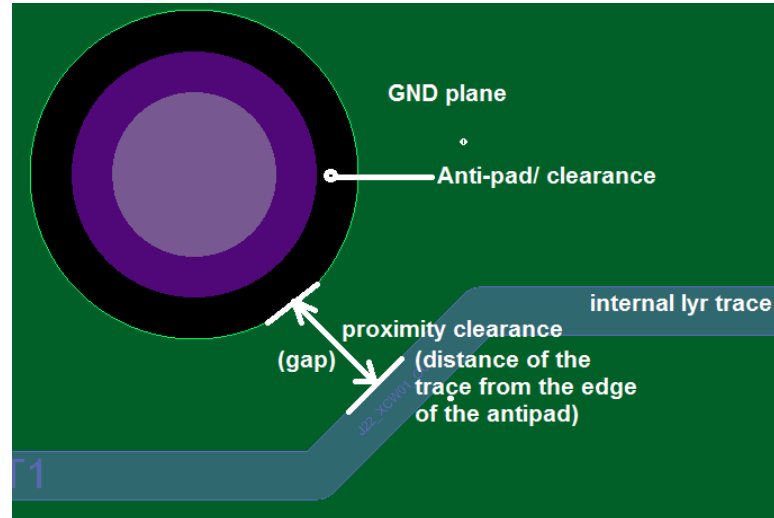
Extraction of CAM netlist now part of preprocessing

The Extract CAM netlist options available in for Netlist Compare have been added to Preprocess. Use this addition in preprocessing to prevent stripping of net names from the database and provide continuity in net names when cross probing errors. (57520)

Signal Layer - Trace to Anti-Pad Spacing Check

Minimal spacing check of traces against anti-pads on adjacent layers

A new check to analyze the minimal distance between an anti-pad (or void in a plane layer) and traces on adjacent layers. Traces will be analyzed against either negative plane anti-pads or positive plane voids. (56676)



Signal Layer - Same Net Spacing Checks

New minimum gap analysis for same net copper

Clearances between copper, traces, and pads of the same net are analyzed against a user specified minimum distance. (57521)

Negative Plane - Additional Negative Plane Checks

New minimum width and gap and other minimal spacing checks

Several new checks were added to the negative plane layer checks. Minimum width will detect copper elements less than the specified value. Minimum gap will detect spacing between copper elements less than the specific value. Anti-pad to anti-pad will detect spacing between adjacent anti-pads of less than the specified value. (57423)

Negative Plane - Annular Ring Check Definition Expanded

Annular ring check applied to other constructs on negative planes

Annular ring checking for negative planes in the previous release looked at only pads centered on drills. Annular ring checking now will analyze anti-pads, filled polygons, or drawn lines having a drill embedded or nested within them. (57423)

Netlist Compare - No Connect Nets

No connect nets are now checked by netlist compare

The netlist compare check now analyzes No Connect nets to verify no shorts occur between named nets and no connect nets. New options are added to the netlist compare to specify the name of the No Connect Nets and an option to ignore open portions of a named no connect net. (56859)

Netlist Compare - Support for Plated Mill RoutesPlated mill routes respected as net connectivity

Any mill route having plating is treated much in the same way as a plated slot during netlist compare. (57149)

Soldermask - Ignore Non-plated Holes for Missing Copper and Missing Pad ChecksNon-plated holes having no pad or copper are ignored

New options are added so any non-plated hole without a pad or any copper will be ignored by soldermask checks for the missing copper and missing pad checks. (57516)

Results - Report Check Results Having No ErrorsNew option to include checks with no errors detected in results

New option added to the Streams option dialog to include in the results and checks that were completed without any errors detected. (54125)

Defect fixes for CAM350 V12.1

Software corrections and enhancements have been made to previously existing functionality, further improving upon CAM350's quality and reliability:

Build 1036

Project	ID	Description
Import	58173	File Import Gerber creates incorrect polygon outline.
Import	58154	File Import ODB++ creates incorrectly position offset pads for SMD components.
Import	58216	File Import ODB++ for files from ODB++ Inside interface version 9.6 has keywords not recognized.
Import	57923	File Import Gerber creates incorrect custom apertures for Barco files with custom apertures made of lines and flashes.
Import	57966	File Import Gerber does not create correct polygon geometries for Barco version 11.0 files with contour definitions.
Import	58228	File Import Auto Import does not use the override setting for NC Drill format specification.
Import	58090	File Import Auto Import does not create an accurate guess for NC Drill format when associated data files include documentation layers which are much larger than the electrical design.
Import	58192	File Import DXF creates incorrect arc representations in CAM350 for certain DXF files with large arcs.
Import	58250	File Import PADS ASCII drops traces for designs with alternate decals where each alternate decal has different pin numbers.
Export	58208	File Export Gerber Data creates incorrect arc representations in the exported Gerber files for certain CAM350 files with large arcs.
Export	58257	File Export DXF creates incorrect text strings in DXF output files for CAM350 designs that have text strings.
Export	58249	File Export Mill Data creates incorrect arc representations in the exported NC files for certain CAM350 files with large arc mill routes.
Utilities	58174	The Clear Silkscreen command fails to complete for certain CAM350 databases.
Utilities	57886	Netlist Extract fails to properly connect copper traces.
Utilities	58164	Netlist Extract fails to properly connect stacked vias for overlapping blind and buried vias for certain CAM350 files.
Utilities	57992	The Polygon conversion command Draw to Raster Polygon drops polygon voids for certain vector polygons.

Tables	58052 58172	NC Tool Table assignments for Custom Apertures are dropped after File Save and File Open commands.
Preferences	54140	The FLEXIm TIMEOUT command in the options file does not work.
Preferences	58057	The Auto Backup command for the CAM350 database does not work.

Build 1031

Project	ID	Description
Import	57814	File Auto Import for Allegro NC files does not recognize Excellon II format and does not set correct precision.
Import	57974	File Import IPC-2581 fails to pass Laser via types from IPC-2581 format to CAM350 database.
Export	57961	File Export NC Data does not recognize NC Drill and Mill data for panels created by the Merge Panel Wizard.
Utilities	58115	Netlist Extract fails to properly connect vector polygons.
Tables	58071	The Columns and Rows controls are reversed in the Aperture Table for the D-Pack aperture type which leads to incorrect aperture origins.
GUI	57891 57944	The Window frame exit "X" command does not quit CAM350 when Edit or Query commands are active.
GUI	57926	DownStream web site HTML edit controls do not work when accessed through the CAM350 Start Page.
GUI	57943	When Grid Visibility is toggled on the Dashboard toolbar, you must redraw the graphics port to see the grid visibility change.
GUI	58036	The View > Application Look color setting is not saved between CAM350 session executions.
Analysis	57904	The Analysis Check Nets command runs for a long time for certain CAM350 databases.
Analysis	58029	Streams Design Analyzer does not look at all copper features when analyzing outer layer spacing and inner layer spacing.
Analysis	58067	Streams Solder Mask Check for missing solder mask reports false errors at component pins for certain CAM350 files.

Build 1026

Project	ID	Description
Import	58008	File Import Gerber Data fails to import Gerber Files with certain custom apertures.
Import	57997	File Import Gerber Data fails to import certain customer apertures..

Utilities	58011	Utilities Netlist Extract fails to correctly connect overlapping traces..
Analysis	57921	Netlist Compare reports Extra External nets for N/C (No Connect nets).

Build 1025

Project	ID	Description
Import	57792	File Import Gerber Data fails to import data when far from the origin.
Import	57830	File Import Gerber Data fails to recognize file as valid Gerber when End Of Block character is missing.
Import	57763	File Import ODB++ generates incorrect pad rotation for flipped components with offset pads.
Import	57817	File Import ODB++ fails to complete for panel data with composite layer definitions.
Import	57819	File Import ODB++ drops pin pads when incorrect internal reference are made between the EDA netlist and layer data.
Import	57842	File Import ODB++ fails to complete for files with long symbol names.
Import	57913	File Import ODB++ fails to complete for files with long layer names and composite layer definitions.
Import	57905	File Import Drill Data for Allegro drill files creates invalid drill with incorrect values.
Import	57945, 57814	File Import Auto Import does not recognize correct Excellon 2 file format for Allegro drill files.
Import	57757,57515, 57366,57322, 57049	File Import Auto Import does not recognize Allegro drill files with updated header lines.
Import	57545	File Import Auto Import does not recognize correct Excellon 2 file format for Allegro mill files.
Export	57997	File Export Panel Gerber Data exports incorrect Homeplate apertures for rotated stepped images
Export	57925	File Export Panel Drill Data exports incorrect drill locations for panels with rotated stepped images
Export	57885	File Export Mill Data exports English units when export setting is set to Metric units.
Edit	57893	Edit Mirror command incorrectly mirrors large arcs that are sectorized.
Tables	57999	Aperture Table does not retain Middle Curve size when the value changed for Radius Inverted Homeplate.
View	57828,57864, 57929	Zoom and Redraw commands display multithread errors for CAM files that contain merged PCB designs.

GUI	57901	The default "L" hotkey does not execute the command to set the active layer.
Info	57852	Info Report BOM creates incorrect output for components with long part names.
Info	57865	Info Query does not display data for merged PCB images when only drill layers are visible.
Utilities	57970	Utilities Data Optimization Remove Covered Data does not detect overlapping raster polygons.
Utilities	57917	Utilities Data Optimization Remove Covered Data fails to complete for designs with certain polygons.
Analysis	57914	Streams Rules Check – Advanced Streams UDTHC unplated drill to copper check does not work for certain CAM files.
Analysis	57956,57907	Netlist Compare reports false short errors.

Build 1022

Project	ID	Description
File Open	57857	Out of memory error on File Open
File Open	57832	Double Click on *.CAM file opens without license
View	57840	Film Box is not visible
View	57881	Zoom with middle mouse wheel does not center view
View	57851, 57854	Layer Bar Classic displays docking context menu
Add	57878	Lower case and number pad does not work
Utilities	57823	Draw to Flash Any Angle does not work
Streams	57484	Netlist Compare does not work for one-up border execution
Streams	57858	Starved thermals are not detected
Analysis	57843	DRC check fails to complete

Build 1019

Project	ID	Description
NC Mill	53162	Mill Path not routed correctly
NC Drill	57389	Drill export incorrect after flip panel
NC Drill	57366	Support for Allegro NC Drill file updates for version 16.6
Gerber Import	56977	Voids lost on file import
Cross Probing	57395	Cross probing with PADS VX.0 freezes
Streams	57477	Missed AR violations based on units setting
Streams	57478	No connect vias incorrectly flagged as AR error
Streams	57518	Board Thickness value not propagated to Board Aspect Ratio check and Design Analyzer
Import	57013	Backdrills are not detected properly for various CAD imports
Import	57000	IPC-2581 import drops assembly outlines for ProtoExpress output
Flying Probe	57682	No adjacency information settings for Microcraft export
Flying Probe	57340	No adjacency information settings for IPC-D356A export
Flying Probe	57682	Endpoint status is incorrect for Microcraft export

Patents, Copyrights, and Trademarks

Patents

“AUTOMATED PCB MANUFACTURING DOCUMENTATION RELEASE PACKAGE SYSTEM AND METHOD”, United States Patent No. 7,409,666 B2

“ADAPTIVE TEMPLATE SYSTEM FOR AN AUTOMATED PCB MANUFACTURING RELEASE PACKAGE SYSTEM”, United States Patent No. 8,875,072 B2

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