IDF-TO-3D User Guide

Contents:

1. **Supported Platforms:**

   IDF-TO-3D currently supports Internet Explorer versions 7, 8, and 9, Firefox, Google Chrome, and Safari. If you experience issues using IDF-TO-3D, please upgrade your browser to the most recently released version. Internet Explorer version 7 and 8 users must install Adobe SVG Viewer version 3.03 prior to launching the IDF-TO-3D. Adobe SVG 3.03 Viewer can be downloaded at http://www.adobe.com/svg/viewer/install/. The Win98-XP version on the Adobe website is also compatible with Windows 7.

2. **Sessions:**

   From the session list page, either choose to *Start New Session* and upload a new set of Intermediate Data Files, or retrieve a PCB that you have previously worked on by choosing one of your recent projects from the *Recent Sessions* list.

3. **Loading IDF files to your working session:**

   a. *Project Name:* Choose a unique project name for your PCB. This name will be used to identify your project at a later date if future modifications are required.

   b. *Board File* (EMN): Click Browse and navigate to your IDF board file. The board file typically has an .emn filename extension. IDF-TO-3D also supports board files with filename extensions of .brd, .bdf, and .idb.

   c. *Library File* (EMP): Click Browse and navigate to your IDF library file. The library file typically has an .emp filename extension. IDF-TO-3D also supports library files with filename extensions of .lib, .pro, .ldf, and .idl.

   d. Select *Upload File* to view your PCB in our IDF Viewer

4. **View Filter:**

   a. *IDF View* top and bottom: Check or uncheck the appropriate boxes to see the desired view of the IDF generated components. Selections of top side only, bottom side only,

both sides, or hide all IDF generated items on your PCB are available by choosing the appropriate selections.

b. *Enhanced View* top and bottom**:** Check or uncheck the appropriate boxes to see the enhanced wireframe view of your replacement components. Selections of top side only, bottom side only, both sides, and hide all Enhanced View items on your PCB are available by choosing the appropriate selections.

c. Holes: If more than 500 holes are in your IDF files, an error or loss of holes may take place during the generation of your 3D PCB. Holes can be filtered by type. Adding or removing the check mark next to the NPTH and PTH Hole options turn off/on NPTH and PTH Hole types.

5. **Zoom to an area:**

With Internet explorer you can zoom to an area of the viewing window by clicking the right mouse button on the intended zoom area and selecting *zoom*. To zoom out, click the right mouse button and choose *reset view*.

6. **3D PCB Library Content:**

IDF-TO-3D contains thousands of 3D Footprint Geometries in our shared library.   In addition, users have a local library where custom content can be added. STEP files or vendor PDF datasheets can be uploaded to Simplified Solutions. STEP files are modified and added to your local library. The items submitted as a PDF datasheet are modeled in 3D and also included in your local library. Credits for both 3D model builds from PDF datasheets and STEP uploads have been added to your account when you register. Additional credits for custom content will be added to your account each time you purchase a STEP 3D PCB.

7. **3D PCB Libraries and Footprint Adjustment Tool:**

a. **Identifying 3D Replacement Components:** Use the browse and search capability implemented into our *3D STEP Libraries* to locate replacement 3D models.

1. *Jump to* - Browse all shared library items by commodity type. See the Table I for a list of commodity types and the corresponding codes.

2. *Search* for 3D replacement components. The default search selection is "search all fields" of the library database.

3. Users have access to our shared 3D library containing thousands of 3D models and wireframe replacement images as well as a local user library that contains custom items submitted by each individual user. To view a wireframe image of a component in the preview window, click the library component name.

4. Each line item in the Library Component Table contains the following parameters: IPC component name*,* Pin Count, Pitch, Component Body Length, Component Body Width, Maximum Component Height, Standard, Component Foot Length, Component Foot Height, Full Description, Manufacturer, Manufacturer Code, and Manufacturer Description.

5. The Library Component Table can be sorted by each of the parameters listed in item 4 above.   Widths of each of the table columns can be adjusted by dragging the column separator located between the column headings.   The table can be sorted by each parameter by clicking the desired column heading.

b. **The IDF file list**

1. Items from the IDF board file are listed in the Component Placement Table.

2. Each line item contains a component's data from the IDF (emn) file. The Reference Designator, footprint name, alternate name, rotation angle, the X and Y location of the item and the side of the board the component is placed is included in the table.

3. The IDF table can be sorted by each parameter in item 2 by clicking the desired column heading.

8. **Adding 3D replacement geometry -** To add 3D replacement geometry to the PCB view:

   a. Select the box to the left of the desired reference designator in the IDF file list.

   b. Select the box to the left of the appropriate 3D replacement component in the Library Component Table.

   c. Click the *Place* button and a wireframe image of the 3D model will be placed on the screen in the appropriate location.

   d. By using the default setting *Apply Suggestions* all items containing both the same footprint name and same alternate name will be populated with a wireframe image on the screen. If these intelligent selections should not apply to your work, uncheck the setting Apply Selections button.

9. **Adjusting replacement geometry:**

   The IDF-TO-3D Library utilizes the IPC7351 standard for component orientation. The (0,0) point for all of our geometries is in the geometric center of component with pin 1 being in the upper left corner of the component. Your ECAD Libraries may utilize different orientation and location standards for component (0,0) points. IDF-TO-3D allows for linear adjustment of 3D component geometry with respect to your component's (0,0) location and angular adjustment with respect to your component's orientation:

   a. To rotate a Library Component's 3D replacement geometry with respect to your IDF data, type in an angle rotation in degrees in the *Rot. Offset* field. Note: The total orientation (original orientation angle + rotation offset angle) may not exceed 360 degrees. Negative rotation offsets can also be applied to generate the desired angle.

   b. To translate a Library Component's 3D replacement geometry with respect to your IDF data, type in an X Offset and/or a Y Offset to properly align the 3D wireframe image to your IDF generated location.

10. **Removing Replacement Geometry:**

To remove replacement geometry, select the box next to the reference designator in the Component Placement Table and select *Remove*.

11. **Saving Placements:**

Prior to generating 3D STEP Geometry or a preview 3D JPEG image of your PCB, you must choose the *save placements* button. The save placement button will store your replacement geometry selections as well as selected rotational and translational offsets in our database. On future PCB designs, if components from your previous design are reused, 3D replacement geometry and offset settings (rotation/translation) will be recalled from the server and applied.

12. **Submit Component Requests/3D STEP Models:**

If you cannot find replacement 3D geometry in our Shared 3D Library for a component on your PCB, you can do one of the following:

a. Upload a STEP model of the 3D geometry using the Custom Component Request Form. The Footprint/Name, Manufacturer, Manufacturer Package Name, and STEP File attachment must be completed to submit a request. Additional form fields can be populated as needed to assist in tracking your custom library components. We will adjust the geometry as required to properly populate the component on your 3D PCB. In addition we create a 3D wireframe image that will be placed in your local user library within the IDF-TO-3D tool. After completed, the submitted component can be found in your personal *User Library* within the Library Component Table.

b. Upload a PDF of a component datasheet using the Custom Component Request Form. The Footprint/Name, Manufacturer, Manufacturer Package Name, and PDF File attachment must be completed to submit a request. We will build the geometry as required to properly populate the item on your 3D PCB. We also will create a 3D wireframe image that will be placed in your local user library within the IDF-TO-3D tool. After completed, the submitted component can be found in your personal *User Library* within the Library Component Table.

***Upon visiting the IDF-TO-3D tool for the first time you will be given 5 free STEP Uploads and 2 free PDF datasheet uploads. Each time you purchase a 3D STEP file, an additional 5 free STEP Uploads and 2 free PDF datasheet uploads will be credited to your account.

13. Purchase/Download Files:

a. Generate 3D View: Utilizes replacement 3D geometry selections and offsets to create a JPEG and 3D PDF of your detailed 3D PCB. STEP and 3D Prototypes can be purchased after the 3D View has been generated. You must "*Save Placements*" prior to choosing the *Generate 3D View* button.

b. Choose *Purchase 3D Model (STEP)* to purchase and download a STEP Model of your 3D PCB design.

c. Choose *Request STL Quote* to receive a quotation for the build of a 3D printer prototype model of your PCB.

14. Library Component Types:

Commodity Code	Description
BGA	Ball Grid Array
CAE	Capacitor, Aluminum Electrolytic
CAPC	Capacitor, Chip
CAPCA	Capacitor, Chip, Array
CAPCP	Capacitor, Chip, Polarized
CAPCWR	Capacitor, Chip, Wire Rectangle
CAPMP	Capacitor, Molded, Polarized
CONN	Connector
DFN	Dual Flat No Lead Package
DIOM	Diode, Molded
DIOMELF	Diode, MELF
FUSM	Fuse, Molded
INDC	Inductor, Chip
INDCA	Inductor, Chip, Array
INDM	Inductor, Molded
LEDC	Light Emitting Diode
OSC	Oscillator
PLCC	Plastic Lead Chip Carrier
QFN	Quad Flat No Lead Package
QFP	Quad Flat Package
RESC	Resistor, Chip
RESCA	Resistor, Chip, Array
RESM	Resistor, Molded
RESMELF	Resistor, MELF
SOD	Small Outline Diode
SODFL	Small Outline Diode, Flat Lead
SOIC	Small Outline Integrated Circuit Package
SOJ	Small Outline J-Lead IC
SON	Dual No Lead Package
SOT	Small Outline Transistor Plastic Package
SOT143	SOT143 (JEDEC Standard Package)
SOT23	SOT23 (JEDEC Standard Package)
SOT223	SOT223 (JEDEC Standard Package)
SOTFL	Small Outline Transistor Flat Lead Package