

Importing Cadence Designs into Ansys Icepak

As the electronics industry continues to evolve, the need for collaborative information sharing between multiple vendors has never been greater. To promote interoperability Ansys supports several generic formats within the EDA industry. More information about the formats that Ansys supports can be found on their associated web pages, including [IPC-2581](#), [ODB++](#) and [Gerber RS-274X](#).

Each format provides its own unique benefit depending on the task at hand for the engineer. Ansys recommends using IPC-2581 revision B for translating Cadence SPB (APD, SiP and Allegro) designs into Ansys Icepak. 2 other approaches that work well, but require additional processing, are ODB++ version 8 and Gerber RS-274X. ODB++ is from the ODB++ Solutions Alliance, and Gerber RS-274X is an open standard for board manufacturing. Recommended translation paths from Cadence SPB into Icepak:

1. IPC-2581 rev. B Best.
2. ODB++ v8 or Gerber RS-274X Requires some additional geometry processing.

The first step in the translation process is to launch the appropriate Cadence SBP product such as Allegro, APD or SiP. Within the Cadence product go to export IPC-2581 dialog and set the export with the following options:

1. IPC2581-B.
2. USERDEF.
3. Select check boxes shown in Figure 1.

To translate a design from a Cadence SPB environment to an ODB++ format, launch the ODB++ Export dialog within the Cadence product and set the options as shown in Figure 1b.

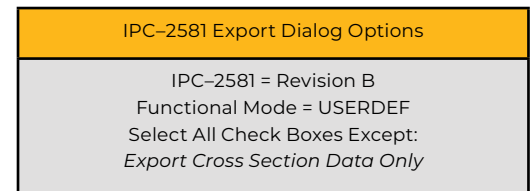


Figure 1a. Some IPC-2581 export dialog options in a Cadence product.

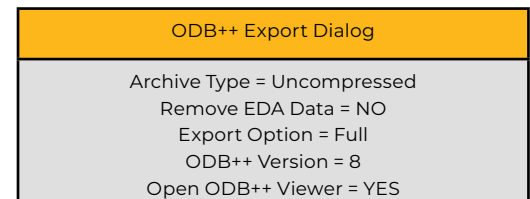


Figure 1b. Some ODB++ export dialog options in a Cadence product.

Importing IPC-2581, ODB++ v8, and Gerber RS-274X into Ansys Electronics Desktop

1. IPC-2581

To import a design into the Ansys Electronics Desktop Icepak design type, launch the application and select File -> Import -> IPC-2581. This will open a dialog to point to the recently created Cadence IPC-2581 .xml file. Note that when using IPC-2581 revision B, the usage of an RLC or XML control file should not be necessary, but it can be very beneficial when trying to set up libraries of parts, stack ups, etc., for automation purposes. The import process will automatically create an Ansys HFSS 3D Layout design containing the board layout.

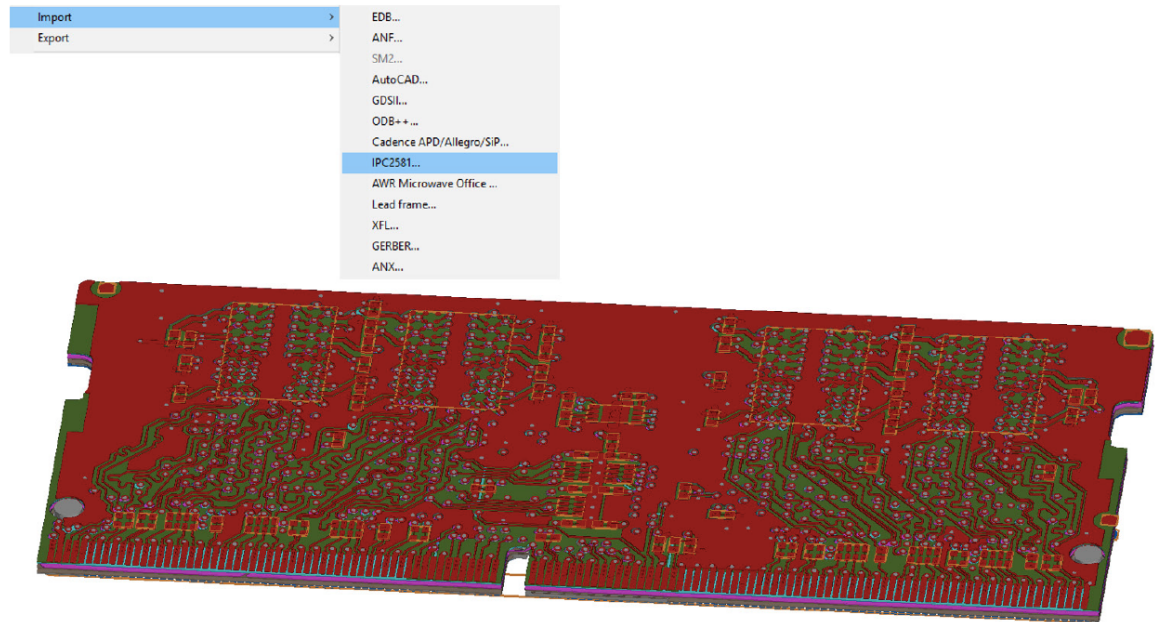


Figure 2: Import of IPC-2581 data into 3D Layout.

Once the geometry has been imported, you should verify the information by reviewing the stack up, padstacks, components, net names, power/ground nets, etc. All of this can be automated for each user's preference to accommodate their company's PLM processes. This enables automation for library development based on bills of materials, thereby removing much of the redundant processes that exist when spinning multiple board designs.

2. ODB++

To import a design into the Ansys Electronics Desktop Icepak design type, launch the application and select File -> Import -> ODB++. From here, you will be directed to select either a .tgz file or a directory containing the layout. Continue by selecting the board layers that are to be imported into the design. Once the import is complete, select Layout -> Layers to confirm or edit the signal and dielectric layer thicknesses and material properties.

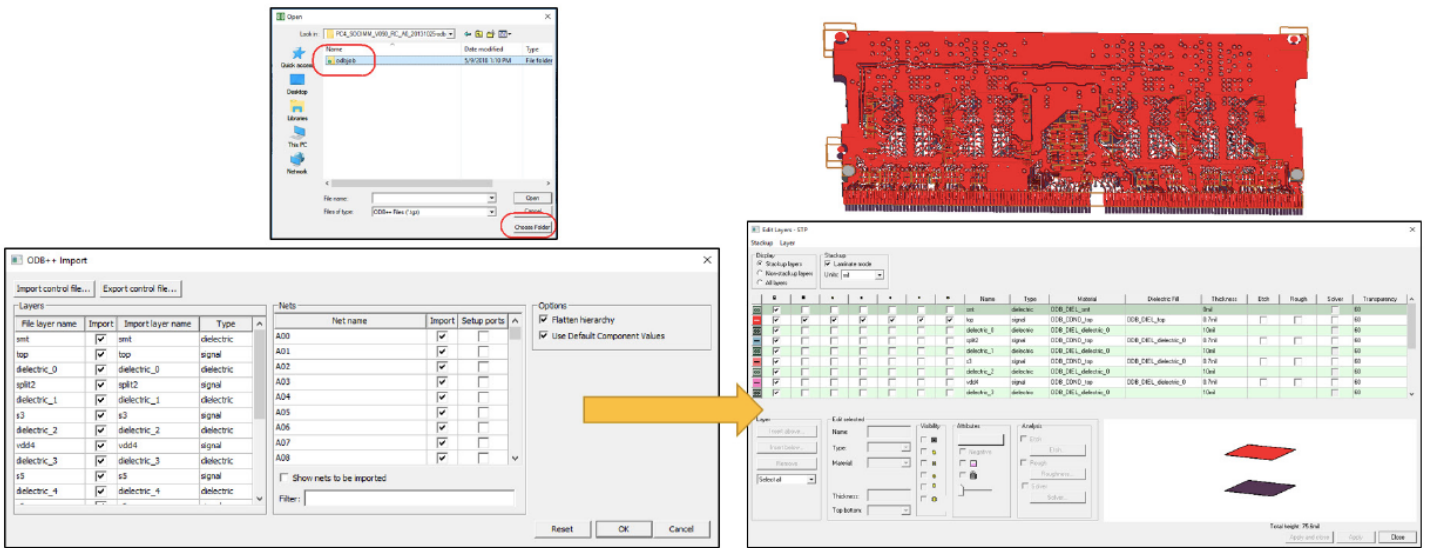


Figure 3. Importing an ODB++ layout into 3D Layout.

3. Gerber RS-247X

To import a design into the Ansys Electronics Desktop Icepak design type, launch the application and select File -> Import -> Gerber. From here, you will be directed to select either a .tgz file or a directory containing the layout. Continue by selecting the board layers that are to be imported into the design. Since Gerber is a layer-by-layer manufacturing format, you may need to adjust the layer stack in the import dialog to make sure the layers appear at the correct elevation.

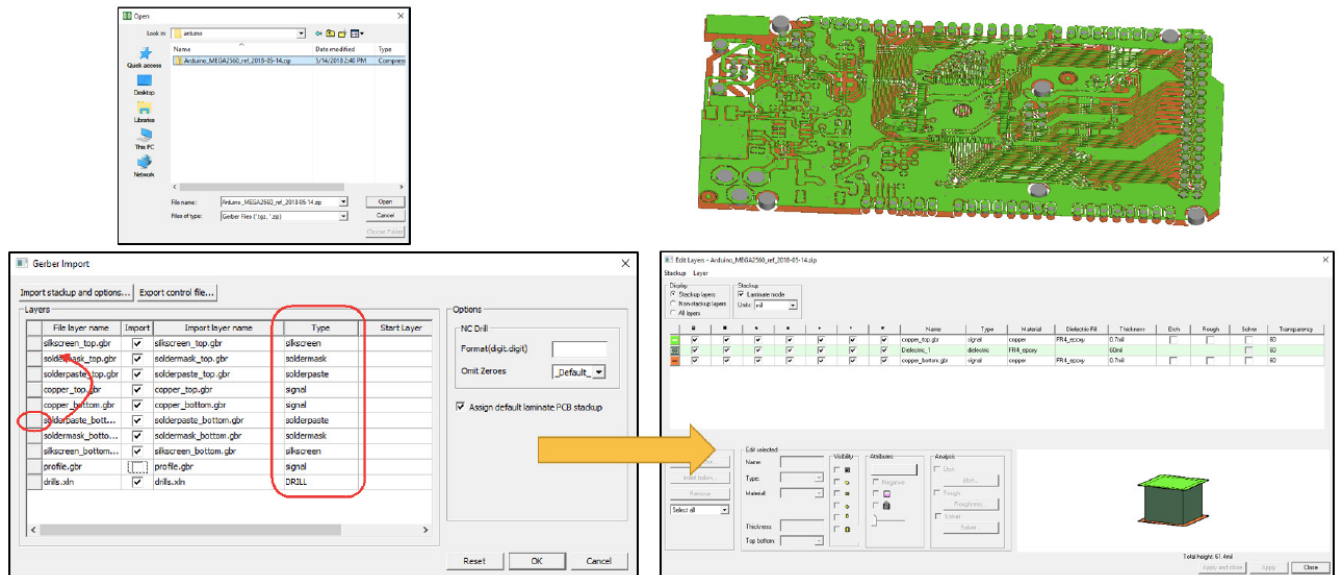


Figure 4. Importing a Gerber layout into 3D Layout.

Once the import is complete, select Layout -> Layers to confirm or edit the signal and dielectric layer thicknesses and material properties. Now save the Electronics Desktop project to create the Ansys Electronics database (EDB) on disk.

/ Create a PCB CompInt in Electronics Desktop Icepak Design

Working from either an existing or new Icepak design type within the Electronics Desktop, right-click on the 3D CompInts element of the Project tree, and select Create -> PCB. From here, follow the wizard to link to the HFSS 3D Layout design, and specify dissipated power in the board along with radiation. The last step in the import process defines the resolution of the trace mapping. This will directly impact the thermal conductivity mapping of metal layers during the Icepak solve by accounting for Joule heating.

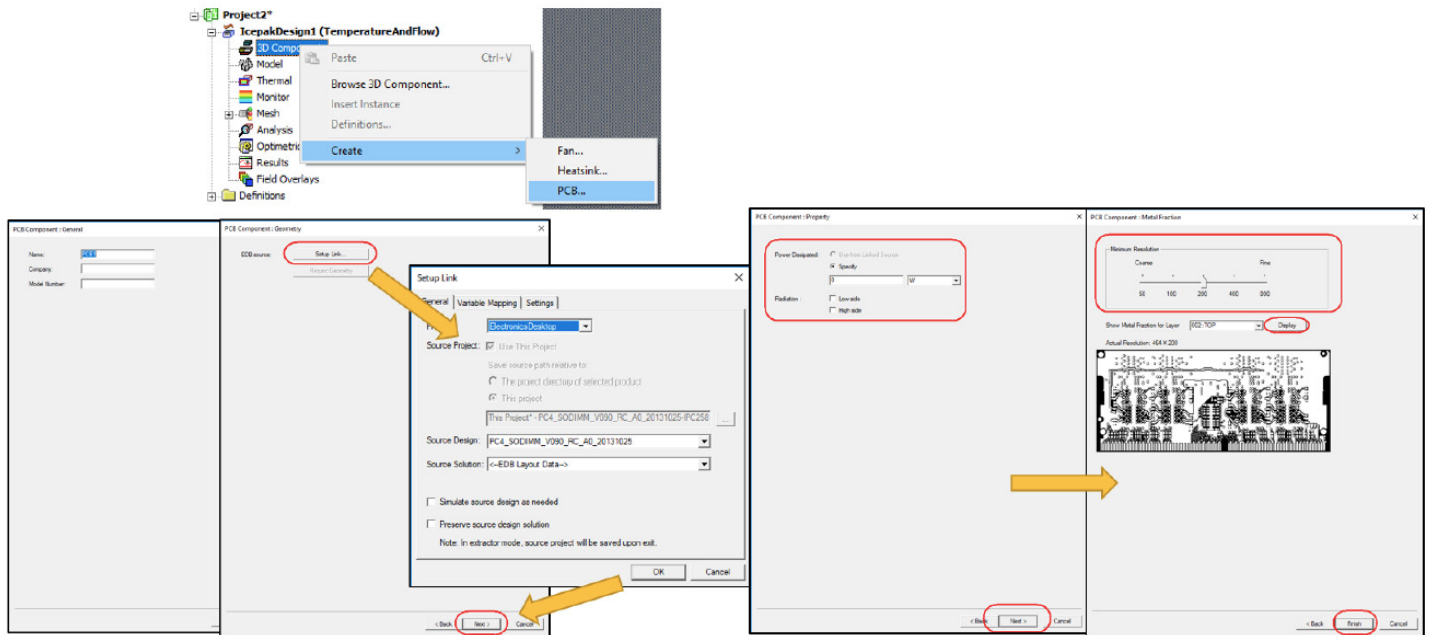


Figure 5. Inserting a PCB compInt in Icepak Design.

/ Create a PCB CompInt in the Classic Icepak Interface

1. ODB++

From the compInts toolbar, select Create printed circuit board. This will create a default outline and position for the board. Select the Edit button to import the layout. From the PCB definition, select the Geometry tab, and then Import ECAD file. Choose the type to be ODB++ Design. From here, select the appropriate file or folder representing the layout. When you click Import, you will be presented with a layer dialog box to inspect and edit the layer thickness. Clicking D1 will import the layout into the existing project.

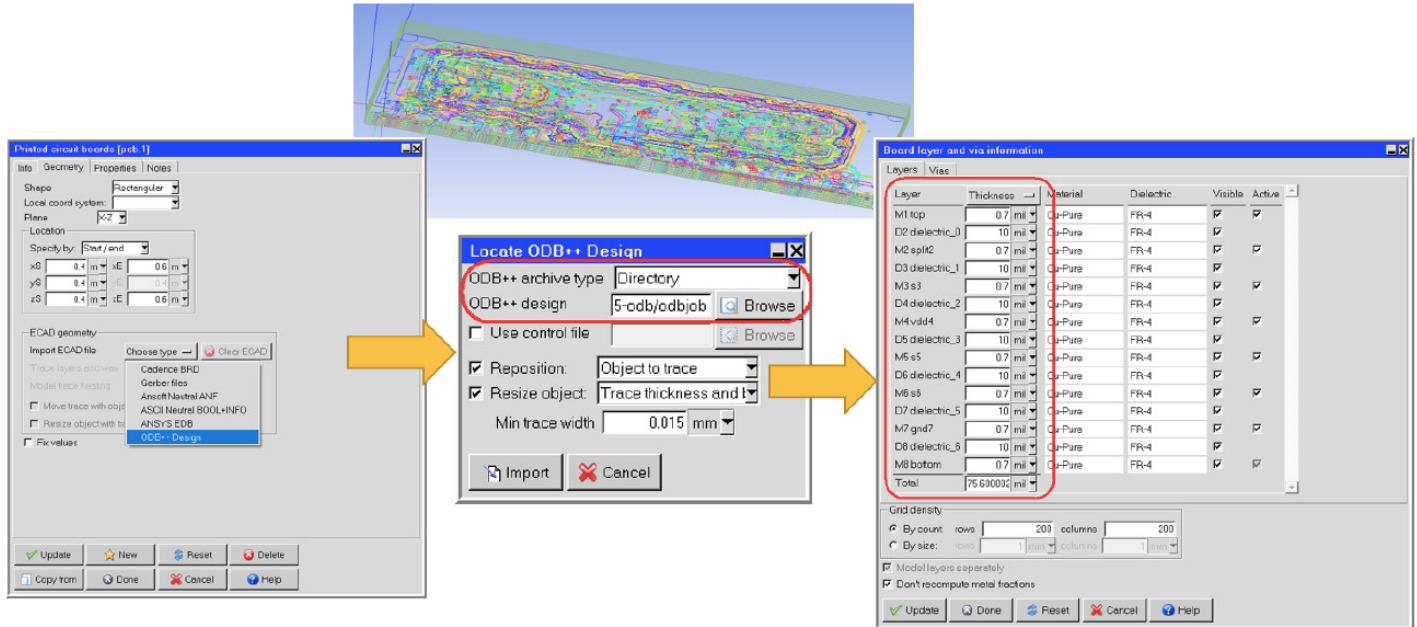


Figure 6. Importing ODB++ into the classic Icepak interface.

2. Gerber RS-247X

From the compInts toolbar, select Create printed circuit board. This will create a default outline and position for the board. Select the Edit button to import the layout. From the PCB definition, select the Geometry tab, and then Import ECAD file. Choose the type to be Ansys EDB. From here, select the appropriate folder representing the layout. This would come from the project saved in step 3 of the previous section. When you click Import, you will be presented with a layer dialog box to inspect and edit the layer thickness. Clicking D1 will import the layout into the existing project.

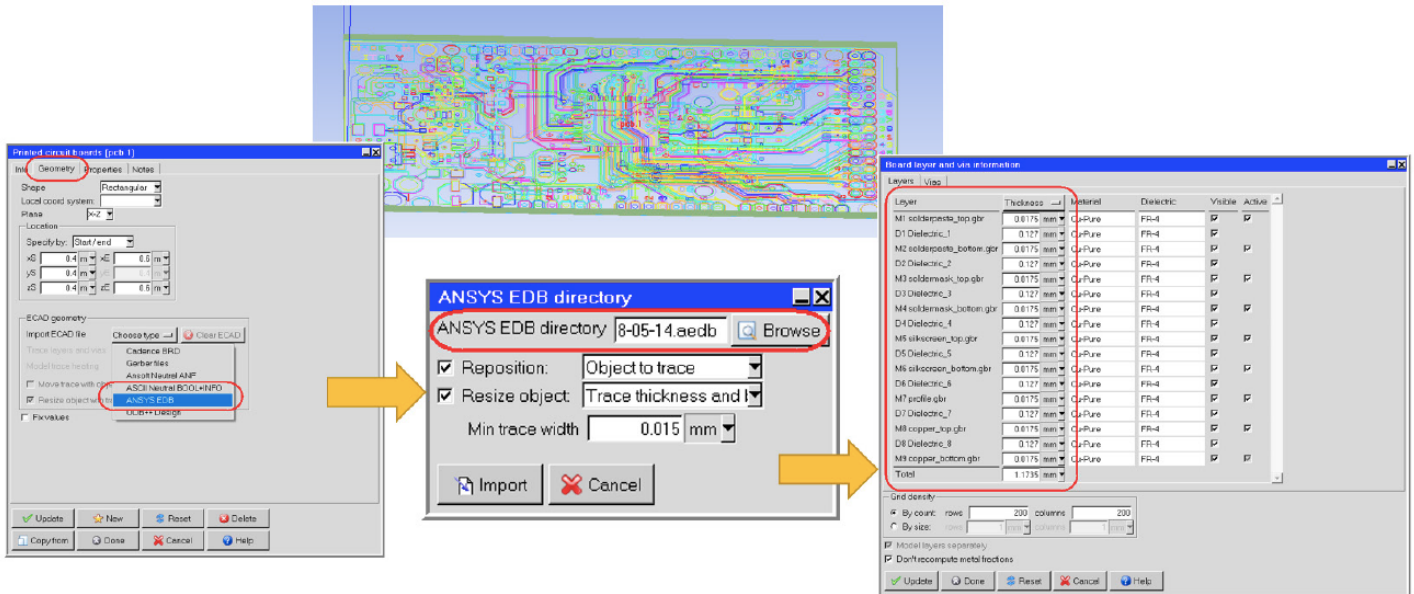


Figure 7. Importing Ansys EDB into the classic Icepak interface.

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