

## OrCAD CIS User Guide Product Version 16.6 October 2012

# 4

## Defining and Using Groups and Subgroups

In CIS, you can organize components with various properties into groups and subgroups used to create bill of materials (BOM) variants. In the part manager window, you can sort components into groups and subgroups to create bill of materials (BOM) variants for a core design. These groups and subgroups, which are collections of parts used together, provide greater convenience for assembling bills of materials for design variants.

This chapter covers the following:

- [Using the part manager window tree view](#)
- [The tree view structure](#)
- [The Part Manager Window](#)

### Using the part manager window tree view

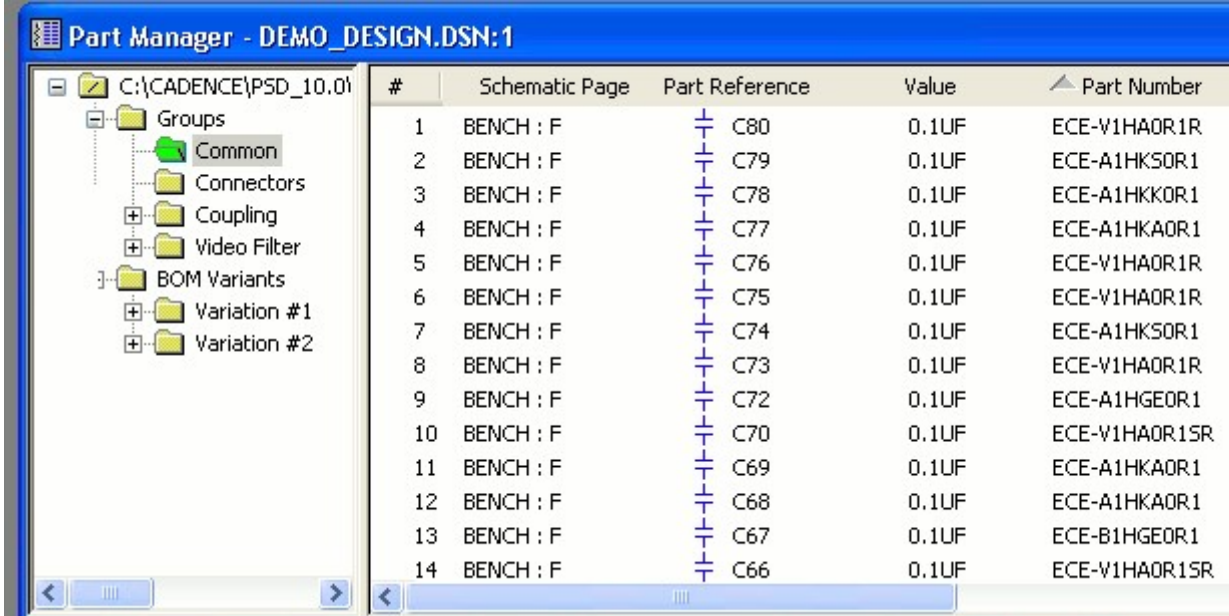
The part manager's tree view provides a graphical interface for easily creating groups, subgroups, and BOM variants. Within the tree view, you can link a database part or update a part's status. You can link and view a part or update its status from within a group, but you cannot update a database part from within a BOM variant folder.

#### The tree view structure

At the top level of the tree view, there is the root folder that displays the path to the core design. When selected, the right side pane displays all of the components in the core design. Any modifications made to components at this level results in a change in the core design.

Under the tree view, there is a folder called Groups. You create all your groups and subgroups under this folder. The Groups folder contains all the groups that have been created on the current design. When the Groups folder is selected, the right side pane displays all groups that are

available.



#	Schematic Page	Part Reference	Value	Part Number
1	BENCH : F	C80	0.1UF	ECE-V1HA0R1R
2	BENCH : F	C79	0.1UF	ECE-A1HK50R1
3	BENCH : F	C78	0.1UF	ECE-A1HK0R1
4	BENCH : F	C77	0.1UF	ECE-A1HKA0R1
5	BENCH : F	C76	0.1UF	ECE-V1HA0R1R
6	BENCH : F	C75	0.1UF	ECE-V1HA0R1R
7	BENCH : F	C74	0.1UF	ECE-A1HK50R1
8	BENCH : F	C73	0.1UF	ECE-V1HA0R1R
9	BENCH : F	C72	0.1UF	ECE-A1HGE0R1
10	BENCH : F	C70	0.1UF	ECE-V1HA0R1SR
11	BENCH : F	C69	0.1UF	ECE-A1HKA0R1
12	BENCH : F	C68	0.1UF	ECE-A1HKA0R1
13	BENCH : F	C67	0.1UF	ECE-B1HGE0R1
14	BENCH : F	C66	0.1UF	ECE-V1HA0R1SR

## The folders

Under the root folder, there are Groups, subgroups, and the BOM Variants folders.

## Groups

In a design, multiple components are used to support a particular functionality or module. For example, power module, memory, or resolution. Whenever the module needs to be changed, all the individual components of that module also change. Groups make variant creation easier and closer to the way it is done in real life. Groups are subsets of components that can be used when creating variants.

## Subgroups

Groups can be further divided into subgroups. A subgroup contains components that are required for different versions of the groups. For example, if you have a group called Power, the components in that group may differ depending on whether you wish that module to be used

in the UK or the US. You cannot drag components to a subgroup. Instead, you must drag the components into the group, which will then populate all subgroups.

### **The Common folder**

The Groups folder also contains a folder called Common. This folder stands out in the tree view structure because of its green color. Also, it is always the first folder under the Groups folder. Initially, the Common folder contains all of the components in a design. As components are placed into groups or subgroups, they are removed from the Common folder.

From the Common folder under the Groups folder, you can use three commands: View Database Part, Update Selected Part Status, and Update All Part Status. The View Database Part and Update Selected Part Status commands are only available when a component is selected in the right side pane. The Update All Part Status command is always available.

You can drag the Common folder into the BOM Variant folders. These folders will contain the same content as the Common folder under Groups.

### **The BOM Variants folder**

You can modify components to use with BOM variants, and store the variations in folders in the part manager tree view. Under the BOM Variants folder, you create design variants from the groups and subgroups that you created. The BOM Variants folder contains all the BOM variants that you create on the current design. When the BOM Variants folder is selected, the right side pane displays all BOM variants that you have created.

You can create a new BOM variant by selecting the New BOM Variant command from the Edit menu keeping the BOM Variants folder selected. This command displays a dialog box, which prompts you to enter a name for the new BOM variant. A folder is added to the tree with the name that you specify. By default, the new BOM variant contains all of the components in the core design.

You can populate a BOM Variant with components by dragging them from the folders under the Groups folder. The Common folder is dragged in with the same name. If you drag a group, the folder remains the same. If you drag a subgroup, the name of the group is added as prefix to the subgroup name (groupName\_subgroupName). You cannot update a component from the BOM variant, although the variant mark column will always be displayed from this level.

### **The commands**

From the root folder, you can use the [Link Database Part command](#), the [View Database Part command](#), the [Update Selected Part Status command](#), and the [Update All Part Status command](#). These commands are available only when a component is selected in the right side pane. The Update Part Status command is always available and is performed on the core design.

#### ***Link Database Part command***

Link Database Part is available when a component is selected in the right side pane in the root folder or in any of the groups or subgroups. If you use the Link Database Part command from the root folder, the core design is updated. As a result, the components on the schematic page are replaced by the components that you choose from the database. Similarly, if the command is used from a group or a subgroup, the component will be updated in all occurrences of that group or subgroup. For example, If you link a part in the Power US subgroup which has also

been dragged into the BOM Variants folder called US, the change will also be reflected in the BOM variant. Further, if the Link operation is performed from a group or a subgroup and the new component has a footprint different from the part in the core design, you will get a warning message stating that the footprint differs from the core design.

The Link Database Part command is available when a single component or multiple components have been selected. Each selected component is linked to the new part selected in the database. The Link Database Part command invokes the CIS Explorer window. The CIS Explorer will by default query for parts in the database that have the same value. See ["Linking a placed part to a database part"](#) for information on how to use the Link Database Part command.

### ***View Database Part command***

When you choose the View Database Part command, the CIS Explorer window is invoked and the selected part is displayed. The View Database Part command is available only if one component is selected in the list view. The CIS Explorer will, by default, query for parts in the database that have the same Part Number. If the selected part does not exist in the database, a blank CIS Explorer window is displayed.

### ***Update Selected Part Status command***

The Update Selected Part Status command is used to ensure that the selected part in the design exists in the part database. Furthermore, it resolves any differences between part property values and their corresponding database property values.

### ***Update All Part Status command***

The Update All Part Status command is used to ensure that all the parts in your design exist in the part database and resolve any differences between part property values and their corresponding database part property values. This command works exactly like the Update Selected Part Status command, difference being this command works on all the parts in the design.

## **The Part Manager Window**

The part manager contains two separate panes: a tree view on the left, and a list view on the right. You can adjust the work environment for the part manager by:

- [Displaying the part manager toolbar](#)
- [Showing or hiding the tree view](#)

Use the part manager tree view to perform the following tasks on various folders:

- [Expanding or collapsing the folder hierarchy in the tree view](#)
- [Creating BOM variants for your core design](#)
- [Adding folders to create new groups, subgroups, and BOM variants](#)
- [Populating groups and subgroups with components](#)
- [Copying groups, subgroups, and BOM variants to quickly create new variants](#)
- [Renaming groups, subgroups, and BOM variants](#)
- [Deleting groups, subgroups, and BOM variants](#)

## ■ [Changing groups of components from the schematic page editor](#)

### **Displaying the part manager toolbar**

The part manager toolbar offers a quick and easy way to perform common tasks, such as linking database parts, updating part status, expanding or collapsing the tree structure, etc. A gray tool button indicates that you cannot perform that task in the current situation.

#### ***To display the toolbar***

1. From part manager's View menu, choose Toolbar.
2. To hide the toolbar, do one of the following:
  - ☐ If the toolbar is floating (not docked), click the hide button in the top corner of the toolbar.
  - ☐ From part manager's View menu, choose Toolbar.
3. Move or dock the toolbar as desired.
4. To display the name of a toolbar button command, point at the button briefly.

### **Showing or hiding the tree view**

You can choose to display or hide the tree view.

#### ***To show or hide the tree view***

→ From the View menu in Part Manager, select the Show/Hide Tree View command.

### **Expanding or collapsing the folder hierarchy in the tree view**

You can also expand or collapse an entire branch of folders in the tree view hierarchy, removing the need to expand or collapse each subfolder individually.

#### ***To expand or collapse the folder hierarchy in the tree view***

→ From the View menu in Part Manager, select the Show/Hide Tree View command

This command toggles between expanded and collapsed display of folders in the part manager tree view.

### **Creating BOM variants for your core design**

BOM variants are the versions of the design that are eventually manufactured. A BOM variant folder contains groups, subgroups, and common components for a particular design variant.

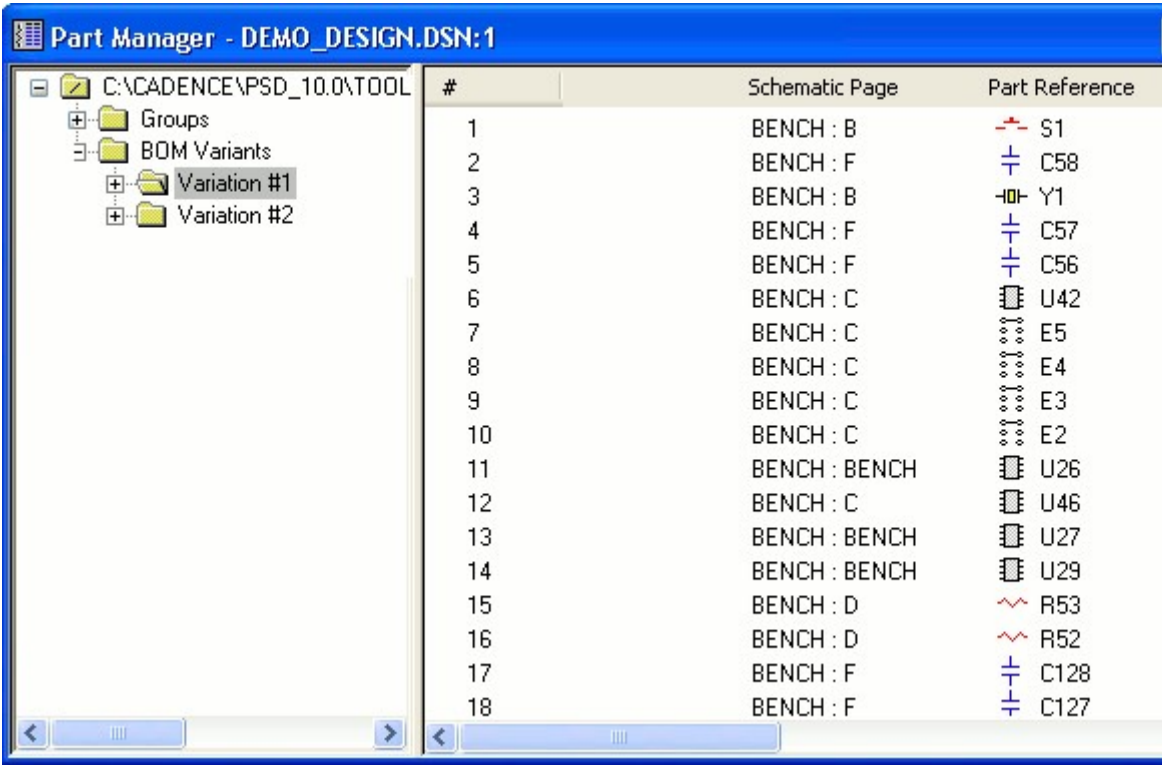
You create BOM variants in the BOM Variants folder in the tree view from groups and subgroups that you have defined. When you create a new BOM variant using the New BOM Variant command, the folder appears to contain all parts in the core design. However, all parts are undefined, indicated by a yellow question mark. Components become defined as you drag them in from the Groups folder. You click and drag the Common folder from the Groups folder to the design variant folder to define remaining components.

When you drag a group or subgroup folder into the BOM variant folder to populate it, the part status of each component in that group or subgroup changes in the BOM variant from a yellow question mark to whatever the part status is in the original group or subgroup.



















You can create a new BOM variant using the following two methods:

- New BOM Variant command.
- Copy command (copy a BOM variant). Use this command to create a BOM variant that is an existing BOM variant. When you copy the information contained in a BOM variant, the BOM variant contains all the BOM variant groups, subgroups, and component information in the source BOM

variant.



The screenshot shows the 'Part Manager - DEMO\_DESIGN.DSN:1' window. On the left, a tree view shows the hierarchy: 'Groups' (expanded), 'BOM Variants' (expanded), and two sub-items: 'Variation #1' and 'Variation #2'. The main area is a table with 4 columns: '#', 'Schematic Page', and 'Part Reference'. The table lists 18 items, each with a number, a schematic page reference, and a part reference with a corresponding symbol.

#	Schematic Page	Part Reference
1	BENCH : B	 S1
2	BENCH : F	 C58
3	BENCH : B	 Y1
4	BENCH : F	 C57
5	BENCH : F	 C56
6	BENCH : C	 U42
7	BENCH : C	 E5
8	BENCH : C	 E4
9	BENCH : C	 E3
10	BENCH : C	 E2
11	BENCH : BENCH	 U26
12	BENCH : C	 U46
13	BENCH : BENCH	 U27
14	BENCH : BENCH	 U29
15	BENCH : D	 R53
16	BENCH : D	 R52
17	BENCH : F	 C128
18	BENCH : F	 C127

*To create a BOM variant*

1. In the part manager tree view, select the BOM Variants folder.
2. From the Edit menu, choose New. The New BOM Variant dialog box appears. Or right-click on the BOM Variants folder and choose New BOM Variant from the pop-up menu.
3. Type the new BOM variant name in the text box and click OK. The new BOM variant folder appears in the list view and the tree view of the part manager window.

## **Adding folders to create new groups, subgroups, and BOM variants**

In the part manager window, you can sort components into groups and subgroups to create bill of materials (BOM) variants for a core design. These groups and subgroups provide greater convenience for assembling bills of materials for design variants.

### **Creating groups and subgroups**

You create groups and subgroups in the Groups folder to make building BOM variants easier. A newly created group is empty and does not contain any components or subgroups. A group can have any number of subgroups. Each subgroup within a group contains the same set of components as the parent group, although the components may have different component properties in each subgroup.

When you create a subgroup in a group that already contains components, all of the components move to the subgroup. When you create a subgroup in a group that contains another subgroup, the new subgroup contains the same components as the existing group.

The part manager's tree view provides a graphical interface for easily creating groups, subgroups, and BOM variants. Within the tree view, you can link a database part or update a part's status.

**Note:** You can link and view a part or update its status from within a group, but you cannot update a database part from within a BOM variant folder.

#### ***To create a group***

1. In the part manager's tree view, select the Groups folder.
2. From the Edit menu, choose New Group Or right-click and choose New Group from the pop-up menu. The New Group dialog box appears.
3. Type the new group name in the text box.



**Caution**

***Do not use the reserved words "groups", "common", or "BOM variant".***

4. Click OK. The new group folder appears in the tree view of the part manager window.

#### ***To create a subgroup***

1. Select the group folder that you want to contain the new subgroup.
2. From the Edit menu, choose New Subgroup. The New Subgroup dialog box appears.
3. Type the new subgroup name in the text box and click OK. The new subgroup folder appears in the list view of the part manager window.

#### ***To create a subgroup in a group that is part of a BOM variant***

1. Remove the group from the BOM variant.

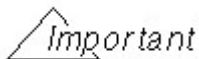
2. Follow the procedure above to create the new subgroup.
3. Add the subgroup back to the BOM variant.

## Populating groups and subgroups with components

After establishing groups and subgroups, you can begin to populate them with design components. A group can contain components or subgroups, but not both. When you create one or more subgroups, the components that were in the group folder move into each of its subgroup folders.

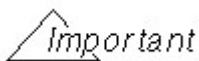
You can populate a group with components using the following two methods:

- Select components in the list view while you drag and drop them into a group folder.



You cannot add components directly into a subgroup.

- Copy a group or subgroup folder to create a new group or subgroup with components from the source group. When you copy a component, you copy its part status and properties.



Whenever you change information in a group that is participating in a BOM variant, the BOM variant is affected. For example, if you remove any component from a group participating in a BOM variant, the component is also removed from all BOM variants containing that group.

### *To populate groups and subgroups*

1. In the part manager tree view, select the group folder that contains the component or components you want to copy.
2. In the list view, select the component or components you want to copy.
3. From the Edit menu, choose Copy Or right-click and choose Copy from the pop-up menu.
4. Select the target folder in the tree view.
5. From the Edit menu, choose Paste Or right-click on the target folder and choose Paste from the pop-up menu.

Or

- After selecting the components you want to copy, hold the Ctrl key while you drag and drop the component set into the target folder.

**Note:** If you select a component from a group or subgroup and drag it to another folder without holding the Ctrl key, the component will be moved, not copied.

**Note:** Copying a component from one group to another, making the same component exist in more than one group, may cause a design to contain ambiguous parts.

## Copying groups, subgroups, and BOM variants to quickly create new variants

Often several groups or subgroups differ by only a few component variations. You can easily create groups and subgroups using the Copy command. The new group contains all the



components and subgroups from the source group. Copying a group or subgroup copies the component variations, like part status and property differences, into the new group or subgroup.

### ***To copy groups and subgroups***

1. In the part manager window tree view, select a group or subgroup whose contents you want to copy.
2. From the Edit menu, choose Copy. Or right-click on the selected folder and choose Copy from the pop-up menu. Depending on which folder you are copying, the Copy Group or Copy Subgroup dialog box appears.
3. Type the name of the new group or subgroup in the text box and click OK. The new folder appears in the tree view of the part manager at the same hierarchical level as the source.

## **Renaming groups, subgroups, and BOM variants**

You can change the name of an existing group or subgroup using the Rename command. When you rename a group or subgroup that was dragged into a BOM variant folder, the folders in that BOM variant folder are also renamed.

### ***To rename groups and subgroups***

1. In the part manager tree view, select the group or subgroup you want to rename.
2. From the Edit menu, choose Rename. Or right-click on the selected group or subgroup and choose Rename from the pop-up menu. The Rename Group or Rename Subgroup dialog box appears, depending on whether you have selected a group or subgroup.
3. Type the new group or subgroup name in the text box and click OK.
4. Click Yes to dismiss the confirmation message window and complete the operation. The renamed group or subgroup appears in the part manager tree view. If the group is participating in any BOM variants, the name of the group or subgroup within the BOM variant automatically changes.

## **Deleting groups, subgroups, and BOM variants**

When you delete a group, its subgroups are also deleted. If the folder has been dragged into a BOM variant folder, the folder and its contents are no longer part of the BOM variant.

When you delete a group or subgroup, any of its components that do not still belong to another group move to the Common folder. If you delete all of the subgroups in a group, the components stay in the group folder.

### ***To delete groups, subgroups, and BOM variants***

1. In the part manager window tree view, look in the Groups folder and select the group or subgroup you want to delete.
2. From the Edit menu, choose Delete Or right-click on the selected group or subgroup and choose Delete from the pop-up menu.

Or

Press the Delete key.

3. Click Yes to dismiss the confirmation message window and complete the operation.

## **Removing components from groups and subgroups**

Removing a component or components from a group or subgroup that is used in a bill of materials (BOM) variant changes the component's properties and status in the BOM variant to the same as those of the component in the core design. When you remove a part from a group or subgroup, it moves into the common folder unless it is still in use by another group or subgroup.

### ***To remove components from groups and subgroups***

1. In the part manager tree view, find the group or subgroup that contains the part or parts you want to remove.
2. Click the group or subgroup folder to show the parts in the list view and select the part or parts you want to remove.
3. Select the part or parts you want to remove from the group or subgroup.
4. From the Edit menu, choose Remove. Or right-click on the selected component or components and choose Remove from the pop-up menu.
5. Click OK in the message box to remove the part or parts from the group or subgroup.

**Note:** Removing a component from a subgroup removes it from all subgroups in the parent group.

## **Changing groups of components from the schematic page editor**

Once you have defined design variant groups and subgroups in the part manager, you can add or remove components from groups while you are working in the schematic page editor. When you add a part to any group that contains subgroups, all subgroups are populated with the part. Similarly, when you remove a part from a group, it is also removed from all of the group's subgroups.

You can add components to existing groups or subgroups, or remove components from existing groups or subgroups without switching the view from the schematic page editor to the part manager window.

### **Adding parts to groups from the schematic page**

After you have defined design variant groups in the part manager, you can add components to groups while you are working in the schematic page editor. When you remove a part from any group that contains subgroups, the part is removed from the subgroups.

### ***To add parts to groups from the schematic page***

1. In the schematic page editor window, select the component or components you want to add to the group.
2. From the Edit menu, choose Add Part(s) To Group. Or right-click on the selected component and choose Add Part(s) To Group from the pop-up menu. The Add Part(s) dialog box appears.
3. Select the group or groups to which you want to add the components and click the Add button.
4. Click OK to dismiss the confirmation message window

### **Removing parts from groups from the schematic page**

Once you have defined design variant groups in the part manager, you can remove components from groups while you are working in the schematic page editor. When you remove a part from any group that contains subgroups, the part is removed from the subgroups.

***To add parts to groups from the schematic page***

1. From the schematic page editor window, select the component you want to remove from the group.
2. From the Edit menu, choose Remove Part(s) From Group. Or click the right mouse button and choose Remove Part(s) From Group from the pop-up menu. The Remove Part(s) dialog box appears.
3. Select the group from which you want to remove the components and click the Remove button.
4. Click OK to dismiss the confirmation message window.

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