cadence®

K Commands

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K Commands

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keepin component

Adds a component keepin area in layout based on selected points. Sets the *Component Keepin* class active on subclass *All*.

You can have only one component keepin area in a layout. The existing keepin shape is erased when you enter another component keepin shape for a layout.

⚠ Available only for the Allegro X Advanced Package Designer licenses.

Related Topics

- Creating Keepin and Keepout Areas
- Commands to Create Keepins and Keepouts - Options Panel
- keepout component
- component_height

keepin package

Adds a package or part keepin area that you want included in the layout. This command sets the *Package Keepin* class active on subclass *All*. Choose the points that define the package or part keepin area.

You can have only one keepin shape in a layout. The existing keepin shape is erased when you enter another keepin shape for a layout.

⚠ Available only for the Allegro X PCB Editor licenses.

Related Topics

- Creating Keepin and Keepout Areas
- Commands to Create Keepins and Keepouts - Options Panel
- keepout package
- package_height
- Preparing the Layout

keepin photo

Creates a photoplot outline that defines the limits of your artwork photoplot data file.

Related Topics

- Creating Keepin and Keepout Areas
- Commands to Create Keepins and Keepouts - Options Panel
- Preparing the Layout

keepin router

Adds route keepin areas to your layout. This command sets the *Route Keepin* class active on subclass *All* and starts the keepin router command. Choose the points that define the route keepin area.

You can have only one route keepin in a layout. If you start to enter another route keepin area for your layout, your first area is erased.

Related Topics

- Creating Keepin and Keepout Areas
- Commands to Create Keepins and Keepouts - Options Panel
- Preparing the Layout

keepout component

Adds filled component keepout areas to your layout. This command sets the *Component Keepout* class active on subclass *All* and starts the keepout component command.

Before you enter coordinates for a keepout, change the subclass to *Top* or *Bottom*/SURFACE or BASE, depending on which side of the board/substrate you want the component keepout. You can have as many component keepout areas as you want. Choose the points that define the component keepout area.

⚠ Available only for the Allegro X Advanced Package Designer licenses.

Related Topics

- Creating Keepin and Keepout Areas
- Commands to Create Keepins and Keepouts - Options Panel
- keepin component
- component height
- Preparing the Layout

keepout gloss

Adds gloss keepout areas to your layout. This command sets the *Manufacturing* class active on subclass *No_Gloss_All* and starts the keepout gloss command.

Before you enter coordinates, change the subclass to *No_Gloss_Bottom*, *No_Gloss_Top*, or *No_Gloss_Internal*.

Related Topics

- Creating Keepin and Keepout Areas
- Commands to Create Keepins and Keepouts - Options Panel
- Preparing the Layout

keepout package

Adds filled package/part keepout areas to your layout. This command sets the *Package Keepout* class active on subclass *All* and starts the keepout package/part command.

Before you enter coordinates for a keepout, change the *Package Keepout* subclass to *Top* or *Bottom*/SURFACE or BASE, depending on which side of the board/substrate you want the package/part keepout. You can have as many package/part keepout areas as you want. Choose the points that define the package/part keepout area.You can also create voids within package keepout areas that allows routing inside the void.

⚠ Available only for the Allegro X PCB Editor licenses.

Related Topics

- Creating Keepin and Keepout Areas
- Commands to Create Keepins and Keepouts - Options Panel
- keepin package
- package_height
- Preparing the Layout

keepout probe

Adds probe keepout areas to your layout. This command sets the *Manufacturing* class active on subclass *No_Probe_Top* and starts the keepout probe command. Before you enter coordinates for a probe KO, change the *Manufacturing* subclass, if necessary, to *No_Probe_Bottom*.

Choose the points that define the keepout area. You can add as many probe keepouts as you want. You can also create voids within probe keepout areas that allows routing inside the void.

Related Topics

- Creating Keepin and Keepout Areas
- Commands to Create Keepins and Keepouts - Options Panel
- Preparing the Layout

keepout router

The `keepout router` command adds filled route (etch/conductor) keepout areas to the layout. The areas may be either filled shapes or filled rectangles depending on the class and first subclass selections for that type of keepout.

This command sets the ROUTE KO class active on subclass ALL and starts the keepout router command.

You can also create voids within route keepout areas that allows routing inside the void.

Related Topics

- Creating Keepin and Keepout Areas
- Commands to Create Keepins and Keepouts - Options Panel
- Preparing the Layout

keepout shape

The `keepout shape` command adds etch/conductor shape keepout areas to your layout. As with all keepouts, the active subclass provides control for individual layers or for creation on the ALL subclasss.

When you run this command, the *Route Keepout* class becomes active on subclass *All*, and the correct shape type is set for this class. Then you can choose the points that define the route keepout area.

The `keepout shape` command adds two properties to control the use of the keepout: VIAS_ALLOWED and ROUTES_ALLOWED. This means that you can drill vias through the shape, and routing is permitted through it.

DRCs generate for a route keepout with:

- No Properties: Routes (clines), vias, or shapes cause DRCs
- VIAS_ALLOWED and ROUTES_ALLOWED: Conductive shapes cause DRCs
- VIAS_ALLOWED: Routes (clines) and conductive shapes cause DRCs
- ROUTES_ALLOWED: Vias and conductive shapes cause DRCs

Related Topics

- Preparing the Layout Overview

keepout via

Adds via keepout placement areas to your layout. This command sets the VIA KEEPOUT class active on subclass ALL and starts the keepout via command. Before you enter the coordinates of the via keepout placement area, change the VIA KEEPOUT subclass to match a particular ETCH/CONDUCTOR subclass, if you want it to apply only to that subclass

Choose the points that define the keepout area. You can add as many via keepouts as you want. You can also create voids within via keepout areas that allows routing inside the void.

Related Topics

- Creating Keepin and Keepout Areas
- Commands to Create Keepins and Keepouts - Options Panel
- Preparing the Layout

keepout wire

The `keepout wire` command adds filled route (etch/conductor) keepout areas to the layout. The areas may be either filled shapes or filled rectangles depending on the class and first subclass selections for that type of keepout.

When you run this command, the editor sets the *Route Keepout* class active on subclass *All*, sets the correct shape type for this class, and starts the `keepout wire` command. Then you can choose the points that define the route keepin area.

The `keepout wire` command also adds the *VIAS_ALLOWED* property to the newly created shape. This means that you can drill vias through the shape, but the editor prevents the wires from routing through the shape.

Related Topics

- Creating Keepin and Keepout Areas
- Drawing an Area Using Line Segments
- Drawing an Area Using a Bounding Box
- Preparing the Layout

Commands to Create Keepins and Keepouts - Options Panel

Access using:

- Menu path: *Setup – Areas – Component Keepin*
- Menu path: *Setup – Areas – Component Keepout*
- Menu path: *Setup – Areas – Component Height*
- Menu path: *Setup – Areas – Package Keepin*
- Menu path: *Setup – Areas – Package Keepout*
- Menu path: *Setup – Areas – Package Height*
- Menu path: *Setup – Areas – Route Keepin*
- Menu path: *Setup – Areas – Route Keepout*
- Menu path: *Setup – Areas – Wire Keepout*
- Menu path: *Setup – Areas – Via Keepout*
- Menu path: *Setup – Areas – Shape Keepout*
- Menu path: *Setup – Areas – Probe Keepout*
- Menu path: *Setup – Areas – Gloss Keepout*
- Menu path: *Setup – Areas – Photoplot Outline*

Active Class and Subclass	Specify the classes. The classes depend on the keepin or keepout you are creating. Following is a list of the different types of keepins and keepouts and their respective default classes: • Component keepin: *Component Keepin* and *All*. • Component keepout: *Component Keepout* and *All*. • Component height: *Package Geometry* and *Place_Bound_Top*. • Package keepin: *Package Keepin* and *All*. • Package keepout: *Package Keepout* and *All*. • Package height: *Package Geometry* and *Place_Bound_Top*. • Route keepin: *Route Keepin* and *All*. • Route keepout: *Route Keepout* and *All*. • Wire keepout: *Route Keepout* and *All*. • Via keepout: *Via Keepout* and *All*. • Shape keepout: *Route Keepout* and *All*. • Gloss keepout: *Manufacturing* and *No_Gloss_All*. • Photoplot outline: *Manufacturing* and *Photoplot_Outline*.
Line lock	Defines the line segment and the angle of the corner when the segment changes direction. Active only when *Add Shape* pop-up command is selected. The values for the line segment are *Line* and *Arc*. *Line* is selected by default. The values for angle are *Off*, *45*, and *95*. *45* is selected by default. Available only for the following commands: • *Component Height* (`height_component`) • *Package Height* (`package_height`)
Min height	Sets the minimum height restriction for the component or package keepout area, based on the chosen class. Available only for the following commands: • *Component Height* (`height_component`) • *Package Height* (`package_height`)

Max height	Sets the maximum height restriction for the component or package or the keepout area, based on the chosen class. Available only for the following commands: • *Component Height* (`height_component`) • *Package Height* (`package_height`)
Clear	Empties the height fields of edited values. Available only for the following commands: • *Component Height* (`height_component`) • *Package Height* (`package_height`)
Reset	Restores the values to their non edited values. Available only for the following commands: • *Component Height* (`height_component`) • *Package Height* (`package_height`)
Line font	Specify a font for lines from the following values: *Solid*, *Hidden*, *Phantom*, *Dotted*, and *Center*. *Solid* is selected by default. Available only for the following commands: • *Gloss Keepout* (`keepout gloss`) • *Photoplot Outline* (`keepin photo`)
Rectangle Creation	Available only for the following commands: • *Gloss Keepout* (`keepout gloss`) • *Photoplot Outline* (`keepin photo`)
Draw Rectangle	Select to draw rectangular shape.This is the default value. Available only for the following commands: • *Gloss Keepout* (`keepout gloss`) • *Photoplot Outline* (`keepin photo`)

Place Rectangle	Select to place a rectangular shape defined by height and width set in the *Height* and Width fields, respectively. Available only for the following commands: • *Gloss Keepout* (`keepout gloss`) • *Photoplot Outline* (`keepin photo`)
Width	Specify the height of the rectangle to be placed. Available only when *Place Rectangle* is selected. Default value is `100.0`. Available only for the following commands: • *Gloss Keepout* (`keepout gloss`) • *Photoplot Outline* (`keepin photo`)
Height	Specify the width of the rectangle to be placed. Available only when *Place Rectangle* is selected. Default value is `100.0`. Available only for the following commands: • *Gloss Keepout* (`keepout gloss`) • *Photoplot Outline* (`keepin photo`)
Shape Fill	
Type	Specify a shape fill type. Changing the fill type affects the shape you are currently adding. If the shape boundary exists, the shape updates dynamically. If the active layer restricts shapes to unfilled type, Unfilled is automatically selected. ⚠ Grayed for the `keepout router`, `keepout shape`, `keepout via`, and `keepout wire` commands.
	Dynamic Copper: Select to create a positive shape. The copper area and voids of the shape are automatically filled and updated whenever you edit the elements or boundary of the shape. You can only add a dynamic shape to the etch class. ⚠ Not valid for the `keepin component` and `keepin route` commands.

	Dynamic Crosshatch: Select to create a dynamic crosshatch-filled shape. The copper area and voids of the shape are dynamically filled or updated after you edit its elements or boundary. ⚠ Not valid for the `keepin component` and `keepin route` commands.
	Static Solid: Select to create a static solidly filled shape. The copper area and voids of the shape are not dynamically filled or updated after you edit the elements or boundary of the shape. A solid-fill shape is filled with a stencil pattern, which is transparent to allow drawing elements behind the shape to display. Use static positive shapes for critical etches that you do not want modified automatically. Selected by default for *Component Keepout* (`keepout component`), *Package Keepout* (`keepout package`), *Route Keepout* (`keepout route`), *Wire Keepout* (`keepout wire`), *Via Keepout* (), *Shape Keepout* (), and *Probe Keepout* (). The selection is not enabled for *Route Keepout* (`keepout route`). *Wire Keepout* (`keepout wire`), *Via Keepout* (`keepout via`), and *Shape Keepout* (`keepout shape`). ⚠ Not valid for the `keepin component` and `keepin route` commands.
	Static Crosshatch: Select to create a static crosshatch-filled shape. The copper area and voids of the shape are not dynamically filled or updated after you edit the elements or boundary of the shape. ⚠ Not valid for the `keepin component` and `keepin route` commands.
	Unfilled: Choose to create a static unfilled shape. You cannot add an unfilled shape on an etch layer. Selected by default for *Component Keepin* (`keepin component`), *Package Keepin* (`keepin package`) and *Route Keepin* (`keepin route`). ⚠ Not valid for the `keepout component` and `keepout packager` commands.
Defer performing dynamic fill	Select to retain shape boundary and defer dynamic fill. Not selected by default.

Assign net name	Choose net from the pull-down menu or browse the net from the Select a net dialog box.
Shape grid	Choose a grid increment for shape/void outlines or enter a value in database units. If the shape grid is set to None or to Current Subclass Grid, the subclass grid displays if you enable the Grids On field in the Grids Display dialog box, available by running the define grid command. If a shape grid is not entered, the grid for the current subclass is used. Up to five grid entries can be entered during any session. Exiting clears the grid settings from memory. Once the shape editing session ends, the working grid reverts back to the original database settings. • *None*: Choose to create shapes off grid in user units, specified on the Drawing Parameters dialog box (`drawing param`). • *Current grid*: Choose to use the grid values defined for the active class/subclass. Selected by default.
Segment Type	
Type	Define the segment type. The following line segment types are available: • *Line*: Choose to use any angle line. • *Line 45*: Choose to miter lines to a 45 degree at vertex locations. Selected by default. • *Line Orthogonal*: Choose to create lines at 90 degree angles at vertex locations. • *Arc*: Choose to create an arc. Available only when adding polygons. Once you enter an arc, this field automatically defaults to the previous line segment type specified in the Type field. Cursor position as it moves toward the arc end point determines arc direction (clockwise or counter clockwise).
Angle	Enter a value to create an arc from the start point with the specified angle. The arc is tangent to the start and end point, which determines the arc's direction. Available only if you specify `Arc` as the line segment type in the Type field as an alternative to selecting the end point of the arc. Default value is `0.0`.
Arc radius	Enter the next arc segment with a given radius. A zero value creates a tangent arc. Available only if you specify `Arc` as the line segment type in the Type field. Default value is `0.0`.

Related Topics

- Drawing an Area Using Line Segments
- Drawing an Area Using a Bounding Box

Creating Keepin and Keepout Areas

A keepin or keepout is an area constraint that you specify on the layout. A keepin is an unfilled polygon that defines the area where a type of object may be placed in a design. You can only add one keepin for a particular type. A keepout is a filled shape that defines an area in which an object is restricted or not allowed.

You can create area constraints for the following types of keepins and keepouts:

- Component keepin

  ⚠ The area of a component symbol may touch but not cross the component keepin.

- Package Keepin
- Route Keepin
- Component Keepout
- Gloss Keepout
- Route Keepout
- Via Keepout

  ⚠ Vias may touch, but not enter a keepout space. The automatic router does not add vias inside a via keepout. You can add via keepouts to package and mechanical symbol drawings.

To add a keepin or keepout area, do the following:

1. Choose the keepout or keepin type from *Setup – Areas*.
2. Specify the appropriate subclass in the *Options* panel.
3. Draw area constraint either using line segments for route, component, via, or probe or using a bounding box for gloss and artwork.

   ⚠ Ensure Area visibility is turned on for the Class keepin you are creating.

Related Topics

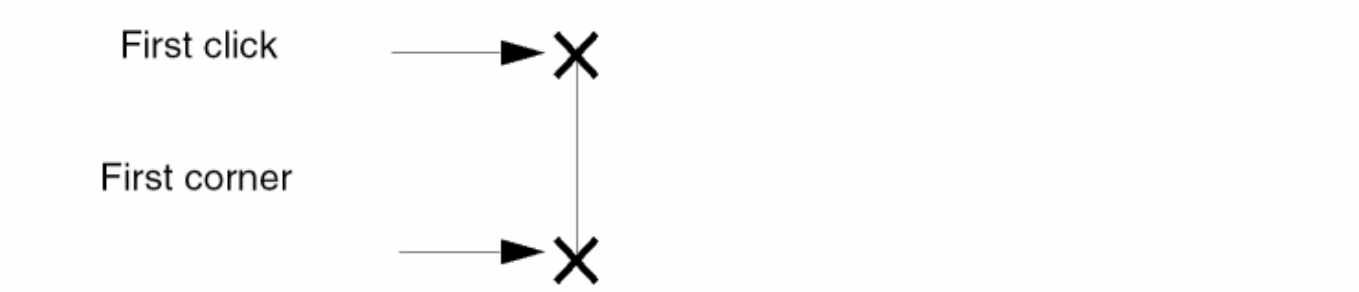
- keepout wire
- Drawing an Area Using a Bounding Box

Drawing an Area Using Line Segments

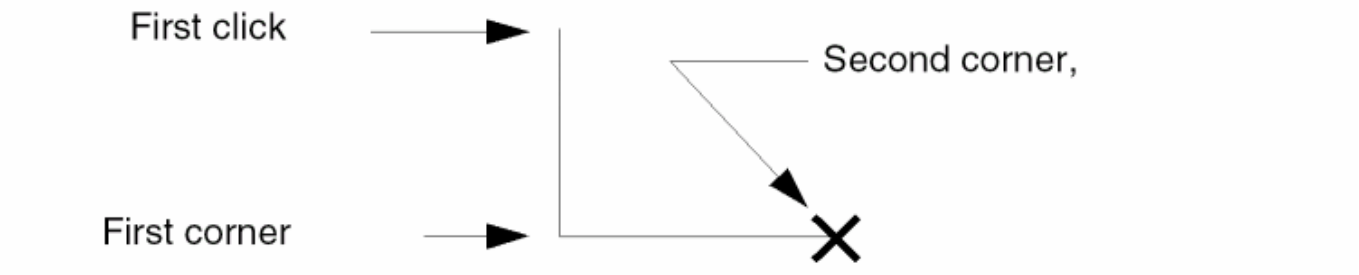
You draw shapes for route, component, via, and probe areas by connecting a series of line segments.

To draw an area constraint using line segments, do the following:

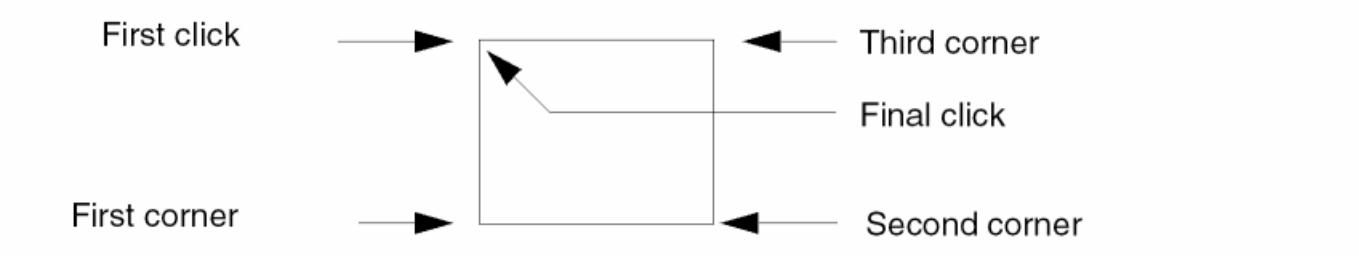
1. Click at the location where you want to begin the first line segment of the constraint.
2. Click at the first corner. This is the point where the first segment ends and the second segment begins.



3. Click at the second corner.



4. Complete additional corners as needed, until you reach the point that completes the shape of the constraint.



5. Right-click and choose *Done*.
   If you do not end by connecting with the starting point, the constraint shape automatically closes.

Related Topics

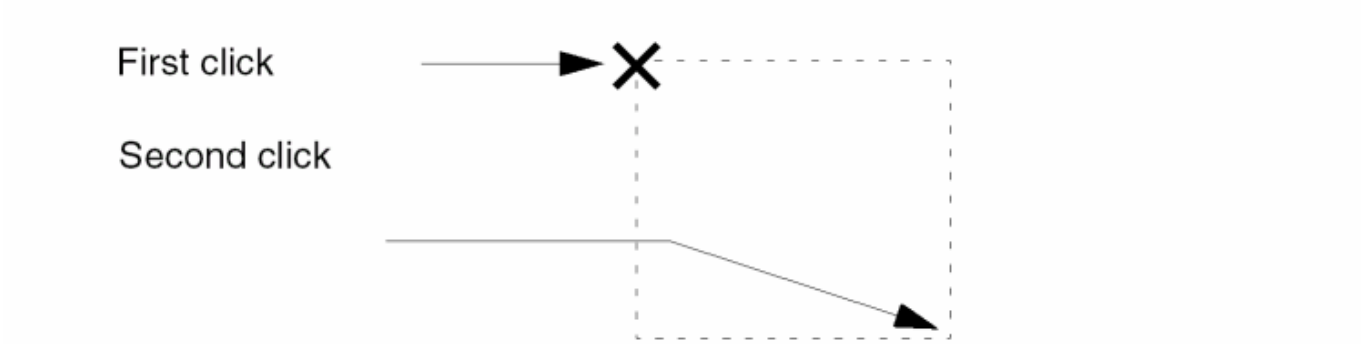
- keepout wire
- Commands to Create Keepins and Keepouts - Options Panel

Drawing an Area Using a Bounding Box

You draw shapes for gloss keepouts by drawing a bounding box.

To draw an area constraint using a bounding box, do the following:

1. Click at the location where you want to begin drawing the constraint area.
   This defines the first corner of the bounding box.
2. Click at the location that is diagonally opposite the first location.
   This defines the opposite corner of bounding box.



   A bounding box expands to cover the area.
3. Click to anchor the cursor and close the constraint shape.
4. Right-click and choose *Done*.

Related Topics

- keepout wire
- Commands to Create Keepins and Keepouts - Options Panel
- Creating Keepin and Keepout Areas