

AAdd KeepOut User Guide

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Purpose

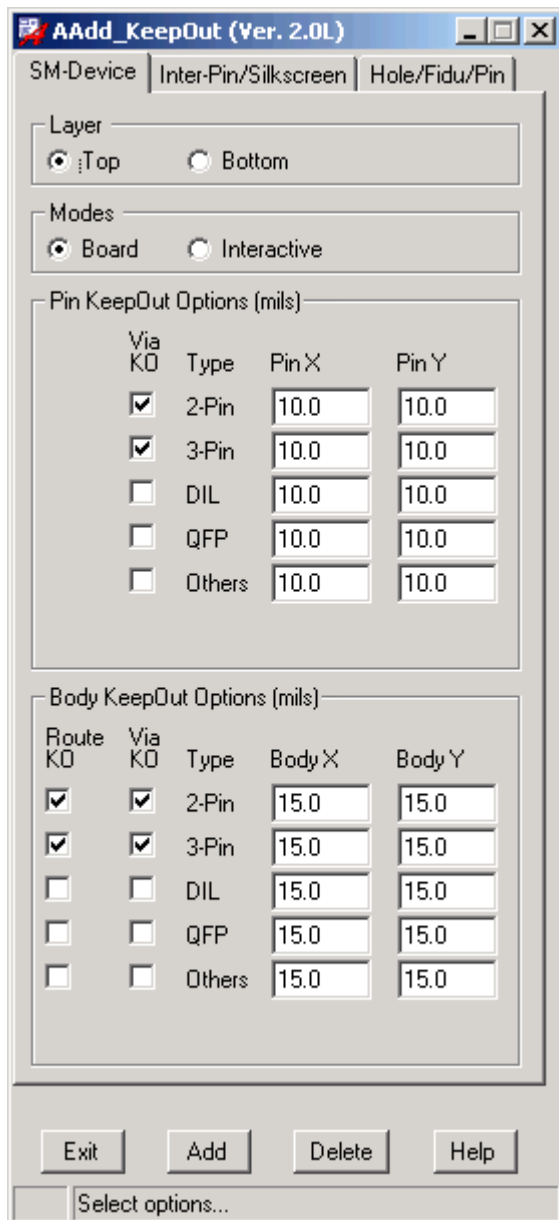
Adds Route and Via keepouts to components, pins, vias, fiducials, text, lines, shapes and holes.

Description

Prime function is to add user defined route keepouts and via keepouts automatically or interactively to components, pins and silkscreen objects prior to using the Specetra autorouter or manual routing. For glue and wave boards, asymmetrical via keepouts can be added to device pins allowing vias to be kept further away from the sides of a pad compared to the ends of the device. Circular, square and rectangular keepouts can also be added interactively to pins, fiducials and holes.

Benefits

Allows users to define via placement based on component type. Inter-pin and silkscreen keepouts added prior to Specetra autorouting, saves time during board cleanup. The interactive Hole/Fiducial/pin function makes adding user defined keepout shapes, easy and fast.



Menu Functions: SM-Device tab

Pin KeepOut → Add or delete via keepouts around device pins. User can choose the device type and define X and Y size of the keepout, outside the pad perimeter. Useful for glue and wave boards that require a via to pad clearance of 40 thou on the side of the device, and 20 thou clearance on the ends of the device.

On two pin chip devices, a one thou wide route keepout is added to the inside edge of the device pads, to prevent connections under the device.

Body KeepOut → Add or delete Route and/or Via Keepouts to device bodies. User can choose the device type and define X and Y size of the keepouts, on top of the device body.

Modes of operation:

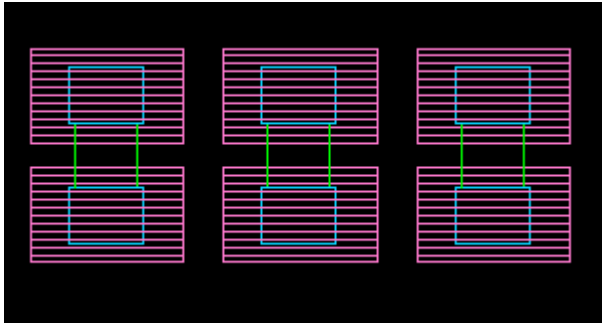
Layer → Add or delete keepouts on selected layer.

Board → Add or delete keepouts to the selected layer on the entire board

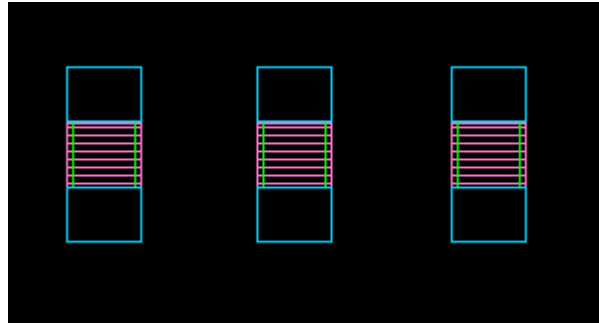
Interactive → Add or delete keepouts inter-actively, to selected devices by body type.

Screen Shots

Pad via KeepOuts for glue and wave.



Body Route and via KeepOuts.



Running the Program: SM Device Tab

- 1) Set the Route and Via Keepouts spacing values as desired.
- 2) Enable the keepout type checkbox beside the target package type.
- 3) Set the mode of operation → Board or Interactive
- 4) Set the target layer → top or bottom.
- 5) Click the “ Add” button.

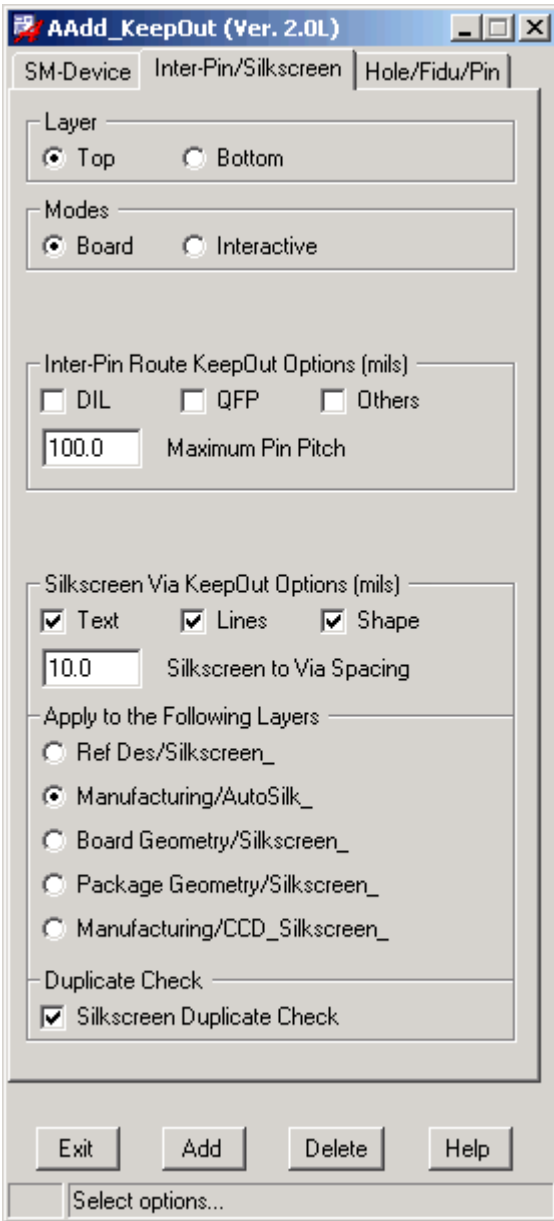
When removing keepouts, simply select the layer and device type, and click the “Delete” button.

In the “ board mode” all selected target devices on the target layer will have keepouts added to them.

In the Interactive mode, the user can choose add keepouts to individual devices, one at a time.
When in the “Interactive” mode use the right mouse button (mouse 3) to quit out of the function.

Note 1: In the interactive mode, after “ADD” or “Delete” is clicked, the user interface menu will disappear.
This is done to prevent users from changing menu tabs while in the middle of “Add” or “Delete” command.

Note 2: This program sorts device types by analysing the footprint geometry. Sometimes the pads in the footprints are not symmetrical in pad layout, one side of a DIL device may be shifted several thou in relation to its opposite side. These non-symmetrical components will not be classified as 2-Pin, 3-Pin, DIL or QFP’s unless the “Others” option is selected. When “**Others**” is enabled, the parameters for classifying 2-pin, 3-pin, DIL and QFP’s are widened, allowing more devices to be classified correctly.



Menu Functions: Inter-Pin / Silkscreen Tab

Inter-Pin KeepOut → Add or delete Route keepouts between the pad of DIL and QFP devices. Keeps the Spectra autorouter from creating pin escapes with starting points between the pads of devices. Only allows pin escapes from the pad ends. User can define the maximum pad pitch of the target devices, all others over this value will be ignored.

Silkscreen KeepOut → Add or delete Via keepouts to silkscreen objects, one layer at a time. The silkscreen to via spacing parameter is the desired distance between the edge of the silkscreen and the edge of the via pad. The Photo Width of the silkscreen is used to determine actual distances.

Modes of operation:

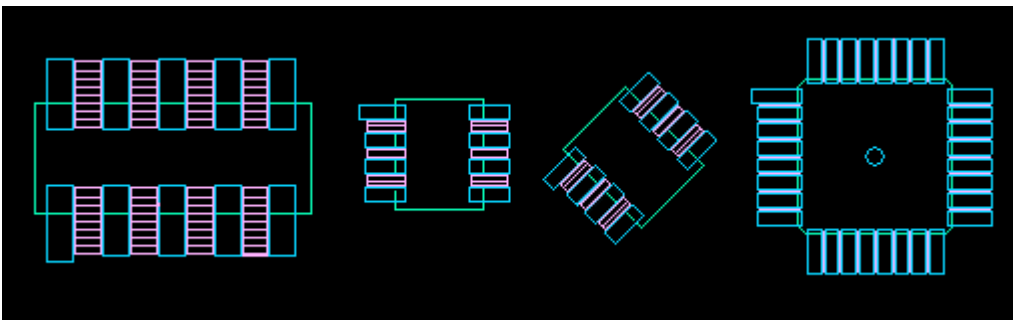
Layer → Add or delete keepouts on selected layer.

Board → Add or deletes keepouts to the selected layer on the entire board

Interactive → Add or delete keepouts inter-actively, to selected devices or objects.

NOTE: Both the inter-pin and silkscreen menus may be active at the same time.

Screen Shots



Inter-Pin Route Keepouts applied to DIL and QFP devices in any angle of rotation.

Screen Shots continued



Via Keepouts added to silkscreen line and text prior to Spectra auto-routing the design.

Running the Program: Inter-Pin / Silkscreen Tab

- 1) Inter-Pin and Silkscreen menus may be active individually or both at the same time.
- 2) Set the target layer → Top or Bottom.
- 3) Set the mode of operation → Board or Interactive
- 4) Enable the target objects in either the Inter-Pin menu or Silkscreen Menu.
- 5) Set the pin pitch for Inter-Pin or Via spacing value for silkscreen
- 6) Set the target silkscreen layer.
- 7) Click the “Add” button.

When removing keepouts, simply select the layer and object type, and click the “Delete” button.

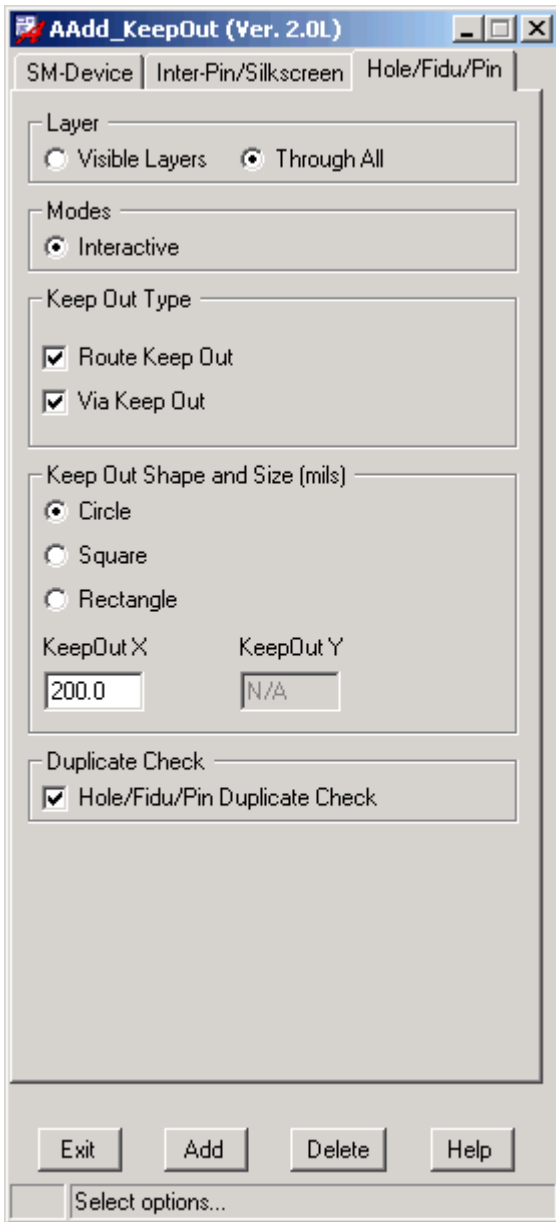
Silkscreen Logos that consist of multiple overlapping lines will not be fully covered by a Via keepouts, unless the “Silkscreen Duplicate check” is disabled. When this option is enabled, Keepout sizes can be Updated without having to delete the previous keepout. The program will detect the presence of a keepout and then replace it with the new size keepout. Users can quickly try multiple variations on an object, with multiple “Add” commands.

In the “Board” mode, all selected target devices on the target layer will have keepouts added to them.

In the Interactive mode, the user can choose add keepouts to individual objects, one at a time. When in the “Interactive” mode use the right mouse button (mouse 3) to quit out of the function.

Note 3: In the interactive mode, after “ADD” or “Delete” is clicked, the user interface menu will disappear. This is done to prevent users from changing menu tabs while in the middle of “Add” or “Delete” command.

Note 4: This program sorts device types by analysing the footprint geometry. Sometimes the pads in the footprints are not symmetrical in pad layout, one side of a DIL device may be shifted several thou in relation to its opposite side. These non-symmetrical components will not be classified as DILs or QFPs unless the “Others” option is selected. When “**Others**” is enabled, the parameters for classifying DILs and QFPs is widened, allowing more devices to be classified correctly.



Menu Functions: Hole / Fiducial / Pin Tab

Interactive Keepouts → Add or delete user defined Route and or Via Keepouts to any hole, fiducial or pin interactively.

Useful for adding KeepOuts quickly and easily to mechanical features.

Modes of operation:

Layer → Add or delete keepouts on visible layers or through all layers.

Keepout Type → Select Route or Via Keepouts or both

Keepout Shape → Define the shape size of the keepout. Select circular, square or rectangular,

Duplicate Check → When enabled prevents multiple keepouts from being added to an object. Disable if you need to add overlapping keepouts, to two, or more objects.

Screen Shot



User defined Via and Route keepouts added to pins or holes

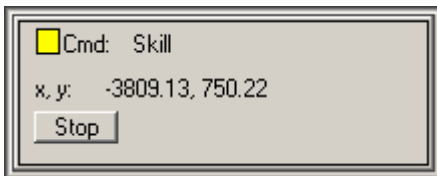
Running the Program: Hole / Fiducial / Pin Tab

- 1) This program runs only in the interactive mode (user pick)
- 2) Choose the layer → All Visible Layers, or Through All
- 3) Select the keepout type → Via or Route keepout, or both.
- 4) Select the keepout shape and enter the size into the menu.
- 5) Click the “Add” button.

When in the “Interactive” mode use the right mouse button (mouse 3) to quit out of the function. The user interface menu will be hidden while in the interactive “Add” or “Delete” mode.

When mounting holes or pins are close together and over lapping keepouts are desirable, disable the “Duplicate Check” in the menu. When this option is enabled, Keepout sizes can be updated without having to delete the previously added keepout. The program will detect the presence of a keepout and then replace it with the new size keepout. Users can quickly try multiple variations on an object, with multiple “ Add” commands.

The Stop Button



While the program is running, the stop button will be displayed in the bottom right corner of the Allegro tool window. The stop button can be used to terminate the AAdd KeepOut program at any time.