

Fill

Modified by Jason Howie on Sep 3, 2014

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A placed Fill.

Summary

A fill is a rectangular object that can be placed on any layer. When placed on a signal layer, a fill becomes an area of solid copper that can be used to provide shielding or to carry large currents. Fills of varying size can be combined to cover irregularly shaped areas, and can also be combined with track or arc segments and be connected to a net.

Fills can also be placed on non-electrical layers. For example, place a fill on the Keep-Out layer to designate a 'no-go' area for autorouting. Place a fill on a Power Plane, Solder Mask, or Paste Mask layer, to create a void on that layer. In the PCB Library Editor, fills can be used to define component footprints.

Availability

Fills are available for placement in both PCB and PCB Library Editors:

PCB Editor

- Click **Home** | **Place** |  **Fill** .

PCB Library Editor

- Click **Home** | **Place** |  **Fill** .

Placement

After launching the command, the cursor will change to a cross-hair and you will enter fill placement mode. Placement is made by performing the following sequence of actions:

1. Click or press **Enter** to anchor the first corner of the fill.
2. Move the cursor to adjust the size of the fill, then click or press **Enter** to anchor the diagonally-opposite corner and complete placement of the fill.
3. Continue placing further fills, or right-click or press **Esc** to exit placement mode.

A fill will 'adopt' a net name if the first corner is placed on an object which has a net name.

Additional actions that can be performed during placement are:

- Press the **L** key to flip the fill to the other side of the board – note that this is only possible prior to anchoring the fill's first corner.
- Press the **+** and **-** keys (on the numeric keypad) to cycle forward and backward through all visible layers in the design respectively – to change placement layer quickly.
- Press the **Tab** key to access an associated properties dialog, from where properties for the fill can be changed on-the-fly.

Note that the attributes can be modified during placement, press **Tab** to bring up the *Fill* dialog. Changes made will affect the object being placed, and subsequent objects placed during the same editing session.

Placing a Fill as a Keepout

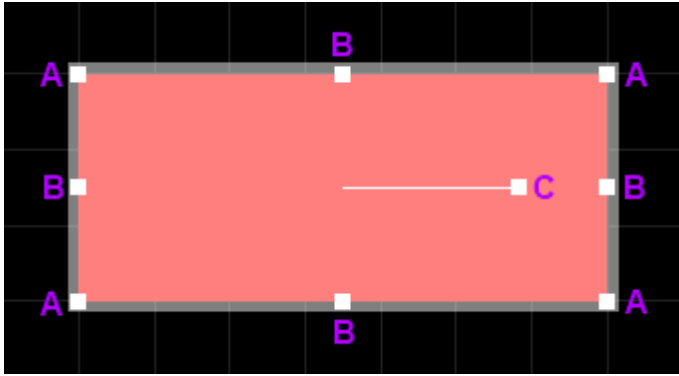
A Fill can be placed as a layer-specific keepout object or an all-layer keepout to act, for example, as a placement or routing barrier. Objects defined as keepouts are ignored during output generation, such as photo plotting and printing. A layer-specific keepout fill is simply a Fill object with its **Keepout** property enabled, an all-layer keepout is a Fill that has been placed on the Keepout layer.

- To place a layer-specific keepout either place a standard Fill on the required signal layer and then enable the **Keepout** property to make it a layer-specific keepout, or use the predefined Fill keepout placement command, available in the sub-menu on the Ribbon at **Home | Place | Keepout**.
- To place an all-layer keepout make the Keepout layer the active layer, then place a Fill from the Ribbon (**Home | Place | Fill**).

Graphical Editing

This method of editing allows you to select a placed fill object directly in the workspace and change its size, shape or location, graphically.

When a fill object is selected, the following editing handles are available:



A selected Fill.

- Click and drag **A** to resize the fill in the vertical and horizontal directions simultaneously.
- Click and drag **B** to resize the fill in the vertical and horizontal directions separately.
- Click and drag **C** to rotate the fill about its center point.
- Click anywhere on the fill – away from editing handles – and drag to reposition it. While dragging, the fill can be rotated or mirrored:
 - Press the **Spacebar** to rotate the fill anti-clockwise or **Shift+Spacebar** for clockwise rotation. The **Rotation Step** size is defined on the **PCB Editor - General** page of the *Preferences* dialog.
 - Press the **X** or **Y** keys to mirror the fill along the X-axis or Y-axis respectively.

If attempting to graphically modify an object that has its **Locked** property enabled, a dialog will appear asking for confirmation to proceed with the edit. Double click on the locked object directly and disable the **Locked** property to graphically edit the object.

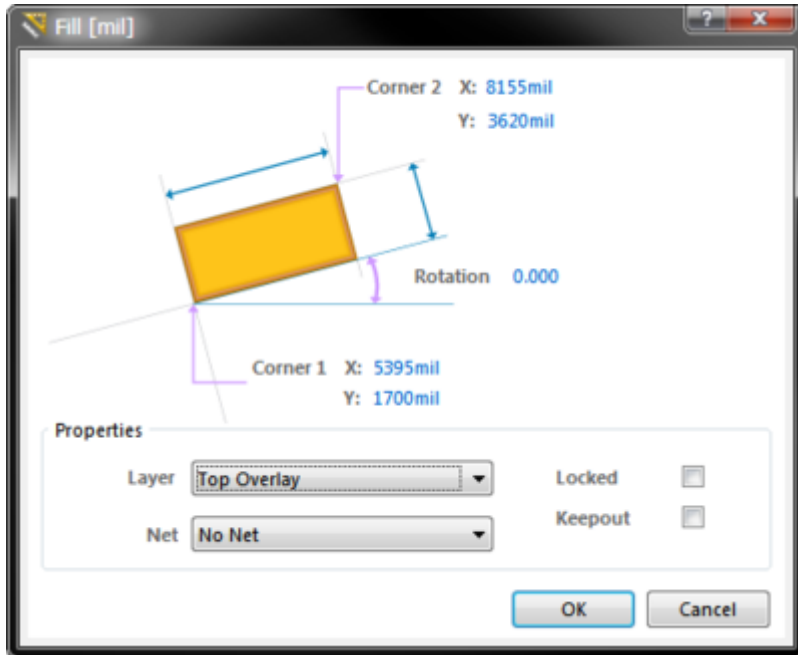
Non-Graphical Editing

The following methods of non-graphical editing are available:

Editing via an Associated Properties Dialog

Dialog page: [Fill](#)

This method of editing uses the [Fill dialog](#) to modify the properties of a fill object.



The *Fill* dialog.

During placement, the dialog can be accessed by pressing the **Tab** key.

After placement, the dialog can be accessed in one of the following ways:

- Double-click on the placed object.
- Place the cursor over the object, right-click and choose **Properties** from the context menu.



To toggle the units of measurement used in the open dialog between metric (mm) and imperial (mil), press the **Ctrl+Q** shortcut. This affects the dialog only and does not change the measurement unit currently selected for the board (**Home | Grids and Units | Metric** or **Imperial**).

Editing via an Inspector Panel

An *Inspector* panel enables the designer to interrogate and edit the properties of one or more design objects in the active document. Used in conjunction with appropriate filtering, the panel can be used to make changes to multiple objects of the same kind, from one convenient location.

Source URL: [http://documentation.circuitmaker.com/display/CMAK/PCB_Obj-Fill\(\(Fill\)\)_CM](http://documentation.circuitmaker.com/display/CMAK/PCB_Obj-Fill((Fill))_CM)