

# MicroSim PCBboards

## Reference Manual

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# How to Use This Online Manual

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Use this icon  
or toolbar button...

To do this...



Go back and forth between pages.



Go back and forth between views.

Library  
Utilities

Go to the Library Utilities chapter. (Other chapters have similar icons.)



Go to the Contents.

---

# Welcome to MicroSim

Welcome to the MicroSim family of products. Whichever programs you have purchased, we are confident that you will find they meet your circuit design needs.

The MicroSim family of products is fully integrated, giving you the flexibility to work through your circuit design in a consistent environment. They provide an easy-to-use environment for creating, simulating, and analyzing your circuit designs from start to finish.

# Overview

This guide is designed so you can quickly find the information you need to use MicroSim PCBboards.

This guide assumes that you are familiar with Microsoft Windows (95 or NT), including how to use icons, menus and dialog boxes. It also assumes you have a basic understanding about how Windows manages applications and files to perform routine tasks, such as starting applications and opening and saving your work. If you are new to Windows, please review your [Microsoft Windows User's Guide](#).

## Typographical Conventions

Before using MicroSim PCBboards, it is important to understand the terms and typographical conventions used in this documentation.

This guide generally follows the conventions used in the [Microsoft Windows User's Guide](#). Procedures for performing an operation are generally numbered with the following typographical conventions.

| Notation            | Examples                  | Description                                   |
|---------------------|---------------------------|---|
| monospace font      | analog.s1b or clipper.sch | Library files and file names.                 |
| <code>Ctrl+R</code> | Press <code>Ctrl+R</code> | A specific key or key stroke on the keyboard. |
| monospace font      | Type VAC...               | Commands/text entered from the keyboard.      |

## Online Help

Pressing **F1** or selecting Search for Help On from the Help menu brings up an extensive online help system.

The online help includes:

- Step-by-step instructions on how to use the PCBoards Autorouter features.
- Reference information about the PCBoards Autorouter.
- Technical Support information.

If you are not familiar with Windows (95 or NT) Help System, select How to Use Help from the Help menu.

# Using the Keyboard

Filename  
Extensions

**msim.ini**  
Configuration

Library  
Utilities



| Shortcut Key(s)          | Equivalent Menu Item       | Function  |
|--------------------------|----------------------------|---|
| <b>Menu Accelerators</b> |                            |   |
| F1                       | Help/Contents              | Run on-line help  |
| F2                       | Configure/Snap Grid        | Enable/disable the snap grid and set required spacing   |
| F3                       | Configure/Layer Display    | Change displayed layers   |
| F4                       | Configure/Padstacks        | Create/edit a padstack definition   |
| F5                       | Configure/Selection Filter | Define criteria for selecting layout objects  |
| F6                       | Configure/Styles/Text      | Change current text style   |
| F7<br>(Layout Editor)    | Configure/Styles/Trace     | Change current trace style  |
| F7<br>(Footprint Editor) | Configure/Styles/Pin       | Change current pin-padstack association   |
| F8                       | Tools/Options              | Set global editing controls   |
| F9<br>(Layout Editor)    | Library/Footprint Editor   | Activate the Footprint Editor   |
| F9<br>(Footprint Editor) | File/New                   | Activate a new Footprint Editor windows   |
| F10                      | File/View Messages         | Display the message log for browsing  |
| F11                      | Edit/Attributes            | Edit the properties of the current selection  |
| F12                      | View/Pan-New Center        | Change the center of the visible portion of the layout  |
| Ctrl+A                   | View/Area                  | Magnify the items bounded by the ROI box  |
| Ctrl+C<br>Ctrl+Insert    | Edit/Copy                  | Copy current selection to the paste buffer  |
| Ctrl+D                   | Edit/Move Delta            | Reposition the current selection by a relative change in coordinates from their current position. |
| Ctrl+E                   | Edit/Move By RefDes        | Select a component by specifying its reference designator.  |
| Ctrl+F                   | Edit/Flip Sides            | Flip current component selection to opposite side of the board                                    |



| Shortcut Key(s)           | Equivalent Menu Item       | Function   |
|---------------------------|----------------------------|--|
| Ctrl+G<br>(Layout Editor) | <b>Draw/Add Component</b>  | Add a component  |
| Ctrl+I                    | <b>View/In</b>             | Magnify the items around the center-point of the work area   |
| Ctrl+L                    | <b>View/Redraw</b>         | Refresh the work area display.   |
| Ctrl+N                    | <b>View/Fit</b>            | Scale complete design to fit into the work area.   |
| Ctrl+O                    | <b>View/Out</b>            | Reduce the items around the center-point of the work area  |
| Ctrl+P                    | <b>File/Print</b>          | Output current design to the configured printer.   |
| Ctrl+Q<br>(Layout Editor) | <b>Edit/Find</b>           | Select objects with attributes that match the listed search criteria   |
| Ctrl+R<br>R               | <b>Edit/Rotate</b>         | Rotate current selection   |
| Ctrl+S                    | <b>File/Save</b>           | Write current design to the Layout Database file (Layout Editor) or Footprint Library file (Footprint Editor)    |
| Ctrl+T                    | <b>Draw/Trace</b>          | Add a trace segment  |
| Ctrl+U                    | <b>View/Previous</b>       | Display layout at the last zoom setting  |
| Ctrl+V<br>⇧ Shift+Insert  | <b>Edit/Paste</b>          | Paste the buffer contents into the work area   |
| Ctrl+W                    | <b>Draw/Add Connection</b> | Draw a logical connection (rat) between two pins   |
| Ctrl+X                    | <b>Edit/Cut</b>            | Copy the current selection to paste buffer and remove from the work area   |
| Ctrl+Y                    | <b>Edit/Redo</b>           | Restore action removed by last Edit/Undo; repeated use will step consecutively forward through Edit/Undo actions |
| Ctrl+Z                    | <b>Edit/Undo</b>           | Remove last action; repeated use will step consecutively backward through earlier actions                        |
| Spacebar                  |                            | Repeat last command shown in status bar  |

| Shortcut Key(s)                         | Equivalent Menu Item   | Function   |
|---|------------------------|--|
| <b>Menu Navigation</b>                  |                        |  |
| <b>Alt</b> <i>menu letter</i>           |                        | Display a Windows menu where menu letter is underlined in the menu item name   |
| <i>command letter</i>                   |                        | Activate command where command letter is underlined in the menu item name  |
| <b>→</b>                                |                        | Go to the next menu item   |
| <b>←</b>                                |                        | Go back one menu item  |
| <b>↑</b>                                |                        | Scroll up through menu items   |
| <b>↓</b>                                |                        | Scroll down through menu items   |
| <b>Enter</b> ↵                          |                        | Display highlighted menu (from menu bar) or activate highlighted menu item (from drop-down list)                         |
| <b>Dialog</b>                           |                        |  |
| <b>Tab</b> ⇨                            |                        | Next field   |
| <b>⇧ Shift</b> + <b>Tab</b> ⇨           |                        | Previous field   |
| <b>Esc</b>                              |                        | Cancel dialog  |
| <b>Enter</b> ↵                          |                        | Execute the currently selected or default command button   |
| <b>General Layout/Footprint Editing</b> |                        |  |
| <b>→, ←, ↑, ↓</b>                       | <b>Edit/Move Delta</b> | Move the selected objects in the direction of the pressed arrow key by the amount indicated by the current grid spacing  |
| <b>← Bksp</b>                           |                        | When pasting objects, change reference point for the selection-set so that objects can be precisely placed at that point |
| <b>⇧ Shift</b>                          |                        | Abort either:<br>Redraw of areafills<br>Or, in-progress DRC  |
| <b>R</b>                                |                        | Rotate component when in place-component mode (Draw/Add Component)   |
| <b>Ctrl</b> + <b>R</b>                  |                        | Rotate component after placement   |

| Shortcut Key(s) | Equivalent Menu Item | Function   |
|-----------------|----------------------|--|
| F               |                      | Flip component to opposite surface when in place-component mode (Draw/Add Component) |
| Ctrl+F          |                      | Flip component to opposite surface after placement                                   |

### Interactive Trace Routing

|         |   |  |
|---------|---|--|
| Tab     | Layers drop-down list (toolbar) or Configure/Layers | When trace routing, change board layer to the partner layer in the current layer pair      |
| +       | Layers drop-down list (toolbar) or Configure/Layers | Change layers to the next signal layer up  |
| -       | Layers drop-down list (toolbar) or Configure/Layers | Change layers to the next signal layer down  |
| ←Bksp   |   | Delete last drawn segment and/or via   |
| 0, 4, 9 | Configure/Trace Placement Mode                      | Route with any angle (<0>), orthogonal or 45 degree angles (<4>), or orthogonal only (<9>) |

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# File Name Extensions

*Using the  
Keyboard*

**msim.ini  
Configuration**

**Library  
Utilities**



## File Name Extensions

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| File Extension | Description   |
|----------------|---|
| .adf           | photoplot aperture definition file  |
| .bco           | backward Engineering Change Order (layout-to-schematic)   |
| .blg           | backward ECO log file providing an audit trail of changes made, changes ignored, and pending changes (no decision made) |
| .cdf           | component description file for bill of materials (user-created and maintained)  |
| .dnn           | NC drill data file where <i>nn</i> is the page number within the job  |
| .dlg           | NC drill descriptive file   |
| .dxf           | AutoCAD DXF file  |
| .flb           | Footprint Library file  |
| .flg           | log of forward Engineering Change Orders applied to the layout  |
| .fpd           | external ASCII footprint definition file (used for import and export)   |
| .glg           | photoplot job description file (companion to the .gmn files)  |
| .gmn           | photoplot artwork file <i>nn</i> is the page number within the job  |
| .job           | external ASCII job file (used for import and export)  |
| .bnl           | netlist file for the board layout   |
| .nlf           | netlist file for Schematics   |
| .pad           | PADS-compatible netlist file  |
| .pca           | Layout Database file (ASCII)  |
| .pkg           | external ASCII package definition file (used for import and export)   |
| .plb           | Package Library file  |
| .psl           | Padstack Library file   |
| .tdf           | NC drill tool definition file   |
| .ymp           | mapping file matching PADS package names to MicroSim package and footprint names  |
| .ypk           | mapping file matching PADS decal names to MicroSim footprint names  |

---

| File Extension   | Description  |
|--|--|
| <b>Reports</b>   |  |
| .apr   | Aperture Information report                                    |
| .atr   | Attributes report  |
| .bom   | Bill of Materials  |
| .drc   | DRC Errors report  |
| .fpr   | Footprint Statistics report                                    |
| .hdr   | Hole-Drill Schedule report                                     |
| .loc   | Component Locations report                                     |
| .sta   | Statistics report  |
| .ucr   | Unrouted Nets report   |
| <b>Automating</b><br>(see the <i>Autorouter User's Guide</i> ) |  |
| .cct   | design information and rules for autorouting                   |
| .do  | file with autorouting control information                      |
| .cco   | autorouter session output                                      |
| .rpt   | reports reflecting autorouting progress and statistics         |
| .rte   | routes established by a successfully completed autorouting run |
| .sts   | status of autorouting run                                      |

---

# Padstack Naming Convention and Standard List

[Standard Padstack Tables](#)

[Oval Padstacks](#)

[Rectangular Padstacks](#)

[Round Padstacks](#)

[Square Padstacks](#)

**Footprint  
Naming**



# Naming Convention

You can use any naming convention you want, but it should be one that easily identifies the padstack characteristics.

Following is a suggested format:

shape-type-pad size-drill size-additional descriptor

Where:

- shape is round, square, rectangular, or oval
- type is either through-hole (through) or surface mount (SMT)
- pad size is one dimension for round and square, or two dimensions (separated by an x) for oval and rectangular
- drill size is the size of the drill
- additional descriptor is any additional comments or descriptions you want

## Example Padstack Definition Names

| Name           | Description  |
|----------------|--|
| rnd-065-031    | rnd, thru, .065 pad, .031 drill                    |
| oval-100x025   | oval, smt, .100 x .025 pad                         |
| sq-080-040-060 | square, thru, .080 pad, .040 drill, .060 inner pad |



## Standard Padstack Tables

The following tables list the PCBboards default padstack styles. They are shown in the format suggested above.

### Oval Padstacks

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|               |               |               |
|---------------|---------------|---------------|
| oval-.20x1.60 | oval-.60x1.80 | oval-1.80x.45 |
| oval-.25x1.60 | oval-.60x2.20 | oval-1.80x.50 |
| oval-.30x1.60 | oval-.65x2.20 | oval-1.80x.60 |
| oval-.40x1.60 | oval-.65x2.40 | oval-118x320  |
| oval-.40x2.60 | oval-.65x2.60 | oval-2.20x.50 |
| oval-.45x1.80 | oval-.80x2.60 | oval-2.20x.60 |
| oval-.45x2.20 | oval-062x500  | oval-2.40x.65 |
| oval-.50x1.60 | oval-1.60x.20 | oval-2.60x.40 |
| oval-.50x1.80 | oval-1.60x.30 | oval-2.60x.65 |
| oval-.50x2.20 | oval-1.60x.40 | oval-2.60x.80 |

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## Rectangular Padstacks

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|                |                |                |
|----------------|----------------|----------------|
| rect-.050x.300 | rect-.80x1.50  | rect-1.30x3.10 |
| rect-.075x.030 | rect-.80x1.60  | rect-1.30x3.20 |
| rect-.15x.35   | rect-.80x1.80  | rect-1.30x3.60 |
| rect-.15x.40   | rect-.80x2.20  | rect-1.40x.60  |
| rect-.20x2.20  | rect-.80x2.40  | rect-1.40x1.60 |
| rect-.21x.45   | rect-.80x2.60  | rect-1.40x1.80 |
| rect-.225x.90  | rect-.80x4.10  | rect-1.40x2.20 |
| rect-.225x.900 | rect-.89x1.00  | rect-1.40x2.40 |
| rect-.26x.51   | rect-.89x100   | rect-1.40x2.80 |
| rect-.30x.75   | rect-.89x2.54  | rect-1.40x5.30 |
| rect-.30x1.03  | rect-.900x.225 | rect-1.44x1.20 |
| rect-.30x1.60  | rect-.90x.225  | rect-1.50x2.20 |
| rect-.33x.60   | rect-.90x1.40  | rect-1.60x.30  |
| rect-.35x1.60  | rect-.90x2.40  | rect-1.60x.35  |
| rect-.35x160   | rect-012.5x020 | rect-1.60x2.00 |
| rect-.38x1.03  | rect-013x020   | rect-1.60x2.20 |
| rect-.40x2.20  | rect-013x023   | rect-1.60x2.60 |
| rect-.45x.60   | rect-020x060   | rect-1.80x.50  |
| rect-.45x1.00  | rect-025x065   | rect-1.80x1.90 |
| rect-.45x1.90  | rect-027x039   | rect-1.80x2.00 |
| rect-.50x.70   | rect-030x075   | rect-1.80x2.60 |
| rect-.50x.90   | rect-040x050   | rect-1.80x3.20 |
| rect-.50x1.00  | rect-050x.136  | rect-1.80x3.60 |
| rect-.50x1.20  | rect-050x136   | rect-1.80x4.00 |
| rect-.50x1.80  | rect-050x3.00  | rect-1.90x2.90 |
| rect-.50x2.00  | rect-050x300   | rect-1.90x4.40 |
| rect-.50x2.20  | rect-056x101   | rect-2.00x2.20 |
| rect-.50x2.50  | rect-065x025   | rect-2.00x2.40 |
| rect-.50x2.70  | rect-075x030   | rect-2.00x4.00 |
| rect-.50x2.80  | rect-1.00x.50  | rect-2.00x5.40 |

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|               |                |                |
|---------------|----------------|----------------|
| rect-.50x5.58 | rect-1.00x1.20 | rect-2.10x2.80 |
| rect-.52x.60  | rect-1.00x1.40 | rect-2.10x3.00 |
| rect-.55x1.70 | rect-1.00x1.44 | rect-2.16x2.74 |
| rect-.55x2.20 | rect-1.00x1.60 | rect-2.20x.55  |
| rect-.55x2.50 | rect-1.00x2.20 | rect-2.20x.65  |
| rect-.60x1.40 | rect-1.00x2.60 | rect-2.20x.70  |
| rect-.60x2.20 | rect-1.00x5.00 | rect-2.20x2.60 |
| rect-.60x2.80 | rect-1.05x1.91 | rect-2.20x3.60 |
| rect-.65x2.20 | rect-1.10x1.20 | rect-2.40x2.60 |
| rect-.70x.80  | rect-1.20x.50  | rect-2.50x.50  |
| rect-.70x1.50 | rect-1.20x1.40 | rect-2.50x.55  |
| rect-.70x2.20 | rect-1.20x1.44 | rect-2.50x4.00 |
| rect-.70x2.30 | rect-1.20x1.60 | rect-2.60x3.05 |
| rect-.74x050  | rect-1.20x2.00 | rect-2.70x.50  |
| rect-.74x1.27 | rect-1.20x2.20 | rect-5.00x6.00 |
| rect-.76x.90  | rect-1.27x3.00 | rect-5.60x5.80 |
| rect-.80x.90  | rect-1.30x1.40 | rect-50x2.0    |
| rect-.80x1.30 | rect-1.30x1.60 |                |

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## Round Padstacks

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|                 |             |               |
|-----------------|-------------|---------------|
| rnd-.60         | rnd-051-031 | rnd-075-055   |
| rnd-.63         | rnd-052-032 | rnd-080-030   |
| rnd-.70         | rnd-054-034 | rnd-080-040   |
| rnd-.75         | rnd-055-032 | rnd-080-050   |
| rnd-.89         | rnd-056-036 | rnd-081-061   |
| rnd-016-008     | rnd-059-039 | rnd-085-055   |
| rnd-018-008     | rnd-059-040 | rnd-085-065   |
| rnd-020         | rnd-060-030 | rnd-095-060   |
| rnd-027-038-012 | rnd-060-035 | rnd-095-065   |
| rnd-031-025     | rnd-060-038 | rnd-100-075   |
| rnd-036-021     | rnd-060-039 | rnd-140-075   |
| rnd-036-026     | rnd-060-040 | rnd-150-100   |
| rnd-036-031     | rnd-063-043 | rnd-2.03-1.52 |
| rnd-040         | rnd-065-035 | rnd-200-156   |
| rnd-040-020     | rnd-065-045 | rnd-300-165   |
| rnd-041-031     | rnd-070-030 | rnd-350-217   |
| rnd-047-037     | rnd-070-035 | rnd-750-250   |
| rnd-050-016     | rnd-070-050 | rnd-750-500   |
| rnd-050-030     | rnd-075-040 |               |

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## Square Padstacks

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|            |            |            |
|------------|------------|------------|
| sq-.35     | sq-060-030 | sq-075-055 |
| sq-.35x.35 | sq-060-035 | sq-080-040 |
| sq-.60     | sq-060-040 | sq-085-055 |
| sq-036-028 | sq-063-043 | sq-085-065 |
| sq-041-031 | sq-065-035 | sq-1.00    |
| sq-045-031 | sq-065-045 | sq-1.60    |
| sq-047-037 | sq-070-035 | sq-100-075 |
| sq-050-030 | sq-070-050 | sq-2.40    |
| sq-054-034 | sq-075-040 | sq-220     |

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# Footprint Naming Conventions

[Naming Conventions](#)

[JEDEC Address](#)

[IPC Address](#)

[Listing of Standard Footprints](#)

**Padstack  
Naming**



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# Naming Conventions

Footprint names in the standard libraries follow the naming conventions used in the JEDEC and IPC specifications. In addition, where these do not apply, the manufacturer's naming convention is used.

Footprint definitions are grouped by manufacturer or device type (such as DIP, capacitor, resistor) in various library files.

## JEDEC Address

JEDEC - Joint Electron Design Engineering Council  
Solid State Products Engineering Council  
2500 Wilson Blvd.  
Arlington, VA 22201

Telephone: (703) 907-7558

Fax: (703) 907-7501

## IPC Address

IPC - The Institute for Interconnecting and Packaging Electronic Circuits  
7380 N. Lincoln Ave.  
Lincolnwood, IL 60646-1705

Telephone: (708) 677-2850

Fax: (708) 677-9570

## Listing of Standard Footprints

The following table lists the footprints supplied with PCBoards in the standard libraries. The table lists the footprints in ascending alphabetical order.

| Footprint | Number of Pins | Technology | Library     |
|-----------|----------------|------------|-------------|
| 1-10A1A   | 2              | thru       | japan.flb   |
| 1-10A1A   | 2              | thru       | notstd4.flb |
| 1-1E1A    | 2              | smt        | japan.flb   |
| 1-1E1A    | 2              | smt        | notstd4.flb |
| 1-2G1A    | 2              | thru       | japan.flb   |
| 1-2G1A    | 2              | thru       | notstd4.flb |
| 1-2H1A    | 2              | thru       | japan.flb   |
| 1-2H1A    | 2              | thru       | notstd4.flb |
| 1-2J1A    | 2              | smt        | japan.flb   |
| 1-2J1A    | 2              | smt        | notstd4.flb |
| 1-2P1A    | 3              | smt        | japan.flb   |
| 1-2P1A    | 3              | smt        | notstd4.flb |
| 1-2P1B    | 3              | smt        | notstd4.flb |
| 1-3G1A    | 3              | smt        | japan.flb   |
| 1-3G1A    | 3              | smt        | notstd4.flb |
| 1-3G1B    | 3              | smt        | japan.flb   |
| 1-3G1B    | 3              | smt        | notstd4.flb |
| 1-3G1C    | 3              | smt        | japan.flb   |
| 1-3G1C    | 3              | smt        | notstd4.flb |
| 1-3G1D    | 3              | smt        | japan.flb   |
| 1-3G1D    | 3              | smt        | notstd4.flb |
| 1-3G1E    | 3              | smt        | japan.flb   |
| 1-3G1E    | 3              | smt        | notstd4.flb |
| 1-3G1F    | 3              | smt        | japan.flb   |
| 1-3G1F    | 3              | smt        | notstd4.flb |
| 1-3G1G    | 3              | smt        | japan.flb   |
| 1-3G1G    | 3              | smt        | notstd4.flb |



| Footprint | Number of Pins | Technology | Library     |
|-----------|----------------|------------|-------------|
| 1-4E1A    | 2              | thru       | japan.flb   |
| 1-4E1A    | 2              | thru       | notstd4.flb |
| 1-4E2A    | 3              | thru       | japan.flb   |
| 1-4E2A    | 3              | thru       | notstd4.flb |
| 1-4E2B    | 3              | thru       | japan.flb   |
| 1-4E2B    | 3              | thru       | notstd4.flb |
| 1-4E2D    | 3              | smt        | japan.flb   |
| 1-4E2D    | 3              | smt        | notstd4.flb |
| 1-7B1A    | 2              | thru       | japan.flb   |
| 1-7B1A    | 2              | thru       | notstd4.flb |
| 12-11A1A  | 4              | thru       | japan.flb   |
| 12-11A1A  | 4              | thru       | notstd4.flb |
| 12-14A1A  | 3              | thru       | japan.flb   |
| 12-14A1A  | 3              | thru       | notstd4.flb |
| 12-14A1B  | 3              | thru       | japan.flb   |
| 12-14A1B  | 3              | thru       | notstd4.flb |
| 12-16A1A  | 4              | thru       | japan.flb   |
| 12-16A1A  | 4              | thru       | notstd4.flb |
| 12-5A1A   | 4              | thru       | japan.flb   |
| 12-5A1A   | 4              | thru       | notstd4.flb |
| 199D/A/A1 | 2              | thru       | tcap.flb    |
| 199D/B/A2 | 2              | thru       | tcap.flb    |
| 199D/C/A1 | 2              | thru       | eval.flb    |
| 199D/C/A1 | 2              | thru       | tcap.flb    |
| 199D/D/A1 | 2              | thru       | tcap.flb    |
| 199D/E/E2 | 2              | thru       | eval.flb    |
| 199D/E/E2 | 2              | thru       | tcap.flb    |
| 199D/F/E3 | 2              | thru       | tcap.flb    |
| 2-10M1A   | 7              | thru       | japan.flb   |
| 2-10M1A   | 7              | thru       | notstd4.flb |

| Footprint | Number of Pins | Technology | Library     |
|-----------|----------------|------------|-------------|
| 2-10M1B   | 7              | thru       | japan.flb   |
| 2-10M1B   | 7              | thru       | notstd4.flb |
| 2-16C1B   | 3              | thru       | japan.flb   |
| 2-21F1B   | 3              | thru       | japan.flb   |
| 2-2E1A    | 3              | smt        | japan.flb   |
| 2-2E1A    | 3              | smt        | notstd4.flb |
| 2-3F1A    | 3              | smt        | japan.flb   |
| 2-3F1A    | 3              | smt        | notstd4.flb |
| 2-3F1B    | 3              | thru       | japan.flb   |
| 2-4E1A    | 3              | thru       | japan.flb   |
| 2-4E1A    | 3              | thru       | notstd4.flb |
| 2-4E1B    | 3              | thru       | japan.flb   |
| 2-4E1C    | 3              | thru       | japan.flb   |
| 2-4H1A    | 3              | thru       | japan.flb   |
| 2-5F1B    | 3              | thru       | japan.flb   |
| 2-5F1B    | 3              | thru       | notstd4.flb |
| 2-5F1C    | 3              | thru       | japan.flb   |
| 2-5F1D    | 3              | thru       | japan.flb   |
| 2-5J1A    | 3              | thru       | japan.flb   |
| 2-5J1A    | 3              | thru       | notstd4.flb |
| 2-5J1B    | 3              | thru       | japan.flb   |
| 2-5K1A    | 3              | smt        | japan.flb   |
| 2-5K1A    | 3              | smt        | notstd4.flb |
| 2-6E1A    | 6              | thru       | japan.flb   |
| 2-7D101A  | 3              | thru       | japan.flb   |
| 3-3E1A    | 2              | thru       | japan.flb   |
| 3-3E1A    | 2              | thru       | notstd4.flb |
| 3-3F2A    | 2              | thru       | japan.flb   |
| 3-3F2A    | 2              | thru       | notstd4.flb |
| 511D/AA   | 2              | thru       | tcap.flb    |

| Footprint         | Number of Pins | Technology | Library     |
|-------------------|----------------|------------|-------------|
| 511D/BB           | 2              | thru       | tcap.flb    |
| 511D/CC           | 2              | thru       | tcap.flb    |
| 511D/DG           | 2              | thru       | tcap.flb    |
| 511D/EK           | 2              | thru       | tcap.flb    |
| 511D/FR           | 2              | thru       | tcap.flb    |
| 516D/JL           | 2              | thru       | tcap.flb    |
| 516D/MM           | 2              | thru       | tcap.flb    |
| 516D/PS           | 2              | thru       | tcap.flb    |
| AD-32XX           | 32             | thru       | notstd4.flb |
| AD_H02A           | 2              | thru       | notstd4.flb |
| ADC541            | 24             | thru       | notstd4.flb |
| ADC542            | 24             | thru       | notstd4.flb |
| AK                | 6              | thru       | notstd4.flb |
| ap                | 4              | thru       | notstd4.flb |
| ar                | 6              | thru       | notstd4.flb |
| BDIP32-1800       | 32             | thru       | notstd4.flb |
| BDIP72-1800       | 72             | thru       | dip.flb     |
| BGA225            | 225            | thru       | notstd4.flb |
| C1005             | 2              | smt        | chipcap.flb |
| C1310             | 2              | smt        | chipcap.flb |
| C1608             | 2              | smt        | chipcap.flb |
| C2012             | 2              | smt        | chipcap.flb |
| C3216             | 2              | smt        | chipcap.flb |
| C3225             | 2              | smt        | chipcap.flb |
| C4532             | 2              | smt        | chipcap.flb |
| C4564             | 2              | smt        | chipcap.flb |
| CBGA100/MO-156AAC | 100            | smt        | cbga.flb    |
| CBGA100/MO-156ABB | 100            | smt        | cbga.flb    |
| CBGA100/MO-156ACA | 100            | smt        | cbga.flb    |
| CBGA100/MO-156BAC | 100            | smt        | cbga.flb    |

| Footprint          | Number of Pins | Technology | Library     |
|--------------------|----------------|------------|-------------|
| CBGA100/MO-156BBB  | 100            | smt        | cbga.flb    |
| CBGA100/MO-156BCA  | 100            | smt        | cbga.flb    |
| CBGA1024/MO-156ACN | 1024           | smt        | cbga.flb    |
| CBGA1024/MO-156BCN | 1024           | smt        | cbga.flb    |
| CBGA121/MO-156AAD  | 121            | smt        | cbga.flb    |
| CBGA121/MO-156ABC  | 121            | smt        | cbga.flb    |
| CBGA121/MO-156BAD  | 121            | smt        | cbga.flb    |
| CBGA121/MO-156BBC  | 121            | smt        | cbga.flb    |
| CBGA122/MO-156BCB  | 144            | smt        | cbga.flb    |
| CBGA144/MO-156ACB  | 144            | smt        | cbga.flb    |
| CBGA144/MO-156BAF  | 144            | smt        | cbga.flb    |
| CBGA144a/MO-156AAE | 144            | smt        | cbga.flb    |
| CBGA144b/MO-156AAF | 144            | smt        | cbga.flb    |
| CBGA169/MO-156BBD  | 169            | smt        | cbga.flb    |
| CBGA196/MO-156AAG  | 196            | smt        | cbga.flb    |
| CBGA196/MO-156ABE  | 196            | smt        | cbga.flb    |
| CBGA196/MO-156ACC  | 196            | smt        | cbga.flb    |
| CBGA196/MO-156BAG  | 196            | smt        | cbga.flb    |
| CBGA196/MO-156BBE  | 196            | smt        | cbga.flb    |
| CBGA196/MO-156BCC  | 196            | smt        | cbga.flb    |
| CBGA225/BG225      | 225            | thru       | notstd4.flb |
| CBGA225/MO-156AAH  | 225            | smt        | cbga.flb    |
| CBGA225/MO-156ABF  | 225            | smt        | cbga.flb    |
| CBGA225/MO-156BAH  | 225            | smt        | cbga.flb    |
| CBGA225/MO-156BBF  | 225            | smt        | cbga.flb    |
| CBGA256/MO-156AAJ  | 256            | smt        | cbga.flb    |
| CBGA256/MO-156ABG  | 256            | smt        | cbga.flb    |
| CBGA256/MO-156ACD  | 256            | smt        | cbga.flb    |
| CBGA256/MO-156BAJ  | 256            | smt        | cbga.flb    |
| CBGA256/MO-156BBG  | 256            | smt        | cbga.flb    |

| Footprint         | Number of Pins | Technology | Library  |
|-------------------|----------------|------------|----------|
| CBGA256/MO-156BCD | 256            | smt        | cbga.flb |
| CBGA289/MO-156ACE | 289            | smt        | cbga.flb |
| CBGA289/MO-156BCE | 289            | smt        | cbga.flb |
| CBGA324/MO-156AAK | 324            | smt        | cbga.flb |
| CBGA324/MO-156ABH | 324            | smt        | cbga.flb |
| CBGA324/MO-156ACF | 324            | smt        | cbga.flb |
| CBGA324/MO-156BAK | 324            | smt        | cbga.flb |
| CBGA324/MO-156BBH | 324            | smt        | cbga.flb |
| CBGA324/MO-156BCF | 324            | smt        | cbga.flb |
| CBGA361/MO-156AAL | 361            | smt        | cbga.flb |
| CBGA361/MO-156ABJ | 361            | smt        | cbga.flb |
| CBGA361/MO-156BAL | 361            | smt        | cbga.flb |
| CBGA361/MO-156BBJ | 361            | smt        | cbga.flb |
| CBGA400/MO-156AAM | 400            | smt        | cbga.flb |
| CBGA400/MO-156ACG | 400            | smt        | cbga.flb |
| CBGA400/MO-156BAM | 400            | smt        | cbga.flb |
| CBGA400/MO-156BCG | 400            | smt        | cbga.flb |
| CBGA441/MO-156AAN | 441            | smt        | cbga.flb |
| CBGA441/MO-156ABK | 441            | smt        | cbga.flb |
| CBGA441/MO-156BAN | 441            | smt        | cbga.flb |
| CBGA441/MO-156BBK | 441            | smt        | cbga.flb |
| CBGA484/MO-156AAP | 484            | smt        | cbga.flb |
| CBGA484/MO-156ABL | 484            | smt        | cbga.flb |
| CBGA484/MO-156ACH | 484            | smt        | cbga.flb |
| CBGA484/MO-156BAP | 484            | smt        | cbga.flb |
| CBGA484/MO-156BBL | 484            | smt        | cbga.flb |
| CBGA484/MO-156BCH | 484            | smt        | cbga.flb |
| CBGA49/MO-156AAA  | 49             | smt        | cbga.flb |
| CBGA49/MO-159BAA  | 49             | smt        | cbga.flb |
| CBGA576/MO-156ABM | 576            | smt        | cbga.flb |

| Footprint         | Number of Pins | Technology | Library  |
|-------------------|----------------|------------|----------|
| CBGA576/MO-156BBM | 576            | smt        | cbga.flb |
| CBGA625/MO-156ABN | 625            | smt        | cbga.flb |
| CBGA625/MO-156BBN | 625            | smt        | cbga.flb |
| CBGA64/MO-156AAB  | 64             | smt        | cbga.flb |
| CBGA64/MO-156BAB  | 64             | smt        | cbga.flb |
| CBGA64/MO-156BBA  | 64             | smt        | cbga.flb |
| CBGA676/MO-156ABP | 676            | smt        | cbga.flb |
| CBGA676/MO-156ACK | 676            | smt        | cbga.flb |
| CBGA676/MO-156BBP | 676            | smt        | cbga.flb |
| CBGA676/MO-156BCK | 676            | smt        | cbga.flb |
| CBGA784/MO-156ACL | 784            | smt        | cbga.flb |
| CBGA784/MO-156BCL | 784            | smt        | cbga.flb |
| CBGA84/MO-156ABA  | 64             | smt        | cbga.flb |
| CBGA900/MO-156ACM | 900            | smt        | cbga.flb |
| CBGA900/MO-156BCM | 900            | smt        | cbga.flb |
| CDIP14            | 14             | thru       | cdip.flb |
| CDIP16            | 16             | thru       | cdip.flb |
| CDIP16X           | 16             | thru       | cdip.flb |
| CDIP18            | 18             | thru       | cdip.flb |
| CDIP20            | 20             | thru       | cdip.flb |
| CDIP22            | 22             | thru       | cdip.flb |
| CDIP22L           | 22             | thru       | cdip.flb |
| CDIP24            | 24             | thru       | cdip.flb |
| CDIP24L           | 24             | thru       | cdip.flb |
| CDIP24X           | 24             | thru       | cdip.flb |
| CDIP28            | 28             | thru       | cdip.flb |
| CDIP28L           | 28             | thru       | cdip.flb |
| CDIP28X           | 28             | thru       | cdip.flb |
| CDIP32            | 32             | thru       | cdip.flb |
| CDIP32X           | 32             | thru       | cdip.flb |

| Footprint | Number of Pins | Technology | Library     |
|-----------|----------------|------------|-------------|
| CDIP32XX  | 32             | thru       | notstd4.flb |
| CDIP36X   | 36             | thru       | cdip.flb    |
| CDIP36XX  | 36             | thru       | cdip.flb    |
| CDIP40X   | 40             | thru       | cdip.flb    |
| CDIP40XX  | 40             | thru       | notstd4.flb |
| CDIP42X   | 42             | thru       | cdip.flb    |
| CDIP48X   | 48             | thru       | cdip.flb    |
| CDIP50XX  | 50             | thru       | cdip.flb    |
| CDIP52X   | 52             | thru       | cdip.flb    |
| CDIP52XX  | 52             | thru       | cdip.flb    |
| CDIP6     | 6              | thru       | cdip.flb    |
| CDIP64XX  | 64             | thru       | cdip.flb    |
| CDIP68X   | 68             | thru       | notstd4.flb |
| CDIP8     | 8              | thru       | cdip.flb    |
| CDIPSM14  | 14             | smt        | cdipsm.flb  |
| CDIPSM16  | 16             | smt        | cdipsm.flb  |
| CDIPSM16X | 16             | smt        | cdipsm.flb  |
| CDIPSM18  | 18             | smt        | cdipsm.flb  |
| CDIPSM20  | 20             | smt        | cdipsm.flb  |
| CDIPSM22  | 22             | smt        | cdipsm.flb  |
| CDIPSM22L | 22             | smt        | cdipsm.flb  |
| CDIPSM24  | 24             | smt        | cdipsm.flb  |
| CDIPSM24L | 24             | smt        | cdipsm.flb  |
| CDIPSM24X | 24             | smt        | cdipsm.flb  |
| CDIPSM28  | 28             | smt        | cdipsm.flb  |
| CDIPSM28L | 28             | smt        | cdipsm.flb  |
| CDIPSM28X | 28             | smt        | cdipsm.flb  |
| CDIPSM32  | 32             | smt        | cdipsm.flb  |
| CDIPSM32X | 32             | smt        | cdipsm.flb  |
| CDIPSM36X | 36             | smt        | cdipsm.flb  |

| Footprint    | Number of Pins | Technology | Library     |
|--------------|----------------|------------|-------------|
| CDIPSM36XX   | 36             | smt        | cdipsm.flb  |
| CDIPSM40X    | 40             | smt        | cdipsm.flb  |
| CDIPSM42X    | 42             | smt        | cdipsm.flb  |
| CDIPSM48X    | 48             | smt        | cdipsm.flb  |
| CDIPSM50XX   | 50             | smt        | cdipsm.flb  |
| CDIPSM52XX   | 81             | smt        | cdipsm.flb  |
| CDIPSM6      | 6              | smt        | cdipsm.flb  |
| CDIPSM64XX   | 64             | smt        | cdipsm.flb  |
| CDIPSM8      | 8              | smt        | cdipsm.flb  |
| CFP10-MO-003 | 10             | smt        | cfp.flb     |
| CFP10-MO-004 | 10             | smt        | cfp.flb     |
| CFP14-MO-003 | 14             | smt        | cfp.flb     |
| CFP14-MO-004 | 14             | smt        | cfp.flb     |
| CFP16-MO-004 | 16             | smt        | cfp.flb     |
| CFP16-MO-021 | 16             | smt        | cfp.flb     |
| CFP18-MO-004 | 18             | smt        | notstd4.flb |
| CFP20-MO-018 | 20             | smt        | cfp.flb     |
| CFP20-MO-022 | 20             | smt        | cfp.flb     |
| CFP24-MO-019 | 24             | smt        | cfp.flb     |
| CFP24-MO-021 | 24             | smt        | cfp.flb     |
| CFP28-MO-019 | 28             | smt        | cfp.flb     |
| CFP32-F      | 32             | smt        | notstd4.flb |
| CFP32-MO-115 | 32             | thru       | notstd4.flb |
| CFP36-MO-020 | 36             | smt        | cfp.flb     |
| CFP36-MO-021 | 36             | smt        | cfp.flb     |
| CFP36-MO-023 | 36             | smt        | cfp.flb     |
| CFP40-MO-020 | 40             | smt        | cfp.flb     |
| CFP42-MO-022 | 42             | smt        | cfp.flb     |
| CFP50-MO-023 | 50             | smt        | cfp.flb     |
| CK05         | 2              | thru       | cap.flb     |



| Footprint                | Number of Pins | Technology | Library      |
|--------------------------|----------------|------------|--------------|
| CK05                     | 2              | thru       | discrete.flb |
| CK05                     | 2              | thru       | eval.flb     |
| CK06                     | 2              | thru       | cap.flb      |
| CK06                     | 2              | thru       | discrete.flb |
| ck06                     | 2              | thru       | eval.flb     |
| CK12                     | 2              | thru       | discrete.flb |
| CK12L                    | 2              | thru       | cap.flb      |
| CK12S                    | 2              | thru       | cap.flb      |
| CK13S                    | 2              | thru       | cap.flb      |
| CK14S                    | 2              | thru       | cap.flb      |
| CK15S                    | 2              | thru       | cap.flb      |
| CK16S                    | 2              | thru       | cap.flb      |
| CK60                     | 2              | thru       | discrete.flb |
| CLCC-R-32/WQFJ032-G-R450 | 32             | smt        | notstd4.flb  |
| CLCC/R-32-450            | 32             | smt        | notstd4.flb  |
| CLCC28                   | 28             | smt        | notstd4.flb  |
| CLCC44                   | 44             | smt        | notstd4.flb  |
| CLCC68                   | 68             | smt        | notstd4.flb  |
| CP                       | 3              | thru       | japan.flb    |
| CPGA-28K                 | 27             | thru       | notstd4.flb  |
| CPGA-36K                 | 36             | thru       | notstd4.flb  |
| CPGA100                  | 100            | thru       | notstd4.flb  |
| CPGA100/MO-066AB         | 100            | thru       | cpga.flb     |
| CPGA100/MO-066BB         | 100            | thru       | cpga.flb     |
| CPGA101/MO-066AE         | 101            | thru       | notstd4.flb  |
| CPGA114/MO-067AE         | 114            | thru       | notstd4.flb  |
| CPGA120                  | 113            | thru       | notstd4.flb  |
| CPGA120/MO-067AE         | 120            | thru       | notstd4.flb  |
| CPGA121/MO-066AC         | 121            | thru       | cpga.flb     |
| CPGA121/MO-066BC         | 121            | thru       | cpga.flb     |

| Footprint        | Number of Pins | Technology | Library     |
|------------------|----------------|------------|-------------|
| CPGA132/MO-066AF | 132            | thru       | notstd4.flb |
| CPGA132/MO-067AF | 132            | thru       | notstd4.flb |
| CPGA133/MO-067AE | 133            | thru       | notstd4.flb |
| CPGA144/MO-066AD | 144            | thru       | cpga.flb    |
| CPGA144/MO-066BD | 144            | thru       | cpga.flb    |
| CPGA149/MO-067AG | 149            | thru       | notstd4.flb |
| CPGA156/PG156    | 156            | thru       | notstd4.flb |
| CPGA160          | 160            | thru       | notstd4.flb |
| CPGA160/MO-067AG | 160            | thru       | notstd4.flb |
| CPGA168          | 168            | thru       | notstd4.flb |
| CPGA168/17X17    | 168            | thru       | notstd4.flb |
| CPGA169/17X17    | 169            | thru       | notstd4.flb |
| CPGA169/MO-066AE | 169            | thru       | cpga.flb    |
| CPGA169/MO-066BE | 169            | thru       | cpga.flb    |
| CPGA175/MO-067AH | 175            | thru       | notstd4.flb |
| CPGA176/MO-067AG | 176            | thru       | notstd4.flb |
| CPGA191/MO-067AK | 191            | thru       | notstd4.flb |
| CPGA192          | 192            | thru       | notstd4.flb |
| CPGA192/MO-067AJ | 192            | thru       | notstd4.flb |
| CPGA196/MO-066AF | 196            | thru       | cpga.flb    |
| CPGA196/MO-066BF | 196            | thru       | cpga.flb    |
| CPGA207/MO-067AJ | 208            | thru       | notstd4.flb |
| CPGA223/MO-067AK | 223            | thru       | notstd4.flb |
| CPGA225/MO-066AG | 225            | thru       | cpga.flb    |
| CPGA225/MO-066BG | 225            | thru       | cpga.flb    |
| CPGA232/MO-067AG | 232            | thru       | notstd4.flb |
| CPGA256/MO-066AH | 256            | thru       | cpga.flb    |
| CPGA256/MO-066BH | 256            | thru       | cpga.flb    |
| CPGA289/MO-066AJ | 289            | thru       | cpga.flb    |
| CPGA289/MO-066BJ | 289            | thru       | cpga.flb    |

| Footprint        | Number of Pins | Technology | Library     |
|------------------|----------------|------------|-------------|
| CPGA299/MO-067AM | 299            | thru       | notstd4.flb |
| CPGA324/MO-066AK | 324            | thru       | cpga.flb    |
| CPGA324/MO-066BK | 324            | thru       | cpga.flb    |
| CPGA361/MO-066AL | 361            | thru       | cpga.flb    |
| CPGA361/MO-066BL | 361            | thru       | cpga.flb    |
| CPGA400/MO-066AM | 400            | thru       | cpga.flb    |
| CPGA400/MO-066BM | 400            | thru       | cpga.flb    |
| CPGA44/F44-229   | 44             | thru       | notstd4.flb |
| CPGA64           | 64             | thru       | notstd4.flb |
| CPGA68           | 68             | thru       | notstd4.flb |
| CPGA68/MO-067AC  | 69             | thru       | notstd4.flb |
| CPGA81/MO-066AA  | 81             | thru       | cpga.flb    |
| CPGA81/MO-066BA  | 81             | thru       | cpga.flb    |
| CPGA84           | 85             | thru       | notstd4.flb |
| CPGA84/MO-066AC  | 85             | thru       | notstd4.flb |
| CQFP100          | 100            | smt        | cqfp.flb    |
| CQFP120          | 120            | smt        | cqfp.flb    |
| CQFP128          | 128            | smt        | cqfp.flb    |
| CQFP132          | 132            | smt        | cqfp.flb    |
| CQFP132-M        | 132            | smt        | cqfp.flb    |
| CQFP144          | 144            | smt        | cqfp.flb    |
| CQFP148          | 148            | smt        | cqfp.flb    |
| CQFP14X20-100    | 100            | smt        | notstd4.flb |
| CQFP156/MO-067AH | 156            | smt        | notstd4.flb |
| CQFP160          | 160            | smt        | cqfp.flb    |
| CQFP164          | 164            | smt        | cqfp.flb    |
| CQFP172/ACTEL    | 172            | smt        | notstd4.flb |
| CQFP196          | 196            | smt        | cqfp.flb    |
| CQFP208          | 208            | smt        | notstd4.flb |
| CQFP24           | 24             | smt        | cqfp.flb    |

| Footprint             | Number of Pins | Technology | Library     |
|-----------------------|----------------|------------|-------------|
| CQFP28                | 28             | smt        | cqfp.flb    |
| CQFP32-HS             | 32             | smt        | notstd4.flb |
| CQFP36                | 36             | smt        | cqfp.flb    |
| CQFP44                | 44             | smt        | cqfp.flb    |
| CQFP52                | 52             | smt        | cqfp.flb    |
| CQFP68                | 68             | smt        | cqfp.flb    |
| CQFP84                | 84             | smt        | cqfp.flb    |
| CROSS                 | 4              | thru       | japan.flb   |
| CSDIP14/MS-019AA      | 14             | thru       | csdip.flb   |
| CSDIP16/MS-019AB      | 16             | thru       | csdip.flb   |
| CSDIP18/MS-019AC      | 18             | thru       | csdip.flb   |
| CSDIP20/MS-019AD      | 20             | thru       | csdip.flb   |
| CSDIP22/MS-019AE      | 22             | thru       | csdip.flb   |
| CSDIP24/MS-019AF      | 24             | thru       | csdip.flb   |
| CSDIP28L              | 28             | thru       | csdip.flb   |
| CSDIP30L              | 30             | thru       | csdip.flb   |
| CSDIP40X/MS-020AA     | 40             | thru       | csdip.flb   |
| CSDIP42X              | 42             | thru       | csdip.flb   |
| CSDIP48X/MS-020AC     | 48             | thru       | csdip.flb   |
| CSDIP52X              | 52             | thru       | csdip.flb   |
| CSDIP64-0750/MS-021AA | 64             | thru       | csdip.flb   |
| CSDIPSM14/MS-019AA    | 14             | smt        | csdipsm.flb |
| CSDIPSM16/MS-019AB    | 16             | smt        | csdipsm.flb |
| CSDIPSM18/MS-019AC    | 18             | smt        | csdipsm.flb |
| CSDIPSM20/MS-019AD    | 20             | smt        | csdipsm.flb |
| CSDIPSM22/MS-019AE    | 22             | smt        | csdipsm.flb |
| CSDIPSM24/MS-019AF    | 24             | smt        | csdipsm.flb |
| CSDIPSM28L            | 28             | smt        | csdipsm.flb |
| CSDIPSM30L            | 30             | smt        | csdipsm.flb |
| CSDIPSM40X/MS-020AA   | 40             | smt        | csdipsm.flb |

| Footprint               | Number of Pins | Technology | Library      |
|-------------------------|----------------|------------|--------------|
| CSDIPSM42X              | 42             | smt        | csdipism.flb |
| CSDIPSM48X/MS-020AC     | 48             | smt        | csdipism.flb |
| CSDIPSM52X              | 52             | smt        | csdipism.flb |
| CSDIPSM64-0750/MS-021AA | 64             | smt        | csdipism.flb |
| CSR13A                  | 2              | thru       | tcap.flb     |
| CSR13B                  | 2              | thru       | tcap.flb     |
| CSR13C                  | 2              | thru       | tcap.flb     |
| CSR13D                  | 2              | thru       | tcap.flb     |
| D0-203AA                | 2              | thru       | notstd4.flb  |
| D0-203AB                | 2              | thru       | notstd4.flb  |
| DAC-14C                 | 14             | thru       | notstd4.flb  |
| DAC-14M                 | 14             | thru       | notstd4.flb  |
| DAC-16C                 | 16             | thru       | notstd4.flb  |
| DAC-16M                 | 16             | thru       | notstd4.flb  |
| DAC-18C                 | 18             | thru       | notstd4.flb  |
| DAC-18M                 | 18             | thru       | notstd4.flb  |
| DAC-24C                 | 24             | thru       | notstd4.flb  |
| DAC-24H                 | 24             | thru       | notstd4.flb  |
| DAC-24M                 | 24             | thru       | notstd4.flb  |
| DAC-24P                 | 24             | thru       | notstd4.flb  |
| DAC-28C                 | 28             | thru       | notstd4.flb  |
| DAC-28H                 | 28             | thru       | notstd4.flb  |
| DAC-28M                 | 28             | thru       | notstd4.flb  |
| DAC-28P                 | 28             | thru       | notstd4.flb  |
| DAC-32C                 | 32             | thru       | notstd4.flb  |
| DAC-32M                 | 32             | thru       | notstd4.flb  |
| DAC-32P                 | 32             | thru       | notstd4.flb  |
| DAC-40C                 | 40             | thru       | notstd4.flb  |
| DAC-40CXX               | 40             | thru       | notstd4.flb  |
| DAC-40MXX               | 40             | thru       | notstd4.flb  |

| Footprint             | Number of Pins | Technology | Library      |
|-----------------------|----------------|------------|--------------|
| DAC-40P               | 40             | thru       | notstd4.flb  |
| DAC-42C               | 42             | thru       | notstd4.flb  |
| DAC-46C-1300          | 46             | thru       | notstd4.flb  |
| DAC-62C               | 62             | thru       | notstd4.flb  |
| DAC-62H-488           | 62             | thru       | notstd4.flb  |
| DAC331-12             | 18             | thru       | notstd4.flb  |
| DAC331-14             | 24             | thru       | notstd4.flb  |
| DAC336-8              | 16             | thru       | notstd4.flb  |
| DAL-16                | 16             | thru       | notstd4.flb  |
| DAL-24                | 24             | thru       | notstd4.flb  |
| DD-7                  | 7              | thru       | notstd4.flb  |
| DFP14X20-48           | 48             | smt        | sqfpqfpr.flb |
| DIMM168               | 168            | thru       | notstd4.flb  |
| DIMM168-0.150         | 168            | thru       | notstd4.flb  |
| DIMM168-0.160         | 168            | thru       | notstd4.flb  |
| DIMM168-0.163         | 168            | thru       | notstd4.flb  |
| DIMM168-0.350         | 168            | thru       | notstd4.flb  |
| DIN5                  | 5              | thru       | connect.flb  |
| DIN96                 | 98             | thru       | connect.flb  |
| DIN96P                | 98             | thru       | connect.flb  |
| DIN96R                | 98             | thru       | connect.flb  |
| DIP10                 | 10             | thru       | dip.flb      |
| DIP14                 | 14             | thru       | dip.flb      |
| DIP14                 | 14             | thru       | eval.flb     |
| DIP14/300-thru-socket | 14             | thru       | ampdip.flb   |
| DIP14/350-sm-socket   | 14             | smt        | ampdip.flb   |
| DIP16                 | 16             | thru       | dip.flb      |
| DIP16                 | 16             | thru       | eval.flb     |
| DIP16                 | 16             | thru       | notstd4.flb  |
| DIP16/24/600          | 16             | thru       | notstd4.flb  |

| Footprint             | Number of Pins | Technology | Library     |
|-----------------------|----------------|------------|-------------|
| DIP16/300-thru-socket | 16             | thru       | ampdip.flb  |
| DIP16/32/900          | 16             | thru       | notstd4.flb |
| DIP16/350-sm-socket   | 16             | smt        | ampdip.flb  |
| DIP16X                | 16             | thru       | dip.flb     |
| DIP18                 | 18             | thru       | dip.flb     |
| DIP18                 | 18             | thru       | eval.flb    |
| DIP18/300-thru-socket | 18             | thru       | ampdip.flb  |
| DIP18/350-sm-socket   | 18             | smt        | ampdip.flb  |
| DIP20                 | 20             | thru       | dip.flb     |
| DIP20/300-thru-socket | 20             | thru       | ampdip.flb  |
| DIP20/350-sm-socket   | 20             | smt        | ampdip.flb  |
| DIP22                 | 22             | thru       | dip.flb     |
| DIP22L                | 22             | thru       | dip.flb     |
| DIP24                 | 24             | thru       | dip.flb     |
| DIP24                 | 24             | thru       | eval.flb    |
| DIP24/16              | 16             | thru       | dip.flb     |
| DIP24/300-thru-socket | 24             | thru       | ampdip.flb  |
| DIP24/400-thru-socket | 24             | thru       | ampdip.flb  |
| DIP24/600-thru-socket | 24             | thru       | ampdip.flb  |
| DIP24/650-sm-socket   | 24             | smt        | ampdip.flb  |
| DIP24L                | 24             | thru       | dip.flb     |
| DIP24X                | 24             | thru       | dip.flb     |
| DIP28                 | 28             | thru       | dip.flb     |
| DIP28/300-thru-socket | 28             | thru       | ampdip.flb  |
| DIP28/350-sm-socket   | 28             | smt        | ampdip.flb  |
| DIP28/600-thru-socket | 28             | thru       | ampdip.flb  |
| DIP28/650-sm-socket   | 28             | smt        | ampdip.flb  |
| DIP28L                | 28             | thru       | dip.flb     |
| DIP28X                | 28             | thru       | dip.flb     |
| DIP32                 | 32             | thru       | dip.flb     |

| Footprint             | Number of Pins | Technology | Library     |
|-----------------------|----------------|------------|-------------|
| DIP32/600-thru-socket | 32             | thru       | ampdip.flb  |
| DIP32/650-sm-socket   | 32             | smt        | ampdip.flb  |
| DIP32L                | 32             | thru       | dip.flb     |
| DIP32X                | 32             | thru       | dip.flb     |
| DIP36X                | 36             | thru       | dip.flb     |
| DIP36XX               | 36             | thru       | dip.flb     |
| DIP4                  | 4              | thru       | eval.flb    |
| DIP40-0900            | 40             | thru       | notstd4.flb |
| DIP40-1000            | 40             | thru       | dip.flb     |
| DIP40-3600            | 40             | thru       | dip.flb     |
| DIP40/600-thru-socket | 40             | thru       | ampdip.flb  |
| DIP40/650-sm-socket   | 40             | smt        | ampdip.flb  |
| DIP40X                | 40             | thru       | dip.flb     |
| DIP40X/16             | 16             | thru       | dip.flb     |
| DIP40XX               | 40             | thru       | dip.flb     |
| DIP42/600-thru-socket | 42             | thru       | ampdip.flb  |
| DIP42X                | 42             | thru       | dip.flb     |
| DIP42X-70             | 42             | thru       | notstd4.flb |
| DIP46-1300            | 46             | thru       | dip.flb     |
| DIP48-1300            | 48             | thru       | dip.flb     |
| DIP48-1300            | 48             | thru       | notstd4.flb |
| DIP48/600-thru-socket | 48             | thru       | ampdip.flb  |
| DIP48X                | 48             | thru       | dip.flb     |
| DIP50XX               | 50             | thru       | dip.flb     |
| DIP52X                | 52             | thru       | notstd4.flb |
| DIP52XX               | 52             | thru       | dip.flb     |
| DIP6                  | 6              | thru       | cap.flb     |
| DIP6                  | 6              | thru       | dip.flb     |
| DIP6                  | 6              | thru       | eval.flb    |
| DIP6/300-thru-socket  | 6              | thru       | ampdip.flb  |



| Footprint             | Number of Pins | Technology | Library     |
|-----------------------|----------------|------------|-------------|
| DIP64/900-thru-socket | 64             | thru       | ampdip.flb  |
| DIP64XX               | 64             | thru       | dip.flb     |
| DIP8                  | 8              | thru       | dip.flb     |
| DIP8                  | 8              | thru       | eval.flb    |
| DIP8/300-thru-socket  | 8              | thru       | ampdip.flb  |
| DIP8/350-sm-socket    | 8              | smt        | ampdip.flb  |
| DIPLOMATE-STD-SIMM22  | 22             | thru       | ampsimm.flb |
| DIPLOMATE-STD-SIMM30  | 30             | thru       | ampsimm.flb |
| DIPLOMATE-STD-SIMM35  | 35             | thru       | ampsimm.flb |
| DIPLOMATE-STD-SIMM42  | 42             | thru       | ampsimm.flb |
| DIPSM14               | 14             | smt        | dipsm.flb   |
| DIPSM16               | 16             | smt        | dipsm.flb   |
| DIPSM16X              | 16             | smt        | dipsm.flb   |
| DIPSM18               | 18             | smt        | dipsm.flb   |
| DIPSM20               | 20             | smt        | dipsm.flb   |
| DIPSM22               | 22             | smt        | dipsm.flb   |
| DIPSM22L              | 22             | smt        | dipsm.flb   |
| DIPSM24               | 24             | smt        | dipsm.flb   |
| DIPSM24L              | 24             | smt        | dipsm.flb   |
| DIPSM24X              | 24             | smt        | dipsm.flb   |
| DIPSM28               | 28             | smt        | dipsm.flb   |
| DIPSM28L              | 28             | smt        | dipsm.flb   |
| DIPSM28X              | 28             | smt        | dipsm.flb   |
| DIPSM32               | 32             | smt        | dipsm.flb   |
| DIPSM32X              | 32             | smt        | dipsm.flb   |
| DIPSM36X              | 36             | smt        | dipsm.flb   |
| DIPSM36XX             | 36             | smt        | dipsm.flb   |
| DIPSM40X              | 40             | smt        | dipsm.flb   |
| DIPSM42X              | 42             | smt        | dipsm.flb   |
| DIPSM48X              | 48             | smt        | dipsm.flb   |

| Footprint | Number of Pins | Technology | Library      |
|-----------|----------------|------------|--------------|
| DIPSM50XX | 50             | smt        | dipsm.flb    |
| DIPSM52XX | 52             | smt        | dipsm.flb    |
| DIPSM6    | 6              | smt        | dipsm.flb    |
| DIPSM64XX | 64             | smt        | dipsm.flb    |
| DIPSM8    | 8              | smt        | dipsm.flb    |
| DO-1      | 2              | thru       | notstd4.flb  |
| DO-13     | 2              | thru       | discrete.flb |
| DO-203AA  | 2              | thru       | notstd4.flb  |
| DO-203AB  | 2              | thru       | notstd4.flb  |
| DO-204AA  | 2              | thru       | discrete.flb |
| DO-204AG  | 2              | thru       | japan.flb    |
| DO-204AG  | 2              | thru       | notstd4.flb  |
| DO-204AH  | 2              | thru       | discrete.flb |
| DO-204AH  | 2              | thru       | japan.flb    |
| DO-204AK  | 2              | thru       | japan.flb    |
| DO-204AK  | 2              | thru       | notstd4.flb  |
| DO-204AL  | 2              | thru       | discrete.flb |
| DO-204AM  | 2              | thru       | discrete.flb |
| DO-204AP  | 2              | thru       | notstd4.flb  |
| DO-204AR  | 2              | thru       | discrete.flb |
| DO-208AA  | 1              | thru       | discrete.flb |
| DO-21     | 1              | thru       | discrete.flb |
| DO-213AB  | 2              | smt        | discrete.flb |
| DO-27     | 2              | thru       | discrete.flb |
| DO-34     | 2              | thru       | notstd4.flb  |
| DO-35     | 2              | thru       | eval.flb     |
| DO-35     | 2              | thru       | notstd4.flb  |
| do-4      | 1              | thru       | discrete.flb |
| DO-41     | 2              | thru       | discrete.flb |
| DO-41     | 2              | thru       | eval.flb     |

| Footprint          | Number of Pins | Technology | Library      |
|--------------------|----------------|------------|--------------|
| DO-41              | 2              | thru       | notstd4.flb  |
| DO-7               | 2              | thru       | discrete.flb |
| DP6B               | 6              | thru       | japan.flb    |
| DS-C304A           | 4              | thru       | osc.flb      |
| DSHELL09-F         | 9              | thru       | dshell.flb   |
| DSHELL09-F-90      | 9              | thru       | dshell.flb   |
| DSHELL09-M         | 9              | thru       | dshell.flb   |
| DSHELL09-M-90      | 9              | thru       | dshell.flb   |
| DSHELL09-M-90      | 9              | thru       | eval.flb     |
| DSHELL15-F         | 15             | thru       | dshell.flb   |
| DSHELL15-F-90      | 15             | thru       | dshell.flb   |
| DSHELL15-M         | 15             | thru       | dshell.flb   |
| DSHELL15-M-90      | 15             | thru       | dshell.flb   |
| DSHELL25-F         | 25             | thru       | dshell.flb   |
| DSHELL25-F-90      | 25             | thru       | dshell.flb   |
| DSHELL25-M         | 25             | thru       | dshell.flb   |
| DSHELL25-M-90      | 25             | thru       | dshell.flb   |
| DSHELL37-F         | 37             | thru       | dshell.flb   |
| DSHELL37-F-90      | 37             | thru       | dshell.flb   |
| DSHELL37-M         | 37             | thru       | dshell.flb   |
| DSHELL37-M-90      | 37             | thru       | dshell.flb   |
| DUAL-RO-SIMM100/50 | 200            | thru       | ampsimm.flb  |
| DUAL-RO-SIMM64/50  | 128            | thru       | ampsimm.flb  |
| DUAL-RO-SIMM68/50  | 136            | thru       | ampsimm.flb  |
| DUAL-RO-SIMM72/50  | 144            | thru       | ampsimm.flb  |
| DUAL-RO-SIMM80/50  | 160            | thru       | ampsimm.flb  |
| EDGE26             | 26             | smt        | eval.flb     |
| EDGE40             | 40             | smt        | edge.flb     |
| EDGE62             | 62             | smt        | edge.flb     |
| F1021-AK           | 6              | thru       | notstd4.flb  |

| Footprint   | Number of Pins | Technology | Library      |
|-------------|----------------|------------|--------------|
| F1022-AK    | 6              | thru       | notstd4.flb  |
| F1120-AR    | 6              | thru       | notstd4.flb  |
| F1174-AR    | 6              | thru       | notstd4.flb  |
| F1240-AT    | 8              | thru       | notstd4.flb  |
| F2201S-CD   | 4              | thru       | notstd4.flb  |
| F2202S-CD   | 4              | thru       | notstd4.flb  |
| FPAK        | 4              | thru       | japan.flb    |
| FPT-18C-C01 | 18             | thru       | notstd4.flb  |
| FPT-22C-C01 | 22             | thru       | notstd4.flb  |
| FPT-24C-C02 | 24             | thru       | notstd4.flb  |
| G36201      | 2              | smt        | discrete.flb |
| H08B        | 8              | thru       | notstd4.flb  |
| HC-18U      | 2              | thru       | osc.flb      |
| HC-33U      | 2              | thru       | osc.flb      |
| HDR20       | 20             | thru       | connect.flb  |
| HDR20       | 20             | thru       | eval.flb     |
| HDR50       | 50             | thru       | connect.flb  |
| HP_TO-46    | 3              | thru       | to.flb       |
| HSIP10-P    | 10             | thru       | japan.flb    |
| HSIP10-P    | 10             | thru       | notstd4.flb  |
| IMS-1       | 10             | thru       | ims.flb      |
| IMS-2       | 13             | thru       | ims.flb      |
| JLCC/R-32   | 32             | smt        | notstd4.flb  |
| JLCC20      | 20             | smt        | notstd4.flb  |
| JLCC28      | 28             | smt        | notstd4.flb  |
| JLCC44      | 44             | smt        | notstd4.flb  |
| JLCC68      | 68             | smt        | notstd4.flb  |
| JLCC84      | 84             | smt        | eval.flb     |
| JLCC84      | 84             | smt        | notstd4.flb  |
| Jump1       | 1              | thru       | eval.flb     |

| Footprint      | Number of Pins | Technology | Library     |
|----------------|----------------|------------|-------------|
| Jump2          | 2              | thru       | eval.flb    |
| KV-15/MO-048AB | 15             | thru       | notstd4.flb |
| L2012C         | 2              | smt        | ind.flb     |
| L2081-LX2      | 4              | thru       | notstd4.flb |
| L2082-LX2      | 4              | thru       | notstd4.flb |
| L2083-LX2      | 4              | thru       | notstd4.flb |
| L2825W/W       | 2              | smt        | ind.flb     |
| L3216C         | 2              | smt        | ind.flb     |
| L3225/3230M    | 2              | smt        | ind.flb     |
| L3225W/W       | 2              | smt        | ind.flb     |
| L4035M         | 2              | smt        | ind.flb     |
| L4516C         | 2              | smt        | ind.flb     |
| L4532M         | 2              | smt        | ind.flb     |
| L4532W/W       | 2              | smt        | ind.flb     |
| L5038W/W       | 2              | smt        | ind.flb     |
| L5650M         | 2              | smt        | ind.flb     |
| L8530M         | 2              | smt        | ind.flb     |
| LCC/R-18       | 18             | smt        | lcc.flb     |
| LCC/R-20       | 20             | smt        | lcc.flb     |
| LCC/R-22       | 22             | smt        | lcc.flb     |
| LCC/R-24       | 24             | thru       | notstd4.flb |
| LCC/R-28       | 28             | smt        | lcc.flb     |
| LCC/R-32       | 32             | smt        | lcc.flb     |
| LCC100         | 100            | smt        | lcc.flb     |
| LCC124         | 124            | smt        | lcc.flb     |
| LCC156         | 156            | smt        | lcc.flb     |
| LCC16          | 16             | smt        | lcc.flb     |
| LCC20          | 20             | smt        | lcc.flb     |
| LCC24          | 24             | smt        | lcc.flb     |
| LCC28          | 28             | smt        | lcc.flb     |

| Footprint          | Number of Pins | Technology | Library      |
|--------------------|----------------|------------|--------------|
| LCC36              | 36             | smt        | lcc.flb      |
| LCC44              | 44             | smt        | lcc.flb      |
| LCC52              | 52             | smt        | lcc.flb      |
| LCC68              | 68             | smt        | lcc.flb      |
| LCC84              | 84             | smt        | lcc.flb      |
| M-230              | 3              | thru       | japan.flb    |
| M-232              | 3              | thru       | japan.flb    |
| M-257              | 3              | thru       | japan.flb    |
| M-273              | 3              | thru       | japan.flb    |
| M2012              | 2              | smt        | melf.flb     |
| M3216              | 2              | smt        | melf.flb     |
| M3516              | 2              | smt        | melf.flb     |
| M5923              | 2              | smt        | melf.flb     |
| M6001              | 2              | thru       | discrete.flb |
| MI105              | 2              | thru       | japan.flb    |
| MI105              | 2              | thru       | notstd4.flb  |
| MINI-2-PINS        | 2              | smt        | japan.flb    |
| MINI-2-PINS        | 2              | smt        | notstd4.flb  |
| MINI-3-PINS        | 3              | smt        | japan.flb    |
| MINI-3-PINS        | 3              | smt        | notstd4.flb  |
| MINI-4-PINS        | 4              | thru       | japan.flb    |
| MINI-6-PINS        | 6              | smt        | japan.flb    |
| MINI-6-PINS        | 6              | smt        | notstd4.flb  |
| MINI-DSHELL26-F-90 | 26             | thru       | dshell.flb   |
| MINI-DSHELL50-F-90 | 50             | thru       | dshell.flb   |
| MINI-DSHELL68-F-90 | 68             | thru       | dshell.flb   |
| MINI-PWR-2-PINS    | 2              | smt        | japan.flb    |
| MINI-PWR-2-PINS    | 2              | smt        | notstd4.flb  |
| MITD-4             | 2              | thru       | notstd4.flb  |
| MLATCH-SIMM72/50   | 72             | thru       | ampsimm.flb  |

| Footprint        | Number of Pins | Technology | Library     |
|------------------|----------------|------------|-------------|
| MLATCH-SIMM80/50 | 80             | thru       | ampsimm.flb |
| MO-006AH         | 8              | thru       | notstd4.flb |
| MO-012AB         | 12             | thru       | notstd4.flb |
| MO-093AA         | 5              | thru       | notstd4.flb |
| MO-127           | 12             | thru       | notstd4.flb |
| MOT-CASE344-08   | 4              | thru       | notstd4.flb |
| MOT-CASE867-04   | 6              | thru       | notstd4.flb |
| MOT221C-02       | 3              | thru       | notstd4.flb |
| MOT22A-01        | 3              | thru       | notstd4.flb |
| MOT263-04        | 3              | thru       | notstd4.flb |
| MOT303-01        | 4              | thru       | notstd4.flb |
| MOT311-02        | 4              | thru       | notstd4.flb |
| MOT314D-03       | 5              | thru       | notstd4.flb |
| MOT317-01        | 4              | thru       | notstd4.flb |
| MOT383-01        | 3              | thru       | notstd4.flb |
| MOT87L-02        | 3              | thru       | notstd4.flb |
| MP-3             | 3              | thru       | japan.flb   |
| MP-3             | 3              | thru       | notstd4.flb |
| MP-45            | 3              | thru       | japan.flb   |
| MP-5             | 3              | thru       | japan.flb   |
| MP-5             | 3              | thru       | notstd4.flb |
| MP-80            | 3              | thru       | japan.flb   |
| MP3Z             | 3              | thru       | japan.flb   |
| MPAK             | 3              | smt        | japan.flb   |
| MPAK             | 3              | smt        | notstd4.flb |
| MT1              | 3              | thru       | japan.flb   |
| MT1              | 3              | thru       | notstd4.flb |
| MT2              | 3              | thru       | japan.flb   |
| MT2              | 3              | thru       | notstd4.flb |
| MT3              | 3              | thru       | japan.flb   |

| Footprint         | Number of Pins | Technology | Library      |
|-------------------|----------------|------------|--------------|
| MT3               | 3              | thru       | notstd4.flb  |
| NECMP3            | 3              | thru       | japan.flb    |
| NECMP3            | 3              | thru       | notstd4.flb  |
| new-s-type        | 3              | thru       | japan.flb    |
| new-s-type        | 3              | thru       | notstd4.flb  |
| P123-SO8          | 8              | thru       | notstd4.flb  |
| P19304            | 2              | thru       | discrete.flb |
| P19404            | 2              | thru       | discrete.flb |
| P26702            | 2              | thru       | discrete.flb |
| PA33              | 3              | thru       | japan.flb    |
| PA33              | 3              | thru       | notstd4.flb  |
| PACKAGE_A         | 2              | thru       | discrete.flb |
| PGA-28K           | 29             | thru       | notstd4.flb  |
| PGA-36K           | 36             | thru       | notstd4.flb  |
| PGA/R-42          | 43             | thru       | notstd4.flb  |
| PGA/R-62          | 62             | thru       | notstd4.flb  |
| PGA/R-62-MNC      | 62             | thru       | notstd4.flb  |
| PGA/R-62A         | 62             | thru       | notstd4.flb  |
| PGA101            | 101            | thru       | notstd4.flb  |
| PGA114            | 114            | thru       | notstd4.flb  |
| PGA124/MO-083AE   | 124            | thru       | notstd4.flb  |
| PGA142            | 144            | thru       | notstd4.flb  |
| PGA142/WEITEK     | 144            | thru       | notstd4.flb  |
| PGA159            | 159            | thru       | notstd4.flb  |
| PGA175/MO-067AF   | 203            | thru       | notstd4.flb  |
| PGA30/ATMEL       | 30             | thru       | notstd4.flb  |
| PGA68/11X11       | 68             | thru       | notstd4.flb  |
| PGA68/CASE765A-05 | 68             | thru       | cpga.flb     |
| PGA68/CASE765A-05 | 68             | thru       | notstd4.flb  |
| PGA84M/11X11      | 85             | thru       | notstd4.flb  |



| Footprint         | Number of Pins | Technology | Library      |
|-------------------|----------------|------------|--------------|
| PLCC-44/MO-047AC  | 44             | smt        | notstd4.flb  |
| PLCC/R-18         | 18             | smt        | plcc-rec.flb |
| PLCC/R-18L        | 18             | smt        | plcc-rec.flb |
| PLCC/R-22         | 22             | smt        | plcc-rec.flb |
| PLCC/R-28         | 28             | smt        | plcc-rec.flb |
| PLCC/R-32         | 32             | smt        | notstd4.flb  |
| PLCC/R-32         | 32             | smt        | plcc-rec.flb |
| PLCC100           | 100            | smt        | plcc.flb     |
| PLCC124           | 124            | smt        | plcc.flb     |
| PLCC20            | 20             | smt        | plcc.flb     |
| PLCC28            | 28             | smt        | plcc.flb     |
| PLCC32-R/MO-052AE | 32             | smt        | notstd4.flb  |
| PLCC40            | 40             | thru       | plcc.flb     |
| PLCC44            | 44             | smt        | plcc.flb     |
| PLCC52            | 52             | smt        | plcc.flb     |
| PLCC68            | 68             | smt        | notstd4.flb  |
| PLCC68            | 68             | smt        | plcc.flb     |
| PLCC84            | 84             | smt        | plcc.flb     |
| PPGA132/PP132     | 132            | thru       | notstd4.flb  |
| PPGA175/PP175     | 175            | thru       | notstd4.flb  |
| PQFP-44/MO-086AA  | 44             | smt        | notstd4.flb  |
| PQFP-44/MO-089AB  | 44             | smt        | notstd4.flb  |
| PQFP100           | 100            | smt        | pqfp.flb     |
| PQFP100/MO-069AD  | 100            | smt        | notstd4.flb  |
| PQFP10X10-44      | 44             | smt        | notstd4.flb  |
| PQFP132           | 132            | smt        | pqfp.flb     |
| PQFP132-M         | 132            | smt        | cqfp.flb     |
| PQFP132-m         | 132            | smt        | pqfp.flb     |
| PQFP132/MO-069AE  | 132            | thru       | notstd4.flb  |
| PQFP14X14-52      | 52             | smt        | notstd4.flb  |

| Footprint          | Number of Pins | Technology | Library      |
|--------------------|----------------|------------|--------------|
| PQFP14X20-100      | 100            | smt        | notstd4.flb  |
| PQFP160            | 160            | smt        | notstd4.flb  |
| PQFP160/MO-108DD-1 | 160            | smt        | notstd4.flb  |
| PQFP164            | 164            | smt        | pqfp.flb     |
| PQFP196            | 196            | smt        | pqfp.flb     |
| PQFP244            | 244            | smt        | pqfp.flb     |
| PQFP28X28-208      | 208            | smt        | notstd4.flb  |
| PQFP52             | 52             | smt        | pqfp.flb     |
| PQFP68             | 68             | smt        | pqfp.flb     |
| PQFP80             | 80             | smt        | notstd4.flb  |
| PQFP84             | 84             | smt        | pqfp.flb     |
| QFP-16M-L02        | 16             | smt        | notstd4.flb  |
| QFP-24M-L02        | 24             | smt        | notstd4.flb  |
| QFP-32M-L02        | 32             | smt        | notstd4.flb  |
| QFP-64             | 64             | smt        | notstd4.flb  |
| QFP10x10-44        | 44             | smt        | sqfpqfps.flb |
| QFP10x10-52        | 52             | smt        | sqfpqfps.flb |
| QFP12x12-48        | 48             | smt        | sqfpqfps.flb |
| QFP12x12-64        | 64             | smt        | sqfpqfps.flb |
| QFP14x14-64        | 64             | smt        | sqfpqfps.flb |
| QFP14x14-80        | 80             | smt        | sqfpqfps.flb |
| QFP14X20-100       | 100            | smt        | sqfpqfpr.flb |
| QFP14X20-64        | 64             | smt        | notstd4.flb  |
| QFP14X20-64        | 64             | smt        | sqfpqfpr.flb |
| QFP14X20-80        | 80             | smt        | notstd4.flb  |
| QFP14X20-80        | 80             | smt        | sqfpqfpr.flb |
| QFP15X19-60        | 60             | smt        | notstd4.flb  |

| Footprint        | Number of Pins | Technology | Library      |
|------------------|----------------|------------|--------------|
| QFP15X19-60      | 60             | smt        | sqfpqfpr.flb |
| QFP160           | 160            | smt        | notstd4.flb  |
| QFP28X28-120     | 120            | smt        | sqfpqfps.flb |
| QFP28X28-128     | 128            | smt        | sqfpqfps.flb |
| QFP28X28-144     | 144            | smt        | sqfpqfps.flb |
| QFP28X28-160     | 160            | smt        | sqfpqfps.flb |
| QFP32X32-184     | 184            | smt        | sqfpqfps.flb |
| QFP40X40-232     | 232            | smt        | sqfpqfps.flb |
| QFP5-60          | 60             | smt        | notstd4.flb  |
| QFP5-64          | 64             | smt        | notstd4.flb  |
| QFP6-60          | 60             | smt        | notstd4.flb  |
| QFP64/MO-108BC-1 | 64             | smt        | notstd4.flb  |
| QFP9X10-44       | 44             | smt        | notstd4.flb  |
| QFP9X10-44       | 44             | smt        | sqfpqfpr.flb |
| QFP9X10-56       | 56             | smt        | notstd4.flb  |
| QFP9X10-56       | 56             | smt        | sqfpqfpr.flb |
| R1005            | 2              | smt        | chipres.flb  |
| R1608            | 2              | smt        | chipres.flb  |
| R2012            | 2              | smt        | chipres.flb  |
| R2012            | 2              | smt        | eval.flb     |
| R3216            | 2              | smt        | chipres.flb  |
| R3216            | 2              | smt        | eval.flb     |
| R3225            | 2              | smt        | chipres.flb  |
| R5025            | 2              | smt        | chipres.flb  |
| R6332            | 2              | smt        | chipres.flb  |
| RC05             | 2              | thru       | discrete.flb |
| RC05             | 2              | thru       | eval.flb     |
| RC05             | 2              | thru       | resistor.flb |

| Footprint     | Number of Pins | Technology | Library      |
|---------------|----------------|------------|--------------|
| RC06          | 2              | thru       | resistor.flb |
| RC07          | 2              | thru       | discrete.flb |
| RC07          | 2              | thru       | eval.flb     |
| RC07          | 2              | thru       | resistor.flb |
| RC08          | 2              | thru       | resistor.flb |
| RC12          | 2              | thru       | resistor.flb |
| RC20          | 2              | thru       | eval.flb     |
| RC20          | 2              | thru       | resistor.flb |
| RC22          | 2              | thru       | resistor.flb |
| RC32          | 2              | thru       | resistor.flb |
| RC42          | 2              | thru       | resistor.flb |
| RL05          | 2              | thru       | resistor.flb |
| RL07          | 2              | thru       | resistor.flb |
| RL32          | 2              | thru       | resistor.flb |
| RL42          | 2              | thru       | resistor.flb |
| RN50          | 2              | thru       | resistor.flb |
| RN55          | 2              | thru       | resistor.flb |
| RN60          | 2              | thru       | resistor.flb |
| RN65          | 2              | thru       | resistor.flb |
| RN70          | 2              | thru       | resistor.flb |
| RN75          | 2              | thru       | resistor.flb |
| RN80          | 2              | thru       | resistor.flb |
| RQFP208       | 208            | smt        | notstd4.flb  |
| RQFP240       | 240            | smt        | notstd4.flb  |
| RWP20         | 2              | thru       | resistor.flb |
| S-MINI-2-PINS | 2              | smt        | japan.flb    |
| S-MINI-2-PINS | 2              | smt        | notstd4.flb  |
| SAN1004A      | 2              | thru       | japan.flb    |
| SAN1004A      | 2              | thru       | notstd4.flb  |
| SAN1005       | 2              | thru       | japan.flb    |

| Footprint | Number of Pins | Technology | Library     |
|-----------|----------------|------------|-------------|
| SAN1005   | 2              | thru       | notstd4.flb |
| SAN1080   | 2              | thru       | japan.flb   |
| SAN1080   | 2              | thru       | notstd4.flb |
| SAN1114   | 2              | thru       | japan.flb   |
| SAN1114   | 2              | thru       | notstd4.flb |
| SAN1117A  | 3              | smt        | japan.flb   |
| SAN1117A  | 3              | smt        | notstd4.flb |
| SAN1129   | 3              | thru       | japan.flb   |
| SAN1129   | 3              | thru       | notstd4.flb |
| SAN1131   | 3              | thru       | japan.flb   |
| SAN1131   | 3              | thru       | notstd4.flb |
| SAN1137   | 2              | smt        | japan.flb   |
| SAN1137   | 2              | smt        | notstd4.flb |
| SAN1146   | 3              | smt        | japan.flb   |
| SAN1146   | 3              | smt        | notstd4.flb |
| SAN1147   | 3              | smt        | japan.flb   |
| SAN1147   | 3              | smt        | notstd4.flb |
| SAN1148   | 3              | smt        | japan.flb   |
| SAN1148   | 3              | smt        | notstd4.flb |
| SAN1149   | 3              | smt        | japan.flb   |
| SAN1149   | 3              | smt        | notstd4.flb |
| SAN1154   | 3              | smt        | japan.flb   |
| SAN1154   | 3              | smt        | notstd4.flb |
| SAN1156   | 3              | thru       | japan.flb   |
| SAN1156   | 3              | thru       | notstd4.flb |
| SAN1157   | 3              | thru       | japan.flb   |
| SAN1157   | 3              | thru       | notstd4.flb |
| SAN1164   | 4              | smt        | japan.flb   |
| SAN1164   | 4              | smt        | notstd4.flb |
| SAN1169   | 3              | smt        | japan.flb   |

| Footprint | Number of Pins | Technology | Library     |
|-----------|----------------|------------|-------------|
| SAN1169   | 3              | smt        | notstd4.flb |
| SAN1173   | 2              | thru       | japan.flb   |
| SAN1173   | 2              | thru       | notstd4.flb |
| SAN1174   | 2              | thru       | japan.flb   |
| SAN1174   | 2              | thru       | notstd4.flb |
| SAN1175   | 2              | thru       | japan.flb   |
| SAN1175   | 2              | thru       | notstd4.flb |
| SAN1177   | 2              | thru       | japan.flb   |
| SAN1177   | 2              | thru       | notstd4.flb |
| SAN1184   | 2              | thru       | japan.flb   |
| SAN1184   | 2              | thru       | notstd4.flb |
| SAN1186   | 3              | smt        | japan.flb   |
| SAN1186   | 3              | smt        | notstd4.flb |
| SAN1187   | 3              | smt        | japan.flb   |
| SAN1187   | 3              | smt        | notstd4.flb |
| SAN1188   | 2              | smt        | japan.flb   |
| SAN1188   | 2              | smt        | notstd4.flb |
| SAN1190   | 2              | thru       | japan.flb   |
| SAN1190   | 2              | thru       | notstd4.flb |
| SAN1193   | 2              | thru       | japan.flb   |
| SAN1193   | 2              | thru       | notstd4.flb |
| SAN1195   | 3              | smt        | japan.flb   |
| SAN1195   | 3              | smt        | notstd4.flb |
| SAN1196   | 3              | smt        | japan.flb   |
| SAN1196   | 3              | smt        | notstd4.flb |
| SAN1197   | 3              | smt        | japan.flb   |
| SAN1197   | 3              | smt        | notstd4.flb |
| SAN1198   | 3              | smt        | japan.flb   |
| SAN1198   | 3              | smt        | notstd4.flb |
| SAN1215   | 2              | thru       | japan.flb   |

| Footprint        | Number of Pins | Technology | Library     |
|------------------|----------------|------------|-------------|
| SAN1215          | 2              | thru       | notstd4.flb |
| SANMCP           | 3              | smt        | japan.flb   |
| SANMCP           | 3              | smt        | notstd4.flb |
| SANSPA           | 3              | thru       | japan.flb   |
| SANSPA           | 3              | thru       | notstd4.flb |
| SC-40            | 2              | thru       | notstd4.flb |
| SC-43            | 3              | smt        | notstd4.flb |
| SC-43A           | 3              | smt        | notstd4.flb |
| SC-43B           | 3              | smt        | notstd4.flb |
| SC-51            | 3              | thru       | notstd4.flb |
| SC-59            | 3              | smt        | notstd4.flb |
| SC-59A           | 3              | thru       | japan.flb   |
| SC-59A           | 3              | smt        | notstd4.flb |
| SC-59A/TO-236    | 3              | smt        | notstd4.flb |
| SC-61            | 4              | smt        | notstd4.flb |
| SC-62            | 3              | smt        | notstd4.flb |
| SC-70            | 3              | smt        | notstd4.flb |
| SC-70/BEC        | 3              | thru       | notstd4.flb |
| SC-70/EBC        | 3              | thru       | notstd4.flb |
| SC-71            | 3              | thru       | notstd4.flb |
| SC71             | 3              | thru       | notstd4.flb |
| SDIP14/MS-019AA  | 14             | thru       | sdip.flb    |
| SDIP16/MS-019AB  | 16             | thru       | sdip.flb    |
| SDIP18/MS-019AC  | 18             | thru       | sdip.flb    |
| SDIP20/MS-019AD  | 20             | thru       | sdip.flb    |
| SDIP22/MS-019AE  | 22             | thru       | sdip.flb    |
| SDIP24/MS-019AF  | 24             | thru       | sdip.flb    |
| SDIP28L          | 28             | thru       | sdip.flb    |
| SDIP30L          | 30             | thru       | sdip.flb    |
| SDIP40X/MS-020AA | 40             | thru       | sdip.flb    |

| Footprint              | Number of Pins | Technology | Library     |
|------------------------|----------------|------------|-------------|
| SDIP42X                | 42             | thru       | sdip.flb    |
| SDIP48X/MS-020AC       | 48             | thru       | sdip.flb    |
| SDIP52X                | 52             | thru       | sdip.flb    |
| SDIP64-0750/MS-021AA   | 64             | thru       | sdip.flb    |
| SDIPSM14/MS-019AA      | 14             | smt        | sdipsm.flb  |
| SDIPSM16/MS-019AB      | 16             | smt        | sdipsm.flb  |
| SDIPSM18/MS-019AC      | 18             | smt        | sdipsm.flb  |
| SDIPSM20/MS-019AD      | 20             | smt        | sdipsm.flb  |
| SDIPSM22/MS-019AE      | 22             | smt        | sdipsm.flb  |
| SDIPSM24/MS-019AF      | 24             | smt        | sdipsm.flb  |
| SDIPSM28L              | 28             | smt        | sdipsm.flb  |
| SDIPSM30L              | 30             | smt        | sdipsm.flb  |
| SDIPSM40X/MS-020AA     | 40             | smt        | sdipsm.flb  |
| SDIPSM42X              | 42             | smt        | sdipsm.flb  |
| SDIPSM48X/MS-020AC     | 48             | smt        | sdipsm.flb  |
| SDIPSM52X              | 52             | smt        | sdipsm.flb  |
| SDIPSM64-0750/MS-021AA | 64             | smt        | sdipsm.flb  |
| SIMM22/100             | 22             | thru       | ampsimm.flb |
| SIMM30/100             | 30             | thru       | ampsimm.flb |
| SIMM35/100             | 35             | thru       | ampsimm.flb |
| SIMM40/100             | 40             | thru       | ampsimm.flb |
| SIMM40/50              | 40             | thru       | ampsimm.flb |
| SIMM42/100             | 42             | thru       | ampsimm.flb |
| SIMM64/50              | 64             | thru       | ampsimm.flb |
| SIMM68/50              | 68             | thru       | ampsimm.flb |
| SIMM72/50              | 72             | thru       | ampsimm.flb |
| SIMM72/50/350          | 72             | thru       | ampsimm.flb |
| SIMM80/50              | 80             | thru       | ampsimm.flb |
| SIMMII30/100           | 30             | thru       | ampsimm.flb |
| SIMMII35/100           | 35             | thru       | ampsimm.flb |



| Footprint      | Number of Pins | Technology | Library     |
|----------------|----------------|------------|-------------|
| SIMMII40/50    | 40             | thru       | ampsimm.flb |
| SIMMII68/50    | 68             | thru       | ampsimm.flb |
| SIMMII72/50    | 72             | thru       | ampsimm.flb |
| SIMMII80/50    | 80             | thru       | ampsimm.flb |
| SIMMII84/50    | 84             | thru       | ampsimm.flb |
| SIP10          | 10             | thru       | sip.flb     |
| SIP11/MO-035AA | 11             | thru       | sip.flb     |
| sip18          | 18             | thru       | notstd4.flb |
| SIP22/MO-068AA | 22             | thru       | sip.flb     |
| SIP24          | 24             | thru       | sip.flb     |
| SIP24/MO-068AB | 24             | thru       | sip.flb     |
| SIP25          | 25             | thru       | sip.flb     |
| SIP30          | 30             | thru       | sip.flb     |
| SIP30/MO-068AF | 30             | thru       | sip.flb     |
| SIP40/MO-068AE | 40             | thru       | sip.flb     |
| SIP5           | 5              | thru       | eval.flb    |
| sip5           | 5              | thru       | notstd4.flb |
| sip8           | 8              | thru       | sip.flb     |
| sip8/p-0340    | 8              | thru       | notstd4.flb |
| SIP9           | 9              | thru       | sip.flb     |
| sip9/p-0340    | 9              | thru       | notstd4.flb |
| SL15           | 6              | thru       | notstd4.flb |
| SMB            | 2              | smt        | sot_sod.flb |
| SO-18D         | 18             | smt        | notstd4.flb |
| SO10W          | 10             | smt        | notstd4.flb |
| SO14           | 14             | smt        | eval.flb    |
| SO14           | 14             | smt        | soic.flb    |
| SO14L/MO-046AA | 14             | smt        | soic.flb    |
| SO14W          | 14             | smt        | soic.flb    |
| SO16           | 16             | smt        | eval.flb    |

| Footprint        | Number of Pins | Technology | Library     |
|------------------|----------------|------------|-------------|
| SO16             | 16             | smt        | soic.flb    |
| SO16L/MO-046AB   | 16             | smt        | notstd4.flb |
| SO16L/MO-046AB   | 16             | smt        | soic.flb    |
| SO16W            | 16             | smt        | soic.flb    |
| SO18W            | 18             | smt        | soic.flb    |
| SO20L/MO-046AC   | 20             | smt        | soic.flb    |
| SO20W            | 20             | smt        | soic.flb    |
| SO20W/MS-013AC-1 | 20             | smt        | notstd4.flb |
| SO24W            | 24             | smt        | soic.flb    |
| SO24W/MS-013AC   | 24             | smt        | notstd4.flb |
| SO24W/MS-013AD   | 24             | smt        | notstd4.flb |
| SO24W/MS-013AD-1 | 24             | smt        | notstd4.flb |
| SO24X            | 24             | smt        | soic.flb    |
| SO28W            | 28             | smt        | soic.flb    |
| SO28W/MS-013AE   | 28             | smt        | notstd4.flb |
| SO28X            | 28             | smt        | soic.flb    |
| SO32W            | 32             | smt        | soic.flb    |
| SO32X            | 32             | smt        | soic.flb    |
| SO36W            | 36             | smt        | soic.flb    |
| SO36X            | 36             | smt        | soic.flb    |
| SO64/MO117       | 64             | smt        | ssoic.flb   |
| SO8              | 8              | smt        | soic.flb    |
| SO8L             | 8              | smt        | notstd4.flb |
| SO8W             | 8              | smt        | soic.flb    |
| SOD123           | 2              | smt        | sot_sod.flb |
| SOD80-D          | 2              | smt        | notstd4.flb |
| SOD80/MLL34      | 2              | smt        | melf.flb    |
| SOD87/MLL41      | 2              | smt        | melf.flb    |
| SOIC-R24         | 24             | smt        | notstd4.flb |
| SOIC-R28         | 28             | smt        | notstd4.flb |

| Footprint             | Number of Pins | Technology | Library     |
|-----------------------|----------------|------------|-------------|
| SOIC-RN20             | 20             | smt        | notstd4.flb |
| SOIC-RN24             | 24             | smt        | notstd4.flb |
| SOJ-28D               | 28             | smt        | notstd4.flb |
| SOJ026-P-0300         | 20             | smt        | notstd4.flb |
| SOJ14/300             | 14             | smt        | soj.flb     |
| SOJ14/350             | 14             | smt        | soj.flb     |
| SOJ14/400             | 14             | smt        | soj.flb     |
| SOJ14/450             | 14             | smt        | soj.flb     |
| SOJ16/300             | 16             | smt        | soj.flb     |
| SOJ16/350             | 16             | smt        | soj.flb     |
| SOJ16/400             | 16             | smt        | soj.flb     |
| SOJ16/450             | 16             | smt        | soj.flb     |
| SOJ18/300             | 18             | smt        | soj.flb     |
| SOJ18/350             | 18             | smt        | soj.flb     |
| SOJ18/400             | 18             | smt        | soj.flb     |
| SOJ18/450             | 18             | smt        | soj.flb     |
| SOJ20/26/300/MO-105AA | 20             | smt        | notstd4.flb |
| SOJ20/300             | 20             | smt        | soj.flb     |
| SOJ20/350             | 20             | smt        | soj.flb     |
| SOJ20/400             | 20             | smt        | soj.flb     |
| SOJ20/450             | 20             | smt        | soj.flb     |
| SOJ22/26/300/MO-105AA | 26             | smt        | soj.flb     |
| SOJ22/26/350/MO-091AA | 20             | smt        | soj.flb     |
| SOJ22/300             | 22             | smt        | soj.flb     |
| SOJ22/350             | 22             | smt        | soj.flb     |
| SOJ22/400             | 22             | smt        | soj.flb     |
| SOJ22/450             | 22             | smt        | soj.flb     |
| SOJ24/26/300          | 24             | thru       | notstd4.flb |
| SOJ24/28/400/MO-061AH | 24             | smt        | soj.flb     |
| SOJ24/300             | 24             | smt        | soj.flb     |

| Footprint          | Number of Pins | Technology | Library     |
|--------------------|----------------|------------|-------------|
| SOJ24/330/MO-121AA | 24             | smt        | soj.flb     |
| SOJ24/350          | 24             | smt        | soj.flb     |
| SOJ24/400          | 24             | smt        | soj.flb     |
| SOJ24/450          | 24             | smt        | soj.flb     |
| SOJ26-350/MO-091AA | 20             | smt        | notstd4.flb |
| SOJ26-P-300        | 20             | smt        | notstd4.flb |
| SOJ26/300          | 26             | smt        | soj.flb     |
| SOJ26/350          | 26             | smt        | soj.flb     |
| SOJ26/400          | 26             | smt        | soj.flb     |
| SOJ26/450          | 26             | smt        | soj.flb     |
| SOJ28/300          | 28             | smt        | soj.flb     |
| SOJ28/330/MO-121AB | 28             | smt        | soj.flb     |
| SOJ28/350          | 28             | smt        | soj.flb     |
| SOJ28/400          | 28             | smt        | soj.flb     |
| SOJ28/415/MO-147AA | 28             | smt        | soj.flb     |
| SOJ28/450          | 28             | smt        | soj.flb     |
| SOJ32/300/MO-077AC | 32             | smt        | soj.flb     |
| SOJ32/330/MO-121AC | 32             | smt        | soj.flb     |
| SOJ32/400/MO-061AB | 32             | smt        | soj.flb     |
| SOJ32/500/MO-124AA | 32             | smt        | soj.flb     |
| SOJ34/400/MO-061AF | 34             | smt        | soj.flb     |
| SOJ34/500/MO-124AB | 34             | smt        | soj.flb     |
| SOJ36/330/MO-121AD | 36             | smt        | soj.flb     |
| SOJ36/400/MO-061AC | 36             | smt        | soj.flb     |
| SOJ40/400/MO-061AD | 40             | smt        | soj.flb     |
| SOJ42/400/MO-061AG | 42             | smt        | soj.flb     |
| SOJ44/400/MO-061AE | 44             | smt        | soj.flb     |
| SOJ54-400          | 54             | smt        | notstd4.flb |
| SOJ64/475/MO-123AA | 64             | smt        | soj.flb     |
| SOP10              | 10             | smt        | sop.flb     |

| Footprint       | Number of Pins | Technology | Library     |
|-----------------|----------------|------------|-------------|
| SOP12           | 12             | smt        | sop.flb     |
| SOP14           | 14             | smt        | sop.flb     |
| SOP16           | 16             | smt        | sop.flb     |
| SOP18           | 18             | smt        | sop.flb     |
| SOP20           | 20             | smt        | sop.flb     |
| SOP22           | 22             | smt        | sop.flb     |
| SOP24           | 24             | smt        | sop.flb     |
| SOP28           | 28             | smt        | sop.flb     |
| SOP28X          | 28             | smt        | notstd4.flb |
| SOP30           | 30             | smt        | sop.flb     |
| SOP32           | 32             | smt        | sop.flb     |
| SOP32S          | 32             | smt        | notstd4.flb |
| SOP36           | 36             | smt        | sop.flb     |
| SOP40           | 40             | smt        | sop.flb     |
| SOP40S          | 40             | smt        | sop.flb     |
| SOP42           | 42             | smt        | sop.flb     |
| SOP44           | 44             | smt        | sop.flb     |
| SOP6            | 6              | smt        | sop.flb     |
| SOP8            | 8              | smt        | sop.flb     |
| SOT143          | 4              | smt        | notstd4.flb |
| SOT143          | 4              | thru       | sot_sod.flb |
| SOT143R         | 4              | thru       | sot_sod.flb |
| SOT223          | 4              | thru       | sot_sod.flb |
| SOT23           | 3              | smt        | notstd4.flb |
| SOT23           | 3              | smt        | sot_sod.flb |
| sot23-5         | 5              | smt        | notstd4.flb |
| SOT89           | 3              | smt        | notstd4.flb |
| SOT93           | 3              | thru       | sot_sod.flb |
| SOW-28/MO-059AC | 28             | smt        | notstd4.flb |
| SP-8            | 3              | thru       | japan.flb   |

| Footprint     | Number of Pins | Technology | Library      |
|---------------|----------------|------------|--------------|
| SP-8          | 3              | thru       | notstd4.flb  |
| SPAK          | 3              | thru       | japan.flb    |
| SPAK          | 3              | thru       | notstd4.flb  |
| SPMOLD        | 3              | thru       | japan.flb    |
| SPMOLD        | 3              | thru       | notstd4.flb  |
| SQFP10x10-112 | 112            | smt        | sqfpqfps.flb |
| SQFP10x10-120 | 120            | smt        | sqfpqfps.flb |
| SQFP10x10-64  | 64             | smt        | sqfpqfps.flb |
| SQFP10x10-72  | 72             | smt        | sqfpqfps.flb |
| SQFP10x10-80  | 80             | smt        | sqfpqfps.flb |
| SQFP10x10-88  | 88             | smt        | sqfpqfps.flb |
| SQFP10X14-100 | 100            | smt        | sqfpqfpr.flb |
| SQFP10X14-108 | 108            | smt        | sqfpqfpr.flb |
| SQFP10X14-140 | 140            | smt        | sqfpqfpr.flb |
| SQFP10X14-148 | 148            | smt        | sqfpqfpr.flb |
| SQFP10X14-80  | 80             | smt        | sqfpqfpr.flb |
| SQFP10X14-88  | 88             | smt        | sqfpqfpr.flb |
| SQFP12x12-100 | 100            | smt        | sqfpqfps.flb |
| SQFP12x12-108 | 108            | smt        | sqfpqfps.flb |
| SQFP12x12-136 | 136            | smt        | sqfpqfps.flb |
| SQFP12x12-144 | 144            | smt        | sqfpqfps.flb |
| SQFP12x12-80  | 80             | smt        | sqfpqfps.flb |
| SQFP12x12-88  | 88             | smt        | sqfpqfps.flb |
| SQFP14x14-100 | 100            | smt        | sqfpqfps.flb |
| SQFP14x14-108 | 108            | smt        | sqfpqfps.flb |
| SQFP14x14-120 | 120            | smt        | sqfpqfps.flb |
| SQFP14x14-128 | 128            | smt        | sqfpqfps.flb |
| SQFP14x14-168 | 168            | smt        | sqfpqfps.flb |
| SQFP14x14-176 | 176            | smt        | sqfpqfps.flb |
| SQFP14X20-100 | 100            | smt        | notstd4.flb  |

| Footprint                     | Number of Pins | Technology | Library      |
|-------------------------------|----------------|------------|--------------|
| SQFP14X20-100                 | 100            | smt        | sqfpqfpr.flb |
| SQFP14x20-120                 | 120            | smt        | sqfpqfpr.flb |
| SQFP14x20-128                 | 128            | smt        | sqfpqfpr.flb |
| SQFP14X20-152                 | 152            | smt        | sqfpqfpr.flb |
| SQFP14X20-160                 | 160            | smt        | sqfpqfpr.flb |
| SQFP14X20-208                 | 208            | smt        | sqfpqfpr.flb |
| SQFP14X20-216                 | 216            | smt        | sqfpqfpr.flb |
| SQFP14X20-64/MO-112CA         | 64             | smt        | notstd4.flb  |
| SQFP14X20-64/MO-112CA         | 64             | smt        | sqfpqfpr.flb |
| SQFP14X20-80                  | 80             | smt        | notstd4.flb  |
| SQFP14X20-80                  | 80             | smt        | sqfpqfpr.flb |
| SQFP208/MO-143FA-1            | 208            | smt        | notstd4.flb  |
| SQFP20X20-152                 | 152            | smt        | sqfpqfps.flb |
| SQFP20X20-176/MO-143D<br>C/DD | 176            | smt        | sqfpqfps.flb |
| SQFP20X20-184                 | 184            | smt        | sqfpqfps.flb |
| SQFP20X20-192                 | 192            | smt        | sqfpqfps.flb |
| SQFP20X20-248                 | 248            | smt        | sqfpqfps.flb |
| SQFP20X20-256                 | 256            | smt        | sqfpqfps.flb |
| SQFP20X28-176                 | 176            | smt        | sqfpqfpr.flb |
| SQFP20X28-184                 | 184            | smt        | sqfpqfpr.flb |
| SQFP20X28-224                 | 224            | smt        | sqfpqfpr.flb |
| SQFP20X28-232                 | 232            | smt        | sqfpqfpr.flb |
| SQFP20X28-300                 | 300            | smt        | sqfpqfpr.flb |
| SQFP20X28-308                 | 308            | smt        | sqfpqfpr.flb |
| SQFP240/MO-143-GA             | 240            | smt        | notstd4.flb  |
| SQFP240/MO-240-GA             | 240            | smt        | notstd4.flb  |
| SQFP24X24-176                 | 176            | smt        | sqfpqfps.flb |
| SQFP24X24-184                 | 184            | smt        | sqfpqfps.flb |
| SQFP24X24-216/MO-143EB        | 216            | smt        | sqfpqfps.flb |
| SQFP24X24-224                 | 224            | smt        | sqfpqfps.flb |

| Footprint                  | Number of Pins | Technology | Library      |
|----------------------------|----------------|------------|--------------|
| SQFP24X24-232              | 232            | smt        | sqfpqfps.flb |
| SQFP24X24-296              | 296            | smt        | sqfpqfps.flb |
| SQFP24X24-304              | 304            | smt        | sqfpqfps.flb |
| SQFP28X28-208              | 208            | smt        | sqfpqfps.flb |
| SQFP28X28-216              | 216            | smt        | sqfpqfps.flb |
| SQFP28X28-264              | 264            | smt        | sqfpqfps.flb |
| SQFP28X28-272              | 272            | smt        | sqfpqfps.flb |
| SQFP28X28-352              | 352            | smt        | sqfpqfps.flb |
| SQFP28X28-360              | 360            | smt        | sqfpqfps.flb |
| SQFP28X40-256              | 256            | smt        | sqfpqfpr.flb |
| SQFP28X40-264              | 264            | smt        | sqfpqfpr.flb |
| SQFP28X40-324              | 324            | smt        | sqfpqfpr.flb |
| SQFP28X40-332              | 332            | smt        | sqfpqfpr.flb |
| SQFP28X40-432              | 432            | smt        | sqfpqfpr.flb |
| SQFP28X40-440              | 440            | smt        | sqfpqfpr.flb |
| SQFP32X32-240              | 240            | smt        | sqfpqfps.flb |
| SQFP32X32-248              | 248            | smt        | sqfpqfps.flb |
| SQFP32X32-296/MO-143G<br>B | 296            | smt        | sqfpqfps.flb |
| SQFP32X32-304              | 304            | smt        | sqfpqfps.flb |
| SQFP32X32-312              | 312            | smt        | sqfpqfps.flb |
| SQFP32X32-400              | 400            | smt        | sqfpqfps.flb |
| SQFP32X32-408              | 408            | smt        | sqfpqfps.flb |
| SQFP36X36-272              | 272            | smt        | sqfpqfps.flb |
| SQFP36X36-280              | 280            | smt        | sqfpqfps.flb |
| SQFP36X36-336/MO-143H<br>B | 336            | smt        | sqfpqfps.flb |
| SQFP36X36-344              | 344            | smt        | sqfpqfps.flb |
| SQFP36X36-352              | 352            | smt        | sqfpqfps.flb |
| SQFP36X36-456              | 456            | smt        | sqfpqfps.flb |
| SQFP36X36-464              | 464            | smt        | sqfpqfps.flb |



| Footprint              | Number of Pins | Technology | Library      |
|------------------------|----------------|------------|--------------|
| SQFP40X40-304          | 304            | smt        | sqfpqfps.flb |
| SQFP40X40-312          | 312            | smt        | sqfpqfps.flb |
| SQFP40X40-376/MO-143JB | 376            | smt        | sqfpqfps.flb |
| SQFP40X40-384          | 384            | smt        | sqfpqfps.flb |
| SQFP40X40-392          | 392            | smt        | sqfpqfps.flb |
| SQFP40X40-512          | 512            | smt        | sqfpqfps.flb |
| SQFP40X40-520          | 520            | smt        | sqfpqfps.flb |
| sqfp44x44-336          | 336            | smt        | sqfpqfps.flb |
| sqfp44x44-344          | 344            | smt        | sqfpqfps.flb |
| sqfp44x44-424          | 424            | smt        | sqfpqfps.flb |
| sqfp44x44-432          | 432            | smt        | sqfpqfps.flb |
| sqfp44x44-568          | 568            | smt        | sqfpqfps.flb |
| sqfp44x44-576          | 576            | smt        | sqfpqfps.flb |
| SQFP5x5-24             | 24             | smt        | sqfpqfps.flb |
| SQFP5x5-32             | 32             | smt        | sqfpqfps.flb |
| SQFP5x5-32F            | 32             | thru       | sqfpqfps.flb |
| SQFP5x5-40             | 40             | smt        | sqfpqfps.flb |
| SQFP5x5-48             | 48             | smt        | sqfpqfps.flb |
| SQFP5x5-56             | 56             | smt        | sqfpqfps.flb |
| SQFP5X7-32             | 32             | smt        | sqfpqfpr.flb |
| SQFP5X7-40             | 40             | smt        | sqfpqfpr.flb |
| SQFP5X7-44             | 44             | smt        | sqfpqfpr.flb |
| SQFP5X7-52             | 52             | smt        | sqfpqfpr.flb |
| SQFP5X7-60             | 60             | smt        | sqfpqfpr.flb |
| SQFP5X7-68             | 68             | smt        | sqfpqfpr.flb |
| SQFP6x6-32             | 32             | smt        | sqfpqfps.flb |
| SQFP6x6-40             | 40             | smt        | sqfpqfps.flb |
| SQFP6X6-40F            | 40             | smt        | sqfpqfps.flb |
| SQFP6x6-48             | 48             | smt        | sqfpqfps.flb |
| SQFP6x6-56             | 56             | smt        | sqfpqfps.flb |

| Footprint       | Number of Pins | Technology | Library      |
|-----------------|----------------|------------|--------------|
| SQFP6x6-64      | 64             | smt        | sqfpqfps.flb |
| SQFP7X10-100    | 100            | smt        | sqfpqfpr.flb |
| SQFP7X10-52     | 52             | smt        | sqfpqfpr.flb |
| SQFP7X10-60     | 60             | smt        | sqfpqfpr.flb |
| SQFP7X10-68     | 68             | smt        | sqfpqfpr.flb |
| SQFP7X10-76     | 76             | smt        | sqfpqfpr.flb |
| SQFP7X10-92     | 92             | smt        | sqfpqfpr.flb |
| SQFP7x7-40      | 40             | smt        | sqfpqfps.flb |
| SQFP7x7-48      | 48             | smt        | sqfpqfps.flb |
| SQFP7x7-56      | 56             | smt        | sqfpqfps.flb |
| SQFP7x7-64      | 64             | smt        | sqfpqfps.flb |
| SQFP7x7-72      | 72             | smt        | sqfpqfps.flb |
| SQFP7x7-80      | 80             | smt        | sqfpqfps.flb |
| SS-MINI-3-PINS  | 3              | smt        | japan.flb    |
| SS-mini-3-pins  | 3              | smt        | japan.flb    |
| SS-MINI-3-PINS  | 3              | smt        | notstd4.flb  |
| SS-mini-3-pins  | 3              | smt        | notstd4.flb  |
| SSMINI-3-PINS   | 3              | smt        | japan.flb    |
| SSMINI-3-PINS   | 3              | smt        | notstd4.flb  |
| SSO28/MO-118AC  | 28             | smt        | ssoic.flb    |
| SSO48/MO-118AA  | 48             | thru       | ssoic.flb    |
| SSO56/MO-118AB  | 56             | thru       | ssoic.flb    |
| SSO64/MO-118AD  | 64             | thru       | ssoic.flb    |
| SSOP-32         | 32             | smt        | ssop.flb     |
| SSOP-60         | 60             | smt        | ssop.flb     |
| SSOP14/MO-137AA | 14             | smt        | tsop.flb     |
| SSOP16/MO-137AB | 16             | smt        | tsop.flb     |
| SSOP18/MO-137AC | 18             | smt        | tsop.flb     |
| SSOP20/MO-137AD | 20             | smt        | tsop.flb     |
| SSOP20/MO-150AE | 20             | smt        | notstd4.flb  |

| Footprint            | Number of Pins | Technology | Library     |
|----------------------|----------------|------------|-------------|
| SSOP24/MO-137AE      | 24             | smt        | tsop.flb    |
| SSOP24/MO-150AG      | 24             | smt        | notstd4.flb |
| SSOP28/MO-137AF      | 28             | smt        | tsop.flb    |
| SSOP32-P-430-K       | 32             | smt        | notstd4.flb |
| SSOP44-16/MO-152AB   | 16             | smt        | ssop.flb    |
| SSOP44-20/MO-152AC   | 20             | smt        | ssop.flb    |
| SSOP44-20N/MO-152BA  | 20             | smt        | ssop.flb    |
| SSOP44-24/MO-152AD   | 24             | smt        | ssop.flb    |
| SSOP44-24EN/MO-152CA | 24             | smt        | ssop.flb    |
| SSOP44-24N/MO-152BB  | 24             | smt        | ssop.flb    |
| SSOP44-28/MO-152AE   | 28             | smt        | ssop.flb    |
| SSOP44-28N/MO-152BC  | 28             | smt        | ssop.flb    |
| SSOP44-33EN/MO-152CB | 32             | smt        | ssop.flb    |
| SSOP44-36EN/MO-152CC | 36             | smt        | ssop.flb    |
| SSOP44-36N/MO-152BD  | 36             | smt        | ssop.flb    |
| SSOP44-48EN/MO-152CD | 48             | smt        | ssop.flb    |
| SSOP44-8/MO-152AA    | 8              | smt        | ssop.flb    |
| SSOP53-14/MO-150AB   | 14             | smt        | ssop.flb    |
| SSOP53-16/MO-150AC   | 16             | smt        | ssop.flb    |
| SSOP53-18/MO-150AD   | 18             | smt        | ssop.flb    |
| SSOP53-20/MO-150AE   | 20             | smt        | ssop.flb    |
| SSOP53-22/MO-150AF   | 22             | smt        | ssop.flb    |
| SSOP53-24/MO-150AG   | 24             | smt        | ssop.flb    |
| SSOP53-28/MO-150AH   | 28             | smt        | ssop.flb    |
| SSOP53-30/MO-150AJ   | 30             | smt        | ssop.flb    |
| SSOP53-8/MO-150AA    | 8              | smt        | ssop.flb    |
| SSOP60-P-700-K       | 60             | smt        | notstd4.flb |
| SSOP61-24/MO-152DA   | 24             | smt        | ssop.flb    |
| SSOP61-28/MO-152DB   | 28             | smt        | ssop.flb    |
| SSOP61-28N/MO-152EA  | 28             | smt        | ssop.flb    |

| Footprint            | Number of Pins | Technology | Library     |
|----------------------|----------------|------------|-------------|
| SSOP61-32/MO-152DC   | 32             | smt        | ssop.flb    |
| SSOP61-36/MO-152DD   | 36             | smt        | ssop.flb    |
| SSOP61-36EN/MO-152FA | 36             | smt        | ssop.flb    |
| SSOP61-36N/MO-152EB  | 36             | smt        | ssop.flb    |
| SSOP61-40/MO-152DE   | 40             | smt        | ssop.flb    |
| SSOP61-40N/MO-152EC  | 40             | smt        | ssop.flb    |
| SSOP61-48EN/MO-152FB | 48             | smt        | ssop.flb    |
| SSOP61-48N/MO-152ED  | 48             | smt        | ssop.flb    |
| SSOP61-52EN/MO-152FC | 52             | smt        | ssop.flb    |
| SSOP61-56EN/MO-152FD | 56             | smt        | ssop.flb    |
| SSOP61-56N/MO-152EE  | 56             | smt        | ssop.flb    |
| SSOP61-64EN/MO-152FE | 64             | smt        | ssop.flb    |
| SSOP80-28/MO-152GA   | 28             | smt        | ssop.flb    |
| SSOP80-32/MO-152GB   | 32             | smt        | ssop.flb    |
| SSOP80-36/MO-152GC   | 36             | smt        | ssop.flb    |
| SSOP80-36N/MO-152HA  | 36             | smt        | ssop.flb    |
| SSOP80-40/MO-152GD   | 40             | smt        | ssop.flb    |
| SSOP80-40N/MO-152HB  | 40             | smt        | ssop.flb    |
| SSOP80-48EN/MO-152JA | 48             | smt        | ssop.flb    |
| SSOP80-48N/MO-152HC  | 48             | smt        | ssop.flb    |
| SSOP80-52EN/MO-152JB | 52             | smt        | ssop.flb    |
| SSOP80-56EN/MO-152JC | 56             | smt        | ssop.flb    |
| SSOP80-56N/MO-152HD  | 56             | smt        | ssop.flb    |
| SSOP80-64EN/MO-152JD | 64             | smt        | ssop.flb    |
| SSTMOLD              | 3              | thru       | japan.flb   |
| SSTMOLD              | 3              | thru       | notstd4.flb |
| SZIP60               | 60             | thru       | notstd4.flb |
| SZIP64               | 64             | thru       | notstd4.flb |
| SZIP70               | 70             | thru       | notstd4.flb |
| tbga1024/mo-149ak    | 1024           | smt        | tbga.flb    |

| Footprint          | Number of Pins | Technology | Library  |
|--------------------|----------------|------------|----------|
| TBGA1089B/MO-149BP | 1089           | smt        | tbga.flb |
| tbga1089b/mo-149cu | 1089           | smt        | tbga.flb |
| tbga1156/mo-149al  | 1156           | smt        | tbga.flb |
| TBGA121A/MO-149BA  | 121            | smt        | tbga.flb |
| tbga121b/mo-149cb  | 121            | smt        | tbga.flb |
| TBGA1225/MO-149BR  | 1225           | smt        | tbga.flb |
| tbga1369a/mo-149am | 1369           | smt        | tbga.flb |
| TBGA1369B/MO-149BT | 1369           | smt        | tbga.flb |
| tbga144/mo-149cc   | 144            | smt        | tbga.flb |
| tbga1521a/mo-149an | 1521           | smt        | tbga.flb |
| TBGA1521B/MO-149BU | 1521           | smt        | tbga.flb |
| TBGA169/MO-149BB   | 169            | smt        | tbga.flb |
| tbga1764/mo-149ap  | 1764           | smt        | tbga.flb |
| tbga1936/mo-149ar  | 1936           | smt        | tbga.flb |
| tbga196a/mo-149aa  | 196            | smt        | tbga.flb |
| tbga196b/mo-149cd  | 196            | smt        | tbga.flb |
| tbga2209/mo-149at  | 2209           | smt        | tbga.flb |
| TBGA225A/MO-149BC  | 225            | smt        | tbga.flb |
| tbga2401/mo-149au  | 2401           | smt        | tbga.flb |
| tbga255b/mo-149ce  | 225            | smt        | tbga.flb |
| tbga256a/mo-149ab  | 256            | smt        | tbga.flb |
| TBGA256B/MO-149BD  | 256            | smt        | tbga.flb |
| tbga256c/mo-149cf  | 256            | smt        | tbga.flb |
| tbga324a/mo-149ac  | 324            | smt        | tbga.flb |
| TBGA324B/MO-149BE  | 324            | smt        | tbga.flb |
| tbga324c/mo-149cg  | 324            | smt        | tbga.flb |
| TBGA361A/MO-149BF  | 361            | smt        | tbga.flb |
| tbga361b/mo-149ch  | 361            | smt        | tbga.flb |
| tbga400a/mo-149ad  | 400            | smt        | tbga.flb |
| tbga400b/mo-149cj  | 400            | smt        | tbga.flb |

| Footprint         | Number of Pins | Technology | Library     |
|-------------------|----------------|------------|-------------|
| TBGA441/MO-149BG  | 441            | smt        | tbga.flb    |
| tbga484a/mo-149ae | 484            | smt        | tbga.flb    |
| TBGA484B/MO-149BH | 484            | smt        | tbga.flb    |
| tbga484c/mo-149ck | 484            | smt        | tbga.flb    |
| tbga529/mo-149cl  | 529            | smt        | tbga.flb    |
| tbga576a/mo-149af | 576            | smt        | tbga.flb    |
| TBGA576B/MO-149BJ | 576            | smt        | tbga.flb    |
| tbga625/mo-149cm  | 625            | smt        | tbga.flb    |
| tbga676a/mo-149ag | 676            | smt        | tbga.flb    |
| TBGA676B/MO-149BK | 676            | smt        | tbga.flb    |
| tbga676c/mo-149cn | 676            | smt        | tbga.flb    |
| TBGA729/MO-149BL  | 729            | smt        | tbga.flb    |
| tbga784a/mo-149ah | 784            | smt        | tbga.flb    |
| tbga784b/mo-149cp | 784            | smt        | tbga.flb    |
| TBGA841/MO-149BM  | 841            | smt        | tbga.flb    |
| tbga900a/mo-149aj | 900            | smt        | tbga.flb    |
| tbga900b/mo-149cr | 900            | smt        | tbga.flb    |
| TBGA961A/MO-149BN | 961            | smt        | tbga.flb    |
| tbga961b/mo-149ct | 960            | smt        | tbga.flb    |
| TC3216            | 2              | smt        | tantcap.flb |
| TC3216            | 2              | smt        | tcap.flb    |
| TC3528            | 2              | smt        | tantcap.flb |
| TC3528            | 2              | smt        | tcap.flb    |
| TC6032            | 2              | smt        | tantcap.flb |
| TC6032            | 2              | smt        | tcap.flb    |
| TC7343            | 2              | smt        | tantcap.flb |
| TC7343            | 2              | smt        | tcap.flb    |
| tgba100/mo-149ca  | 100            | smt        | tbga.flb    |
| TO-100            | 10             | thru       | to.flb      |
| TO-101            | 12             | thru       | to.flb      |

| Footprint | Number of Pins | Technology | Library     |
|-----------|----------------|------------|-------------|
| TO-105    | 4              | thru       | to.flb      |
| TO-106    | 4              | thru       | to.flb      |
| TO-12     | 4              | thru       | notstd4.flb |
| TO-12     | 4              | thru       | to.flb      |
| TO-126    | 3              | thru       | notstd4.flb |
| TO-126    | 3              | thru       | to.flb      |
| TO-17     | 4              | thru       | to.flb      |
| TO-18     | 3              | thru       | eval.flb    |
| TO-18     | 3              | thru       | notstd4.flb |
| TO-18     | 3              | thru       | to.flb      |
| TO-202    | 3              | thru       | notstd4.flb |
| TO-202    | 3              | thru       | to.flb      |
| TO-202AB  | 3              | thru       | to.flb      |
| TO-202AC  | 3              | thru       | to.flb      |
| TO-203AA  | 3              | thru       | notstd4.flb |
| TO-203AA  | 3              | thru       | to.flb      |
| TO-204AA  | 3              | thru       | eval.flb    |
| TO-204AA  | 2              | thru       | notstd4.flb |
| TO-204AA  | 2              | thru       | to.flb      |
| TO-204AE  | 2              | thru       | notstd4.flb |
| TO-204AE  | 2              | thru       | to.flb      |
| TO-205AA  | 3              | thru       | notstd4.flb |
| TO-205AA  | 3              | thru       | to.flb      |
| TO-205AB  | 4              | thru       | notstd4.flb |
| TO-205AB  | 4              | thru       | to.flb      |
| TO-205AC  | 4              | thru       | notstd4.flb |
| TO-205AC  | 4              | thru       | to.flb      |
| TO-205AD  | 3              | thru       | notstd4.flb |
| TO-205AD  | 3              | thru       | to.flb      |
| TO-205AE  | 3              | thru       | notstd4.flb |

| Footprint | Number of Pins | Technology | Library     |
|-----------|----------------|------------|-------------|
| TO-205AE  | 3              | thru       | to.flb      |
| TO-205AF  | 3              | thru       | notstd4.flb |
| TO-205AF  | 3              | thru       | to.flb      |
| TO-205AG  | 3              | thru       | notstd4.flb |
| TO-205AG  | 3              | thru       | to.flb      |
| TO-206AA  | 3              | thru       | notstd4.flb |
| TO-206AA  | 3              | thru       | to.flb      |
| TO-206AB  | 3              | thru       | notstd4.flb |
| TO-206AB  | 3              | thru       | to.flb      |
| TO-206AC  | 3              | thru       | notstd4.flb |
| TO-206AC  | 3              | thru       | to.flb      |
| TO-206AD  | 3              | thru       | notstd4.flb |
| TO-206AD  | 3              | thru       | to.flb      |
| TO-206AE  | 3              | thru       | notstd4.flb |
| TO-206AE  | 3              | thru       | to.flb      |
| TO-206AF  | 4              | thru       | notstd4.flb |
| TO-206AF  | 4              | thru       | to.flb      |
| TO-206AG  | 3              | thru       | to.flb      |
| TO-208AA  | 3              | thru       | notstd4.flb |
| TO-208AB  | 3              | thru       | notstd4.flb |
| TO-208AG  | 4              | thru       | notstd4.flb |
| TO-208AG  | 4              | thru       | to.flb      |
| TO-218AA  | 3              | thru       | notstd4.flb |
| TO-218AA  | 3              | thru       | to.flb      |
| TO-218AC  | 3              | thru       | notstd4.flb |
| TO-218AC  | 3              | thru       | to.flb      |
| TO-220    | 3              | thru       | to.flb      |
| TO-220-11 | 11             | thru       | notstd4.flb |
| TO-220-5  | 5              | thru       | notstd4.flb |
| TO-220-5  | 5              | thru       | to.flb      |



| Footprint | Number of Pins | Technology | Library     |
|-----------|----------------|------------|-------------|
| TO-220-7  | 7              | thru       | notstd4.flb |
| TO-220-7  | 7              | thru       | to.flb      |
| TO-220AA  | 2              | thru       | to.flb      |
| TO-220AB  | 3              | thru       | eval.flb    |
| TO-220AB  | 3              | thru       | to.flb      |
| TO-220AC  | 2              | thru       | to.flb      |
| TO-221AA  | 3              | thru       | to.flb      |
| TO-221AB  | 3              | thru       | to.flb      |
| TO-222AA  | 4              | thru       | to.flb      |
| TO-222AB  | 4              | thru       | to.flb      |
| TO-223AA  | 4              | thru       | to.flb      |
| TO-223AB  | 4              | thru       | to.flb      |
| TO-225AA  | 3              | thru       | to.flb      |
| TO-225AB  | 3              | thru       | to.flb      |
| TO-226    | 3              | thru       | to.flb      |
| TO-226AA  | 3              | thru       | to.flb      |
| TO-226AB  | 3              | thru       | to.flb      |
| TO-226AC  | 2              | thru       | to.flb      |
| TO-226BA  | 3              | thru       | to.flb      |
| TO-230AA  | 4              | thru       | to.flb      |
| TO-230AB  | 4              | thru       | to.flb      |
| TO-233AA  | 3              | thru       | to.flb      |
| TO-236    | 3              | smt        | notstd4.flb |
| TO-236    | 3              | smt        | to.flb      |
| TO-236AA  | 3              | smt        | notstd4.flb |
| TO-236AA  | 3              | smt        | to.flb      |
| TO-236AB  | 3              | smt        | notstd4.flb |
| TO-236AB  | 3              | smt        | to.flb      |
| TO-236MOD | 3              | thru       | japan.flb   |
| TO-237    | 3              | thru       | to.flb      |

| Footprint | Number of Pins | Technology | Library     |
|-----------|----------------|------------|-------------|
| TO-237AA  | 3              | thru       | to.flb      |
| TO-243AA  | 3              | smt        | notstd4.flb |
| TO-243AA  | 3              | smt        | to.flb      |
| TO-247-5  | 5              | thru       | to.flb      |
| TO-247AB  | 3              | thru       | eval.flb    |
| TO-247AB  | 3              | thru       | to.flb      |
| TO-247AC  | 3              | thru       | to.flb      |
| TO-247AD  | 3              | thru       | to.flb      |
| TO-247AE  | 3              | thru       | notstd4.flb |
| TO-247AE  | 3              | thru       | to.flb      |
| TO-251    | 4              | thru       | to.flb      |
| TO-251AA  | 4              | thru       | notstd4.flb |
| TO-251AA  | 4              | thru       | to.flb      |
| TO-252AA  | 3              | smt        | notstd4.flb |
| TO-252AA  | 3              | smt        | to.flb      |
| TO-252AB  | 3              | thru       | japan.flb   |
| TO-252AB  | 3              | thru       | to.flb      |
| TO-253AA  | 4              | thru       | to.flb      |
| TO-254    | 3              | thru       | to.flb      |
| TO-254AA  | 3              | thru       | to.flb      |
| TO-257AA  | 3              | thru       | notstd4.flb |
| TO-262AA  | 3              | thru       | to.flb      |
| TO-263AB  | 3              | thru       | to.flb      |
| TO-264AA  | 3              | thru       | to.flb      |
| TO-3      | 2              | thru       | notstd4.flb |
| TO-3      | 2              | thru       | to.flb      |
| TO-3-8    | 8              | thru       | to.flb      |
| TO-33     | 4              | thru       | notstd4.flb |
| TO-33     | 4              | thru       | to.flb      |
| TO-37     | 3              | thru       | to.flb      |

| Footprint | Number of Pins | Technology | Library     |
|-----------|----------------|------------|-------------|
| TO-39     | 3              | thru       | eval.flb    |
| TO-39     | 3              | thru       | notstd4.flb |
| TO-39     | 3              | thru       | to.flb      |
| TO-3PB    | 3              | thru       | japan.flb   |
| TO-3PB    | 3              | thru       | notstd4.flb |
| TO-41     | 4              | thru       | to.flb      |
| TO-46     | 3              | thru       | notstd4.flb |
| TO-46     | 3              | thru       | to.flb      |
| TO-48     | 3              | thru       | notstd4.flb |
| TO-48     | 3              | thru       | to.flb      |
| TO-5      | 3              | thru       | notstd4.flb |
| TO-5      | 3              | thru       | to.flb      |
| TO-52     | 3              | thru       | notstd4.flb |
| TO-52     | 3              | thru       | to.flb      |
| TO-52-2   | 2              | thru       | notstd4.flb |
| TO-61     | 4              | thru       | to.flb      |
| TO-66     | 2              | thru       | to.flb      |
| TO-71     | 8              | thru       | to.flb      |
| TO-72     | 4              | thru       | to.flb      |
| TO-72-25  | 4              | thru       | to.flb      |
| TO-72-28  | 4              | thru       | to.flb      |
| TO-74     | 10             | thru       | to.flb      |
| TO-75     | 6              | thru       | to.flb      |
| TO-76     | 8              | thru       | to.flb      |
| TO-77     | 8              | thru       | to.flb      |
| TO-78     | 8              | thru       | to.flb      |
| TO-79     | 8              | thru       | to.flb      |

| Footprint              | Number of Pins | Technology | Library     |
|------------------------|----------------|------------|-------------|
| TO-8                   | 3              | thru       | to.flb      |
| TO-8-12                | 12             | thru       | notstd4.flb |
| TO-80                  | 8              | thru       | to.flb      |
| TO-9                   | 3              | thru       | to.flb      |
| TO-92                  | 3              | thru       | eval.flb    |
| TO-92                  | 3              | thru       | notstd4.flb |
| TO-92                  | 3              | thru       | to.flb      |
| TO-92-18A              | 3              | thru       | notstd4.flb |
| TO-92-18A              | 3              | thru       | to.flb      |
| TO-92-18B              | 3              | thru       | notstd4.flb |
| TO-92-18B              | 3              | thru       | to.flb      |
| TO-92-2                | 2              | thru       | notstd4.flb |
| TO-92-5A               | 3              | thru       | notstd4.flb |
| TO-92-5A               | 3              | thru       | to.flb      |
| TO-92-5B               | 3              | thru       | notstd4.flb |
| TO-92-5B               | 3              | thru       | to.flb      |
| TO-92MOD               | 3              | thru       | notstd4.flb |
| TO-92MOD               | 3              | thru       | to.flb      |
| TO-92S                 | 3              | thru       | japan.flb   |
| TO-92S                 | 3              | thru       | notstd4.flb |
| TO-92S                 | 3              | thru       | to.flb      |
| TO-96                  | 10             | thru       | to.flb      |
| TO-97                  | 10             | thru       | to.flb      |
| TO-98                  | 3              | thru       | to.flb      |
| TO-99                  | 8              | thru       | to.flb      |
| TO252                  | 3              | thru       | sot_sod.flb |
| TOP3                   | 3              | thru       | notstd4.flb |
| TOP3/15_A_3_DIN_41_869 | 3              | thru       | notstd4.flb |
| TOS1-4E1A              | 2              | thru       | japan.flb   |

| Footprint                  | Number of Pins | Technology | Library      |
|----------------------------|----------------|------------|--------------|
| TOS1-4E1A                  | 2              | thru       | notstd4.flb  |
| TOS1-4E2A                  | 3              | thru       | japan.flb    |
| TOS1-4E2A                  | 3              | thru       | notstd4.flb  |
| TOS1-4E2B                  | 3              | thru       | japan.flb    |
| TOS1-4E2B                  | 3              | thru       | notstd4.flb  |
| TOS3-3E1A                  | 2              | thru       | japan.flb    |
| TOS3-3E1A                  | 2              | thru       | notstd4.flb  |
| TOSI-2J1A                  | 2              | thru       | japan.flb    |
| TOSI-2J1A                  | 2              | thru       | notstd4.flb  |
| TOSI-7B1A                  | 2              | thru       | japan.flb    |
| TOSI-7B1A                  | 2              | thru       | notstd4.flb  |
| TQFP100/MS-026AED          | 100            | smt        | notstd4.flb  |
| tqfp10x10-36               | 36             | smt        | sqfpqfps.flb |
| TQFP10X10-44               | 44             | smt        | notstd4.flb  |
| TQFP12X12-52/MO-136CC      | 52             | smt        | sqfpqfps.flb |
| TQFP144/MO-136BT           | 144            | smt        | notstd4.flb  |
| TQFP144/TQ144              | 144            | smt        | notstd4.flb  |
| TQFP176/MO-136AV           | 176            | smt        | notstd4.flb  |
| TQFP20X20-176/MO-136A<br>U | 176            | smt        | sqfpqfps.flb |
| TQFP24X24-216/MO-136A<br>W | 216            | smt        | sqfpqfps.flb |
| TQFP28X28-256/MO-136D<br>G | 256            | smt        | sqfpqfps.flb |
| TQFP7X7-32/MO-136AC        | 32             | smt        | sqfpqfps.flb |
| TQFP7X7-40/MO-136AD        | 40             | smt        | sqfpqfps.flb |
| tsip32                     | 32             | thru       | notstd4.flb  |
| TSIP36                     | 36             | thru       | notstd4.flb  |
| TSIP44                     | 44             | thru       | notstd4.flb  |
| TSOP050-P-0400             | 50             | smt        | notstd4.flb  |
| TSOP050-P-0400R            | 50             | smt        | notstd4.flb  |
| TSOP10X14-28               | 28             | smt        | tsop.flb     |

| Footprint       | Number of Pins | Technology | Library     |
|-----------------|----------------|------------|-------------|
| TSOP10X14-40    | 40             | smt        | tsop.flb    |
| TSOP10X14-40R   | 40             | smt        | tsop.flb    |
| TSOP10X16-40    | 40             | smt        | tsop.flb    |
| TSOP10X18-40    | 40             | smt        | tsop.flb    |
| TSOP10X18-40R   | 40             | smt        | tsop.flb    |
| TSOP10X18-48    | 48             | smt        | tsop.flb    |
| TSOP10X20-40    | 40             | smt        | tsop.flb    |
| TSOP10X20-40R   | 40             | smt        | tsop.flb    |
| TSOP10X20-64    | 64             | smt        | tsop.flb    |
| TSOP12X14-36    | 36             | smt        | tsop.flb    |
| TSOP12X14-48    | 48             | smt        | tsop.flb    |
| TSOP12X14-48R   | 48             | smt        | tsop.flb    |
| TSOP12X16-48    | 48             | smt        | tsop.flb    |
| TSOP12X18-48    | 48             | smt        | tsop.flb    |
| TSOP12X18-48R   | 48             | smt        | tsop.flb    |
| TSOP12X18-60    | 60             | smt        | tsop.flb    |
| TSOP12X20-48    | 48             | smt        | tsop.flb    |
| TSOP12X20-48R   | 48             | smt        | tsop.flb    |
| TSOP12X20-76    | 76             | smt        | tsop.flb    |
| TSOP14X16-56    | 56             | smt        | tsop.flb    |
| TSOP14X16-56R   | 56             | smt        | tsop.flb    |
| TSOP14X18-56    | 56             | smt        | tsop.flb    |
| TSOP14X18-56R   | 56             | smt        | tsop.flb    |
| TSOP14X20-56    | 56             | smt        | tsop.flb    |
| TSOP14X20-56R   | 56             | smt        | tsop.flb    |
| TSOP20X14-48    | 48             | smt        | notstd4.flb |
| tsop26/mo-132aa | 20             | smt        | notstd4.flb |
| TSOP26/MS-025AA | 20             | smt        | tsop.flb    |
| TSOP26/MS-025AB | 24             | smt        | tsop.flb    |
| TSOP26/MS-025AC | 26             | smt        | tsop.flb    |

| Footprint          | Number of Pins | Technology | Library     |
|--------------------|----------------|------------|-------------|
| tsop26r/mo-132aa   | 20             | smt        | notstd4.flb |
| TSOP28-0814        | 28             | smt        | notstd4.flb |
| TSOP28-D814R       | 28             | smt        | notstd4.flb |
| TSOP28/MS-025BA    | 28             | smt        | tsop.flb    |
| TSOP28A-R/MS-024AA | 28             | smt        | notstd4.flb |
| TSOP28A/MS-024AA   | 28             | smt        | tsop.flb    |
| TSOP28B-R/MS-024AB | 24             | smt        | tsop.flb    |
| TSOP28B/MS-024AB   | 24             | smt        | tsop.flb    |
| TSOP32-P-0820      | 32             | smt        | notstd4.flb |
| TSOP32-P-0820R     | 32             | smt        | notstd4.flb |
| TSOP32-R/MS-024BA  | 32             | smt        | tsop.flb    |
| TSOP32/MO-135AA    | 32             | smt        | tsop.flb    |
| tsop32/ms-024ba    | 32             | smt        | notstd4.flb |
| TSOP32/MS-024BA    | 32             | smt        | tsop.flb    |
| tsop32r/ms-024ba   | 32             | smt        | notstd4.flb |
| TSOP34/MO-135AB    | 34             | smt        | tsop.flb    |
| TSOP36-R/MS-024CA  | 36             | smt        | tsop.flb    |
| TSOP36/MO-135AC    | 36             | smt        | tsop.flb    |
| tsop36/ms-024ca    | 36             | smt        | notstd4.flb |
| TSOP36/MS-024CA    | 36             | smt        | tsop.flb    |
| TSOP40-R/MS-024DA  | 40             | smt        | tsop.flb    |
| TSOP40/MO-135AD    | 40             | smt        | tsop.flb    |
| TSOP40/MS-024DA    | 40             | smt        | tsop.flb    |
| TSOP44-R/MS-024AC  | 40             | smt        | tsop.flb    |
| tsop44/50/400      | 44             | smt        | tsop.flb    |
| tsop44/dd-7        | 44             | smt        | notstd4.flb |
| tsop44/ms-024ac    | 40             | smt        | notstd4.flb |
| TSOP44/MS-024AC    | 40             | smt        | tsop.flb    |
| TSOP44/MS-025BB    | 44             | smt        | tsop.flb    |
| tsop44r/dd-7       | 44             | smt        | notstd4.flb |

| Footprint         | Number of Pins | Technology | Library     |
|-------------------|----------------|------------|-------------|
| tsop44r/ms-024ac  | 40             | smt        | notstd4.flb |
| TSOP48/MO-142DC   | 48             | smt        | notstd4.flb |
| TSOP48R/MO-142DC  | 48             | smt        | notstd4.flb |
| TSOP50-R/MS-024BB | 44             | smt        | tsop.flb    |
| TSOP50/MO-135BA   | 50             | smt        | tsop.flb    |
| tsop50/ms-024bb   | 44             | smt        | notstd4.flb |
| TSOP50/MS-024BB   | 44             | smt        | tsop.flb    |
| TSOP54/MO-135BB   | 54             | smt        | tsop.flb    |
| TSOP62/MO-135CA   | 62             | smt        | tsop.flb    |
| TSOP6X14-16       | 16             | smt        | tsop.flb    |
| TSOP6X14-24       | 24             | smt        | tsop.flb    |
| TSOP6X14-24R      | 24             | smt        | tsop.flb    |
| TSOP6X16-20/24    | 20             | smt        | notstd4.flb |
| TSOP6X16-20/24    | 20             | smt        | tsop.flb    |
| TSOP6X16-20/24R   | 20             | smt        | notstd4.flb |
| TSOP6X16-20/24R   | 20             | smt        | tsop.flb    |
| TSOP6X16-24       | 24             | smt        | tsop.flb    |
| TSOP6X18-24       | 24             | smt        | tsop.flb    |
| TSOP6X18-24R      | 24             | smt        | tsop.flb    |
| TSOP6X18-28       | 28             | smt        | tsop.flb    |
| TSOP6X20-24       | 24             | smt        | tsop.flb    |
| TSOP6X20-24R      | 24             | smt        | tsop.flb    |
| TSOP6X20-36       | 36             | smt        | tsop.flb    |
| TSOP70-R/MS-024CB | 70             | smt        | tsop.flb    |
| TSOP70-R/MS-024EA | 70             | smt        | tsop.flb    |
| TSOP70/MO-135BC   | 70             | smt        | tsop.flb    |
| TSOP70/MS-024CB   | 70             | smt        | tsop.flb    |
| TSOP70/MS-024EA   | 70             | smt        | tsop.flb    |
| tsop70/sde-4      | 70             | smt        | notstd4.flb |
| TSOP8X14-24       | 24             | smt        | tsop.flb    |



| Footprint         | Number of Pins | Technology | Library     |
|-------------------|----------------|------------|-------------|
| TSOP8X14-28       | 28             | smt        | notstd4.flb |
| TSOP8X14-28-M     | 28             | smt        | tsop.flb    |
| TSOP8X14-28R-M    | 28             | smt        | tsop.flb    |
| TSOP8X14-32       | 32             | smt        | tsop.flb    |
| TSOP8X14-32R      | 32             | smt        | tsop.flb    |
| TSOP8X16-32       | 32             | smt        | tsop.flb    |
| TSOP8X18-32       | 32             | smt        | tsop.flb    |
| TSOP8X18-32R      | 32             | smt        | tsop.flb    |
| TSOP8X18-40       | 40             | smt        | tsop.flb    |
| TSOP8X20-32       | 32             | smt        | tsop.flb    |
| TSOP8X20-32R      | 32             | smt        | tsop.flb    |
| TSOP8X20-52       | 52             | smt        | tsop.flb    |
| tsopr50/ms-024bb  | 44             | smt        | notstd4.flb |
| TSSOP14/MO-253AA  | 14             | smt        | notstd4.flb |
| TSSOP8/MO-253AA   | 8              | smt        | notstd4.flb |
| VQFP100/MO-136AR  | 100            | smt        | notstd4.flb |
| VQFP64/MO-136AJ   | 64             | smt        | notstd4.flb |
| wl                | 2              | thru       | japan.flb   |
| wl                | 2              | thru       | notstd4.flb |
| ZIP16             | 16             | thru       | zip.flb     |
| ZIP16-thru-socket | 16             | thru       | ampzip.flb  |
| ZIP18             | 18             | thru       | notstd4.flb |
| ZIP20             | 20             | thru       | zip.flb     |
| ZIP20-thru-socket | 20             | thru       | ampzip.flb  |
| ZIP20/125         | 20             | thru       | zip.flb     |
| ZIP24             | 24             | thru       | zip.flb     |
| ZIP24-thru-socket | 24             | thru       | ampzip.flb  |
| ZIP28             | 28             | thru       | zip.flb     |
| ZIP28-thru-socket | 28             | thru       | ampzip.flb  |
| ZIP28/115         | 28             | thru       | zip.flb     |

---

| Footprint         | Number of Pins | Technology | Library    |
|-------------------|----------------|------------|------------|
| ZIP40             | 40             | thru       | zip.flb    |
| ZIP40-thru-socket | 40             | thru       | ampzip.flb |
| ZIP40/475         | 40             | thru       | zip.flb    |
| ZIP56             | 56             | thru       | zip.flb    |
| ZIP60             | 60             | thru       | zip.flb    |
| ZIP60S            | 60             | thru       | zip.flb    |
| ZIP64             | 64             | thru       | zip.flb    |
| ZIP64S            | 64             | thru       | zip.flb    |
| ZIP72S            | 72             | thru       | zip.flb    |



# Netlist File Format

**Layout**  
**File Format**



The PCB Layout Editor reads and writes files in the MicroSim PCBboards Netlist File Format (MNLFF). Other tools may generate files as input to the Layout Editor - for example, a schematic editor.

MNLFF is an ASCII representation for portability across platforms and to facilitate development of other tools. Linefeeds or linefeed/carriage return combinations at the ends of lines work equally well.

The file is partitioned into sections and subsections. Each section starts with the section mark '\*' and a section name. The section mark is always the first character on a line; the section name always follows the section mark immediately, with no intervening spaces. This is shown as a string starting with '^\*' below (for example, '^\*version' for the version section).

Subsections start in the same manner with the subsection mark '@', and are shown starting with "^@".

Empty lines and lines beginning with '#' are ignored (and lost on rewriting). White space is generally ignored unless otherwise specified.

The following table lists notational conventions.

| Notation  | Description   |
|-----------|---|
| [<item>]* | zero or more  |
| <item>*   | one or more   |
| \         | escape character for specifying use of '[', ']', '<', '>' |
| //        | all text following is a comment                           |

## MNLFF Format

```
<mnlff> ::= <Header> <Parts> <Nets> <End>
```

### Header

```
// introductory information
  <Header> ::= <file title> <netlist timestamp> [<back annotation timestamp>]
// program name and version, and file format version
  <file title> ::= ^*PCBoards Netlist Version 6.2 - Format 1.0
// timestamps for keeping ECO synchronized
  <netlist timestamp> ::= ^*timestamp: netlist <large positive number>
  // <back annotation> written by Schematics - part of the ECO synchronization <back annotation
  timestamp> ::= ^*timestamp: last backannotation <large positive number>
```

## Parts

```
// Physical components
<parts> ::= <component>*
  <component> ::= ^*component <package name> <footprint name> <refdes> <attribute>*
    <package name> ::= <string>
    <footprint name> ::= <string>
    <refdes> ::= <string>
    // COMP_X, COMP_Y, COMP_ANGLE, COMP_LAYER, COMP_FIXED, VALUE,
    // and TOLERANCE are the set of recognized component attributes
    <attribute> ::= ^@attribute <attr name>=<attr value>
      <attr name> ::= <string>
      <attr value> ::= <any string>
```

## Nets

```
// Connectivity
<nets> ::= <net>*
  <net> ::= ^*net <net name> <connection>* <attribute>*
    <connection> ::= ^+ <refdes>.<pin number> [<refdes>.<pin number>]
    <pin number> ::= <string>
    // NET_TRACE_WIDTH, and NET_CLEARANCE are the primary net attributes
```

## End Section

```
// end of data
<end> ::= ^*end
<large positive number> ::= 0 to 4G // 32 bit integer
<real number> ::= HUGE_VAL to -HUGE_VAL // floating point number

<string> ::= <most printable chars>*
<any string> ::= (<most printable chars> | <whitespace>)*

// "most" printable chars are "any" except: ,!@.( )"
// NOTE that [](): have special meanings!

<most printable chars> ::= a-z | A-Z | 0-9 | ;:'\|[{ }]-_+=`~#%&*<>?/
<whitespace> ::= ' ' | '\t' // spaces or tabs
```



# Layout File Format

**Netlist**  
**File Format**



The PCB Layout Editor reads and writes files in the MicroSim PCBoards File Format (MPFF). Other tools may generate files as input to the Layout Editor - for example, a layout translator.

MPFF is an ASCII representation for portability across platforms and to facilitate development of other tools. Linefeeds or linefeed/carriage return combinations at the ends of lines work equally well.

The file is partitioned into sections and subsections. Each section starts with the section mark '\*' and a section name. The section mark is always the first character on a line; the section name always follows the section mark immediately, with no intervening spaces. This is shown as a string starting with '^\*' below (for example, '^\*version' for the version section).

Subsections start in the same manner with the subsection mark '@', and are shown starting with "^@".

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| Notation  | Description   |
|-----------|---|
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| <item>*   | one or more   |
| \         | escape character for specifying use of '[', ']', '<', '>' |
| //        | all text following is a comment                           |

## MPFF Format

```
<mpff> ::= <Header> <Definitions> <Instances>
```

### Header

```
// program name and version, and file format version
<Header> ::= <file title> <IDcounter> <Original netlist> <Environment> <Layers> <Layerpairs>
<file title> ::= ^*PCBoards ASCII File Version 6.2 - Format 1.0
```

### IDcounter Section

```
// counter for generating system assigned net names
<IDcounter> ::= ^*maxNameId <positive number>
```

### Original netlist Section

```
// name of the netlist this layout started from, if any
```

<Original netlist>::=^\*netlistName [<string>]

## Environment Section

```
// Editor settings, defined styles and grids for the layout
<Environment> ::= ^*environment <settings> <styles> <grid> <ECO status>
  <settings> ::= <options> <selection filter> <view> <colors> <repaint>
    <options> ::= ^options <rubberband> <online DRC> <xhair display>
      <best units> <auto complete CCT> <auto ECO> <optimize rats>
      <default units> <trace mode> <rotation increment> <pin snap
      threshold>
      <rubberband> ::= r | -
      <online DRC> ::= d | -
      <xhair display> ::= x | -
      <best units> ::= b | -
      <auto complete CCT> ::= a | -
      <auto ECO> ::= e | -
      <optimize rats> ::= o | -
      <default units> ::= mil | mm // mils (.001 inches) or millimeters
      <trace mode> ::= 1 | 2 | 3 // 1 -> 90/90, 2 -> 45/90, 3 -> any angle
      <rotation increment> ::= <real number> // in degrees
      <pin snap threshold> ::= <real number> // in inches

    <selection filter> ::= ^selFilter <pins> <segs> <vias> <rats> <fills>
      <graphics> <text> <holes> <keepouts> <placement center>
      <current layer only> <auto extend> <enable>
      <pins> ::= p | -
      <segs> ::= s | -
      <vias> ::= v | -
      <rats> ::= r | - // logical connections
      <fills> ::= f | -
      <graphics> ::= g | -
      <text> ::= t | -
      <holes> ::= h | -
      <keepouts> ::= k | -
      <placement center> ::= m | -
      <current layer only> ::= c | -
      <auto extend> ::= a | -
      <enable> ::= e | -

    <view> ::= ^view <center X> <center Y> <width>
      <center X> ::= <real number> // in inches
      <center Y> ::= <real number> // in inches
      <width> ::= <real number> // in inches

    <colors> ::= <background> <highlight> <select> <grid color>
      <background> ::= ^backgrRGB <0 - 255> <0 - 255> <0 - 255>
      <highlight> ::= ^hiliteRGB <0 - 255> <0 - 255> <0 - 255>
      <select> ::= ^selectRGB <0 - 255> <0 - 255> <0 - 255>
      <grid color> ::= ^snapgrRGB <0 - 255> <0 - 255> <0 - 255>

    <repaint> ::= ^repaintStyle <current layer on top> <fill or outline>
      <pass order>
      <current layer on top> ::= c | -
      <fill or outline> ::= fill | outline
      <pass order> ::= onepass | formal
```



```
<styles> ::= <trace styles> <graphic styles> <text styles>
<trace styles> ::= ^@traceStyles [<tracestyle>]* <currentTraceStyle>
  <tracestyle> ::= ^traceStyle <name> <width> <clearance> <via padstack>
    <name> ::= <string>
    <width> ::= <real number>
    <clearance> ::= <real number>
    <via padstack> ::= <string>
  <currentTraceStyle> ::= ^currentTraceStyle <name> <width> <clearance>
    <via padstack>
    <name> ::= <string>
    <width> ::= <real number>
    <clearance> ::= <real number>
    <via padstack> ::= <string>
<graphic styles> ::= ^@graphicStyles [<graphicstyle>]* <currentGraphicStyle>
  <graphicstyle> ::= ^graphicStyle <name> <width>
    <name> ::= <string>
    <width> ::= <real number>
  <currentGraphicStyle> ::= ^graphicStyle <name> <width>
    <name> ::= <string>
    <width> ::= <real number>
<text styles> ::= ^@textStyles [<textstyle>]* <currentTextStyle>
  <textstyle> ::= ^textStyle <name> <height> <weight> <justification> <angle>
    <clearance>
    <name> ::= <string>
    <height> ::= <real number>
    <weight> ::= <real number>
    <angle> ::= <real number>
    <justification> ::= <positive number>
      // 1 - 9
    <clearance> ::= <real number>
  <currentTextStyle> ::= ^currentTextStyle <name> <height> <weight>
    <justification> <angle> <clearance>
    <name> ::= <string>
    <height> ::= <real number>
    <weight> ::= <real number>
    <angle> ::= <real number>
    <justification> ::= <positive number>
      // 1 - 9
    <clearance> ::= <real number>
<grid> ::= @snapGrids [<snapgrid>]* <currentsnapgrid>
  <snapgrid> ::= ^snapGrid <spacing>
    <spacing> ::= <real number> // spacing in inches
  <currentsnapgrid> ::= ^currentSnapGrid <spacing> <enable snap> <enable display>
    <spacing> ::= <real number> // spacing in inches
    <enable snap> ::= 1 | 0
    <enable display> ::= 1 | 0
<ECO status> ::= ^fcostatus <timestamp> <othertimestamp> <error>
  <timestamp> ::= d <year>:<month>:<day>:<hour>:<minute>:<second>;<time>
  <othertimestamp> ::= p <year>:<month>:<day>:<hour>:<minute>:<second>;<time>
  <error> ::= e <positive number>
    <year> ::= <positive number>
    <month> ::= <positive number>
    <day> ::= <positive number>
    <hour> ::= <positive number>
    <minute> ::= <positive number>
    <second> ::= <positive number>
```

```
<time> ::= <positive number>
```

## Layers Section

```
// physical and conceptual layers for the layout
<Layers> ::= ^*Layers <layer>* <currentLayer>
<currentLayer> ::= @currentLayer <layer name>
<layer> ::= @layer <layer tag> <layer name> <flags> <color>
<layer tag> ::= \[<string>\]
<layer name> ::= <string>
<flags> ::= <signal> <display> <protect> <routing bias>
<signal> ::= S | -
<display> ::= D | -
<protect> ::= P | -
<routing bias> ::= h | v | -
```

## Layerpairs Section

```
// layer pairs for vias and manual routing (switching between layer pairs using the TAB key)
<Layerpairs> ::= ^*LayerPairs <layerpair>* <currentLayerpair>
<currentLayerpair> ::= @currentPair <layer name> / <layer name>
<layerpair> ::= @layerPair <layer name> / <layer name>
```

## Definition

```
// Definitions of padstacks, footprints and packages used in the layout
<Definition> ::= [<Footprint>]* [<Package>]* [<Padstacks>]
```

## Footprint Section

```
// Footprint used in the layout
<Footprint> ::= ^*footprint <name> <refdes template> <comptypename template> <graphics>
<pins>
<refdes template> ::= ^@refdes <template text length> [<text instance data>]*
<template text length> ::= <positive number>
<text instance data> ::= ^display <layer tag> <layer name> <X> <Y> <justification>
<angle> <height> <weight> <mirror> <fitted> <length>
<X> ::= <real number>
<Y> ::= <real number>
<mirror> ::= 0 | 1
<fitted> ::= 0 | 1
<length> ::= <real number>
<comptypename template> ::= ^@comptype <template text length> [<text instance data>]*
<graphics> ::= ^@graphics [<centroid>] | [<FP line>]* | [<FP arc>]* |
[<FP hole>]*
<centroid> ::= ^centroid <layer tag> <X> <Y>
<FP line> ::= ^line <layer tag> <X> <Y> <X> <Y> <width>
<real number>
<FP arc> ::= ^arc <layer tag> <center X> <center Y> <radius>
<start angle> <end angle> <width>
<FP hole> ::= ^hole <start layer tag> <end layer tag> <X> <Y> <width>
<clearance>
<start layer tag> ::= <layer tag>
```

```
    <end layer tag> ::= <layer tag>
<pins>      ::= ^@pins [<pin>]*
  <pin>      ::= ^pin <pin number> <X> <Y> <angle> <padstack name>
              <technology>
  <pin number> ::= <string>
  <padstack name> ::= <string>
  <technology> ::= smt | thru
```

## Package Section

```
<Package>   ::= ^*package <package name> [<ako>] [<package flag>]
              [<types> <pinouts>]// types and pinouts not present if ako
<package name> ::= <string>
<ako>         ::= ako <package base name> // should be phased out
  <package base name> ::= <string>
<package flag> ::= b // do not show in part browser
<types>       ::= ^@types <number of gates> <gate types>* [<pin swaps>]*
  <number of gates> ::= <number>
  <gate types>     ::= ^g <type name> [<gate name>]*
    <type name>    ::= <string> // usually "1"
    <gate name>    ::= <string> // unnecessary if only one gate in package
  <pin swaps>      ::= ^w <pin name>,<pin name>* // List of equivalent pins
<pinouts>      ::= ^@pinout <pinout for package types>*
  <pinout for package types> ::= ^t <package types> <pins for gate type>*
    <package types> ::= <type name>[,<type name>]*
      <type name>   ::= <string> // footprint name
    <pins for gate type> ::= <gate type name> <pin>* <shared pin>*
      <gate type name> ::= ^g <type name>
      <pin>             ::= ^p <pin name> <pin number>[,<pin number>]*
      <sharedPin>      ::= ^s <pin name> <pin number>
        <pin name>    ::= <string>
        <pin number> ::= <string>
```

## Padstacks Section

```
// Padstacks used in the layout
<Padstacks> ::= ^*padStacks [<padstack>]*
  <padstack> ::= @padStack <padstack name> <padstack data> <description>
              <inner layer template> <component layer data>
              <solder layer data> [<other layer data>]*
  <padstack name> ::= <string>
  <padstack data> ::= <drill diameter> <xOffset> <yOffset> <clearance>
                    <thru flag> <swell value> <shrink value>
                    <remove on inner layers, if unused>
    <drill diameter> ::= <real number> // non-negative
    <xOffset>        ::= <real number>
    <yOffset>        ::= <real number>
    <clearance>     ::= <real number>
    <thru flag>     ::= 1 | 0
    <swell value>   ::= <real number>
    <shrink value>  ::= <real number>
    <remove on inner layers, if unused> ::= 1 | 0
  <description>   ::= <string>
  <inner layer template> ::= <layer details>
```

```
<layer details> ::= <shape> <pad height> <pad width> <pad clearance>
                    <thermal spoke angle> <thermal spoke size>
    <shape>          ::= round | oval | rectangular | square
    <pad height>    ::= <real number>
    <pad width>     ::= <real number>
    <pad clearance> ::= <real number>
    <thermal spoke angle> ::= <real number>
    <thermal spoke size> ::= <real number>
    <component layer data> ::= <component layer name> \[Top\] <layer details>
    <solder layer data> ::= <solder layer name> \[Bottom\] <layer details>
    <other layer data> ::= <layer name> <layer tag> <layer details>
```

## Instances

```
// Graphical and electrical objects in the layout
<Instances> ::= <Component>* <Net>* <PCB line>* <PCB arc>* <PCB hole>* <Text>*
                <PCB rect>* <PCB oblong>* <Keepout>* <Keepin>* <Void>*
                <Net Rules> <CAM Data> <Aperture>* <Drill>* <Job Setup>* <DRC>
```

## Component Section

```
<Component> ::= ^*component <package name> <footprint name> <refdes> <X> <Y>
                <angle> <layer name> [<fixed>] <attribute>* <pin attributes>
    <package name> ::= <string>
    <footprint name> ::= <string>
    <refdes>       ::= <string>
    <fixed>        ::= 1
    <attribute> ::= ^@attribute <attr name>=<attr value> <text instance data>
        <attr name>     ::= <string>
        <attr value>    ::= <any string>
    <pin attributes> ::= ^@pinAttributes <pin attr>*
        <pin attr>     ::= ^@attribute <attr name>=<pin number>,<attr value>
                        <text instance data>
```

## Net Section

```
<Net>          ::= ^*net <net name> [<suppress display>] <connection>* <segment>*
                <via>* <areafill>* <attribute>*
    <suppress display> ::= s
    <connection> ::= ^+ <refdes>.<pin number> [<refdes>.<pin number>]
    <segment>    ::= ^@seg <layer name> <X> <Y> <X> <Y> <width> <clearance>
    <via>        ::= ^@via <start layer name> <end layer name> <X> <Y>
                <padstack name>
        <start layer name> ::= <layer name>
        <end layer name>  ::= <layer name>
    <areafill>   ::= ^@areafill <layer name> <real number> <real number>
                <real number> <real number> <clearance> [<display mode>]
                [<show islands>] <polygon>
    <display mode> ::= DRAFT | SOLID// DRAFT is default
    <show islands> ::= -//islands are shown by default
    <polygon>     ::= <segment> <segment> <segment> <segment>*// at least three
```

### PCB line Section

```
// same as <FP line>, except uses layer name instead of layer tag
<PCB line> ::= ^*line <layer name> <X> <Y> <X> <Y> <width> <real number>
```

### PCB arc Section

```
// same as <FP arc>, except uses layer name instead of layer tag
<PCB arc> ::= ^arc <layer name> <center X> <center Y> <radius>
           <start angle> <end angle> <width>
```

### PCB hole Section

```
// same as <FP hole>, except uses layer name instead of layer tag
<PCB hole> ::= ^*hole <start layer name> <end layer name> <X> <Y> <width>
           <clearance>
```

### Text Section

```
<Text> ::= ^*text <clearance> <text attribute>
        <text attribute> ::= ^@attribute text=<attr value> <text instance data>
```

### PCB rect Section

```
<PCB rect> ::= ^*rect <layer name> <center X> <center Y> <width> <height> <angle>
           <filled flag> <line width> <number>
<filled flag> ::= 1 | 0
<line width> ::= <real number>
```

### PCB oblong Section

```
<PCB oblong> ::= ^*oblong <layer name> <center X> <center Y> <width> <height>
           <angle> <filled flag> <line width> <number>
```

### Keepout Section

```
<Keepout> ::= ^*keepout <layer name> <clearance> <polygon>
```

### Keepin Section

```
<Keepin> ::= ^*keepin <layer name> <clearance> <polygon>
```

### Void Section

```
<Void> ::= ^*void <layer name> <clearance> <polygon>
```

## Net Rules Section

```
<Net Rules> ::=^*netrules <default width> <default trace clearance>
              <default pin/via clearance> <default via padstack> <CCT license>
              [<net class>]* [<rule>]*
<default width> ::=^<real number>// >= <min trace width>
<default trace clearance> ::= <real number>// >= <min copper clearance>
<default pin/via clearance> ::= <real number>// >= <min copper clearance>
<default via padstack> ::= <padstack name>
<CCT license> ::= 2/1000 | 4/4000 | 6/U | U/U
<net class> ::=^@netclass <class name> <class net name>*
  <class name> ::= <name>
  <class net name> ::=^<net name>
<rule> ::= <general rule> |
          <class rule> |
          <class-class rule> |
          <net rule> |
          <dofile (end) rule> |
          <layer rule> |
          <control rule>
<general rule> ::=^@rule general <general basic rule> | <general hybrid rule>
  <general basic rule> ::= BASIC
                        <trace grid> |
                        <via grid> |
                        <trace grid per layer> |
                        <via grid per via> |
                        <max wrong way> |
                        <pad to turn gap> |
                        <smd to turn gap> |
                        <T junctions okay> |
                        <no T junctions> |
                        <stub from pin> |
                        <max vias/connection> |
                        <max total vias> |
                        <max bends/connection> |
                        <max crossings/connection> |
                        <max trace on mixed layer> |
                        <routing style>
  <trace grid> ::= traceGrid - - - <grid spacing> 0
  <grid spacing> ::= <real number>
  <via grid> ::= viaGrid - - - - <grid spacing> 0
  <trace grid per layer> ::= gridLayer <layer name> - - <grid spacing> 0
  <via grid per via> ::= gridVia - - - <padstack name> <grid spacing> 0
  <max wrong way> ::= maxWrongWay - - - <real number> 0
  <pad to turn gap> ::= padToTurnGap - - - - <real number> 0
  <smd to turn gap> ::= smdToTurnGap - - - - <real number> 0
  <T junctions okay> ::= tJunction <net name>|<class name>|- - - - 0 0
  <no T junctions> ::= noTJunction <net name>|<class name>|- - - - 0 0
  <stub from pin> ::= stubFromPin <net name>|<class name>|- - - -
                        <real number> 0
  <max vias/connection> ::= maxViasPerConn <net name>|<class name>|- - - -
                        <real number> 0
  <max total vias> ::= maxTotalVias <net name>|<class name>|- - - -
                        <real number> 0
  <max bends/connection> ::= maxBendsPerConn <net name>|<class name>|- - - -
                        <real number> 0
  <max crossings/connection> ::= maxCrossingsPerConn <net name>|<class name>|-
                        - - - <real number> 0
  <max trace on mixed layer> ::= maxTraceOnMixedLayer <net name>|<class
                        name>|-
                        - - - <real number> 0
```

```
<routing style> ::=routingStyle <net name>|<class name>|- - - - 0 0
    [<routingStyle child rule>]
    <routingStyle child rule> ::= ^+ general BASIC daisyMid | daisyBalanced
    - - - - 0 0
<general hybrid rule>::=HYB
    <vias under smd>
    |<buried via gap>
    <bb via padstack> |
    <vias under smd>
<vias under smd>::=viasUnderSMD - - - - 0 0
    [<fit vias under SMD>] [<via grid SMD>]
    <fit vias under SMD>::=viaFitSMD - - - - 0 0
    <via grid SMD> ::=viaGridSMD - - - - 0 0
<buried via gap>::=buriedViaGap - - - - <real number> 0
<bb via padstack>::=bbViaPadstack - - - <padstack name> 0|1 0
<class-class rule>::=^@rule classclass
    <parallel segment>
    <tandem segment>
    <parallel noise>
    <tandem noise>
<parallel segment>::=PARALLEL maxRunAtGapH <class name> - <class name> -
    <gap> <run length>
    <gap> ::=<real number>
    <run length>::=<real number>
<tandem segment>::=PARALLEL maxRunAtGapV <class name> - <class name> -
    <gap> <run length>
// parallel and tandem noise rules of type class-class are not yet
    implemented
<parallel noise>::=NOISE noisePerLengthH <class name> - <class name> -
    <noise amount> <noise gap> <length threshold>
    <noise amount>::=<real number>
    <noise gap> ::=^+ child NOISE noisePerLengthGap - - - -
    <real number> 0
    <length threshold>::=^+ child NOISE noisePerLengthThresh - - - -
    <real number> 0
<tandem noise> ::=NOISE noisePerLengthV <class name> - <class name> -
    <noise amount> <noise gap> <length threshold>
<class rule> ::=^@rule netclass
    <basic class rules> |
    <ADV class rules> |
    <FST class rules> |
    <PARALLEL class rules> |
    <NOISE class rules> |
    <DELAY class rules>
<basic class rules>::=BASICNET
    <T junctions okay> |
    <no T junctions> |
    <stub from pin> |
    <max vias/connection> |
    <max total vias> |
    <max bends/connection> |
    <max crossings/connection> |
    <max trace on mixed layer> |
    <routing style>
<ADV class rules>::=ADV
    <use via>
    <use layer>
    <clearance for layer>
    <width for layer>
    <use via> ::=useVia <class name>|<net name> - - <padstack name>
    0 0
    <use layer> ::=useLayer <class name>|<net name> <layer name> - -
    0 0
```

```
<clearance for layer> ::= clearanceForLayer <class name> | <net name>
    <layer name> - - <clearance> 0
<width for layer> ::= widthForLayer <class name> | <net name>
    <layer name> - - <width> 0
<FST class rules> ::= FST <set min/max length> |
    <set same length> | <accordian gap> | <accordian height> |
    <effective via length>
<set min/max length> ::= minMaxLength <class name> | <net name> - - -
    <real number> [<real number>] [<ratio length>]
<ratio length> ::= ^+ child FST ratioLength - - - 0 0
<set same length> ::= sameLength <class name> | <net name> - - -
    <real number> 0
<accordian gap> ::= accordianGap <class name> | <net name> - - -
    <real number> 0
<accordian height> ::= accordianHt <class name> | <net name> - - -
    <real number> 0
<effective via length> ::= viaLength <class name> | <net name> - - -
    <real number> 0
<PARALLEL class rules> ::= PARALLEL <(net or class) parallel segment> |
    <(net or class) tandem segment>
    <(net or class) parallel segment> ::= maxRunAtGapH <class name> | <net
        name> -
        - - <gap> <run length>
    <(net or class) tandem segment> ::= maxRunAtGapV <class name> | <net name>
        -
        - - <gap> <run length>
<NOISE class rules> ::= NOISE <set max noise> |
    <shield with net> |
    <noise/length, parallel> |
    <noise/length, tandem> |
    <noise weighting factor>
<set max noise> ::= maxNoise <class name> | <net name> - - -
    <real number> 0
<shield with net> ::= shieldWith <class name> | <net name> - <net name> -
    <real number> 0
<noise/length, parallel> ::= .noisePerLengthH <class name> | <net name> - -
    -
    <real number> 0 [<noise gap>] [<noise threshold>]
    <noise gap> ::= ^+ child PARALLEL noisePerLengthGap - - - -
    <real number> 0
    <noise threshold> ::= ^+ child PARALLEL noisePerLengthThresh - - - -
    <real number> 0
    <noise/length, tandem> ::= .noisePerLengthV <class name> | <net name> - - -
    <real number> 0 [<noise gap>] [<noise threshold>]
<DELAY class rules> ::= DELAY <same delay> | <max delay> |
    <min delay> |
    <net delay per length>
<same delay> ::= sameDelay <class name> | <net name> - - -
    <real number> 0
<max delay> ::= maxDelay <class name> | <net name> - - -
    <real number> 0
<min delay> ::= minDelay <class name> | <net name> - - -
    <real number> 0
<net delay per length> ::= netDelayPerLength <class name> | <net name> - -
    -
    <real number> 0
<net rule> ::= ^@rule net
    <basic net rules> |
    <ADV net rules> |
    <FST net rules> |
    <PARALLEL net rules> |
    <NOISE net rules> |
    <DELAY net rules>
```



```
<basic net rules>::=BASICNET
    <T junctions okay> |
    <no T junctions> |
    <stub from pin> |
    <max vias/connection> |
    <max total vias> |
    <max bends/connection> |
    <max crossings/connection> |
    <max trace on mixed layer> |
    <routing style>
<ADV net rules>::=ADV
    <use via>
    <use layer>
    <clearance for layer>
    <width for layer>
<FST net rules>::=FST <set min/max length> |
    <set same length> |<accordian gap> |<accordian height> |
    <effective via length> |<differential pair>
    <differential pair>::=diffPair <net name> - - <net name> 0 0
<PARALLEL net rules> ::= PARALLEL <(net or class) parallel segment>|
    <(net or class) tandem segment>
<NOISE net rules>::=NOISE <set max noise> |
    <shield with net> |
    <noise/length, parallel> |
    <noise/length, tandem> |
    <noise weighting factor>
<DELAY net rules>::=DELAY <same delay> |<max delay> |
    <min delay> |
    <net delay per length>
<dofile (end) rule>::=^@rule DOFILEEND DFM
    <add test point> |
    <miter> |
    <spread traces> |
    <miter on layer>
<add testpoint>::=addTestPoint <class name>|- - - 0 0
    [<testpoint layer>] [<testpoint distance>]
    [<use grid for testpoints>] [<use pins for testpoints>]
<testpoint layer>::=^+ child DFM testPointLayer - front|back|both - -
    0 0
<testpoint distance>::=^+ child DFM testPointCCDist - - - - <real
    number> 0
<use grid for testpoint> ::= ^+ child DFM testPointUseGrid - - - - 0 0
<use pins for testpoint> ::= ^+ child DFM testPointUsePins - - - - 0 0
<miter> ::=miter - - - - 0 0
    [<miter bends>]
    [<miter pin exits>]
    [<miter T junctions>]
    [<miter slants>]
<miter bends>::=^+ child DFM miterBends - - - - <start setback>
    <final setback>
    <start setback>::=<real number>
    <final setback>::=<real number>
<miter pin exits>::=^+ child DFM miterPinExits - - - - <setback> 0
    <setback>::=<real number>
<miter T junctions>::=^+ child DFM miterTJunctions - - - - <setback> 0
<miter slants>::=^+ child DFM miterSlants - - - - <setback> 0
<miter on layer>::=miterLayer - <layer name> - - 0 0
    [<miter bends>]
    [<miter pin exits>]
    [<miter T junctions>]
    [<miter slants>]
```

```
<spread traces>::=spreadTraces - - - <extra clearance>
    <smaller extra clearance>| 0
    [<type wire-pin>][<type wire-smd>]
    [<type wire-via>]
<extra clearance>::=<real number>
<smaller extra clearance> ::= <real number>
<type wire-pin>::=^+ child DFM spreadWirePin - - - 0 0
<type wire-smd>::=^+ child DFM spreadWireSmt - - - 0 0
<type wire-via>::=^+ child DFM spreadWireVia - - - 0 0
<layer rule> ::=^@rule cctlayer <layer delay rule> | <layer noise rule>
<layer delay rule>::=DELAY delayPerLength <layer name> - - -
    <delay amount> 0
    <delay amount>::=<real number>
<layer noise rule>::=NOISE noiseLayerWeight <layer name> <layer name> - -
    <layer weight> 0
    <layer weight>::=<real number>
<control rule> ::=^@rule control BASIC <same net checking> |
    <no diagonals> |
    <stay on grid> |
    <use fanout via also>
<same net checking>::=sameNetChecking - - - 0 0
<no diagonals> ::=noDiagonals - - - 0 0
<stay on grid> ::=stayOnGrid - - - 0 0
<use fanout via also>::=useFanoutViaAsWell - - - 0 0
```

## CAM Data Section

```
<CAM Data> ::=^*CAM <NCD options> <NCD symbol data> <photoplot options>
    <print options>
<NCD options>::=^NCD <NCD flags> <integer digits> <decimal digits>
    <zero suppression>
    <NCD flags> ::=<NCD metric units> <NCD sort in X> <regenerate NCD jobs>
    <NCD metric units>::=m | -
    <NCD sort in X>::=x | -
    <regenerate NCD jobs>::=r | -
    <integer digits>::=1 - 5
    <decimal digits>::=1 - 5
    <zero suppression>::=none | leading | trailing
<NCD symbol data>::=^NCDsymbol <NCD symbol flags> <NCD symbol scale>
    <NCD symbol style>
    <NCD symbol flags>::=<sort by count> <reverse sort> <use plus first>
    <sort by count>::=c | -
    <reverse sort> ::=r | -
    <use plus first>::=+ | -
    <NCD symbol scale>::=<positive real number>
    <NCD symbol style>::=<textstyle>
<photoplot options>::=^PP <PP flags> <PP format> <integer digits> <decimal digits>
    <zero suppression>
    <PP flags> ::=<PP metric units> <use G54> <use G04> <use G75>
    <PP metric units>::=m | -
    <use G54> ::=5 | -
    <use G04> ::=c | -
    <use G75> ::=3 | -
    <PP format> ::=RS274X | RS274D
<print options>::=^PRN <print flags>
    <print flags> ::=<print black and white> <print the view>
    <print black and white> ::= b | -
```

```
<print the view>::=f | -
```

## Aperture Section

```
<Aperture> ::= ^*aperture <aperture usage> <aperture shape> <width> <height>
              <angle> <D code>
<aperture usage> ::= drawn | flashed
<aperture shape> ::= round | oval | square | rectangular
<D code> ::= <positive number> // >= 10
```

## Drill Section

```
<Drill> ::= ^*drill <tool code> <diameter> <feed> <speed> [<drill symbol>]
<tool code> ::= <positive number>
<diameter> ::= <positive real number>
<feed> ::= <positive real number>
<speed> ::= <positive real number>
<symbol> ::= <ASCII character>
```

## Job Setup Section

```
<Job Setup> ::= ^*job <name> <job type> <job flags> <translation> <repaint style>
              <job page>*
<job type> ::= photoPlot | print | drill
<job flags> ::= ^flags <auto job>
  <auto job> ::= a | -;
<translation> ::= ^translation [<origin X>] [<origin Y>] [<dX>] [<dY>]
              [<rotate 90>] [<scale>]
  <origin X> ::= orgx <real number>
  <origin Y> ::= orgy <real number>
  <dX> ::= dx <real number>
  <dY> ::= dy <real number>
  <rotate 90> ::= a 90
  <scale> ::= s <real number>
<repaint style> ::= ^repaintStyle <repaint flags> <fill style> <pass style>
  <repaint flags> ::= <current layer on top>
  <current layer on top> ::= c | -
  <fill style> ::= fill | outline
  <pass style> ::= onePass | formal
<job page> ::= ^@page <page number> <selection filter> <job page layer>*
  <page number> ::= <positive number>
  <job page layer> ::= ^layer <layer name>
```

## DRC Section

```
<DRC> ::= ^*DRC <min drill clearance> <min copper clearance>
          <min trace width> <min annular ring> <min drill diameter>
          <min spoke width>
<min drill clearance> ::= <real number>
<min copper clearance> ::= <real number>
<min trace width> ::= <real number>
<min annular ring> ::= <real number>
```

## Layout File Format

---

```
<min drill diameter>::=<real number>
<min spoke width>::=<real number>
```

```
<number>      ::= -2G to +2G // 32 bit integer
<positive number> ::= 0 to 4G // 32 bit integer
<large positive number> ::= 0 to 4G // 32 bit integer
<real number> ::= HUGE_VAL to -HUGE_VAL // floating point number
```

```
<string>      ::= <most printable chars>*
<any string>  ::= (<most printable chars> | <whitespace>)*
```

```
// "most" printable chars are "any" except: ,!@.()"
// NOTE that [](): have special meanings!
```

```
<most printable chars> ::= a-z | A-Z | 0-9 | ;:'\|[{ ]- _ + = ` ~ # $ % ^ & * < > ? /
<whitespace>      ::= ' ' | '\t' // spaces or tabs
```

# PCBoards Configuration Items in msim.ini

MSIM.INI

Setting Configuration Items

Using Menu Selections

Using a Text Editor

[MICROSIM] Section

[MICROSIM OPTIONS] Section

[SCHEMATICS] Section

[SCHEMATICS INTERFACES] Section

[PCBOARDS] Section

[PCBOARDS FOOTPRINTS] Section

[PCBOARDS PADSTACKS] Section

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[PART LIBS]

Using the  
Keyboard

Filename  
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# MSIM.INI

The configuration file, `msim.ini`, is an ASCII text file that contains settings used to initialize your MicroSim software at startup. This file is created during system installation, or extended when adding a new system option (like PCBoards) to your existing configuration. `msim.ini` is located in the directory where Windows is installed (usually `c:\windows`).

This file is divided into sections; each section has a title name enclosed in brackets. For example, the first section is `[MICROSIM]`. Each section contains settings using the syntax:

```
keyword=value
```

where `keyword` is the name of the setting and `value` defines the value of the setting. For example, `LIBPATH` defines the directories to search for library files; on the PC, `LIBPATH` can be specified as follows:

```
LIBPATH=c:\msim\lib
```

## Setting Configuration Items

This appendix describes PCBoards-specific configuration items provided in `msim.ini`. Each description includes the keyword, valid values, and the best method for setting it. For descriptions of other `msim.ini` configuration items, please see Appendix A in the [Installation Manual](#).

## Using Menu Selections

Many items can be defined using selections in the Configure and Library menus provided in the Layout and Footprint Editors. It is good practice wherever possible to do so. Changes are effective immediately.

## Using a Text Editor

In some cases, a text editor must be used to add or update the `msim.ini` entries directly. All MicroSim programs must be exited before making the edits since these programs can also modify the section of the `msim.ini` file you wish to change. Changes become effective the next time a MicroSim program is invoked.

## [MICROSIM] Section

This section contains settings that are general to the MicroSim software.

| Keyword     | Description  | Menu Selection    |
|-------------|--|-------------------|
| PCBoardscmd | Defines the command line required to invoke PCBoards from Schematics. This line is defined when installing PCBoards and should read:<br>PCBcmd=PCBOARDS.EXE  | (Use text editor) |
| CCTcmd      | Defines the command line required to invoke the CCT SPECCTRA autorouter. This line is defined when installing PCBoards and should read something like (one line):<br>CCTcmd=C:\SPECCTRA\BIN\SPECCTRA.EXE -P<br>C:\SPECCTRA\COMMON\SP.PAS | (Use text editor) |

## [MICROSIM OPTIONS] Section

This section contains settings that define the program options purchased with your MicroSim software installation. The following line should appear in this section.

```
PCBoards=0N
```

This line is defined when installing PCBoards.

## [SCHEMATICS] Section

For installations with Schematics, this section contains configuration items used by Schematics. The LAYOUTFORMAT keyword defines the current board layout package interface Schematics should use when generating layout netlists and processing ECO files. The line should appear as follows when using PCBoards and Schematics together:

```
LayoutFormat=PCBOARDS
```

If not already set, invoke Schematics, select Configure Layout Editor from the Tools menu, and select the PCBoards entry in the list.

## [SCHEMATICS INTERFACES] Section



This item is system-defined and should not be changed.

For installations with Schematics, this section lists the file extensions and netlister mapping files used by Schematics for each supported board layout interface. The following line should appear in this section reflecting the Schematics-PCBoards interface:

```
PCBOARDS=EXT:.nlf ECOEXT:.bco MAPFILE1:pcboards.xnt PAREX:MSIM
REFPINSEP:2 RDBEXT:.si
```

## [PCBOARDS] Section

This section contains configuration items used by PCBoards. Unless otherwise specified, menu selections are within the layout editor.

| Keyword     | Description  | Menu Selection    |
|-------------|--|-------------------|
| CCTPlanePCT | Percentage of a signal layer that must be covered in metal to create a plane layer for autorouting. The default is CCTPlanePCT=80. | (Use text editor) |

## [PCBOARDS BORDER] Section



These items are system-defined and should not be changed.

This section defines the window size and position that will be used when PCBoards is started as defined by the last displayed PCBoards window. The items in this section are: Zoomed, Left, Top, Width, and Height.



## [PCBOARDS DISPLAY COLORS] Section

This section lists the red, green, and blue settings (RGB) used to achieve the desired color for items and edit-modes in the work area.

| Keyword   | Description                                   | Menu Selection    |
|-----------|---|-------------------|
| BackgrRGB | Background color of the work area             | (Use text editor) |
| HiliteRGB | Color of selected items when dragged or moved | (Use text editor) |
| SelectRGB | Color of selected items when stationary       | (Use text editor) |
| SnapgrRGB | Color of snap grid                            | (Use text editor) |

Use the following syntax when editing any one of these settings in `msim.ini`:  
`item nameRGB=red intensity green intensity blue intensity`  
 where `intensity` ranges from 0 to 255.

## [PART LIBS]

This section lists the component Package Library files that are available to PCBoards for library searches. If your installation also has Schematics, this section also lists corresponding symbol library files (with the same file name prefix as the Package Library file). Each entry is specified with this format:

```
LIBn=Symbol/Package Library file name prefix [[.slb,].plb]
```

where `n` is the number of the library file in consecutive ascending order in the list, `.plb` is the usual file extension for Package Library files, and `.slb` is the usual file extension for symbol library files (`.slb` only appears if there is a corresponding symbol library file for use by Schematics).

Entries are listed in search-order. New package definitions are defined within the layout editor (Packaging in the Library menu) and can be saved to existing or new library files. To add new Package Library files to this section, use the layout editor's Setup command in the Library menu. Entries can also be changed, deleted, and reordered using this dialog.

## [PCBOARDS FOOTPRINTS] Section

The section lists the component symbol library files that are available to PCBoards for library searches. Each entry is specified with this format:

```
LIBn=Footprint Library file name prefix.flb
```

where `n` is the number of the library file in consecutive ascending order in the list, and `.flb` is the usual file name extension for symbol library files.

Entries are listed in search-order. When new footprint definitions are defined within the Footprint Editor, they can be saved to existing library files using Save to Library under the Footprints menu, or Save under the File menu.

Definitions can be saved to a new file using Save As under the File menu. To add new symbol library files to this section, use the layout editor's Setup command under the Library menu. Entries can also be changed, deleted, and reordered using this dialog.

## [PCBOARDS PADSTACKS] Section

This section specifies the global component symbol library file that is available to PCBoards for library searches. This entry is specified using the format,

```
LIB1=Padstack Library file name prefix.psl
```

The default padstack library is:

```
LIB1=std.psl
```

When a new padstack is created, its definition is stored in the current layout database for use in the current design. It is not immediately available to other or future designs until it is either saved to a symbol library file and configured for automatic search, or imported into the design from an external file. To configure a symbol library file for global availability, use the layout editor's Export Padstack and Setup commands under the Library menu.

# Library Expansion and Compression Utility

Introduction

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# Introduction

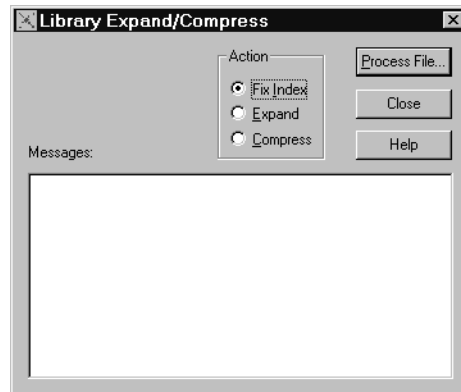
MicroSim Schematics and MicroSim PCBoards include a library utility (LXCWin) that works with the symbol, package, and footprint libraries.

You can use LXCWin to:

- expand a library into definitions and create a list of those definitions (.lst file)
- compress definitions listed in the .lst file into a library
- salvage corrupted library files
- reorganize library files

## To activate LXCWin

- 1 From the Windows Start menu, point to Programs, point to the MicroSim program entry, and select LXCWin.



## Expanding Library Definitions into Text Files

When you use LXCWin to expand a library, it reads the selected library line by line, and writes each definition of a symbol (.sym), package (.pkg), or footprint (.fpd) in plain ASCII format, to a text file. It also creates a .lst file, detailing the file name and the corresponding definition name.

### To expand a library into individual definition files:

- 1 From the Action frame, select Expand.
- 2 Click the Process File button.
- 3 Select a library.

## Compressing Definition Files into a Library

When you use LXCWin to compress definitions it reads the .lst file (a file of the same name as the library you selected), and packs each listed file into a selected library, in the order read. Thus, symbol, package, and footprint libraries can be built from files generated by another process.



The individual definition files are automatically removed.

### To compress individual definition files into a library:

- 1 In the Action frame, select Compress.
- 2 Click the Process File button.

- 3 Specify a library.

## Salvaging a Corrupted File

To salvage a corrupted file or one that has carriage returns and line feeds

- 1 In the Action frame, select Fix Index.
- 2 Click the Process File button.
- 3 Select a library.

## Reorganizing a Library File

To reorganize a library file

- 1 Expand the library.
- 2 Edit the `.lst` file with a text editor to add, delete, or rearrange files.
- 3 Compress the library.

## `.lst` File Format

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| File Name | Definition Name |
|-----------|-----------------|
| xxxx.sym  | xxxx            |

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Example:

7400.sym 7400

## Running LXCWin Using Command Line Options

You can also run LXCWin using command line options.

The options are:

|            |   |
|------------|---|
| -f         | Fix Index (default)   |
| -x         | Expand  |
| -c         | Compress  |
| -n         | Do not delete definition files                                    |
| <libnames> | One or more library names; the names may include wildcards (*, ?) |

Example:

```
LXCWin *.flb
```