

NAME

layflat - remove the hierarchy from a cell in the layout view

SYNOPSIS

layflat [...options...] <inputcell>

OPTIONS

- h** Help--- print list of options.
- s** Lift all the terminals from the <inputcell>s children as well. The default is to only include the top level terminals with the <outputcell>).
- o <outputcell>**
Cell name of the layout to be created. The default output cell is "testflat".
- x <mask>**
Exclude all occurrences of <mask> from the output. Multiple -x options are allowed.
- i <mask>**
Only include <mask> in the output. Multiple -i options are allowed, but -x and -i are mutually exclusive.
- L <pat>**
Exclude library cells that are imported from a project whose path contains the string <pat>.
- l** Equivalent to specifying the option "-L /celllibs/".

DESCRIPTION

Layflat reads the layout description of the <inputcell> and recursively of all its children. It then removes the model calls contained in this layout tree by expanding them. Finally, it writes the flattened layout into the <outputcell>.

By default, *layflat* copies all masks found in the <inputcell> to the <outputcell>. If one or more -x<mask> options are specified then all but the specified masks are copied to the output. If one or more -i<mask> options are specified then only these masks are copied to the <outputcell>.

If the -s options is specified, then a likely consequence of the expansion is terminal name collision. *Layflat* remedies this by modifying collided names in such a way that for each terminal a new unique name results. Normally the modification consists of appending "_%d" to the name, where %d represents a small integer. Sometimes, however, this results in too long a name and in such cases *layflat* comes up with a new unique name that has no similarities to the original name. It also prints a message on the terminal to warn you for the change of names.

The -l and the -L options prevent *layflat* from flattening cells of a certain library. If the -l is used, all cells of which the path to the library contains the substring "/celllibs/" are excluded from the flattened output. The -L option allows for exclusion of cells imported from any other project. The options are useful for the final assembly of sea-of-gates chips, where the image must be excluded from the final mask set.

EXAMPLE

The following call flattens the cell dff (in the fishbonec3tu process) and writes the result to dff_f, which only contains two levels of metal and 4 types of contacts. If dff is a sea-of-gates cell, then dff_f is the equivalent cell but without the active area and polysilicon of the sea-of-gates image:

```
% layflat -iin -iins -icon -icop -icps -icos -o dff_f dff
```

BUGS

Elements of type NOR_CIRCLE and NOR_WIRE are ignored. (*Layflat* issues a warning message on the terminal when it encounters such weird elements.)

Multiple -L options should be allowed. The pattern used with -L should be a regular expression.

AUTHOR

Paul Stravers. The -s option was added by Gerben Hekstra and the -L option by Patrick Groeneveld.