

## NAME

cgi - convert GDS II formatted files to an ICD project

## SYNOPSIS

**cgi** [-4cdfglpSsv] [-m mlist] [-n ctable] [-w size] GDS-files

## OPTIONS

- 4** Test non-orthogonal input conform *45 degree*.
- c** Instead of truncating, *convert GDS text names* that are too long to other names. A name conversion list will automatically be generated.
- d** Enable *debug* mode.
- f** Enable the cell *force* overwrite mode.
- g** If possible, *go on* after error.
- l** Replace '\$' characters by '\_' characters in names.
- m mlist**  
Use this *mask list* instead of the default mask list.
- n ctable**  
Use this table to convert *names* to other names.
- p** Use an alternative algorithm to convert *path* elements. This may solve truncation problems for non-orthogonal path elements.
- S** Enable *silent* mode.
- s** Allow unknown elements and layer numbers by *skipping* the messages.
- v** Enable *verbose* mode.
- w size** Use this to specify the *width* of terminals (in lambda) generated by text structures (default 0).

## DESCRIPTION

*Cgi* reads GDS file(s) and places the structures in the ICD database. A structure in a GDS file may contain the following elements:

### BOUNDARY

(45 degree path types 0,1 and 2, non-45 degree path types 0 and 2 only)

SREF (structure reference)

AREF (array reference)

TEXT (terminal/pin or label/net name definition)

*Text elements* are default written as comments to the layout database. But they can be used as terminal or label names, see *bmlist(4ICD)*.

*Structure names* are mapped to cell names. If a cell already exists the cell will not be overwritten. The width of a path must be greater than 0. You can use this program only in a NELSIS project directory.

If the GDS database unit is less than lambda you may lose accuracy (be careful). Thus, if you make a new project, you have to choice a suitable lambda value (in microns). If you want to change lambda, use the *clambda* program. With the *cga* program, you can inspect the GDS file and also find out which database unit is used in the GDS file (second argument of UNITS record).

The GDS layer numbers are mapped to the layers of the used process by a mask list file. Default this file is the file *bmlist.gds* in the process directory, but an alternative file can be specified using the option **-m**. For a description of the contents of the mask list file, see *bmlist(4ICD)*. Each line of this file contains a mask name, a GDS layer number and (optionally) a GDS data type or text type number. Besides that it is specified in this file how boundary and path elements are stored into the project database, it is also specified in this file how text structures are mapped to either terminals/pins or to labels/net names.

## PROPERTIES

A property of an element in the GDSII format consists of a *number* and a *value*. *number* specifies the intended property and *value* specifies the value of the property. Properties can be used to e.g. specify instance names with SREF and AREF elements, and terminal and label names with BOUNDARY elements. Below, a table is given of the supported properties, their default number (if it exists), their expected value type and their semantics. The number that is used for a property can be specified in the mask list file (see `bmlist(4ICD)`) by specifying on one line the name of the property followed by the number.

name	default <i>number</i>	<i>value</i> type	semantics.
prop_instance	61	<i>string</i>	<i>value</i> specifies the instance name of a cell
prop_termlay	60	<i>integer</i>	<i>value</i> specifies the GDS layer number of the terminal
prop_term	62	<i>string</i>	<i>value</i> specifies the name of the terminal
prop_labellay	<none>	<i>integer</i>	<i>value</i> specifies the GDS layer number of the label
prop_label	<none>	<i>string</i>	<i>value</i> specifies the name of the label

## NAME CONVERSION

A file that contains a name conversion table can be specified using the option `-n`. This file should have on each line an original name and a name to which the original name is mapped.

## AUTHOR(S)

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## LIMITATIONS

GDS layer numbers must be in the range of 0 to 255.

The following statements are supported:

HEADER, TAPENUM, TAPECODE, UNITS  
BGNLIB, ENDLIB, BGNSTR, ENDSTR, LIBNAME, STRNAME, ENDEL  
BOUNDARY LAYER DATATYPE  
PATH LAYER DATATYPE PATHTYPE(0, 2) WIDTH XY  
AREF/SREF SNAME COLROW XY STRANS ANGLE TEXT

BOUNDARY, SREF or AREF statements can contain PROPATTR PROPVALUE records (see the PROPERTIES section).

## FILES

ICDPATH/share/lib/process/*proc*/bmlist.gds (def. basic mask list)  
NELSISPROJECT/.dmrc (input file)  
NELSISPROJECT/layout/celllist (input file (updated))

For each *cell* written:

NELSISPROJECT/layout/*cell*/box (output file)  
NELSISPROJECT/layout/*cell*/info (output file)  
NELSISPROJECT/layout/*cell*/mc (output file)  
NELSISPROJECT/layout/*cell*/nor (output file)  
NELSISPROJECT/layout/*cell*/term (output file)

## SEE ALSO

`cga(1ICD)`, `cig(1ICD)`, `clambda(1ICD)`, `mkpr(1ICD)`, `bmlist(4ICD)`.