

# TSMC018 PDK Utility Usage Guide

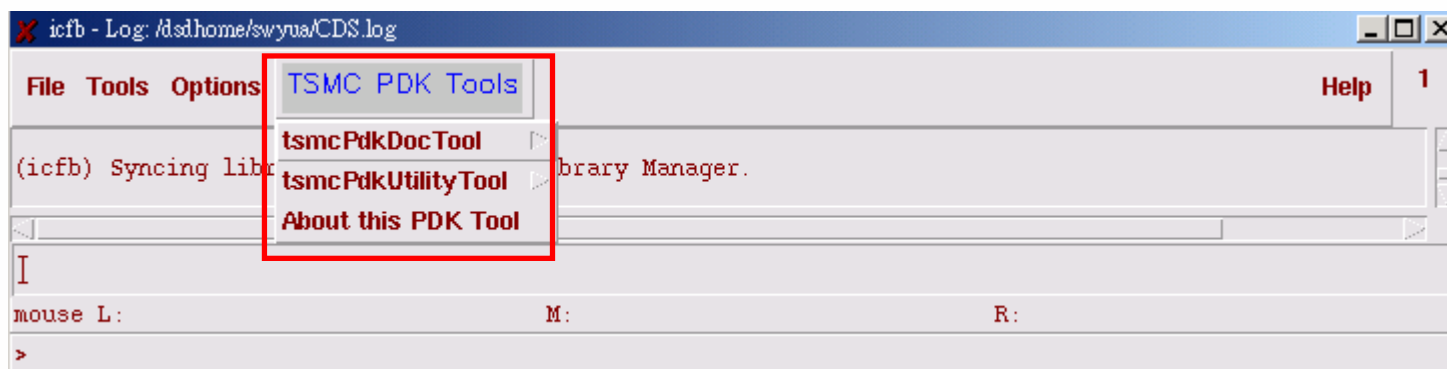
- **tsmcPdkDocTool**

- Document Center Viewer

- **tsmcPdkToolAbout**

- **tsmcPdkUtility Tool**

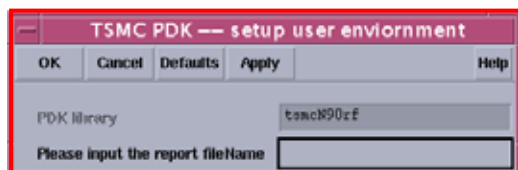
- VXL Fold and Chain setting
- Switch instances between basic <-> mac
- Update design(instance) CDF
- Add MOM license key
- Create GuardRing utility
- Layout vs. Layout
- ZoomIn(sch/lay) with history
- File Browser & Viewer



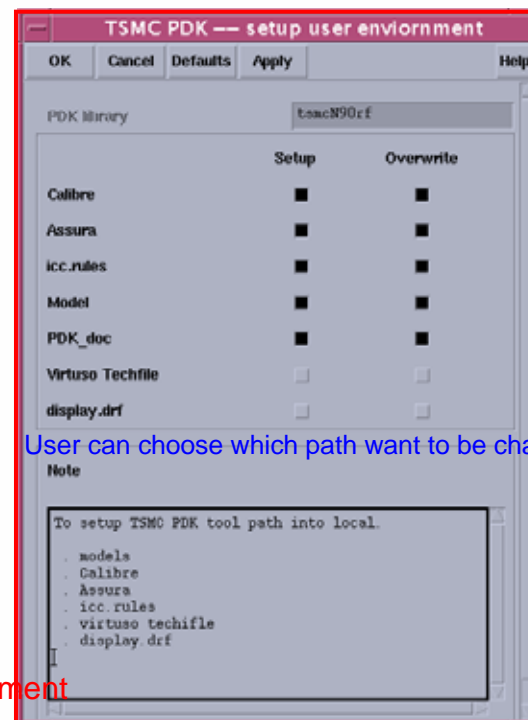
# TSMC018 PDK Utility Usage Guide

## ● Document Center Viewer :

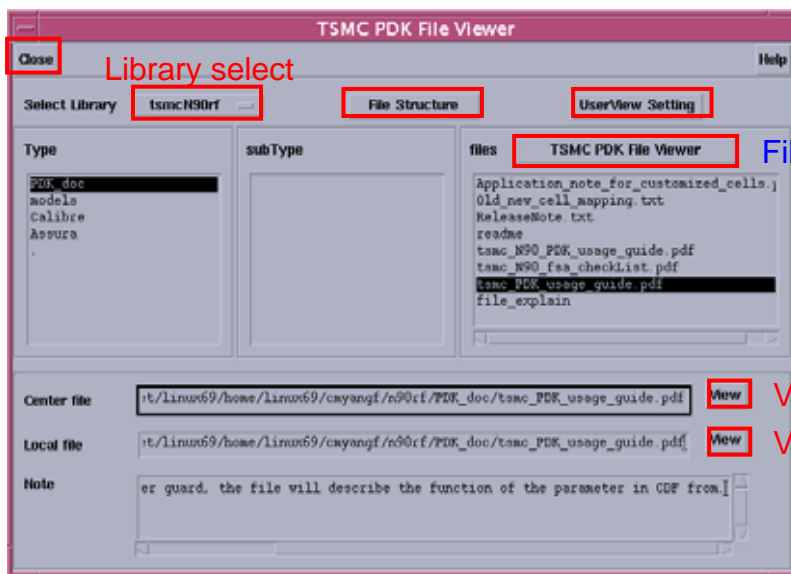
- Sometimes TSMC PDK user will use symbolic link to use the PDK, user will encounter a problem - documents and technology file path missing. TSMC provide [Document Center Viewer](#) function to solve this problem. The function will re-connect the document directory and replace the default path setup.



Input the path to save setup report



User can choose which path want to be change



Close window

Library select

File Structure

UserView Setting

TSMC PDK File Viewer

File Browser

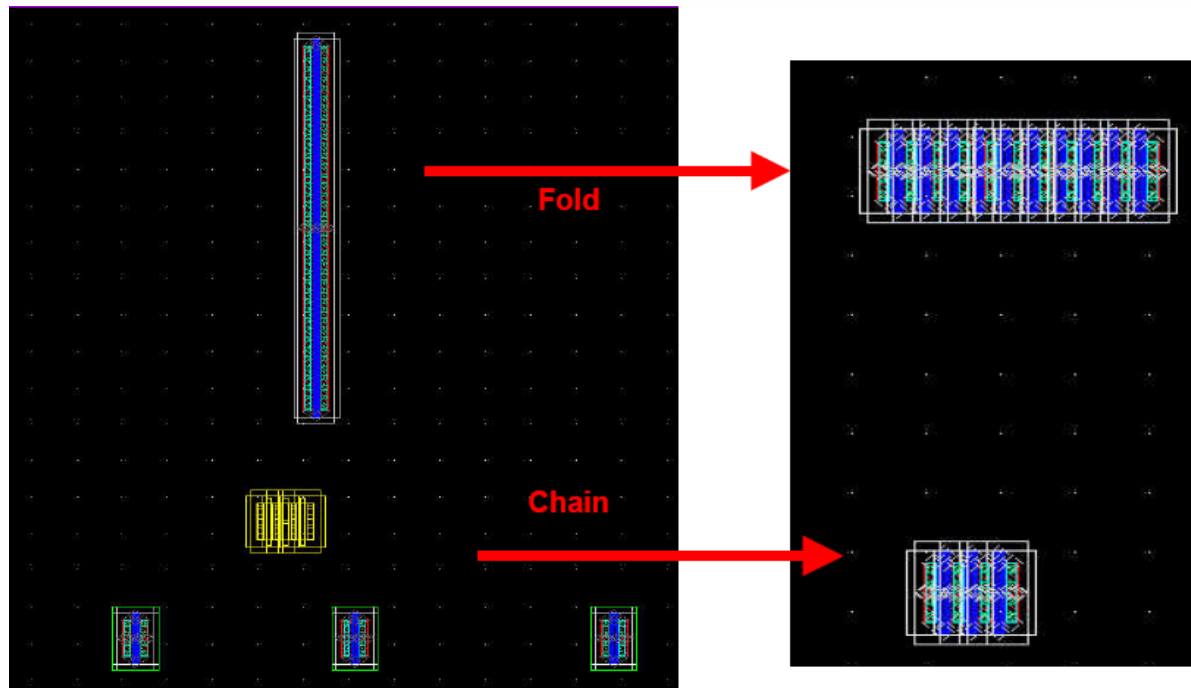
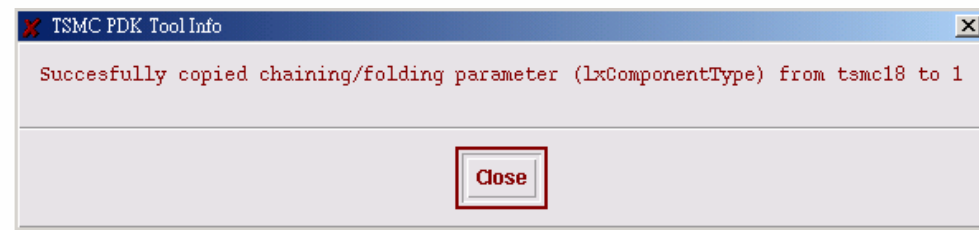
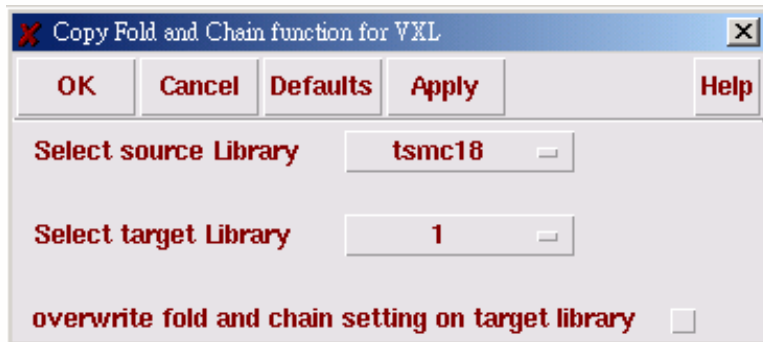
View PDK document

View Local document

# TSMC018 PDK Utility Usage Guide

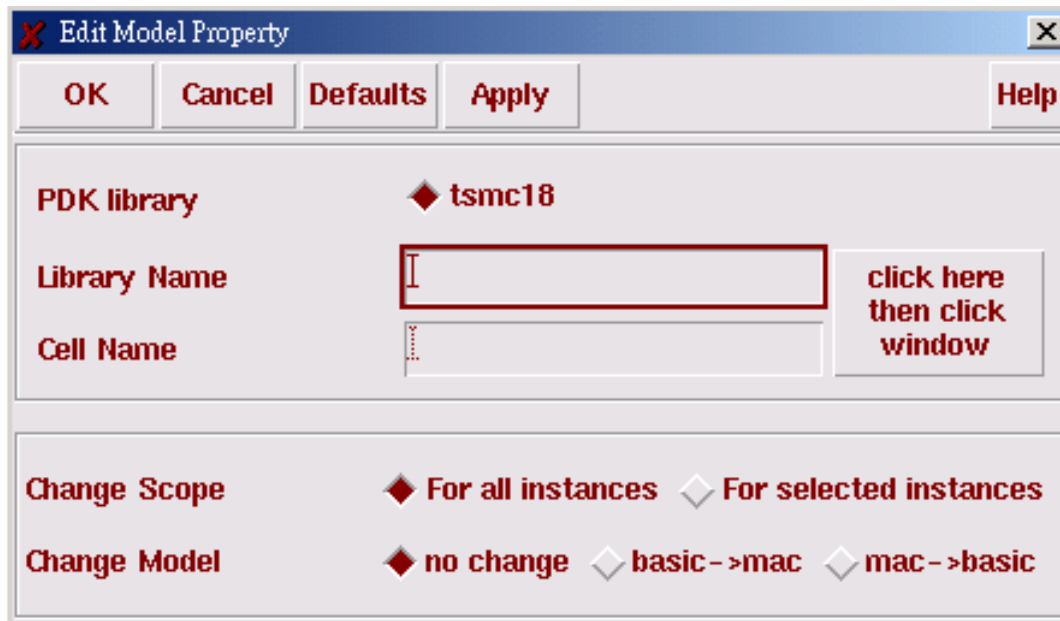
- **VXL Fold and Chain setting :**

- The function of **VXL Fold and Chain setting** is an utility function to fold and chain.



# TSMC018 PDK Utility Usage Guide

- Switch instances between basic <-> mac :
  - The function of [Switch instances between basic <-> mac](#) will switch instance between basic and MACRO one.



**Edit Model Property**

OK Cancel Defaults Apply Help

PDK library ☒ tsmc18

Library Name

Cell Name

click here then click window

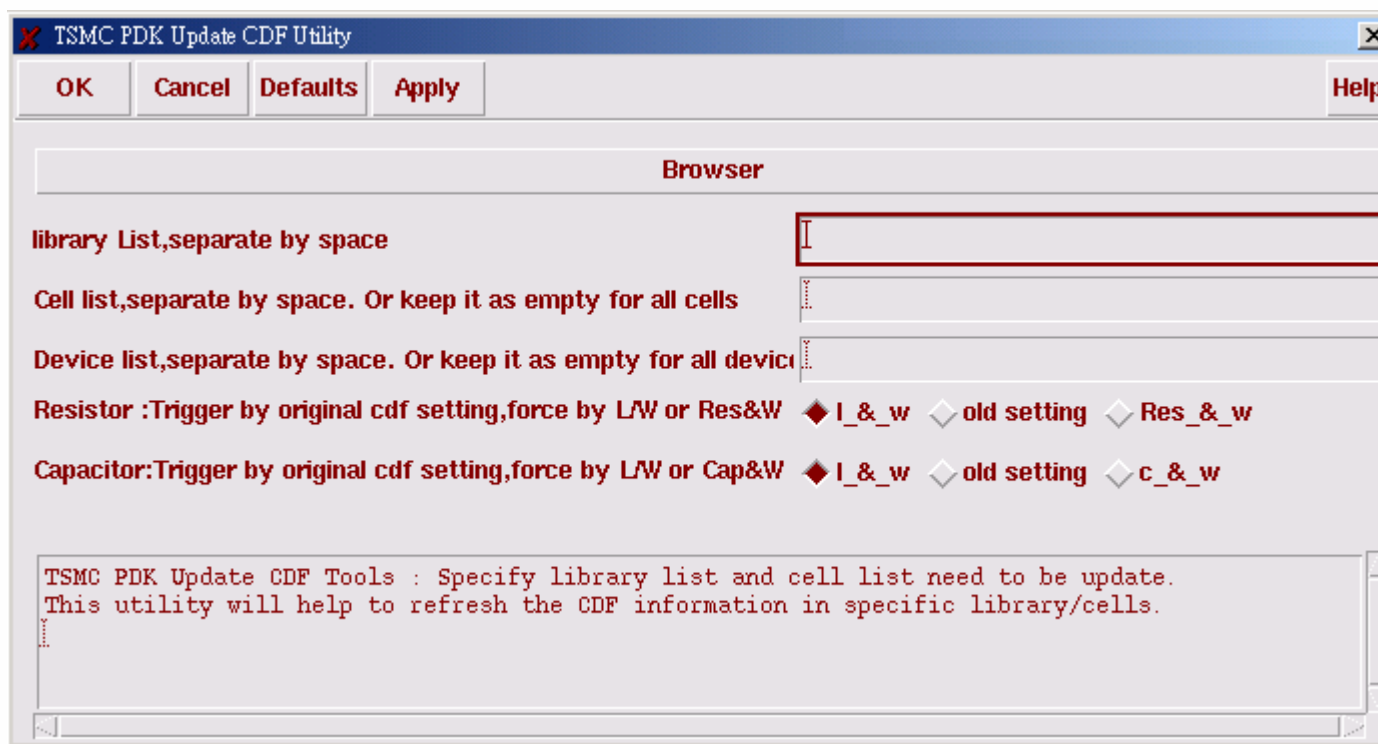
Change Scope ☒ For all instances ☐ For selected instances

Change Model ☒ no change ☐ basic -> mac ☐ mac -> basic

# TSMC018 PDK Utility Usage Guide

- **Update design(instance) CDF:**

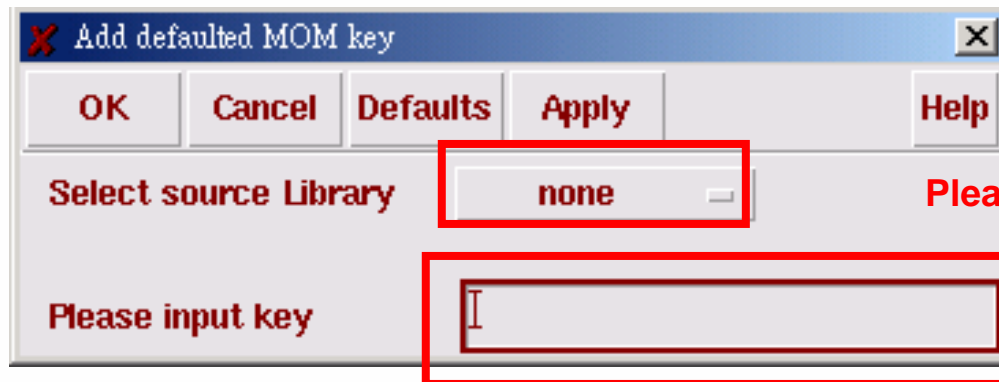
- The function of **Update design(instance) CDF** will trigger TSMC CDF parameter update.



# TSMC018 PDK Utility Usage Guide

- Add MOM license key :

- The function of [Add MOM license key](#) will need license key. Please contact TSMC's AE.



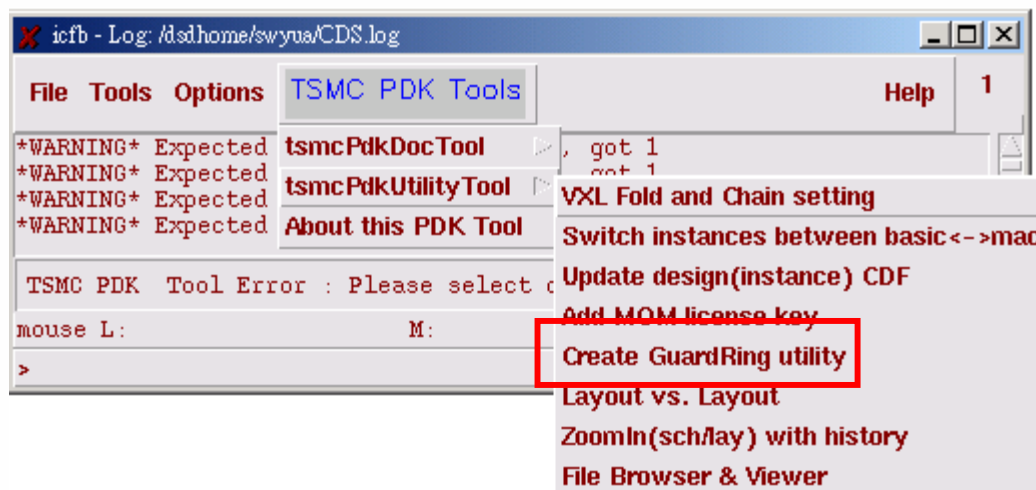
Please Select TSMC PDK Library

Please enter the license key

# TSMC018 PDK Utility Usage Guide

## ● Create GuardRing utility :

- **Create GuardRing utility** – TSMC Guard-Ring utility allow users to easily create guard-ring with flexibility. For more information, please refer to “Guard Ring Utility Usage Guide”.



## Guard-Ring utility for layout view

- . DRC clean
- . Create ring path by mouse draw
- . Create ring box by mouse click
- . Create ring box outside of the each selected instances
- . Create ring box outside of the whole selection
- . Flexibility for the ring box by specified distance



# TSMC018 PDK Utility Usage Guide

## ● Create GuardRing utility :

## Guard-Ring setting

- . Psub/NWELL
- . Path width
- . Contact spacing
- . Multi-Path

## Guard-Ring box setting

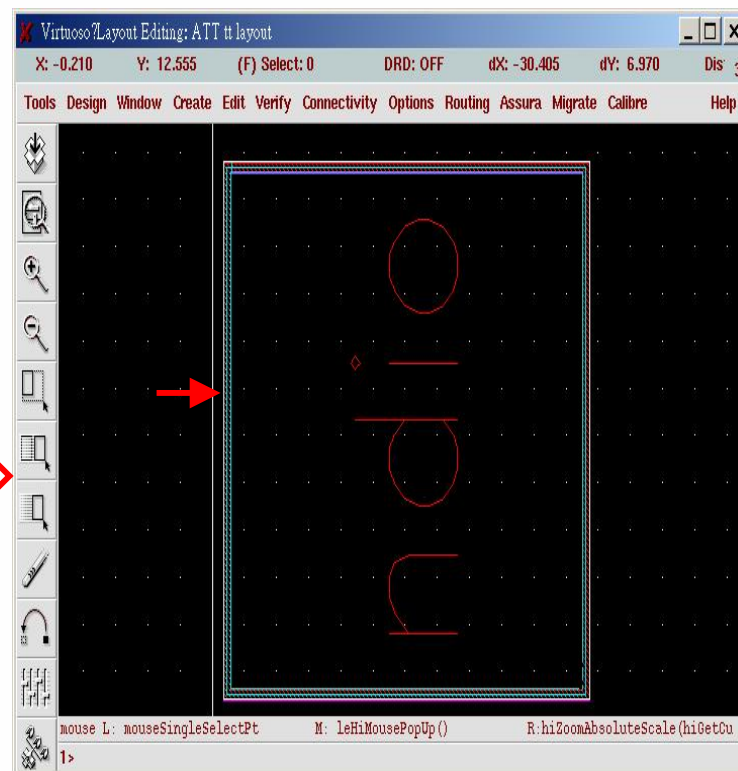
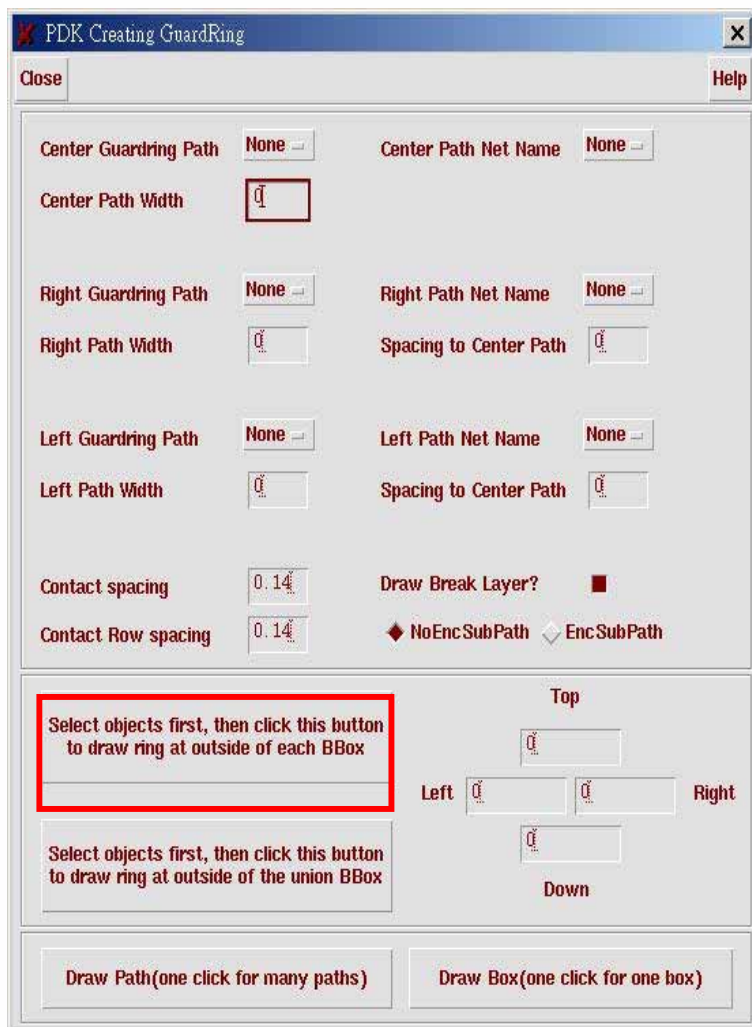
- . Separated box
- . Union box

## Guard-Ring drawing by hand



# TSMC018 PDK Utility Usage Guide

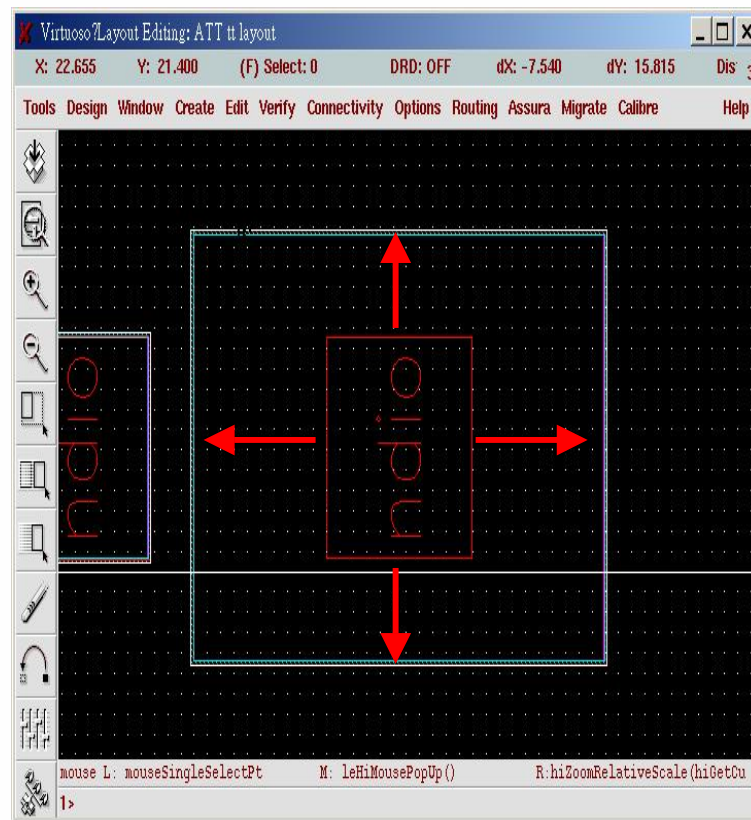
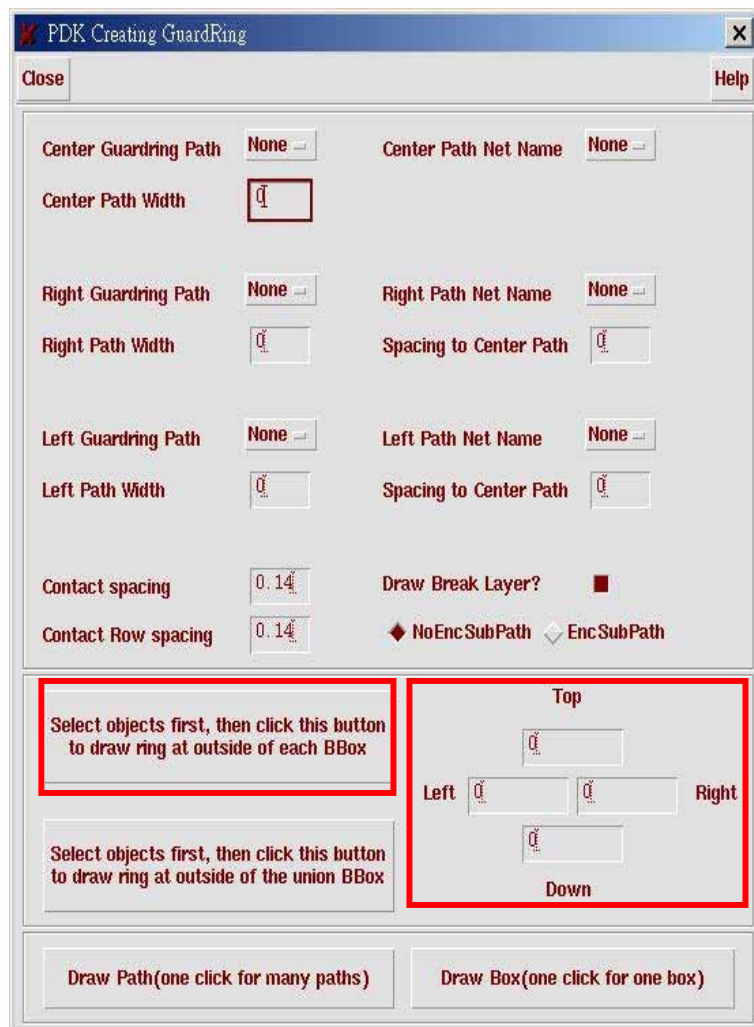
## ● Create GuardRing utility :



Create Guard-Ring outside of the instance

# TSMC018 PDK Utility Usage Guide

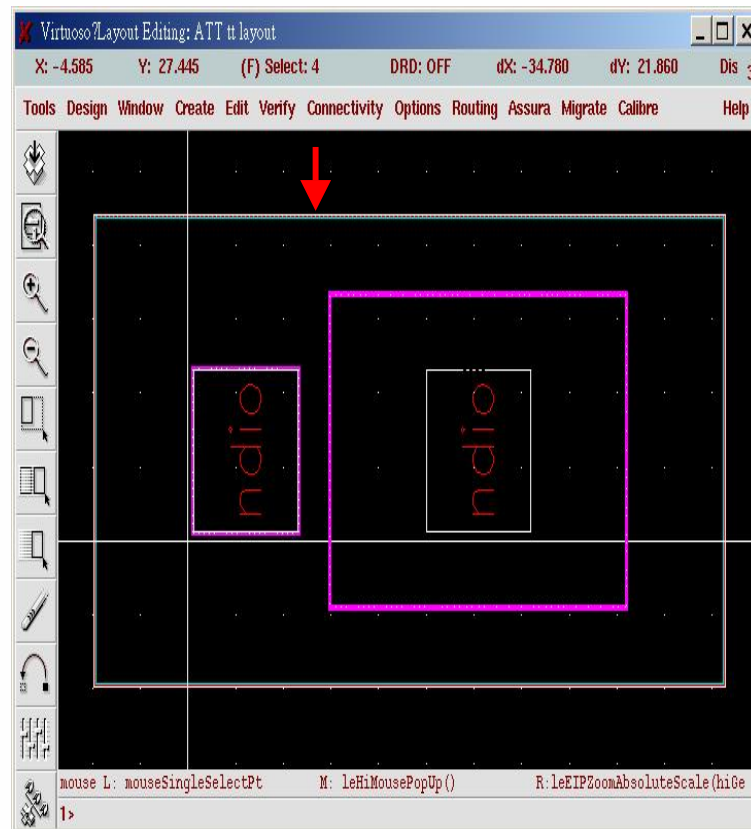
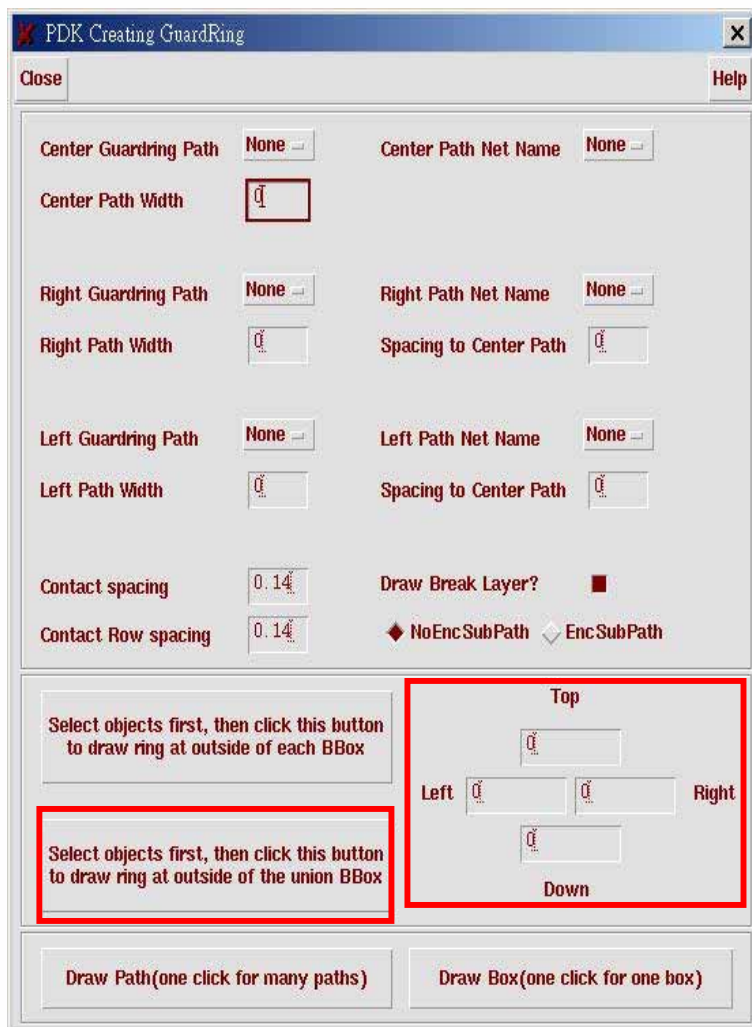
## ● Create GuardRing utility :



Create Guard-Ring outside of the instance by specified distance

# TSMC018 PDK Utility Usage Guide

## ● Create GuardRing utility :

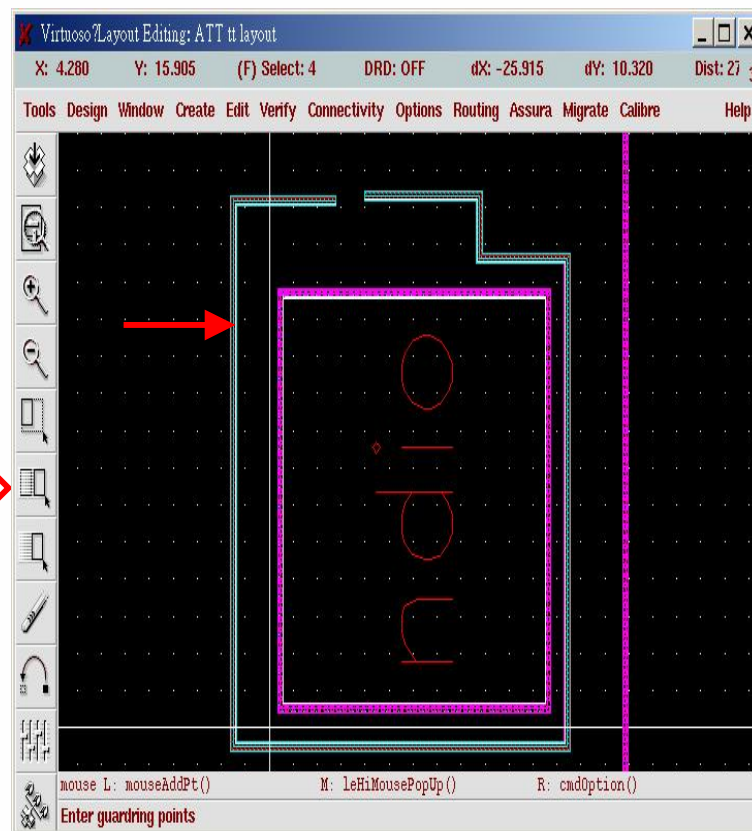
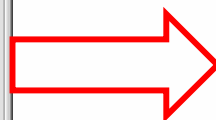
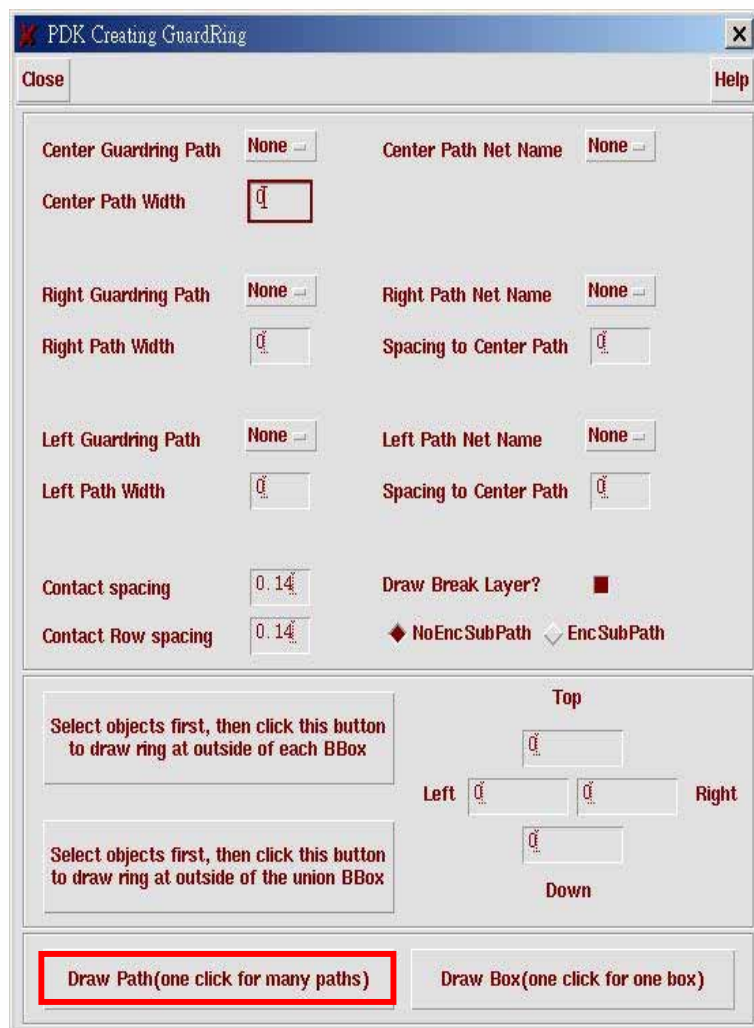


Create Guard-Ring outside of all instances by specified distance



# TSMC018 PDK Utility Usage Guide

## ● Create GuardRing utility :



Create Guard-Ring path by hand

# TSMC018 PDK Utility Usage Guide

## ● Create GuardRing utility :

PDK Creating GuardRing

Close Help

Center Guardring Path: None Center Path Net Name: None

Center Path Width: 0.1

Right Guardring Path: None Right Path Net Name: None

Right Path Width: 0.1 Spacing to Center Path: 0.1

Left Guardring Path: None Left Path Net Name: None

Left Path Width: 0.1 Spacing to Center Path: 0.1

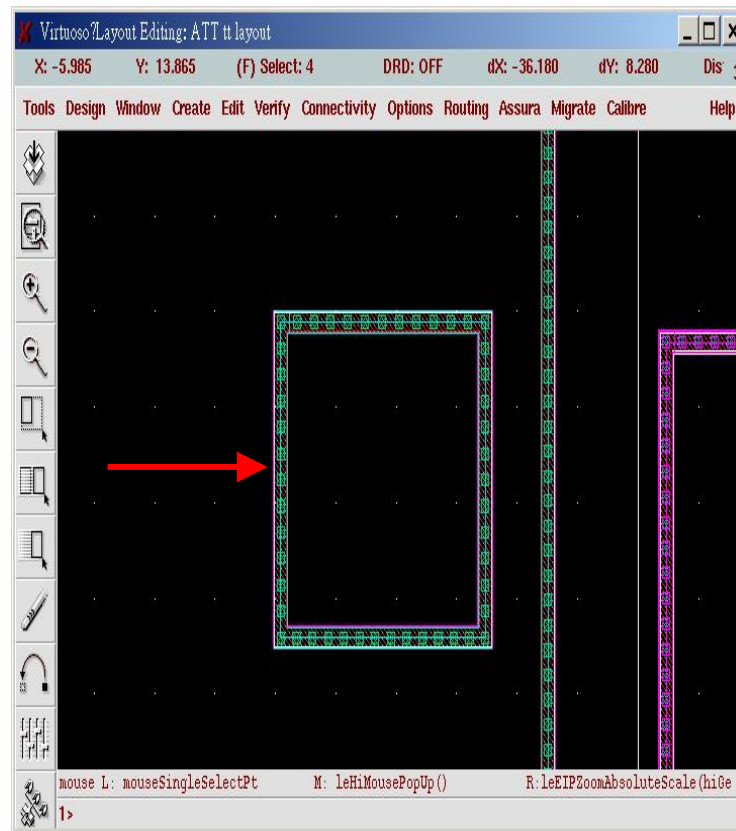
Contact spacing: 0.14 Draw Break Layer? ☒

Contact Row spacing: 0.14 ☒ NoEncSubPath ☐ EncSubPath

Select objects first, then click this button to draw ring at outside of each BBox

Select objects first, then click this button to draw ring at outside of the union BBox

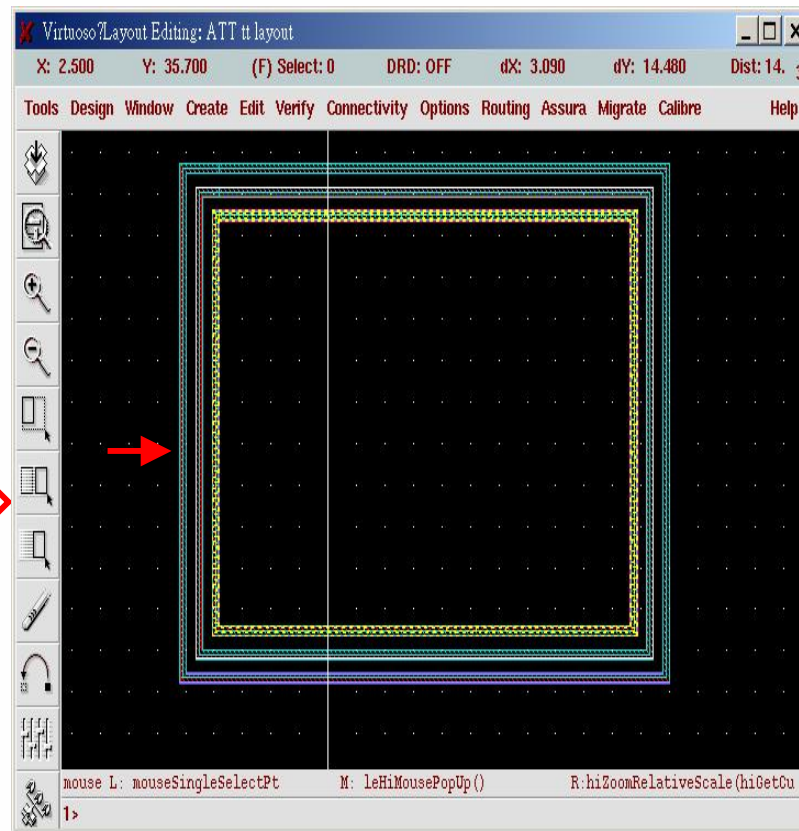
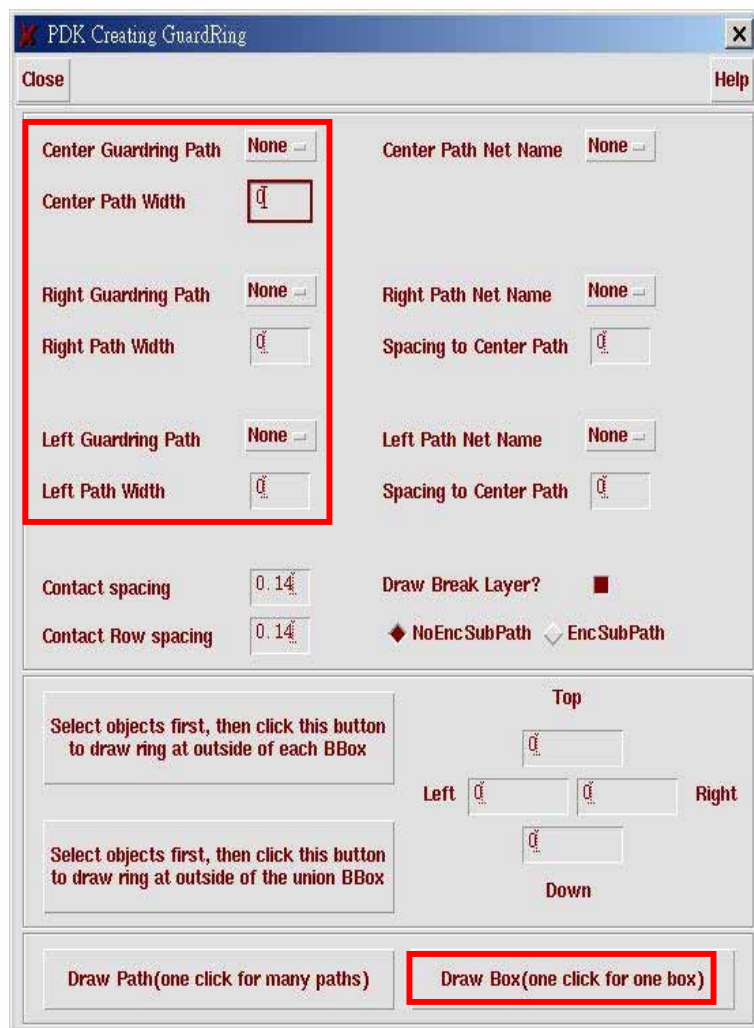
Draw Path(one click for many paths) Draw Box(one click for one box)



Create Guard-Ring box by click two points

# TSMC018 PDK Utility Usage Guide

## ● Create GuardRing utility :



Create multi-Guard-Ring box by click two points



# TSMC018 PDK Utility Usage Guide

- **tsmcPdkZoomIn(sch/lay) with history :**

- The function of **tsmcPdkZoomIn(sch/lay) with history** is an utility to help user easy to find the layout.

**zoom into XY position(schematic/layout)**

OK Cancel Defaults Apply Help

**Input coordinates**

center X 12.000

center Y 2.000

zoomIn window size 30

**Create boundary**

Create the boundary ☐

boundary layerName

boundary layerPurpose

**visit history** Reset

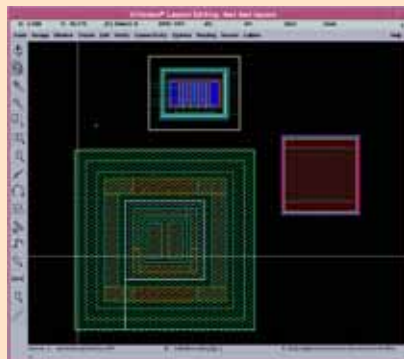
centerX	centerY	zoomIn	layer	purpose
12.000	2.000	30.000		
15.000	22.000	15.000	ref	drawing

**Coordinate history**

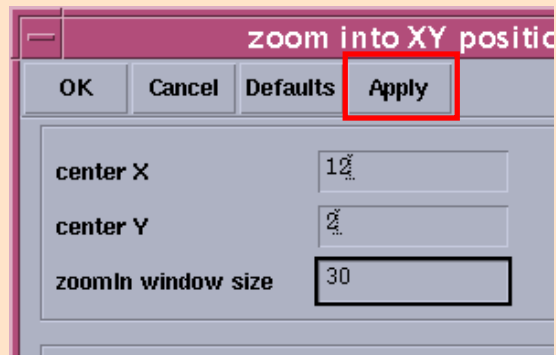
# TSMC018 PDK Utility Usage Guide

## Way1

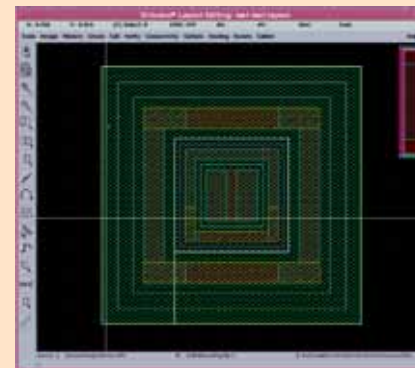
Select layout window



input coordinates and check Apply

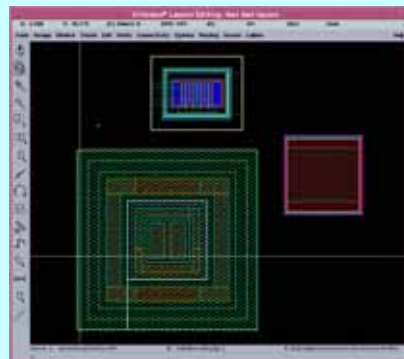


Window zoom in



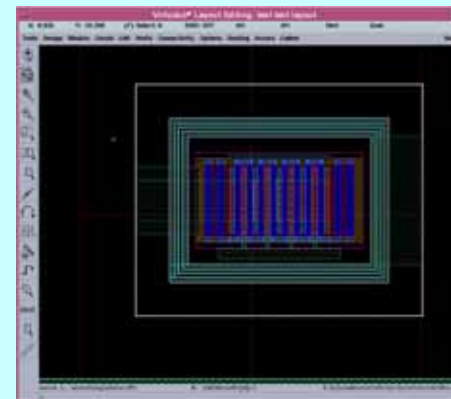
## Way2

Select layout window



Double check coordinate history

visit history					Ref
centerX	centerY	zoomIn	layer	purp	
12.000	2.000	30.000			
15.000	22.000	15.000	ref	drawing	



# TSMC018 PDK Utility Usage Guide

## ● Layout vs. Layout :

- Layout vs. Layout (tsmcPdkLVL) is an utility to help user easy to compare the layouts.

The screenshot shows the 'Layout VS. Layout without layer and rule setting (LVL)' dialog box. It has a title bar with 'OK', 'Cancel', 'Defaults', 'Apply', and 'Help' buttons. The dialog is divided into several sections:

- First cell setup:** A red box highlights the 'Lib/cell Browser for first layout' section, which includes fields for 'Library for 1st layout', 'Cell for 1st layout', and a checkbox 'keep shapes form 1st layout on y1 layer'.
- Second cell setup:** A red box highlights the 'Lib/cell Browser for second layout' section, which includes fields for 'Library for 2nd layout', 'Cell for 2nd layout', and a checkbox 'keep shapes form 2nd layout on y2 layer'.
- Flatten option:** A red box highlights the 'Flatten Level' (set to 32), 'Flatten Pcells' checkbox, 'Preserve Pins' checkbox, 'Preserve ROD Objects' checkbox, and the 'Please input the comparison report directory' field.
- Function description:** A red box highlights the large text area at the bottom containing usage instructions.

The text in the function description area is as follows:

```
Please read following usage procedure first

Selection :
choose first layout and second layout(DFII format).
choose the flatten setting
choose the text mode output report location.

Action :
first cellName will be flatten into cellName1_flat
second cellName will be flatten into cellName2_flat.
the LVL comparision will be done without rule and layer setting.
Limitation: cellName1 and cellName2 can't have the differce with "_flat" only.

Result :
the reslut cellview is "cellName1_xor_cellName2" in library1.
All shapes in the first layout will be created by "y1 drawing"
All shapes in the second layout will be created by "y2 drawing"
The differences of each layerName will be created by
the same layerName

Example:
```

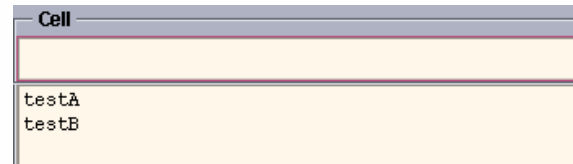
# TSMC018 PDK Utility Usage Guide



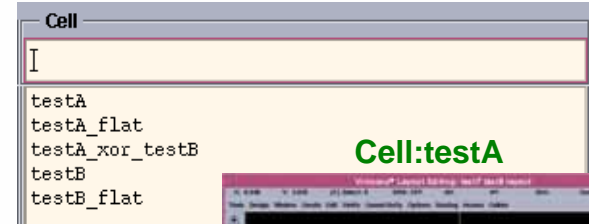
Confidential  
Security C

## Layout vs. Layout :

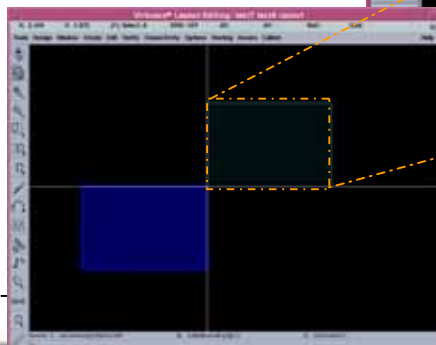
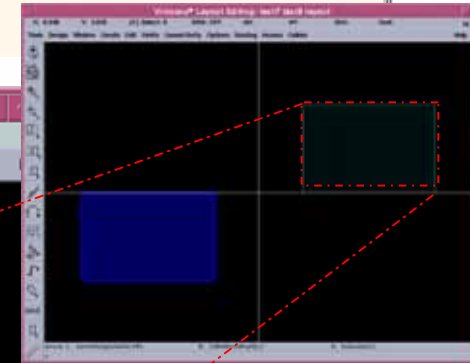
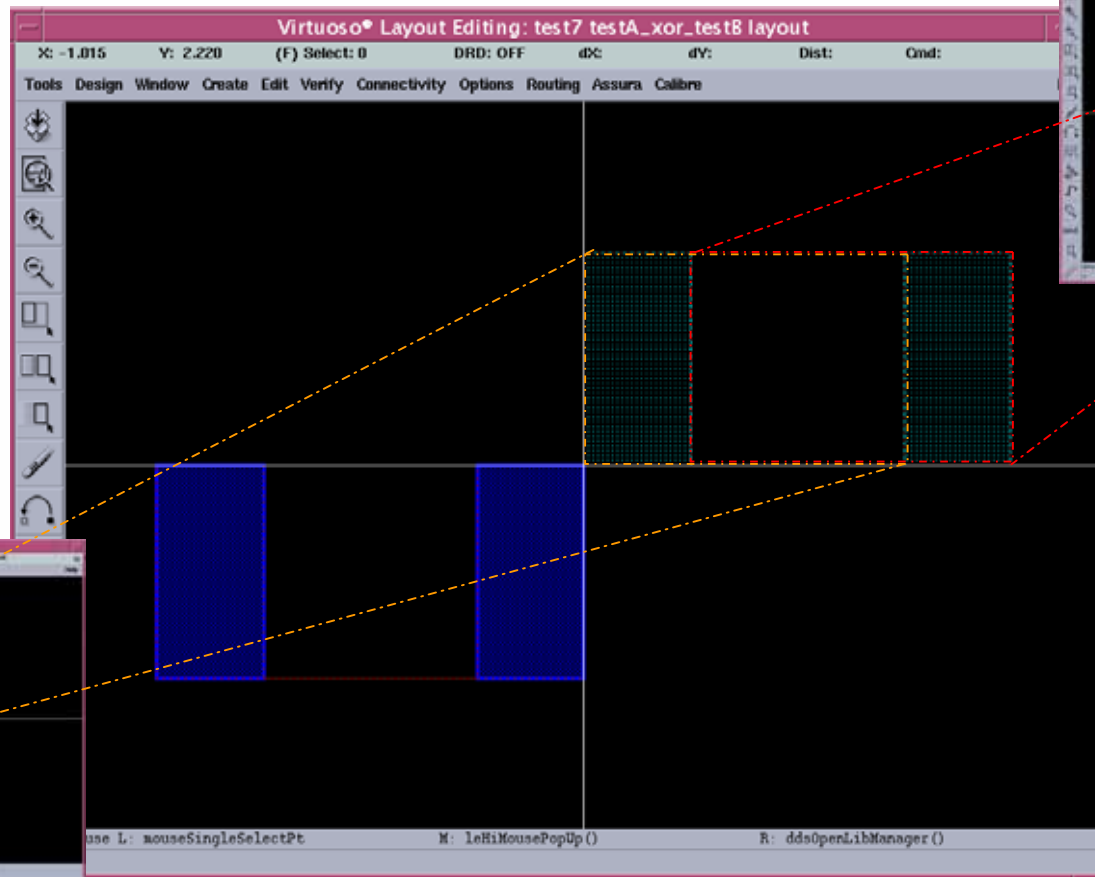
Before LVL



After LVL



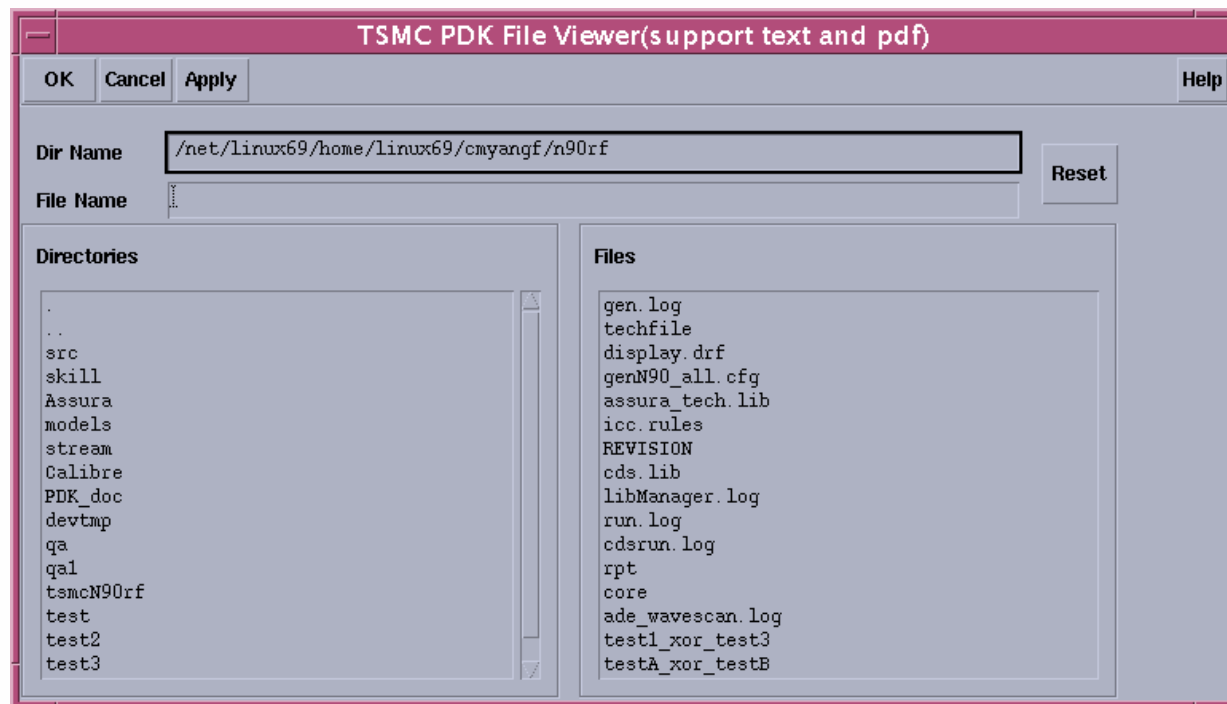
Cell:testA\_xor\_testB



# TSMC018 PDK Utility Usage Guide

## ● File Browser & Viewer :

- **File Browser & Viewer** – TSMC file browser tool, user can easily find the file they needs.



# TSMC018 PDK Utility Usage Guide



Confidential  
Security C

## ● tsmcPdkToolAbout :

TSMC PDK setting information

Close Help

(1) TSMC PDK information

Library : tsmc18  
Version : v1.1a

(2) PDK installation information

\*\*\* Select mimcap : 1.0ff per unit area  
\*\*\* Select package : TSMC 0.18um 1.8V/5V 1P6M Mixed Signal BSIM4.5 PDK  
\*\*\* Install to directory : 1

(3) PDK support

pd\_k\_support@tsmc.com

	PDK	User
Operation System	Linux 2.4.21-47.ELsmp	Linux 2.4.21-47.ELsmp
DFII database	5.10.41.500.5.101	5.10.41.500.5.101
Assura version	317_USR2_HF7	317_USR2_HF7
Calibre version	v2007.3_36.25	v2007.3_36.25
Spectre version	6.2.1.264	6.2.1.264
Hspice version	Hspice < 2007	Hspice < 2007
Output to fileName	./tsmc18_pdk_info	Save As

View ReleaseNote View REVISION

File Help 15

TSMC 0.18um Mixed Signal SALICIDE 1.8V/5V PDK

Version : V1.1a  
Doc. # : T-018-CM-SP-010-K1  
Date : January 20, 2009

DISCLAIMER

The information contained herein is provided by TSMC on an "AS IS" basis without any warranty, and TSMC has no obligation to support or otherwise maintain the information. TSMC disclaims any representation that the information does not infringe any intellectual property rights or proprietary rights of any third parties. There are no other warranties given by TSMC, whether express, implied or statutory, including, without limitation, implied warranties of merchantability and fitness for a particular purpose.

STATEMENT OF USE

This information contains confidential and proprietary information of TSMC. No part of this information may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any human or computer language, in any form or by any means, electronic, mechanical, magnetic, optical, chemical, manual, or otherwise, without the prior written permission of TSMC. This information was prepared for informational purpose and is for use by TSMC's customers only. TSMC reserves the right to make changes in the information at any time and without notice.

0. Overview

This PDK requires the following environmental variables:

\*CDS\_Netlisting\_Mode\* to be set to "Analog"  
\*CDSHOME\* to be set to Cadence DFII installation path

File Help 17

Revision	Date	Comments
1.1a	2009/1/20	New Create