

# IC WorkBench Edit/View Plus

## High Speed Layout Visualization

### Overview

IC WorkBench Edit/View Plus (ICWBEV+) is a powerful, hierarchical layout visualization and analysis tool. It allows viewing and editing GDSII and OASIS layouts from small IP blocks to full chip databases. ICWBEV+:

- ▶ Quickly opens large GDSII and OASIS files with low memory overhead, and cache files drastically decrease the time for subsequent sessions
- ▶ Provides easy debugging of the hierarchy and placement of cells and shapes
- ▶ Shows fast, interactive shape connectivity
- ▶ Supports the IC Validator (VUE) application to review and correct DRC and LVS errors
- ▶ Defines TCAD simulation domains in hierarchical layouts for Sentaurus

### High Speed, High Capacity View and Editing

ICWBEV+ loads gigabytes of data in minutes and has unlimited file size capacity on 64-bit platforms. Fast zooming and panning ease exploration and analysis of the largest layout patterns. In addition, ICWBEV+ can overlay two or more layouts in a single view without merging the underlying layout files.

Hierarchical selection and editing allow ICWBEV+ to select and edit shapes deep in the hierarchy without requiring the sub-cell to be opened as shown in Figure 1. Edit operations have undo and redo support.

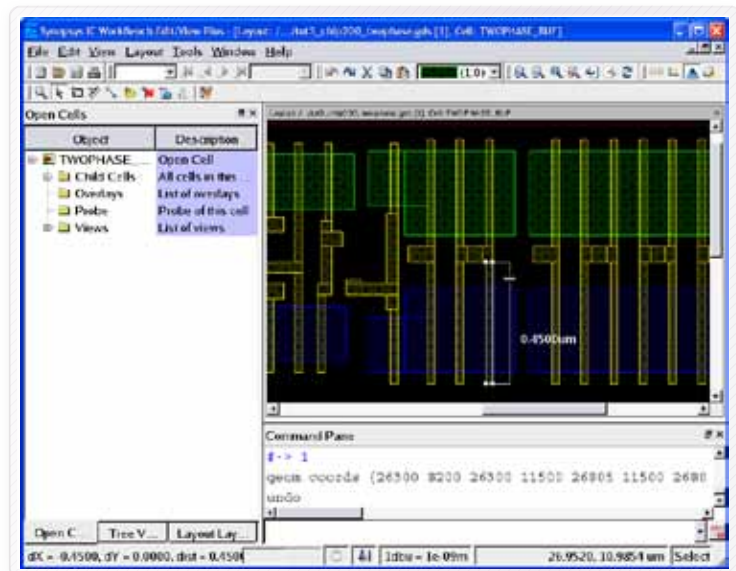


Figure 1: Hierarchical selection and editing in ICWBEV+

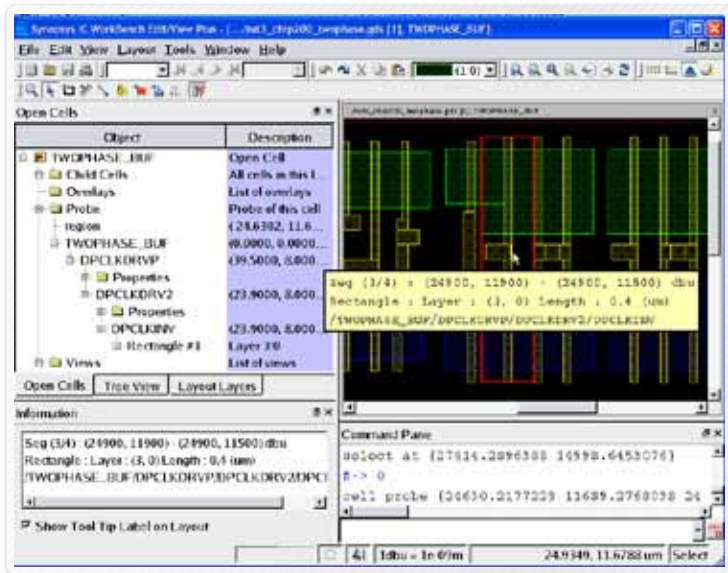


Figure 2: Shape information tool tip and probe showing the hierarchy of layout shapes

### Hierarchy Debug

Debugging layouts and their hierarchy is critical for the final design of large chips and ICWBENCH+ provides a number of tools to do this as shown in Figure 2.

- ▶ **Control of the levels of hierarchy shown:** ICWBENCH+ can be configured to show any level(s) of the hierarchy, allowing better determination of the source of shapes

- ▶ **Shape information tool tip:** ICWBENCH+ includes a shape information tool tip to allow quick determination of the hierarchy of shapes and cells

- ▶ **Probe:** ICWBENCH+ allows more detailed information of the hierarchy in a location including the cell placement information

### Advanced Features

ICWBENCH+ implements the latest in user interface technology, and is architected to make the powerful ICWBENCH+ capabilities easy and intuitive to use. Key features include:

- ▶ Net tracing – ICWBENCH+ can trace touching shapes based on a user-defined connectivity list. This allows a quick check of opens/shorts in a layout
- ▶ Support for user and site level customization
- ▶ Hierarchical folder representation of all objects including layouts, rulers, and other markups, such as SEM images
- ▶ Browser-like forward and back view history
- ▶ User customizable hot keys for menus and commands
- ▶ User customizable window and toolbar positions
- ▶ Custom buttons to run user-created macros

### Common Platform and User Modes

ICWBENCH+ is built on the same code base as the IC WorkBench Plus product, but without the lithographic simulation. All lithography markup types are available for review in ICWBENCH+.

ICWBENCH+ has user modes for different users including:

- ▶ IC Validator: default set up and connections to IC Validator VUE through a single toolbar button
- ▶ Sentaurus: Additional markups to support TCAD simulations, including stretch, and toolbar buttons to generate simulation domain information for Sentaurus

### Interfaces

- ▶ Inputs and Outputs
  - GDSII
  - OASIS
- ▶ User Interfaces
  - GUI-based user interface
  - TCL-based user interface with TK widgets available
  - Socket communication
- ▶ Supported platforms
  - AMD64, Linux 32, Sparc64, Suse 32, Suse 64



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