

Navigating Multiple ITMs

Project Navigator

Site: 1

Project Tree	UID
probesubsites	0
InitializationSteps	0
prober-init	1
Subsite1	0
4terminal-n-fet	1
prober-contact	1
connect	1
vds-id-1x	1
3terminal-npn-bit	1
connect	2
vce-ic-1x	1
prober-ss-move	1
Subsite2	0
4terminal-n-fet	2
prober-contact	2
connect	3
vds-id-2x	1
3terminal-npn-bit	2
connect	4
vce-ic-2x	1
prober-ss-move	2
TerminationSteps	0
prober-separate	1
prober-prompt	1

Action

Double-Click to open vds-id ITM.

Vds-id ITM Window Tab

Open more ITMs to add ITM Window tabs in this area.

Vds-id ITM Window

Definition Sheet Graph Status

Formulator Timing Exit Conditions Output Values Speed: Normal Mode: Sweeping

Drain SMU2

FORCE	MEASURE
Sweep V (Master)	Measure I: YES
Type: Linear	LtdAuto: 1e-010A
Start: 0V	Measure V: YES
Stop: 5V	Range V: Best Fixed
Step: 0.1V	Compl: 0.1A
Points: 51	

Gate SMU3

FORCE	MEASURE
Step V (Master)	Measure I: NO
Start: 2V	Measure V: YES
Stop: 5V	Range V: Best Fixed
Step: 1V	Compl: 0.1A
Points: 4	

Source SMU1

FORCE	MEASURE
Bias V: 0V	Measure I: NO
	Measure V: NO
	Compl: 0.1A

Bulk GNDU

FORCE	MEASURE
Common: 0V	Measure I = NA
	Measure V = NA

vds-id#1@1

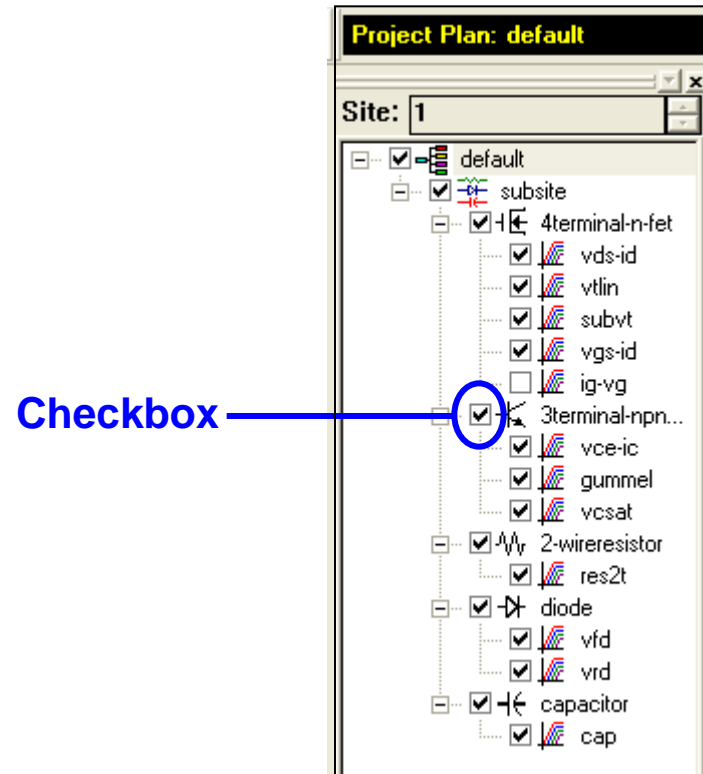
To summarize, click an ITM Window tab to access the Definition, Sheet, Graph and Status tabs for the test.

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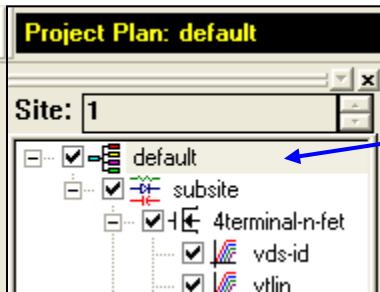
Executing Project Plans and Tests

Checkboxes

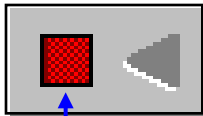
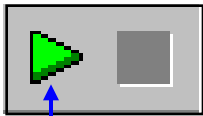
- You can execute an entire Project Plan or individual parts of the Project Plan.
- Each part of the Project Plan has a checkbox. A check mark indicates that the test is enabled.
- The absence of a check mark indicates the test is disabled.
- Clicking on the checkbox adds or removes the check mark.



Executing Project Plans and Tests

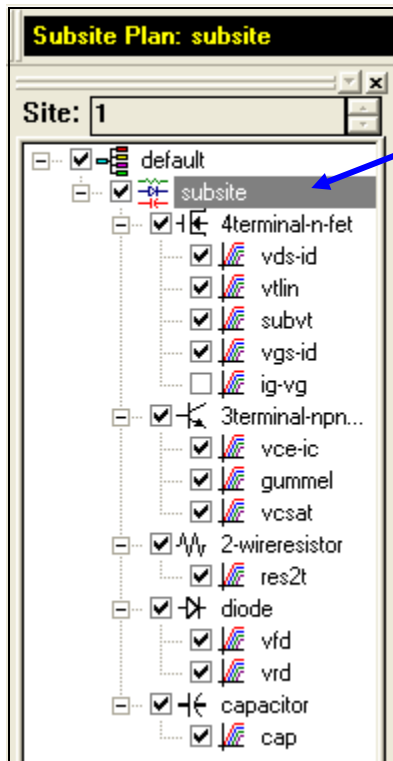


- To execute an entire project, select the project node at the top of the project navigator. In this case, the “default” project node is selected.
- If you select a node other than the project node, KITE runs only the test or the test sequences at the node.
- To start execution, click on the green triangular Run icon, select Run in the Run menu, or press the F6 keyboard key.
- Clicking on the **Run** button from the project level will execute everything in the project that is checked – Subsite Plans, Device Plans, ITMs, and UTMs – in the order in which they appear.
- To abort a test, click on the square red **Abort** button or press the Pause/Break keyboard key.



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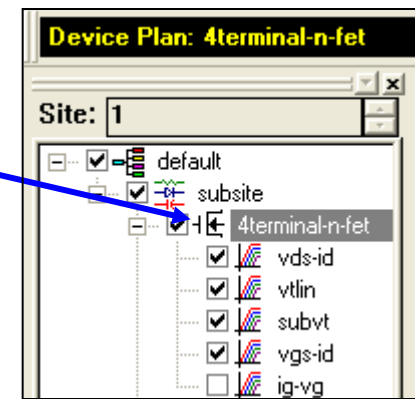
Executing Test Sequences and Individual Tests



Subsite Plan

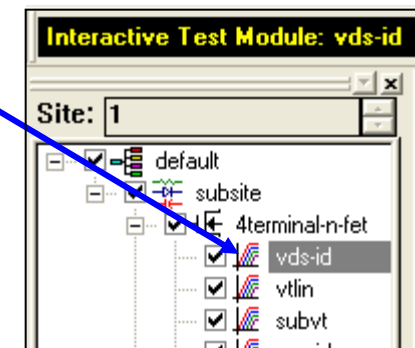
- To execute an entire **Subsite Plan**, click on the Subsite Plan and then click on the green **Run** button. Everything located beneath the Subsite Plan that is checked will execute in the order it appears.

Device Plan



- To execute all the tests under a **Device Plan** that are checked, click on the Device Plan and click **Run**.

- If you want to execute an individual **ITM** or **UTM**, click on only that test and then click on the **Run** button.

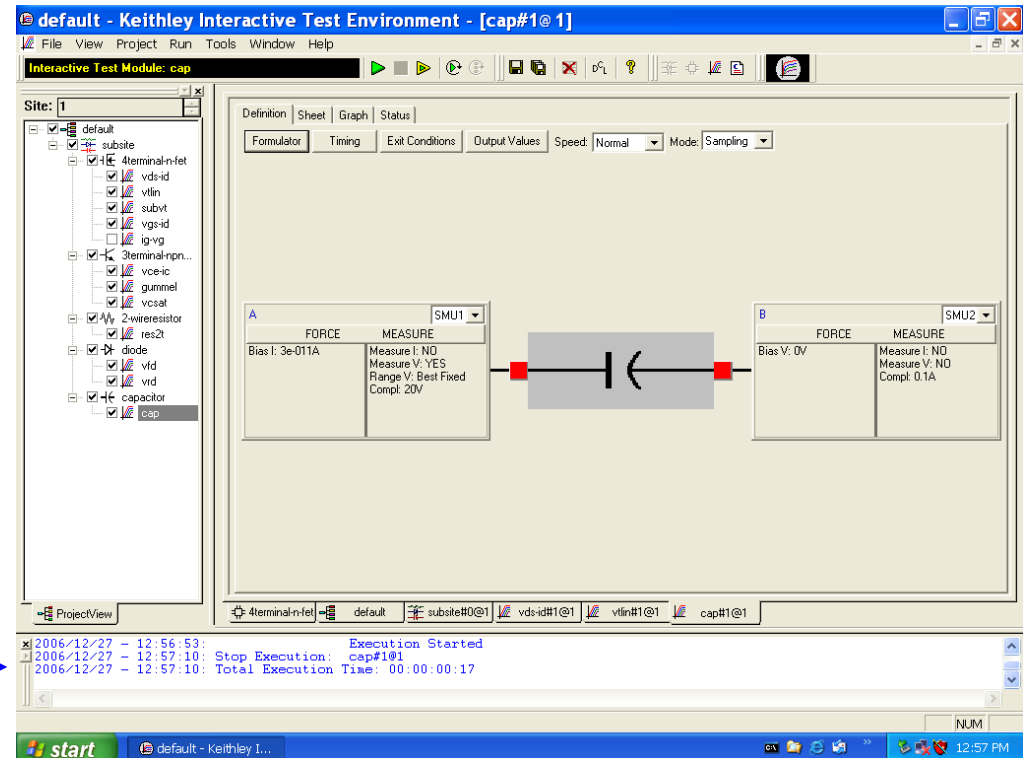


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Message Area of KITE Window

- The **Message Area** displays KITE execution and error messages.
- This area also includes start time, stop time and total execution time.
- From the View Menu, the Project Messages can be displayed or hidden.

Message Area →



Building a New Project

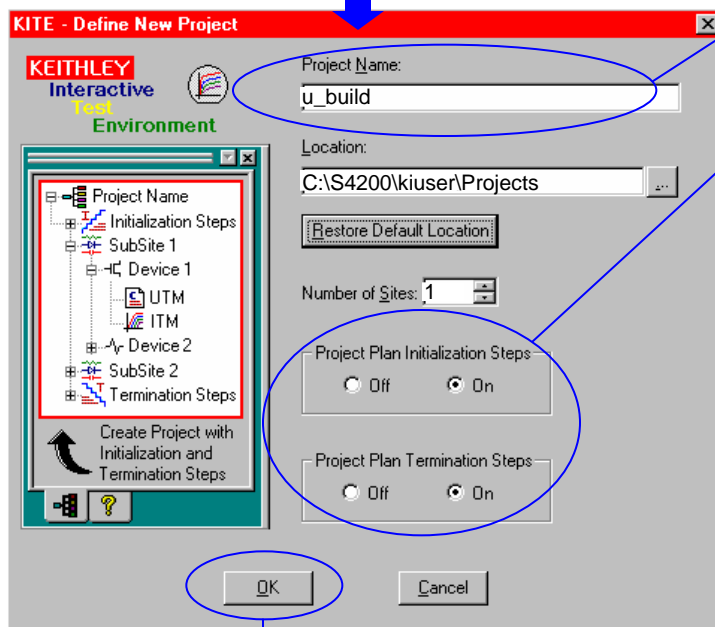
Define a New Project

Action

1. In the **File** menu, click **New Project**

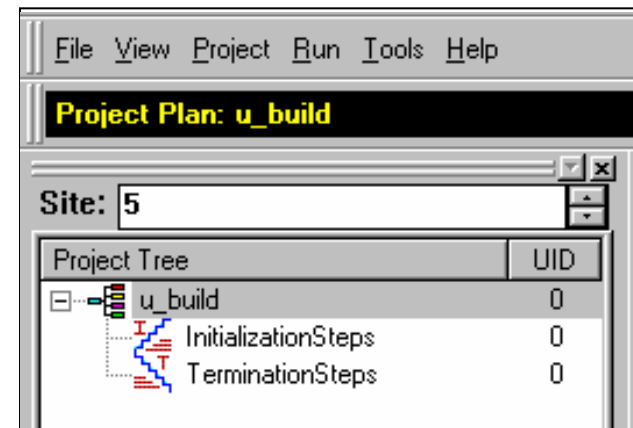
2. Name the project (e.g., u_build)

3. Add placeholders for initialization and termination steps (UTMs)



4. Click **OK**

Project Navigator



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Building a New Project

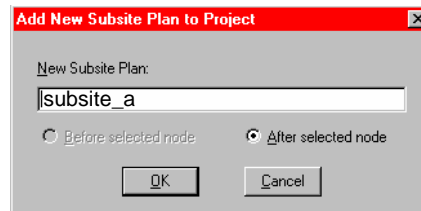
Inserting a Subsite Plan & a Device Plan

1. In the Project Navigator, click **Initialization Steps** to indicate the position for inserting plans.

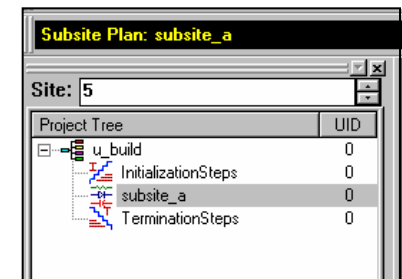
2. Click Subsite Plan icon



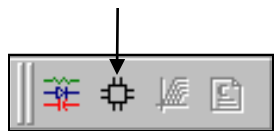
3. Type in name of Subsite Plan and click **OK**



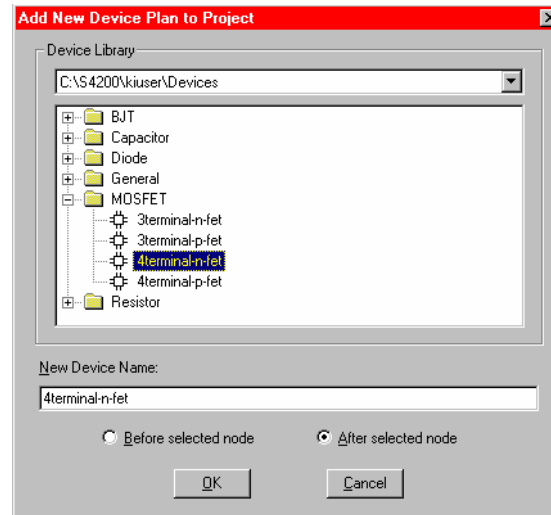
subsite_a Subsite Plan inserted:



4. Click Device Plan icon



5. Select **4terminal-n-fet** and click **OK**



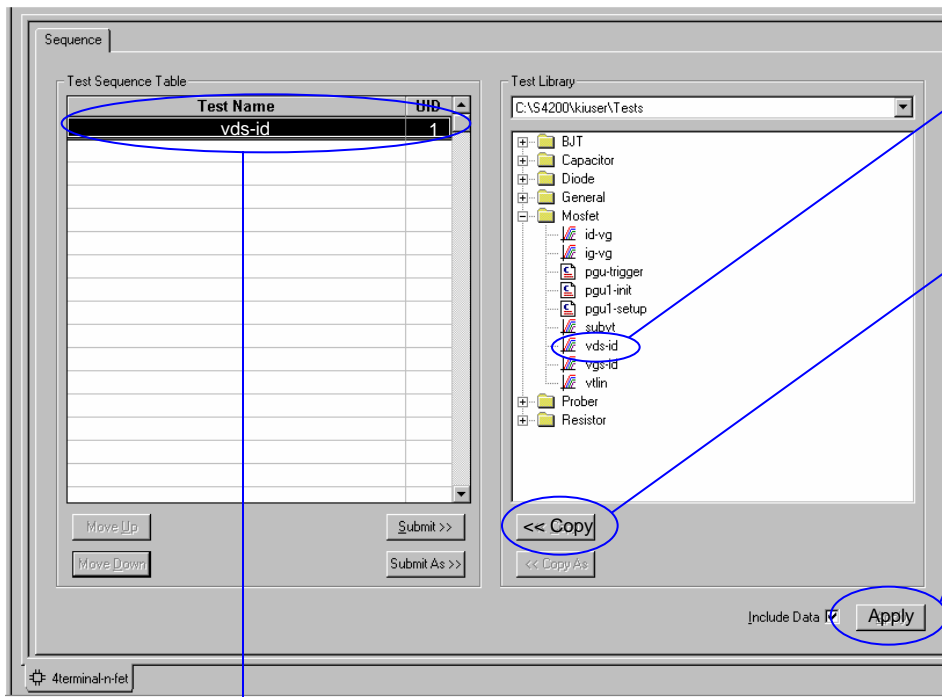
4terminal-n-fet Device Plan inserted:



Building a New Project

Inserting an ITM

1. In the Project Navigator, double-click **4terminal-n-fet** to open the Device Plan window:



2. Select **vds-id** ITM from the library.
3. Click **Copy** to add ITM to the Test Sequence Table.
4. Click **Apply** to insert ITM.

↓

Project Tree	UID
u_build	0
InitializationSteps	0
subsite_a	0
4terminal-n-fet	1
vds-id	1

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Building a New Project

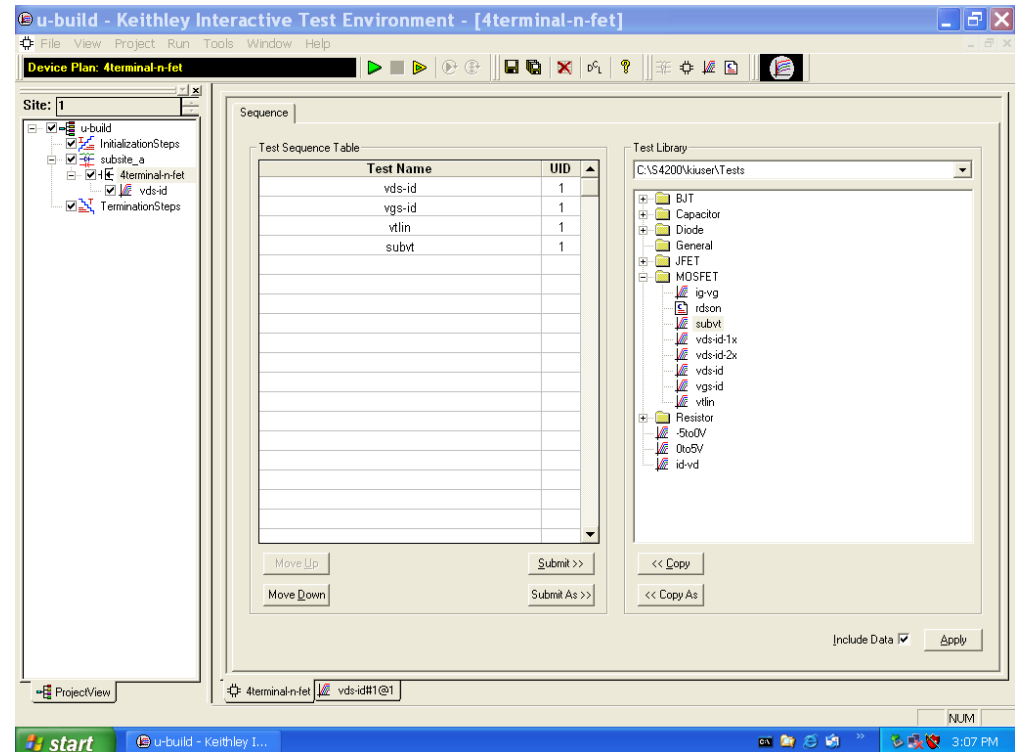
Opening an ITM

- 1. Click on the vds-id ITM in the Project Navigator.**
- 2. Connect the demo MOSFET to the 4200 as previously described in Slide 58.**
- 3. Click on the graph tab and then click on the green Run button.**
- 4. Are the results as expected?**

Building a New Project

Adding ITMs

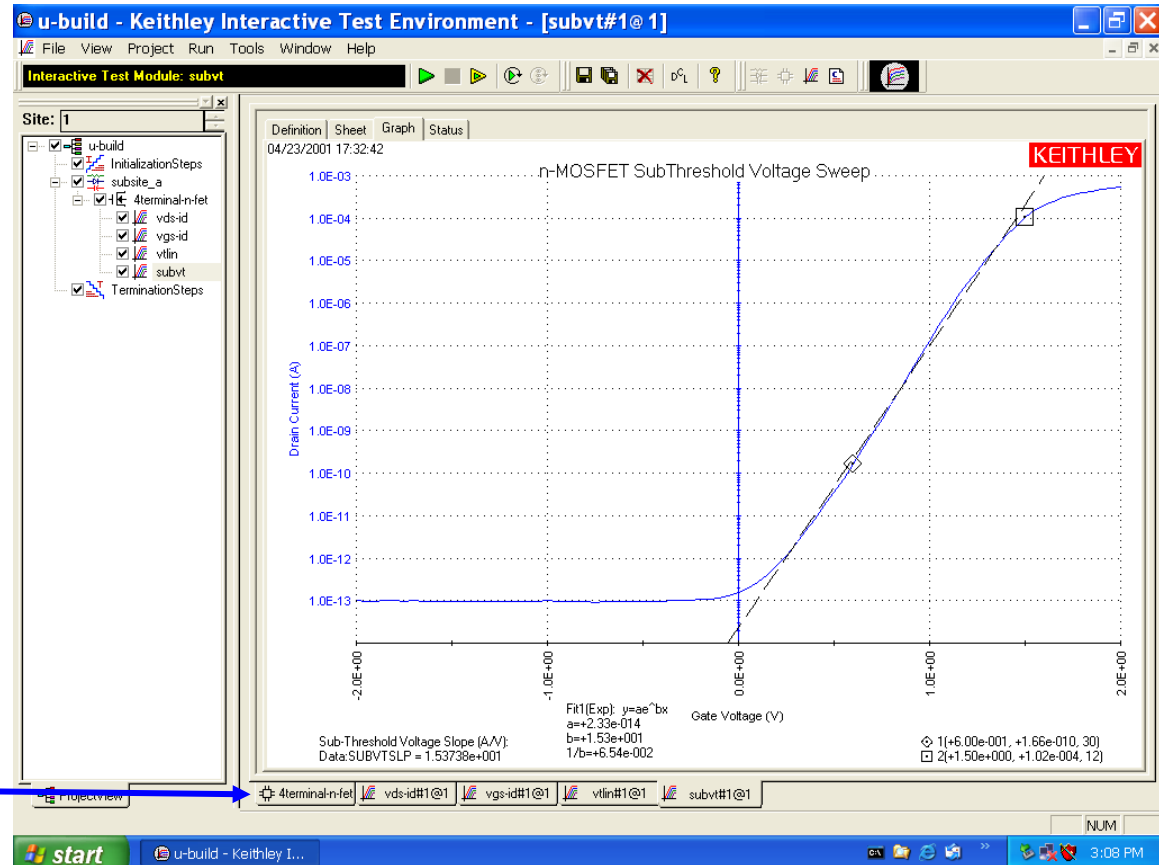
1. In the Project Navigator, double click **4terminal-n-fet**.
2. Add more ITMs by clicking on the **MOSFET** folder in the Test Library.
3. Select **vgs-id** and then click on Copy.
4. Select **vtlin** and then click on Copy.
5. Select **subvt** and then click on Copy.
6. You can change the execution order of the ITMs by clicking on the **Move Up** and **Move Down** buttons. Click on Move Up two times to change the order of the 4 ITMs as shown.
7. Click on **Apply**. Notice the 4 ITMS in the Project Navigator.



Building a New Project

Executing Multiple ITMs

1. Click on each ITM and click on their Graph tabs.
2. Notice on the bottom of the KITE window, there are five tabs. When an item from the Project Navigator is opened, a tab for that item will appear.



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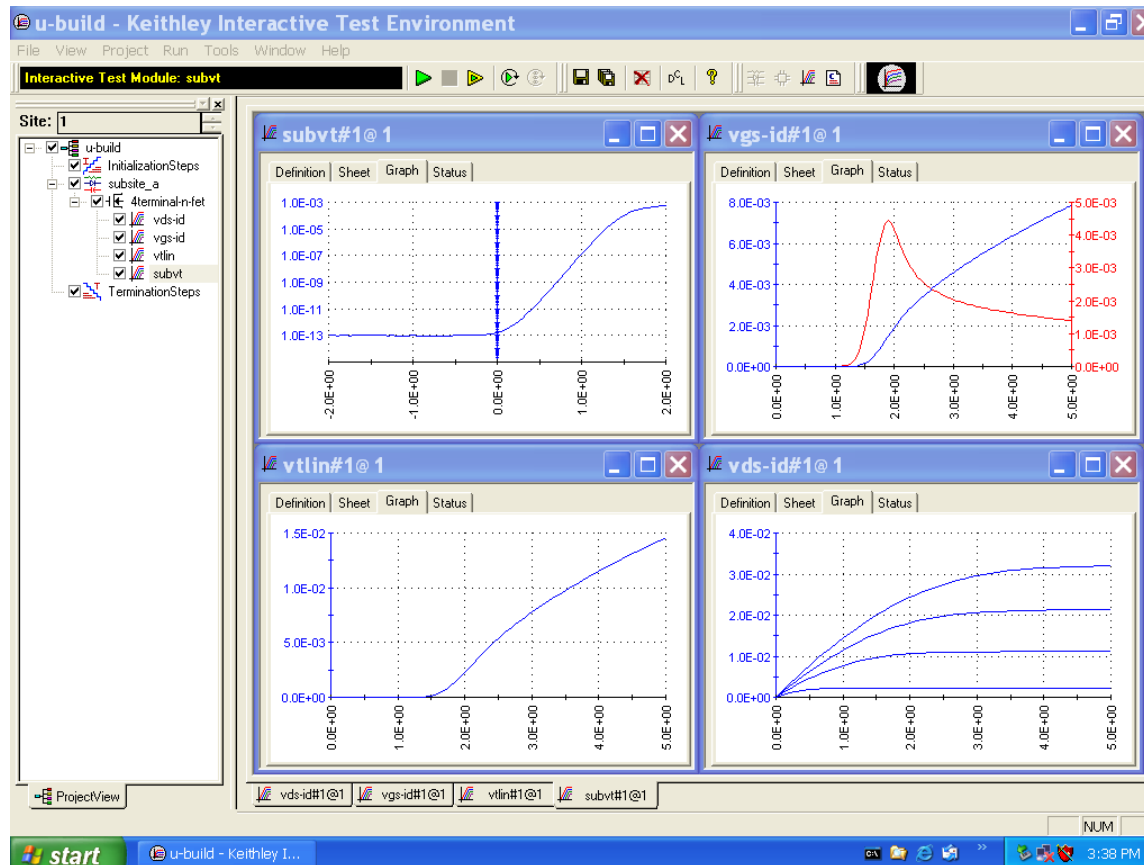
Building a New Project

Executing Multiple ITMs

1. Double click on the Device Plan, **4terminal-n-fet**. Close out this window by clicking on the small gray “x” near the upper right hand corner. There should now be only the 4 ITMs shown at the bottom of the KITE window.
2. Go up to the Windows Menu and click on **Tile Vertically**. The graphs from all 4 ITMs should appear on the screen.
3. Make sure the 4terminal-n-fet Device Plan is plan is highlighted, if not, click on it only once. (Do not open up the window for the Device Plan). Click on the green **Run** button.
4. The ITMs should execute consecutively in the order displayed.
5. The test can be stopped by pressing the red **Abort** button.

Building a New Project Executing Multiple ITMs

Results from running multiple ITMs:

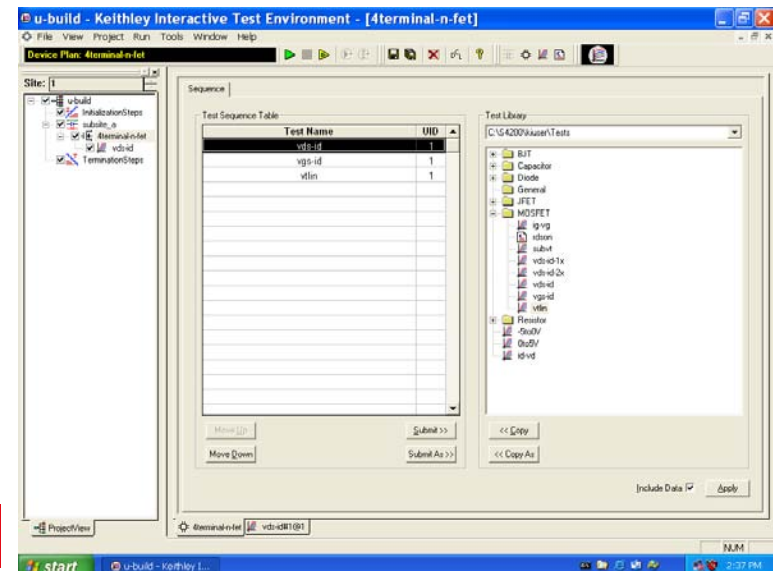
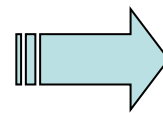
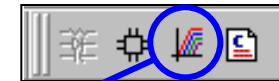


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Review

What are the Steps in Creating a New Project?

1. Create a new project from the File Menu.
Name the project.
2. Add a new **Subsite Plan**.
3. Add a new **Device Plan**.
4. Add a new **ITM** in one of two ways:
 - Click on add new ITM button from toolbar.
 - From the Device Plan, choose test in Test Library and copy to the Project Navigator.



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Review (cont.)

What are the Steps in Creating a New Project?

5. Set up the SMUs in the Definition Tab.
6. Set up the graph in the Graph Tab (this can also be done after the project has been executed).
7. Save the Project.
8. Use the green **Run** button to execute the project.

That's It!

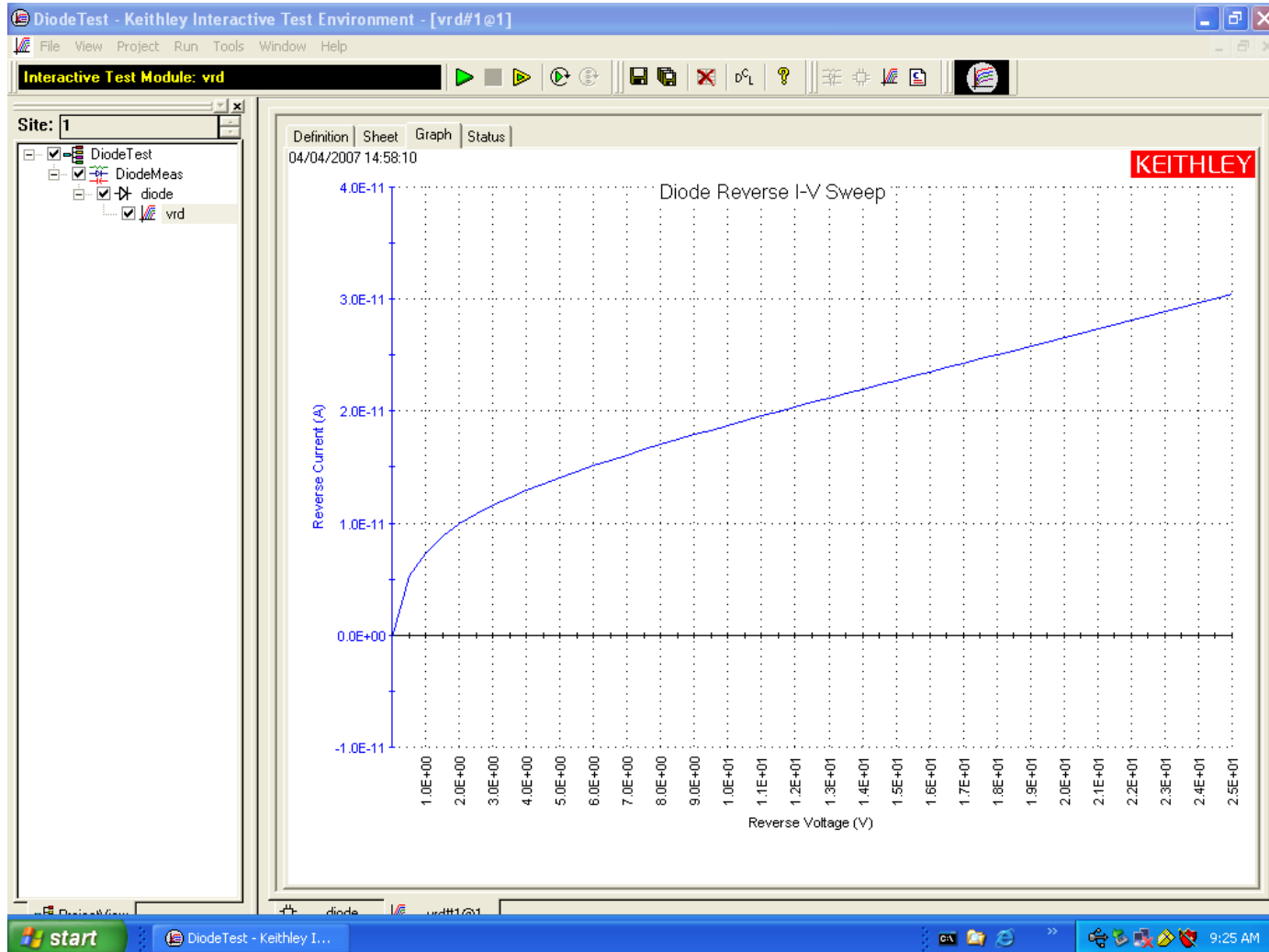
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Lab 6

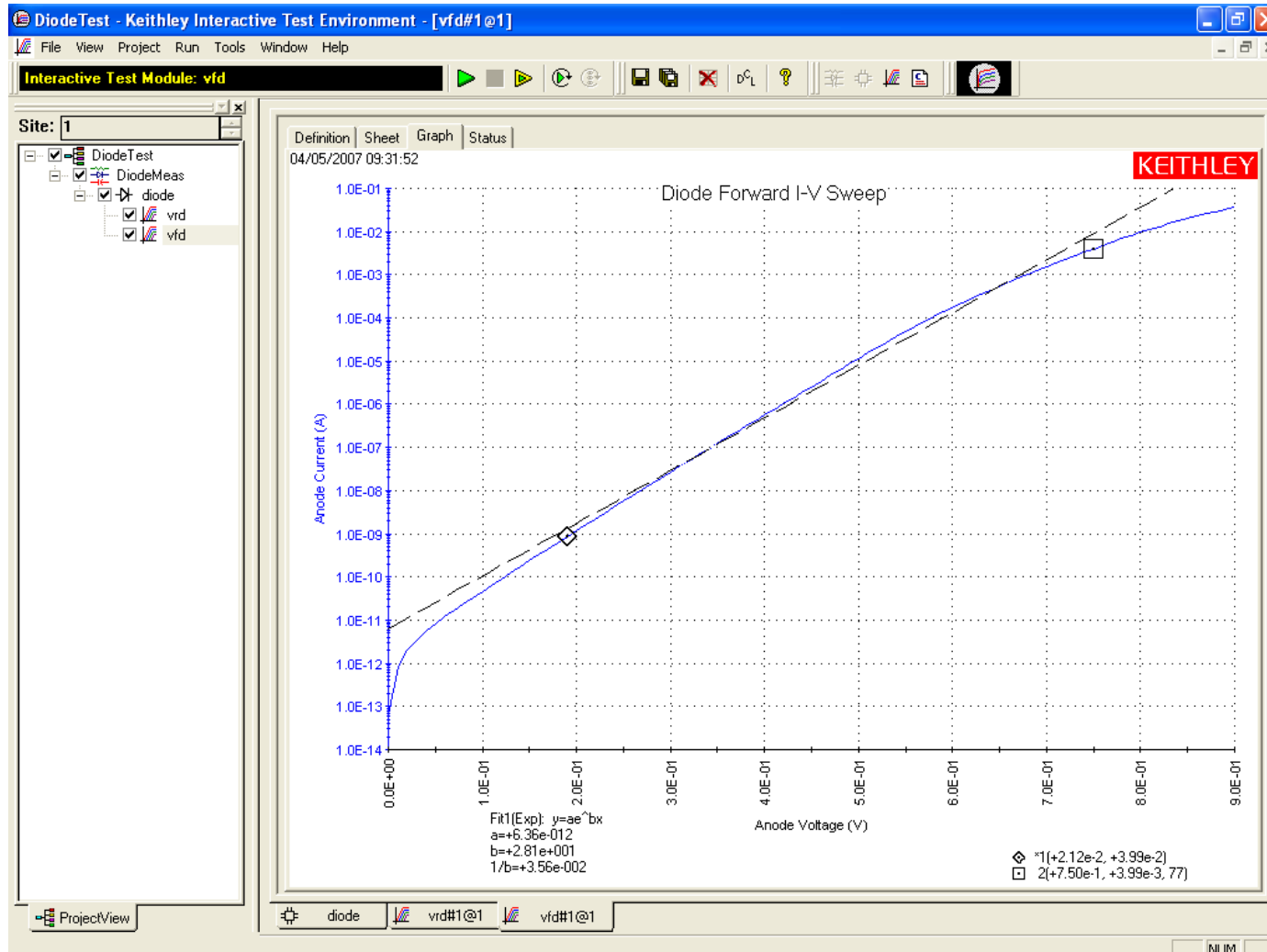
Performing I-V Sweeps on a Diode – Building a New project Using an Existing Library

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Lab 6 Results

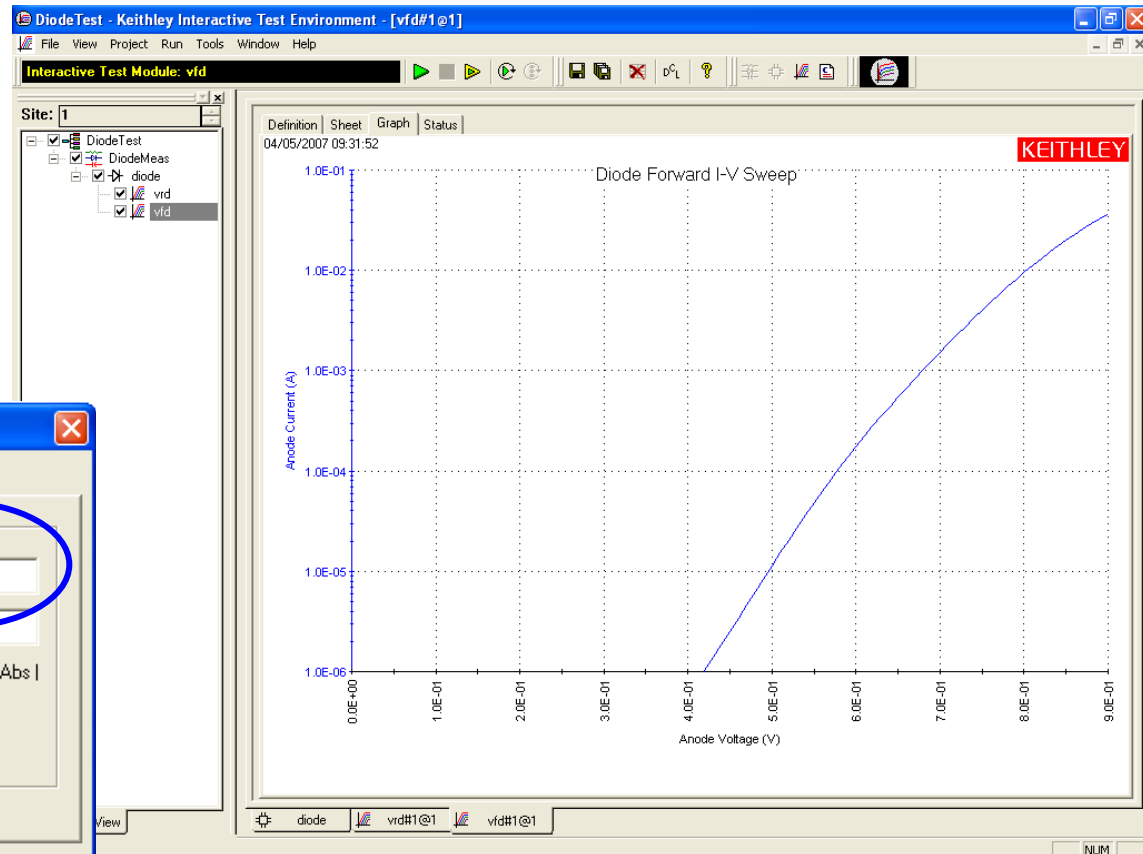
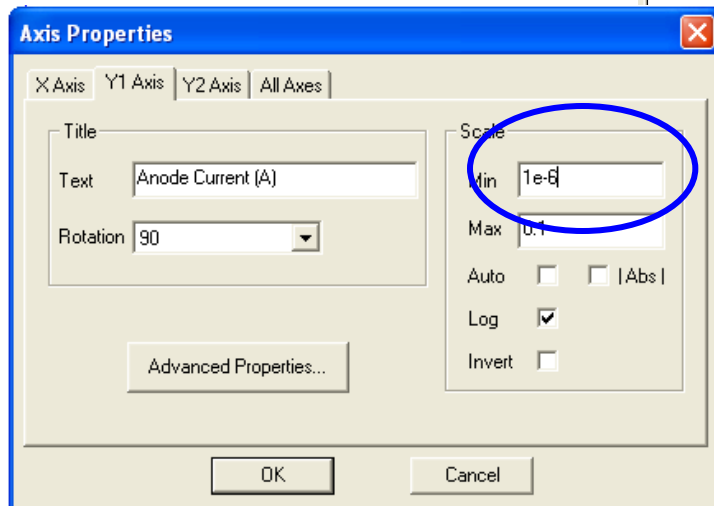


Lab 6 Results



Lab 6 Results

By right clicking on the axis, the **Axis Properties** menu opens. The axis scale can be changed here. In this example, the scale is changed to $1e-6$ to match the spec sheet graph.



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Managing KITE

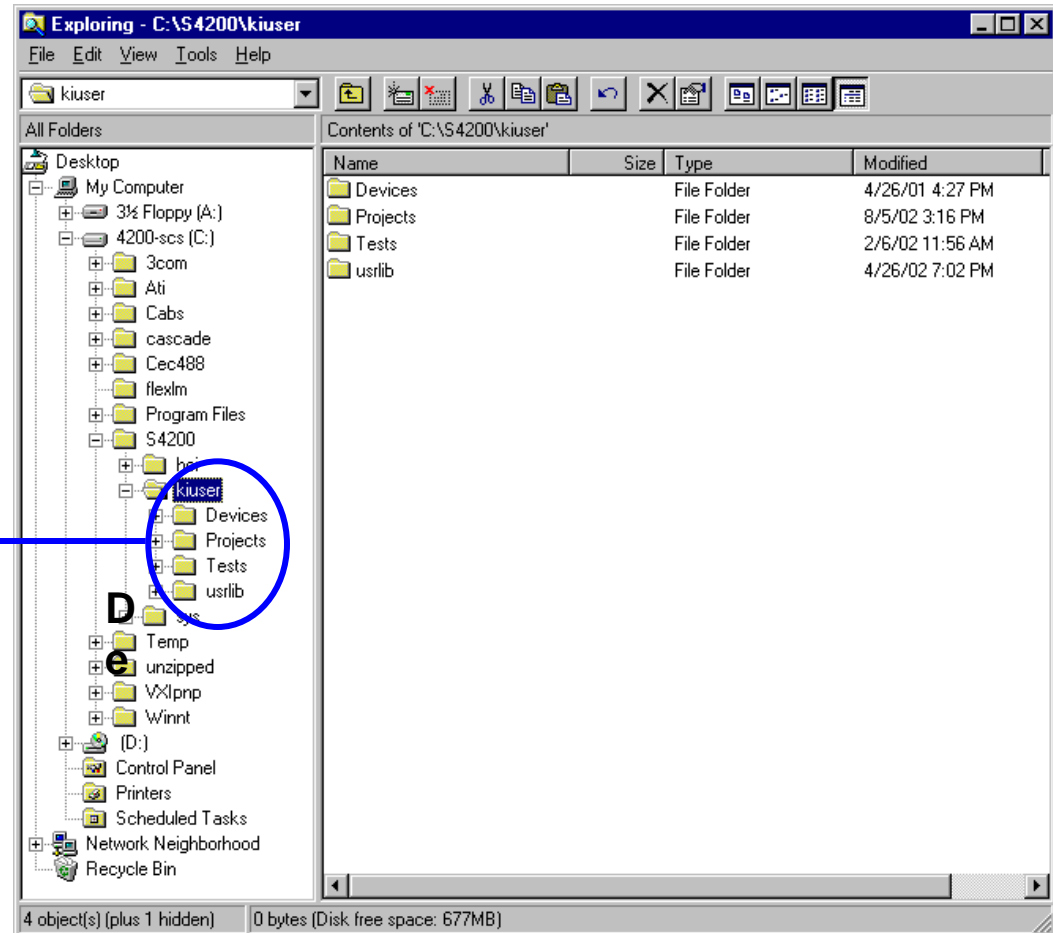
Application Files and Test Results

kiuser Directory

Default user directory → **C:\S4200\kiuser**

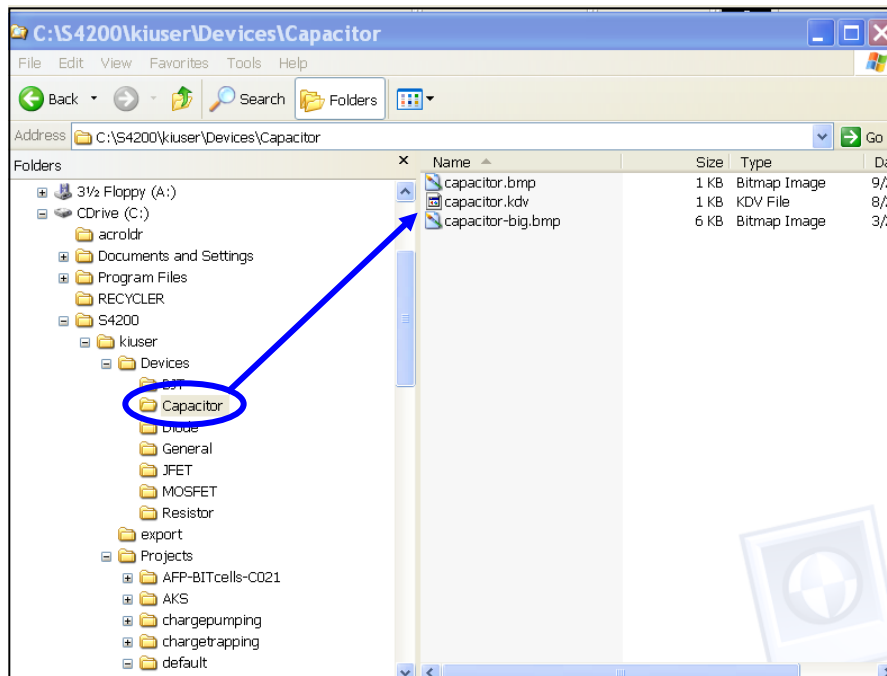
The default user directory is called kiuser. This directory contains four subdirectories:

- **Devices**
- **Projects**
- **Tests**
- **usrlib**



Managing KITE Application Files and Test Results Devices Subdirectory

- By default, the Devices subdirectory contains the KITE device library that is provided with each version of KITE.
- Users can copy devices from this library to their projects or submit devices from their projects to this library.

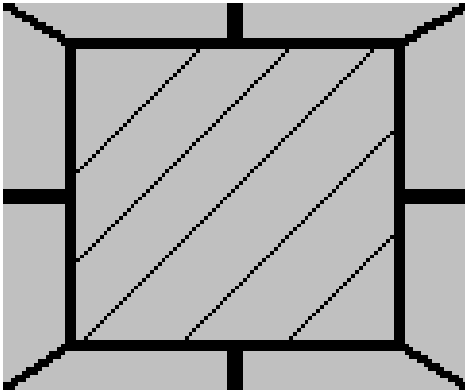


- Each device is defined by three files.
- New devices can be created by a bitmap editor, such as Microsoft Paint.

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Advanced KITE

Creating Custom Devices in KITE



Custom devices can
be created using
Microsoft Paint.

```
8terminal-generic.kdv - Notepad
File Edit Search Help
[Bitmaps]
Small=8terminal-Generic.bmp
Big=8terminal-Generic-Big.bmp
[Terminals]
Number=8
Orientation=;N:A;NE:B;E:C;SE:D;S:E;SW:F;W:G;NW:H
```

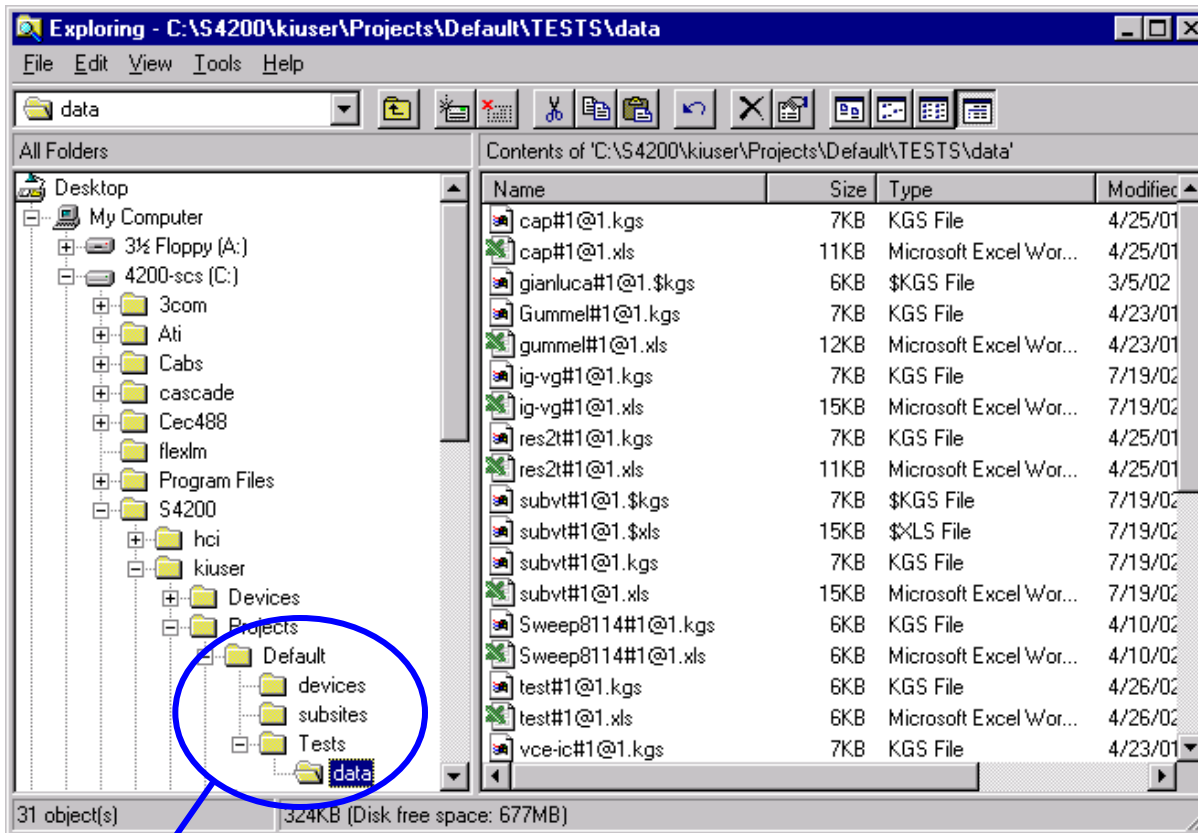
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Application Files and Test Results

Projects Subdirectory

- The Projects subdirectory contains the default KITE project library that is provided with each version of KITE.
- By default, users store KITE projects in this directly. However, projects can be stored in any location using the **File** → **Save Project As** menu.
- Projects consist of multiple files stored in a pre-defined directory structure. All of the project components are stored in a project folder.
- Projects can be moved from one location to another as long as the entire project folder – with all of its contents – are relocated.
- Projects can be emailed, but the entire projects folder must be zipped.

Managing KITE Application Files and Test Results Projects Subdirectory



Shown here
are the data
files from
the **Default**
project.

Default project folder includes three files: **devices**, **subsites**, and **Tests**.

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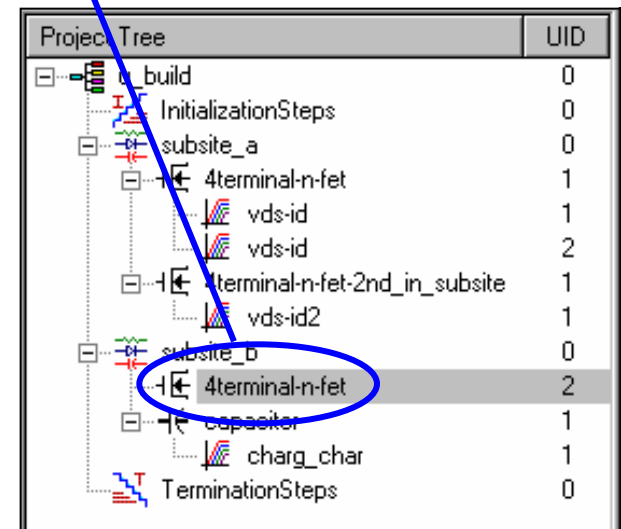
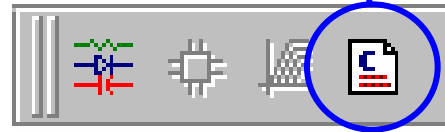
UTM (User Test Module)

- A UTM is a user-named test module that connects to, configures and runs a KULT created user module.
- UTMs may be used to run special parametric tests that cannot be performed with existing ITM functions.
- They may be used to control external instrumentation, such as a CV meter, switch matrices, etc.
- KITE includes user libraries containing pre-coded user modules for several commonly used external instruments.
- Using KULT, you can also write code to create custom user-modules in C.

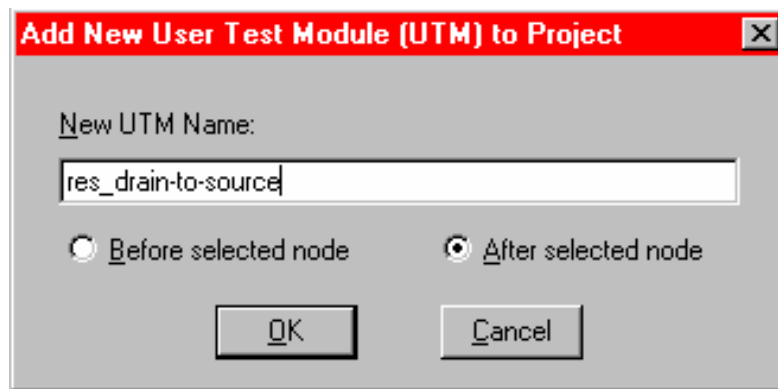
Inserting a New UTM

1. Select the device in which to insert a new **UTM name**.

2. Add a new UTM using the **Add New UTM** button.



3. Enter a new **UTM name**.

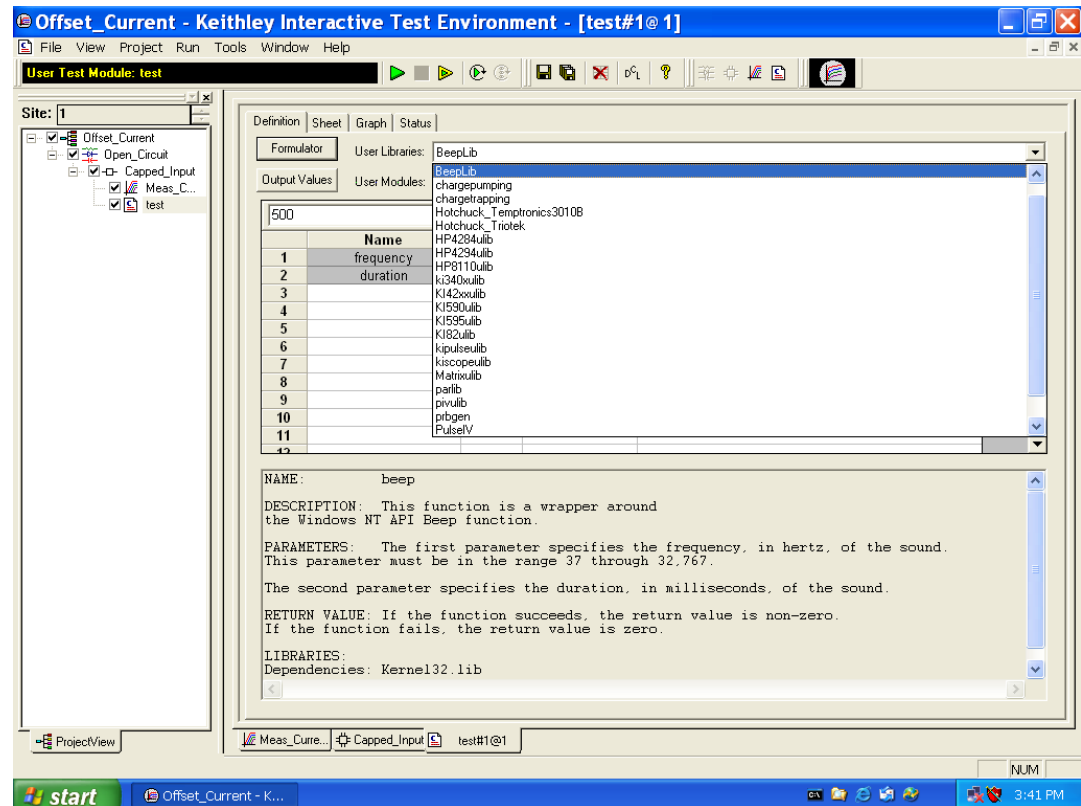


Inserting a New UTM (cont.)

- Click on the new UTM in the Project Navigator and choose a User Library.

Action

- Create a new UTM called test in the project you have currently open .
- Select the BeepLib.

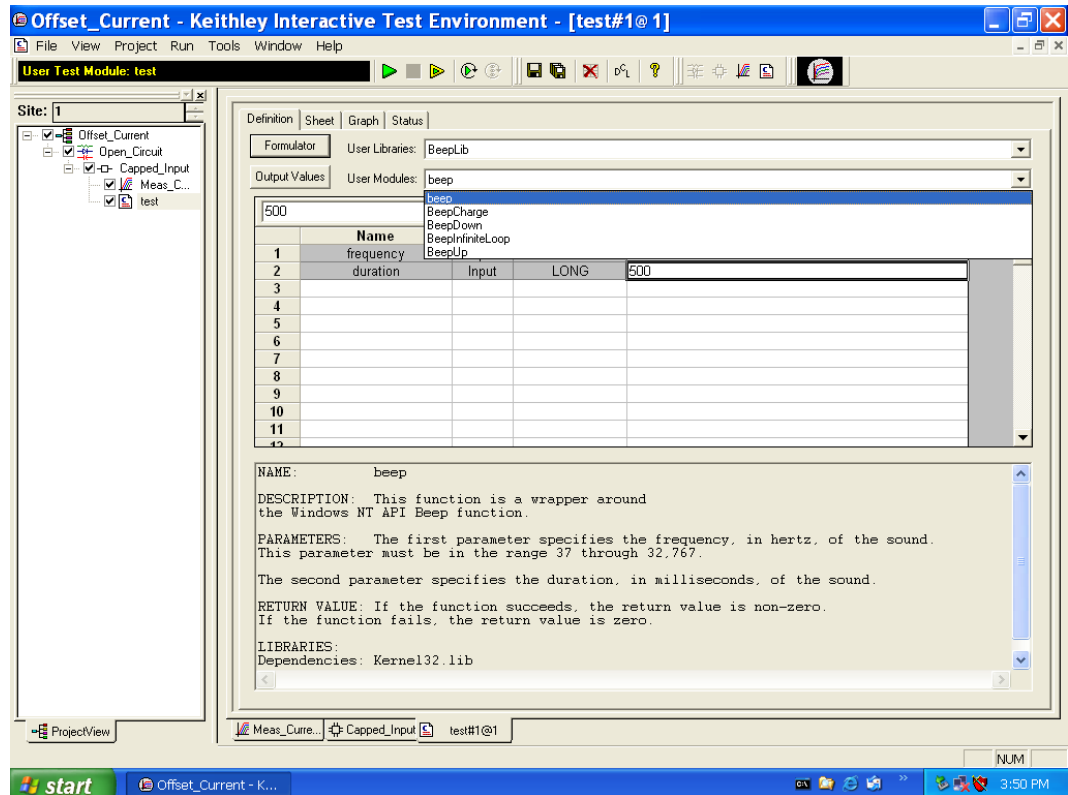


Inserting a New UTM (cont.)

5. Choose the desired User Module.
6. Modify the test parameters as desired.
7. Save the Project.

Action

- Select the **beep** User Module.
- Save the Project.
- Click on the green **Run** button.



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Understanding a UTM

Sheet tab: Numerical test and analysis results and test settings.

Graph tab: Graphical test and analysis results.

Status tab: Test definition and configuration status.

User libraries: Select the user library that contains the desired module.

User modules: Select the desired module for the UTM.

Formulator: Mathematical test results analysis tool.

Output Values button: Click to export Output Values for this test into the Subsite Data sheet.

Parameter identity cells: Spreadsheet-like cells that list the test module parameter names and data types, as specified in the user module.

Workspace window tab: You can quickly access a Project-component window that is active in the KITE workspace – several can be active simultaneously – by selecting its Workspace tab.

Documentation area: Displays information about the user module.

Parameter entry cells: Enter test-parameter values in these cells.

Cell display edit box: Display enter contents of selected cell.

	Name	In/Out	Type	Value
1	OpenAll	Input	INT	1
2	TermIdStr1	Input	CHAR_P	SMU1
3	Pin1	Input	INT	3
4	TermIdStr2	Input	CHAR_P	SMU2
5	Pin2	Input	INT	4
6	TermIdStr3	Input	CHAR_P	SMU3
7	Pin3	Input	INT	5
8	TermIdStr4	Input	CHAR_P	SMU4
9	Pin4	Input	INT	0

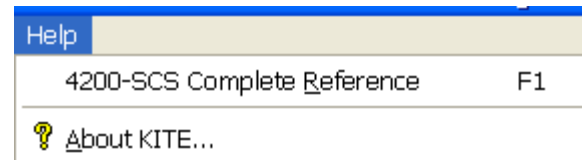
MODULE: Connect Pins

DESCRIPTION:

The ConnectPins module allows you to control your switch matrix. You can connect the instrument terminals to one or more DUP pins. If the DUP pin number is less than 1, then that connection is ignored (not performed), otherwise the specified instrument is connected to the desired DUP pin. If you wish to connect an instrument to more than one DUP pin, you may specify that instrument terminal again in the parameter list.

If the OpenAll parameter is 1, then all previous matrix connections are cleared before making the new connections. If the OpenAll parameter is 0 (zero), then NO matrix.

Help Menu



Help → 4200-SCS Complete Reference

4200-SCS Complete Reference loads the 4200-SCS Complete Reference portable web site, which is preinstalled on your 4200-SCS and included on CD-ROM. It was specifically designed to provide easy access to all Model 4200-SCS reference information, such as:

- **Product Manuals** — The 4200-SCS User Manual, the 4200-SCS Reference Manual, and related product manuals in searchable .pdf format.
- **Data Sheets** — The Model 4200-SCS Technical Data Sheet and related product data sheets.
- **Application Notes** — Pragmatic examples of how to use the Model 4200-SCS, and related products, to perform application specific tasks.

Selecting Help → 4200-SCS Complete Reference automatically starts the web browser and loads the Complete Reference web site.

Help → About KITE

Provides the internal version of KITE.

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