

# **Importing a SPICE NetList into TINA-TI**

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## **ABSTRACT**

This application note describes the procedure for importing an unencrypted SPICE netlist into [TINA-TI](#) simulation software, creating a new macromodel based on the netlist, and placing a symbol to instantiate the macromodel in a TINA-TI circuit schematic. The behavior of the macromodel depends on the compatibility of the netlist entries with the TINA-TI software. It is possible that some SPICE-based netlists may contain formats or executable statements that are not compatible with TINA™. If the SPICE netlist is encrypted and cannot be imported directly into TINA, contact the TI E2E/Simulation and Models Forum for support ([www.ti.com/e2e-simulation](http://www.ti.com/e2e-simulation)).

The first section gives an example of the step-by-step procedure for importing a SPICE netlist to create a TINA-TI macromodel. Then we illustrate how to create an instance of the TINA macromodel on a circuit schematic. This report uses the example of a PSpice netlist for an [OPA830](#), a low-power, high-speed operational amplifier with rail-to-rail output.

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**NOTE:** This document does not address the details and best practices of generating SPICE subcircuits. For more information on this topic, see [Reference \(1\)](#).

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## 1 Procedure

Follow this procedure to import a SPICE netlist in order to create a TINA-TI macromodel.

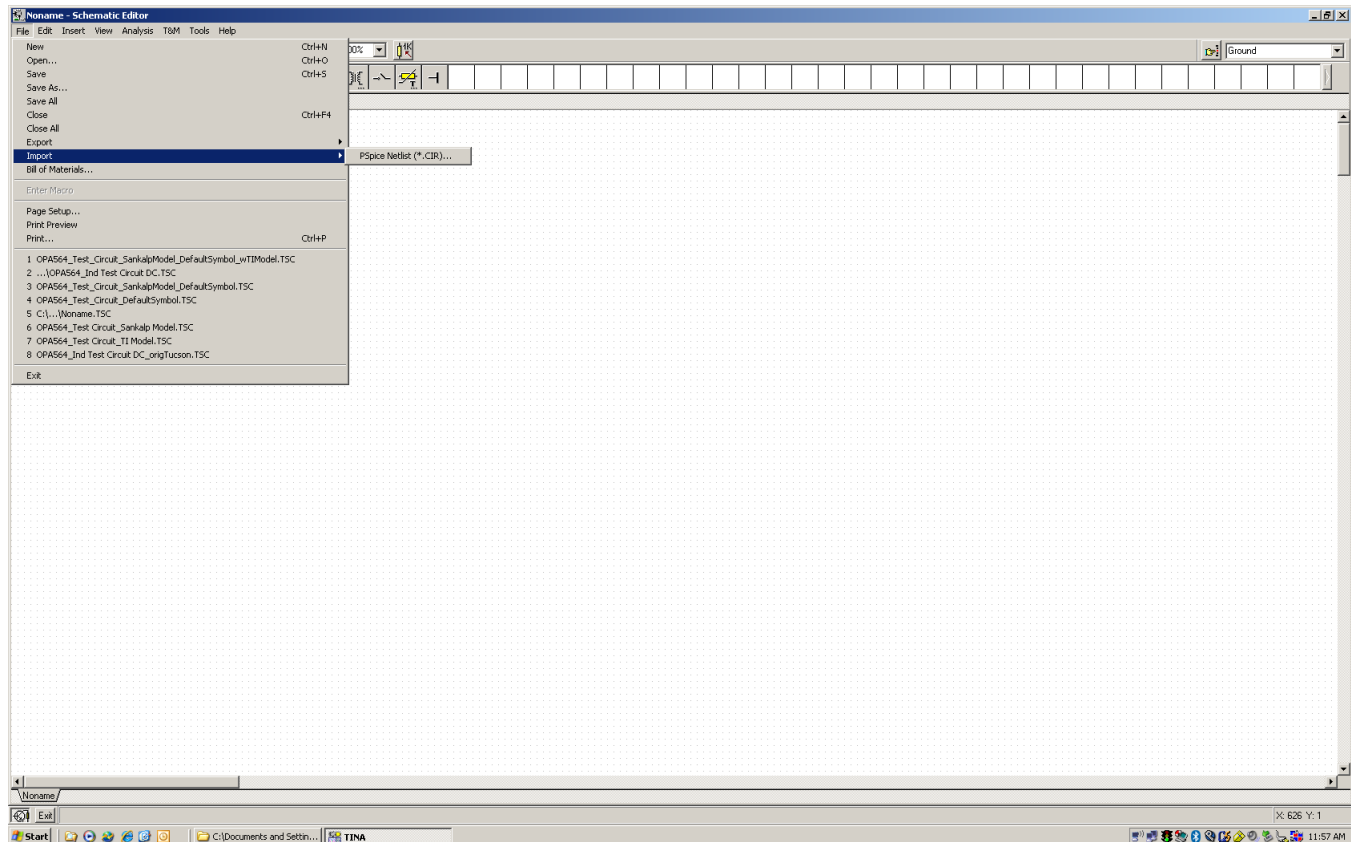
### 1. Importing a SPICE netlist file.

The netlist in question must be configured using a SPICE subcircuit statement, and the netlist file must have a **\*.cir** extension. If the netlist file has a different extension (such as **\*.sub**), change the extension to **\*.cir** before trying to import it into TINA-TI. Here is an example from the OPA830 PSpice netlist:

```
.SUBCKT OPAx83x_Model + - Dis OUT V+ V-
```

### 2. Confirming that the SPICE netlist will compile in TINA.

Some SPICE netlists may contain statements and/or formatting that is incompatible with TINA. To check for this potential incompatibility, open the TINA program and select the **File/Import/Pspice Netlist (\*.CIR)** menu tab as shown in [Figure 1](#).



**Figure 1. Menu Tabs for Importing a PSpice Netlist as a \*.CIR File**

Navigate to the desired file and select it using the open directory window. A netlist editor window opens, as shown in Figure 2. Select the check-box icon on the upper menu bar as indicated by the black arrow in Figure 2. If the netlist format and executable statements are compatible with TINA, then a message that says *Successfully completed* appears in the lower margin of the window.

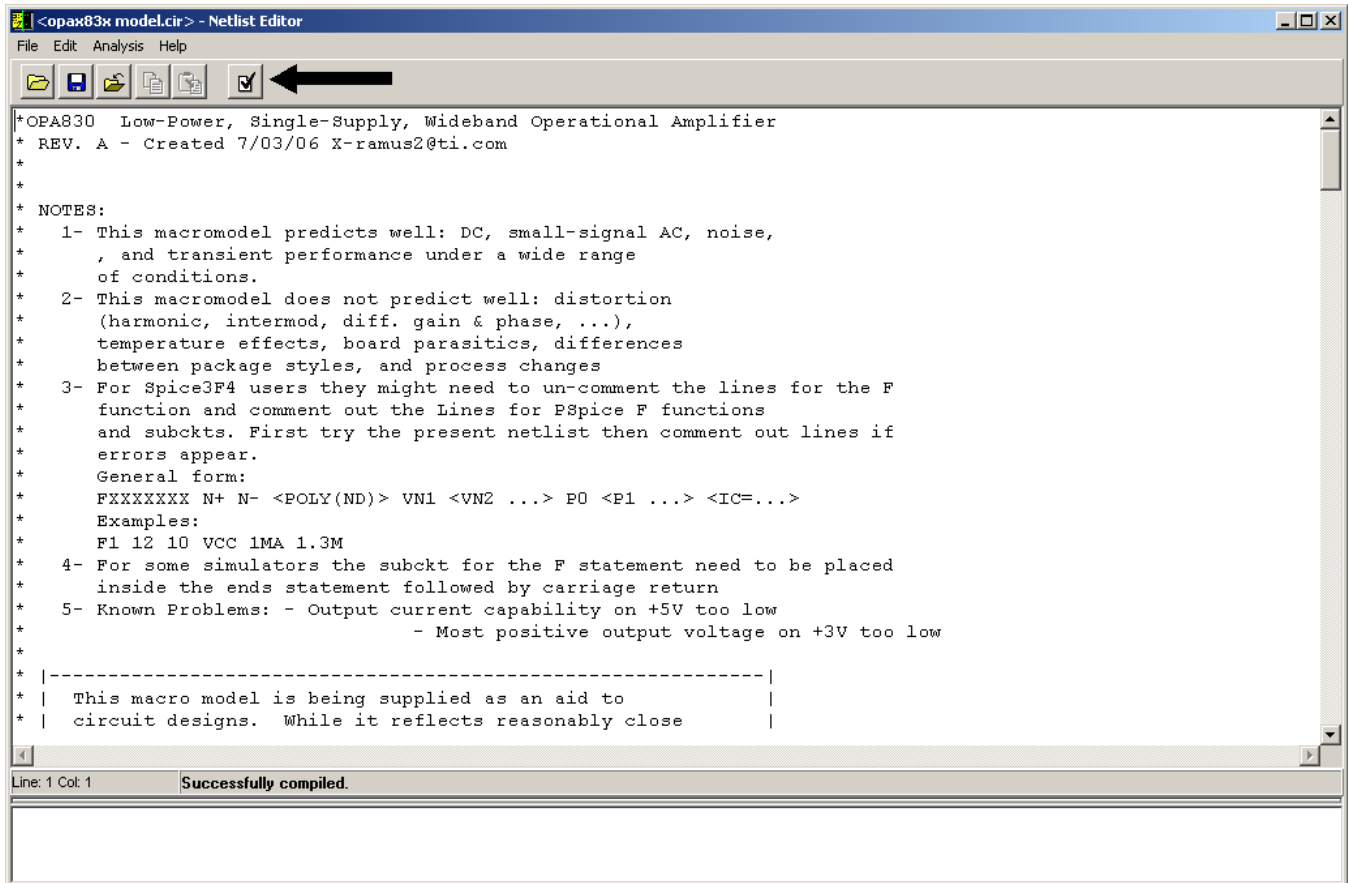


Figure 2. Netlist Editor Window Used to Check PSpice Netlist Compatibility with TINA-TI

3. Creating the TINA-TI macromodel.

Open TINA-TI and select the *Tools/New Macro Wizard* menu tab. A new window should appear, as shown in Figure 3.

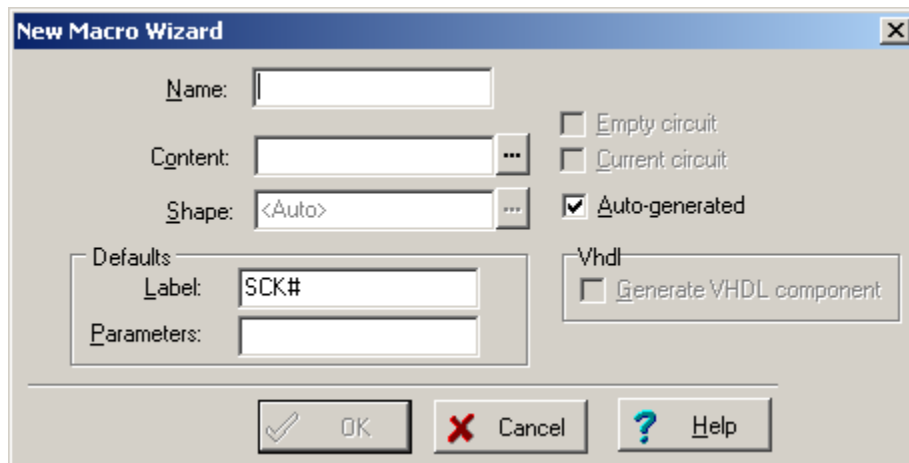
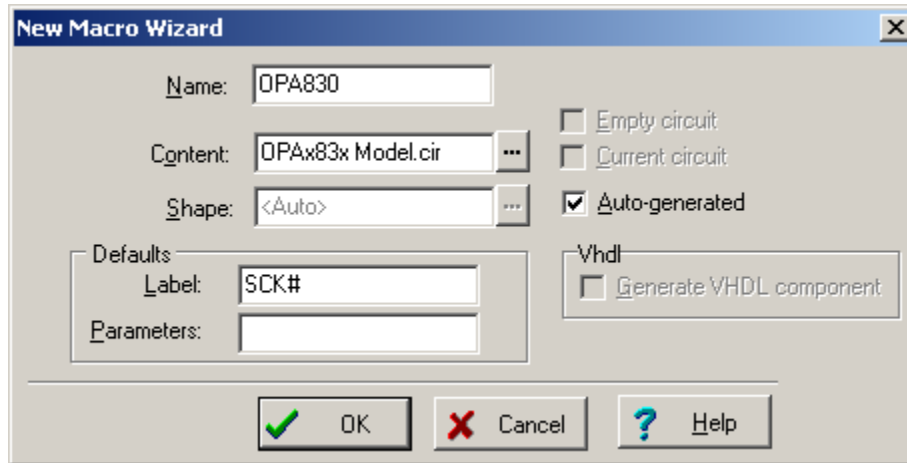


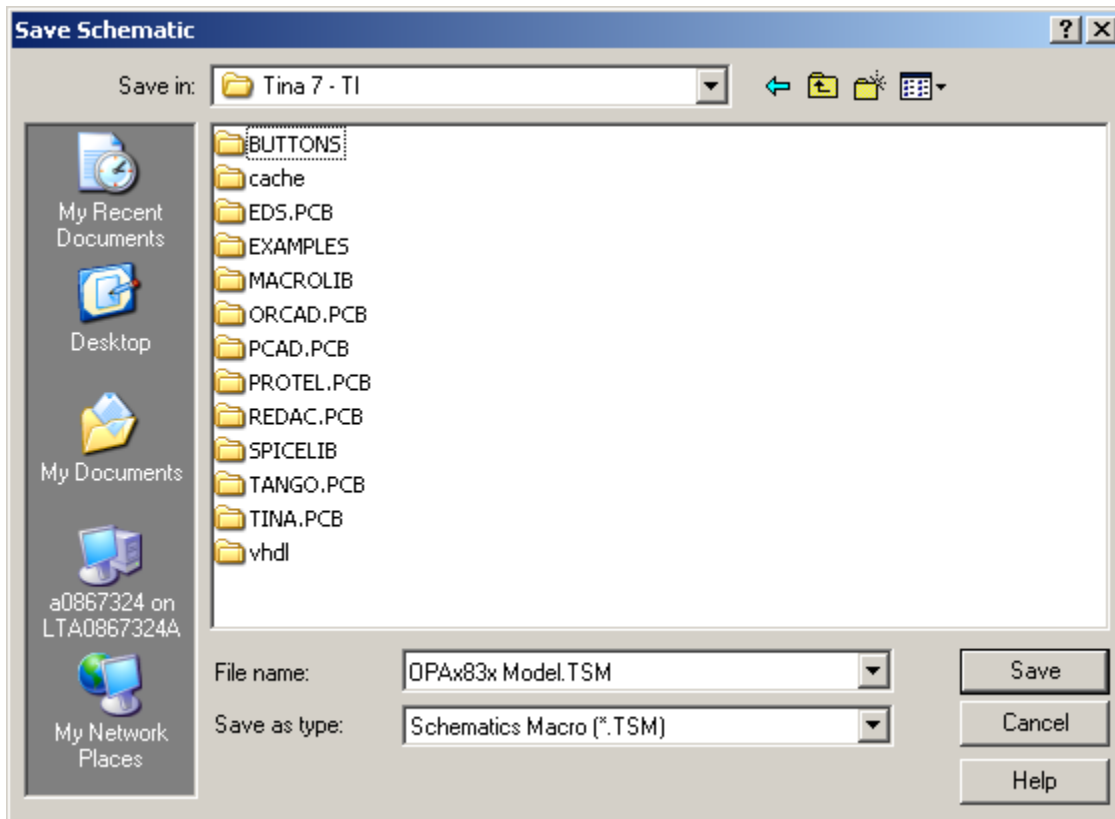
Figure 3. New Macro Wizard Start Window

Enter a name in the *Name* field. Be sure that the *Current circuit* box is unchecked, then click the ellipsis to the right of the *Content* field. A directory window then opens. Navigate to the folder containing the SPICE netlist file and click on the file icon. In our example, the *New Macro Wizard* window should appear as [Figure 4](#) illustrates.



**Figure 4. New Macro Wizard Window with Entries**

Leave the check-mark in the *Auto-generated* box and click the *OK* button. A directory window opens with a default path to the TINA-TI **MACROLIB** folder as shown in [Figure 5](#).

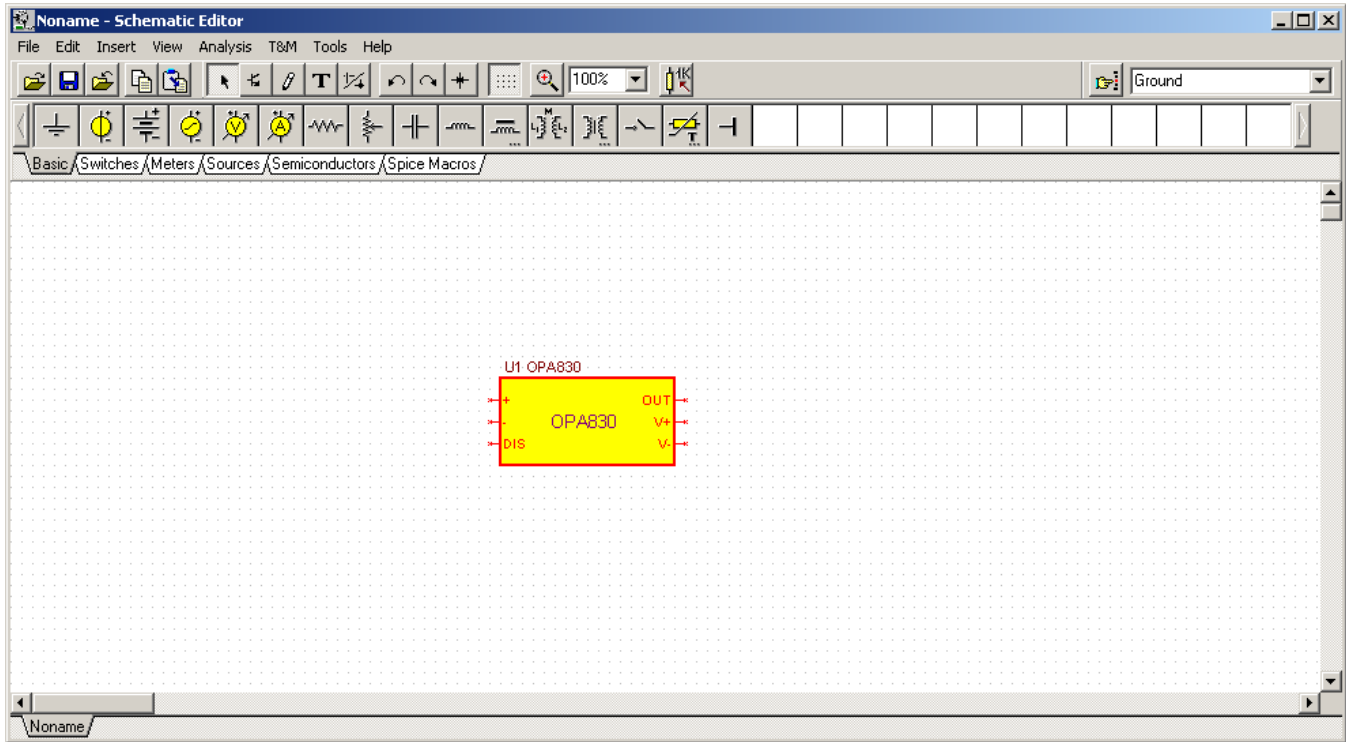


**Figure 5. Initial Window for Saving Instantiated Macromodel**

Navigate to the desired directory folder and click the *Save* button. This directory is the destination of the instantiated TINA-TI macromodel based on the imported SPICE subcircuit netlist.

**4. Placing an instance of the new macromodel in a TINA-TI circuit schematic.**

After the new macromodel file (\*.TSM) has been created and saved, the macromodel may be instantiated (placed) into a circuit schematic by first selecting the *Insert/Macro* menu tab and navigating the open window to the directory that contains the macromodel file. Select the desired macromodel file (in our example, *OPAx83x.TSM*) and select the *Open* button. The window closes, and the mouse cursor then shows the outline of the autogenerated shape. Click the mouse when the cursor is in the desired position in the schematic window; the shape should appear as shown in [Figure 6](#).



**Figure 6. Newly Created Macromodel Placed in a Schematic Window**

Complete the circuit by inserting and connecting additional components, and run the desired simulations. An example of a final schematic and the probe window that shows the output waveform from a transient simulation appear in [Figure 7](#) and [Figure 8](#), respectively.

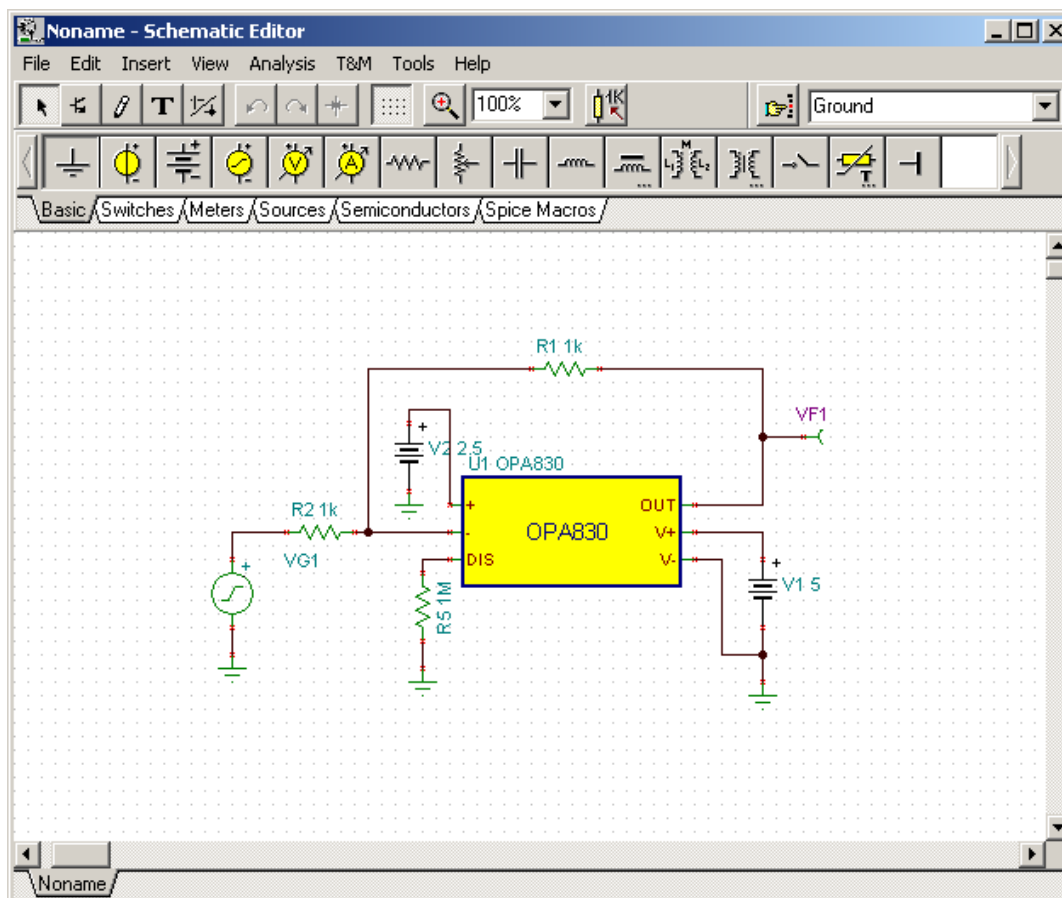


Figure 7. Final Schematic Showing Macromodel Shape and Additional Components

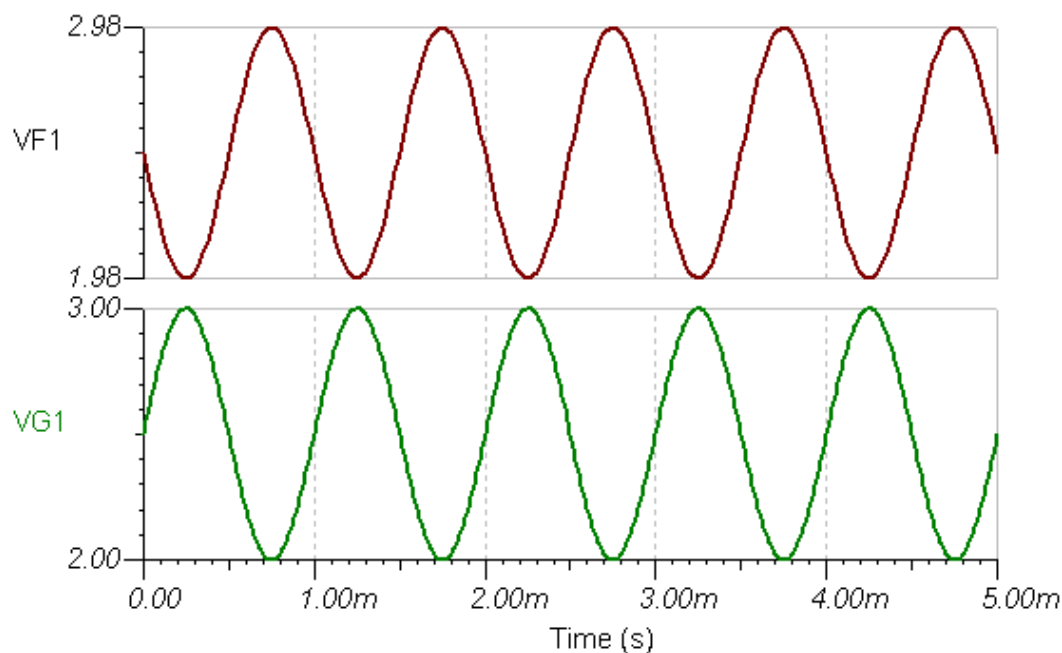
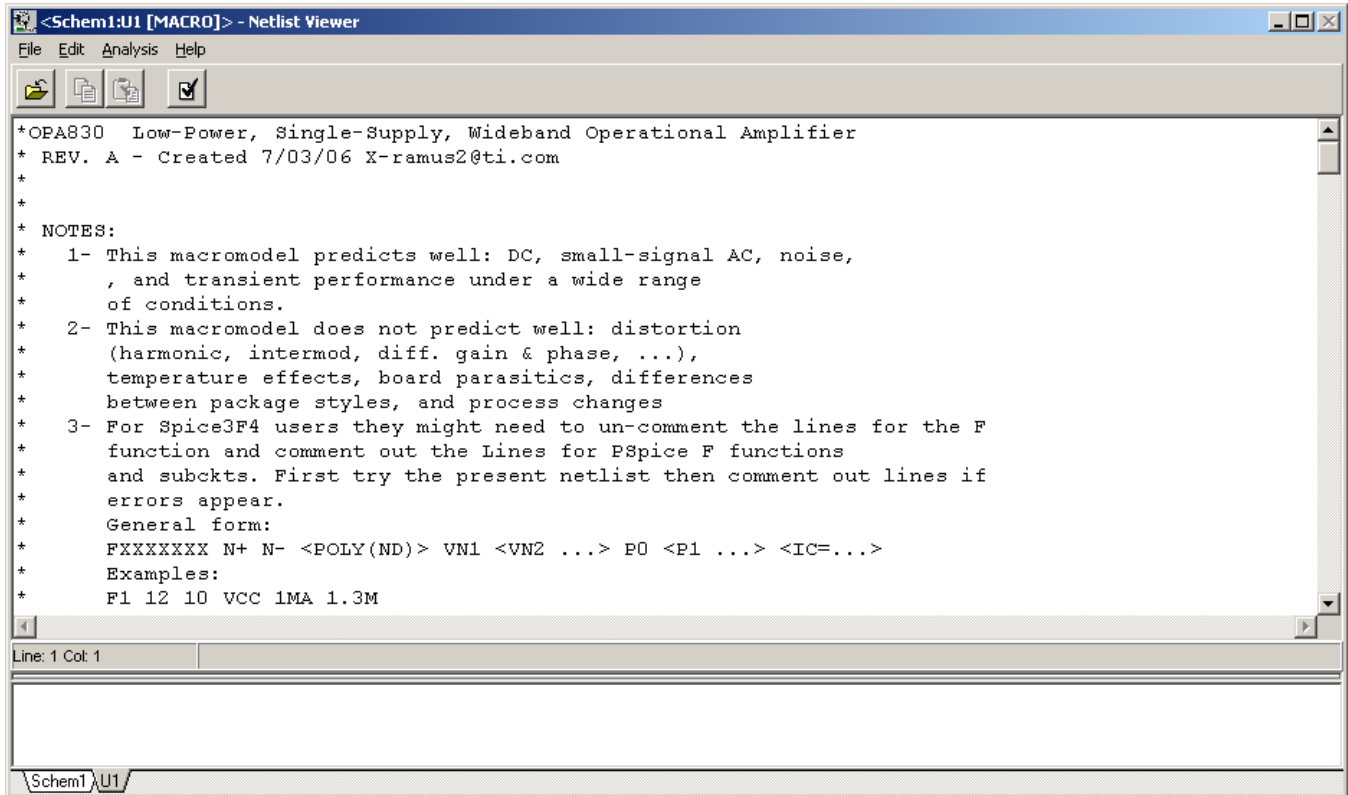


Figure 8. Probe Window Showing the Output Waveform from a Transient Simulation

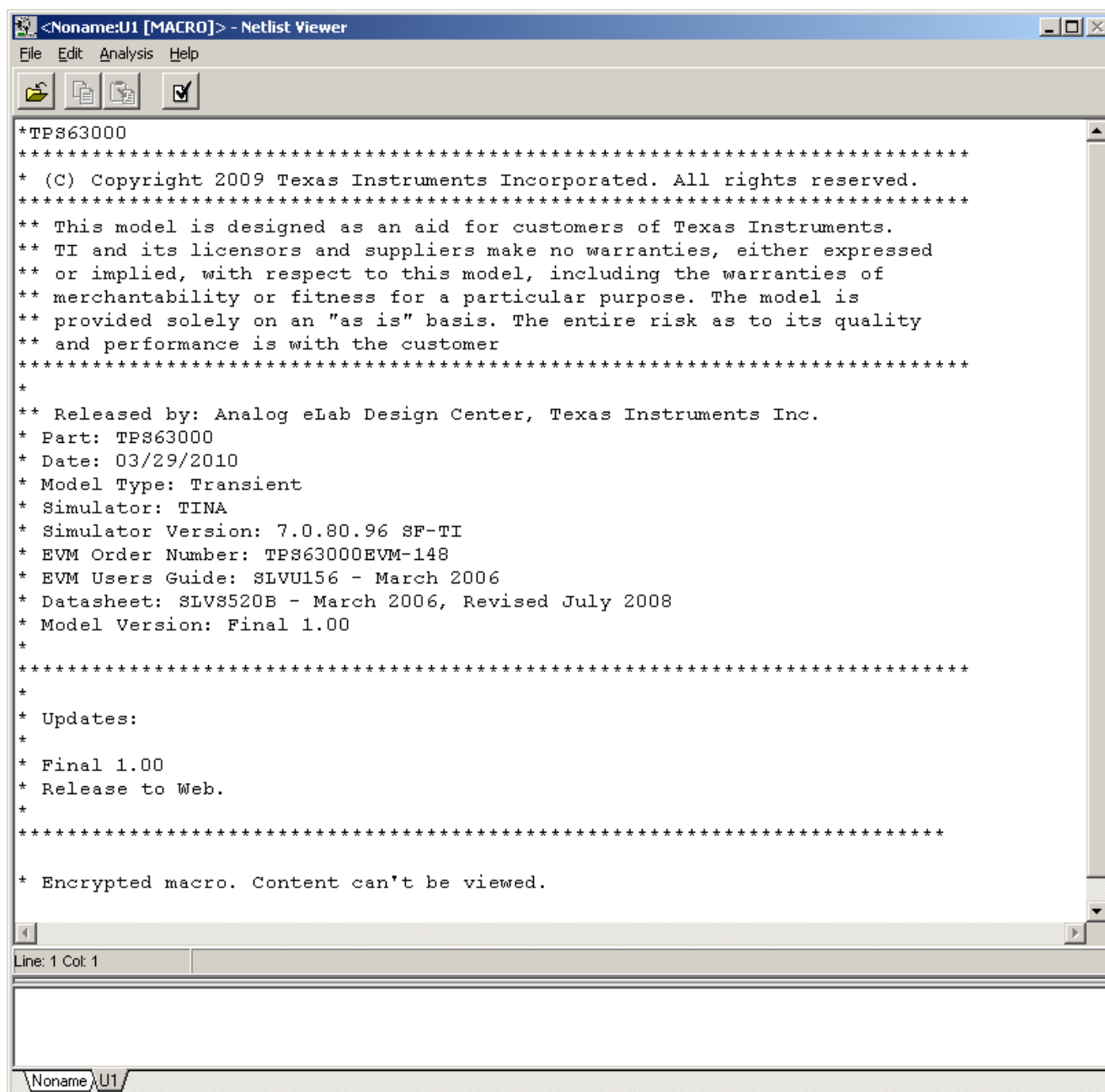
## 5. Viewing the netlist.

If the netlist is unencrypted, it is possible to view the macromodel netlist in TINA. To view the netlist, click the macromodel symbol and select *Enter Macro* in the pop-up menu. The netlist viewer window then opens within the TINA application window as shown in [Figure 9](#). The schematic can still be viewed by selecting the appropriate tab on the lower left corner of the TINA application window. To close the netlist viewer, select the *File/Close* menu tab. (Note the tabs for the schematic window and the viewer window [lower left].)



**Figure 9. Netlist Viewer Window**

If the netlist is encrypted, it is not possible to view the netlist content from within TINA or any other text viewer. As an example, [Figure 10](#) shows the netlist view of the TPS6300 macromodel. If the SPICE netlist is encrypted and cannot be imported directly into TINA-TI software, contact the E2E/Simulation and Models Forum for support ([www.ti.com/e2e-simulation](http://www.ti.com/e2e-simulation)).



```

<Noname:U1 [MACRO]> - Netlist Viewer
File Edit Analysis Help
*TPS63000
*****
* (C) Copyright 2009 Texas Instruments Incorporated. All rights reserved.
*****
** This model is designed as an aid for customers of Texas Instruments.
** TI and its licensors and suppliers make no warranties, either expressed
** or implied, with respect to this model, including the warranties of
** merchantability or fitness for a particular purpose. The model is
** provided solely on an "as is" basis. The entire risk as to its quality
** and performance is with the customer
*****
*
** Released by: Analog eLab Design Center, Texas Instruments Inc.
* Part: TPS63000
* Date: 03/29/2010
* Model Type: Transient
* Simulator: TINA
* Simulator Version: 7.0.80.96 SF-TI
* EVM Order Number: TPS63000EVM-148
* EVM Users Guide: SLVU156 - March 2006
* Datasheet: SLV8520B - March 2006, Revised July 2008
* Model Version: Final 1.00
*
*****
*
* Updates:
*
* Final 1.00
* Release to Web.
*
*****
* Encrypted macro. Content can't be viewed.
Line: 1 Col: 1
<Noname>U1

```

**Figure 10. Netlist Editor Display for an Encrypted Netlist**

## 2 References

1. Vladimirescu, V. (1994). *The Spice Book*. John Wiley and Sons, Inc. New York. ISBN 0-471-60926-9



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DLP® Products	<a href="http://www.dlp.com">www.dlp.com</a>	Communications and Telecom	<a href="http://www.ti.com/communications">www.ti.com/communications</a>
DSP	<a href="http://dsp.ti.com">dsp.ti.com</a>	Computers and Peripherals	<a href="http://www.ti.com/computers">www.ti.com/computers</a>
Clocks and Timers	<a href="http://www.ti.com/clocks">www.ti.com/clocks</a>	Consumer Electronics	<a href="http://www.ti.com/consumer-apps">www.ti.com/consumer-apps</a>
Interface	<a href="http://interface.ti.com">interface.ti.com</a>	Energy	<a href="http://www.ti.com/energy">www.ti.com/energy</a>
Logic	<a href="http://logic.ti.com">logic.ti.com</a>	Industrial	<a href="http://www.ti.com/industrial">www.ti.com/industrial</a>
Power Mgmt	<a href="http://power.ti.com">power.ti.com</a>	Medical	<a href="http://www.ti.com/medical">www.ti.com/medical</a>
Microcontrollers	<a href="http://microcontroller.ti.com">microcontroller.ti.com</a>	Security	<a href="http://www.ti.com/security">www.ti.com/security</a>
RFID	<a href="http://www.ti-rfid.com">www.ti-rfid.com</a>	Space, Avionics & Defense	<a href="http://www.ti.com/space-avionics-defense">www.ti.com/space-avionics-defense</a>
RF/IF and ZigBee® Solutions	<a href="http://www.ti.com/lprf">www.ti.com/lprf</a>	Video and Imaging	<a href="http://www.ti.com/video">www.ti.com/video</a>
		Wireless	<a href="http://www.ti.com/wireless-apps">www.ti.com/wireless-apps</a>

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