

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).

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.

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](#).

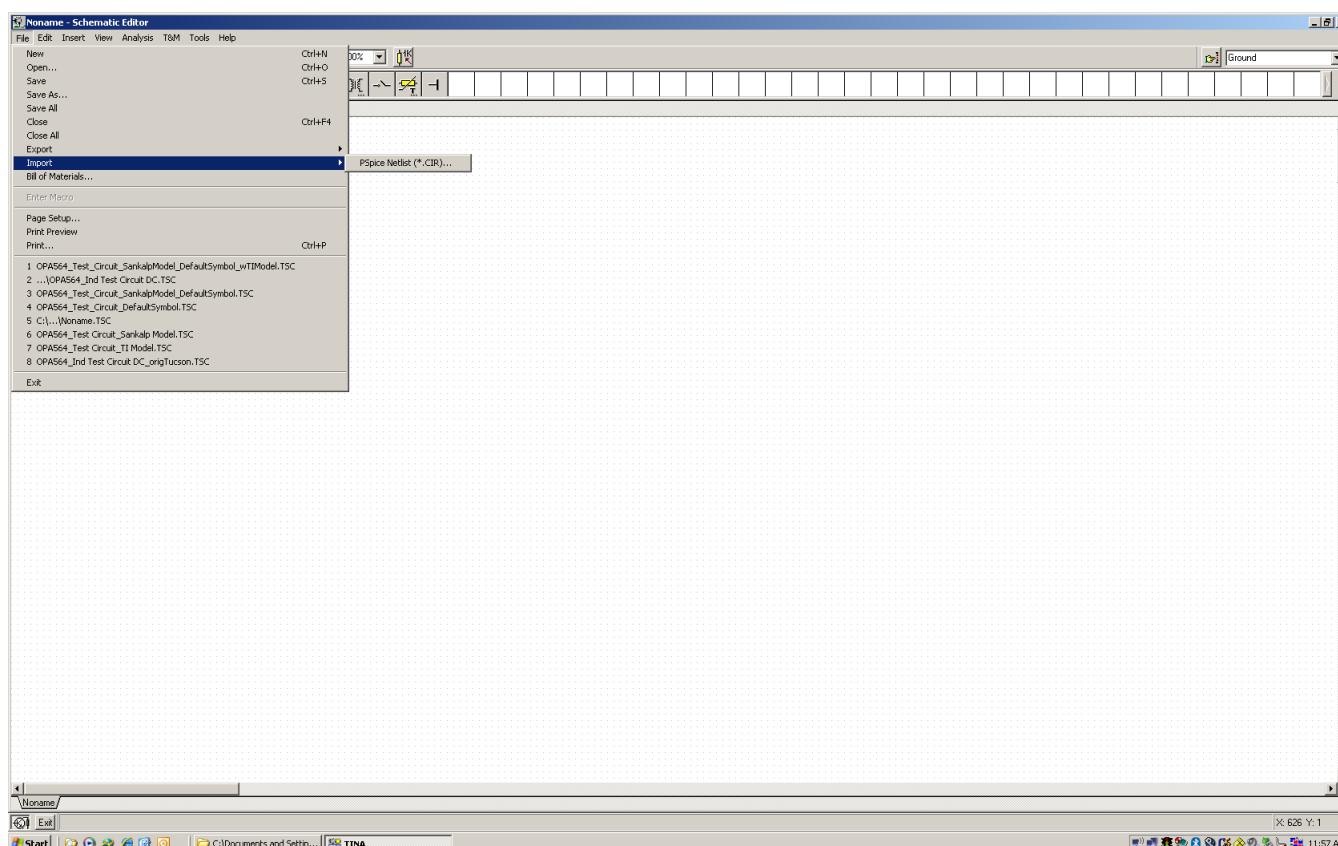


Figure 1. Menu Tabs for Importing a PSpice Netlist as a *.CIR File

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.

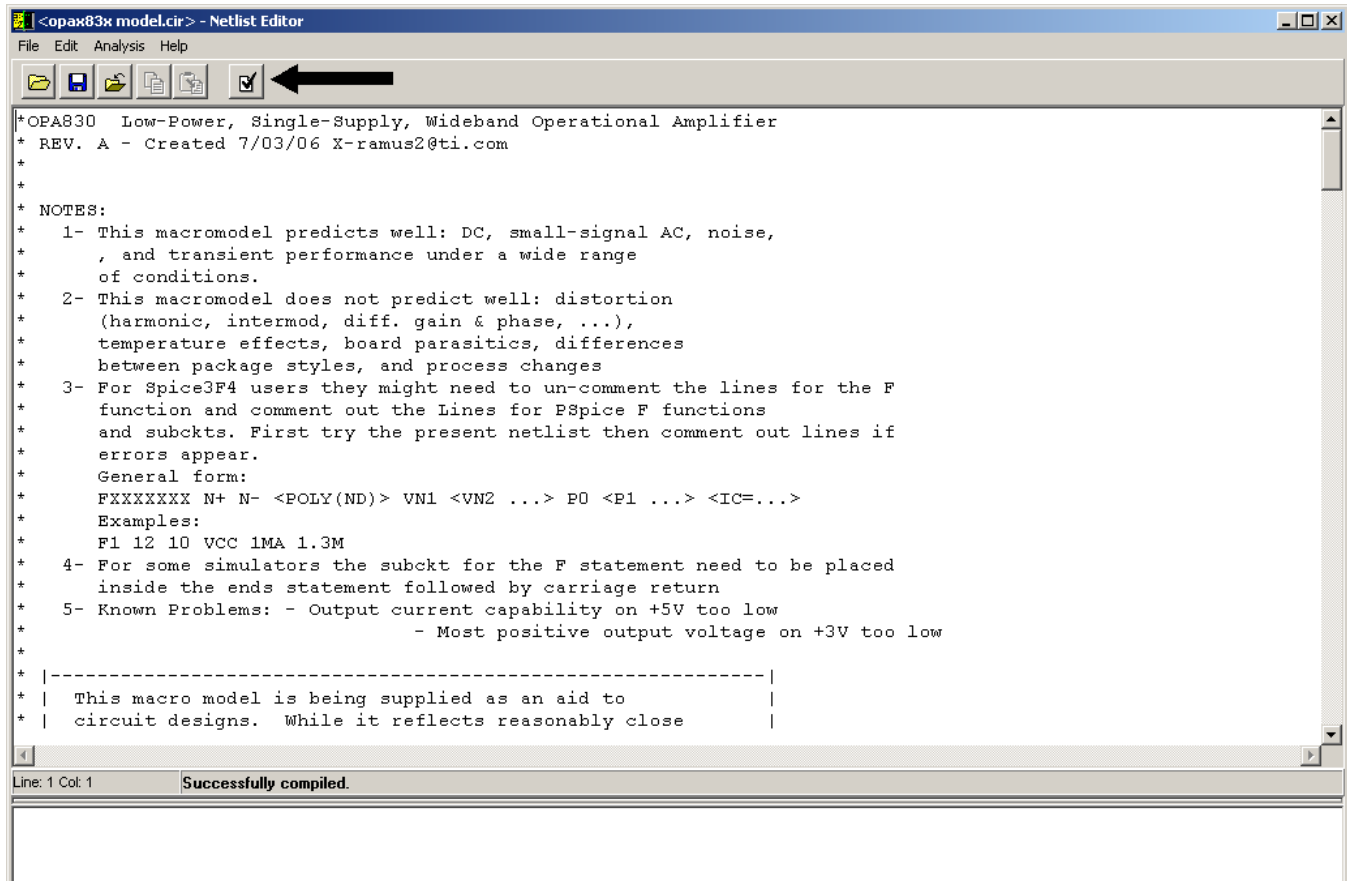


Figure 2. Netlist Editor Window Used to Check PSpice Netlist Compatibility with TINA-TI

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.

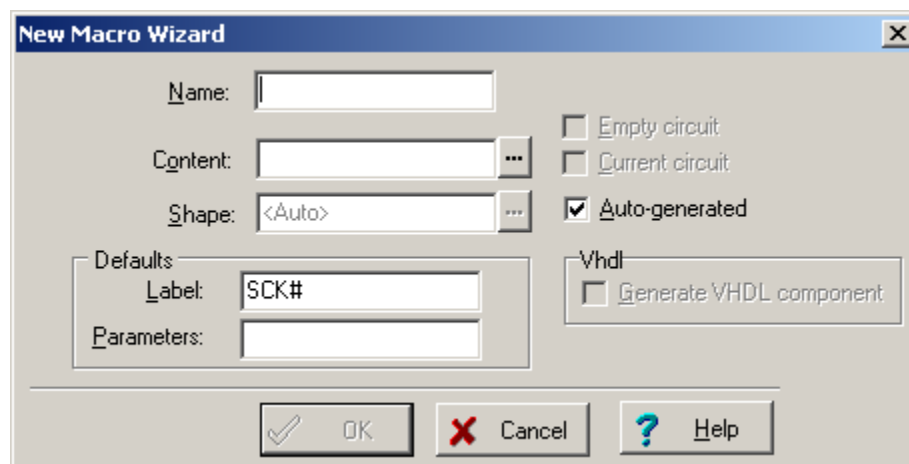


Figure 3. New Macro Wizard Start Window

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.

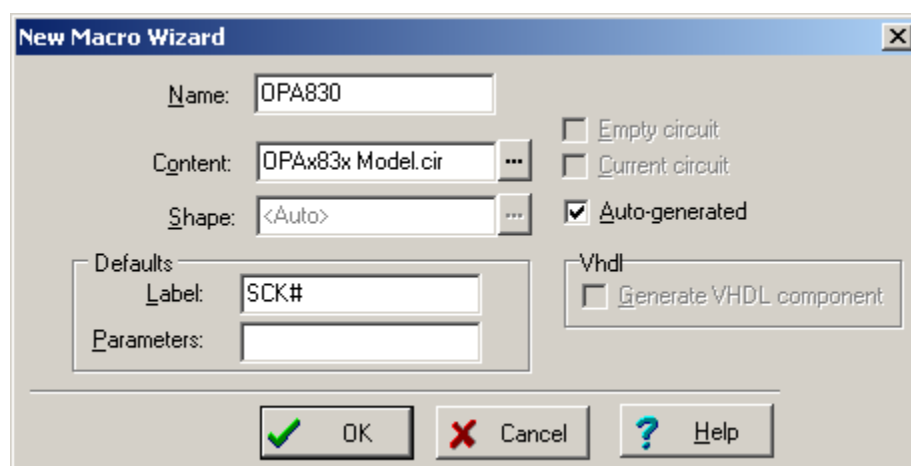


Figure 4. New Macro Wizard Window with Entries

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](#).

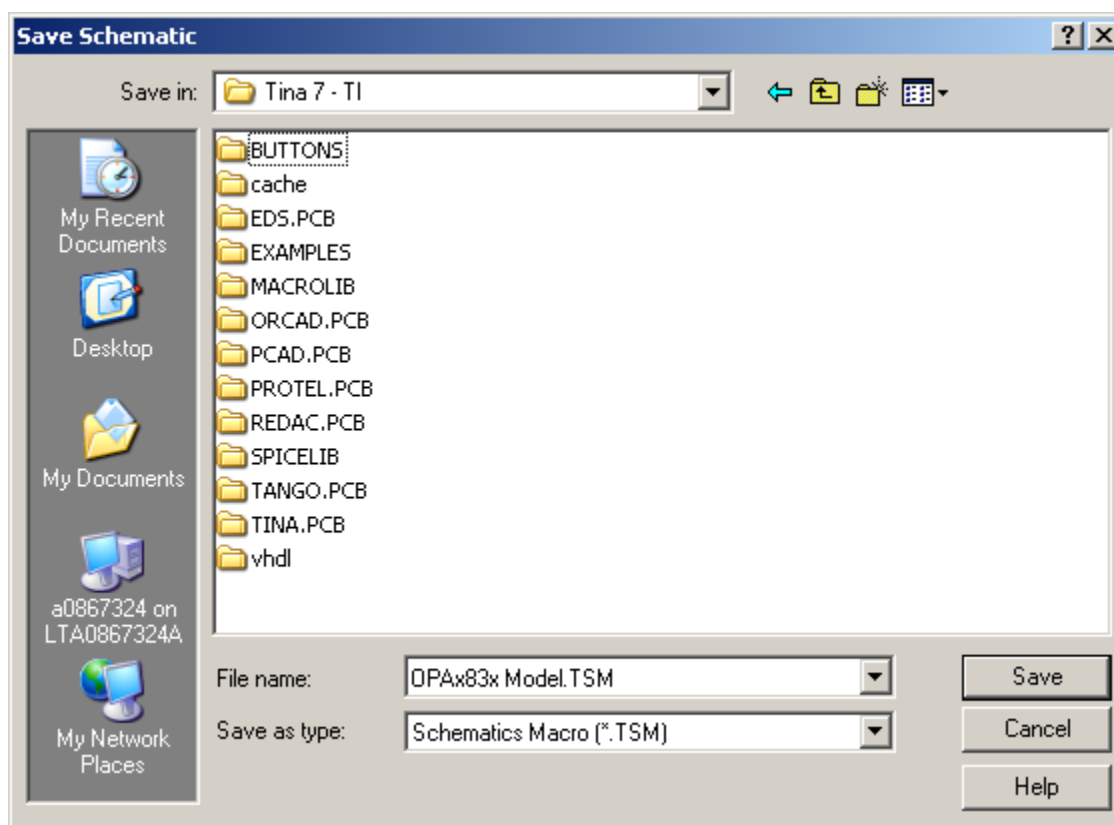


Figure 5. Initial Window for Saving Instantiated Macromodel

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](#).

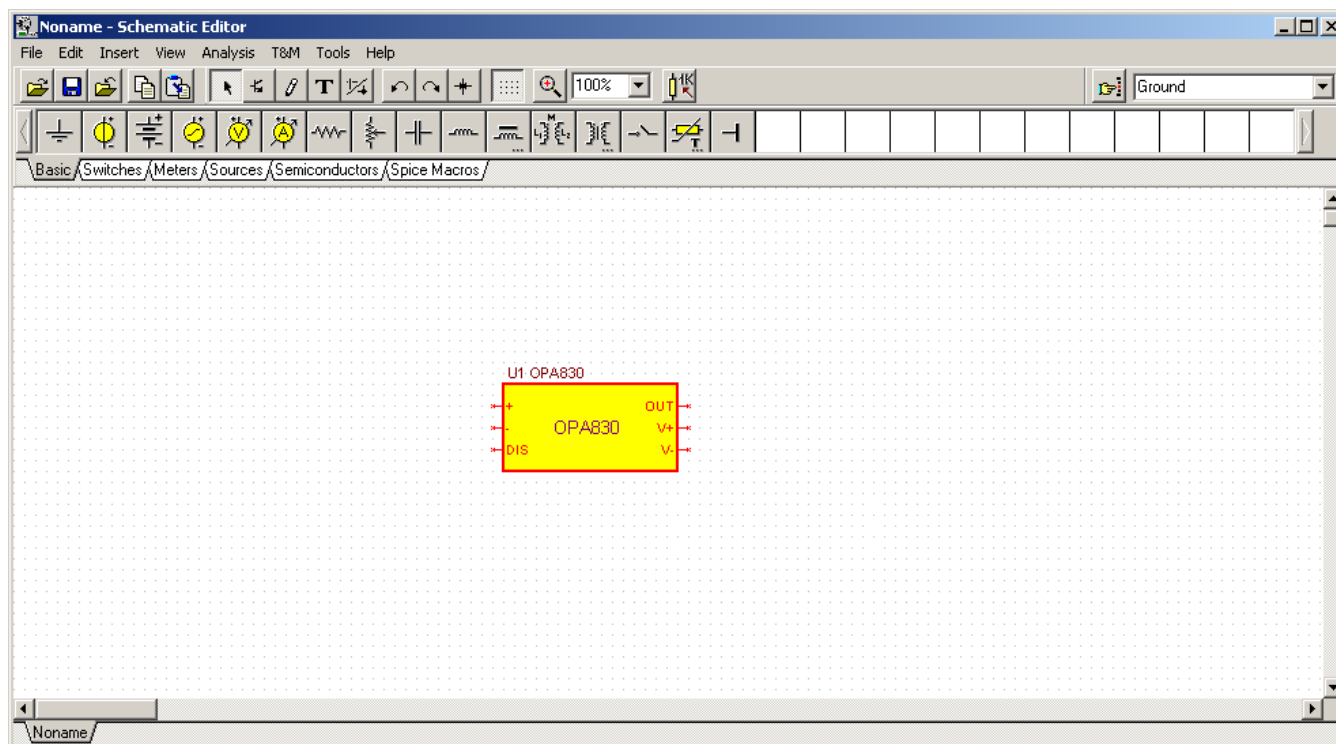


Figure 6. Newly Created Macromodel Placed in a Schematic Window

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.

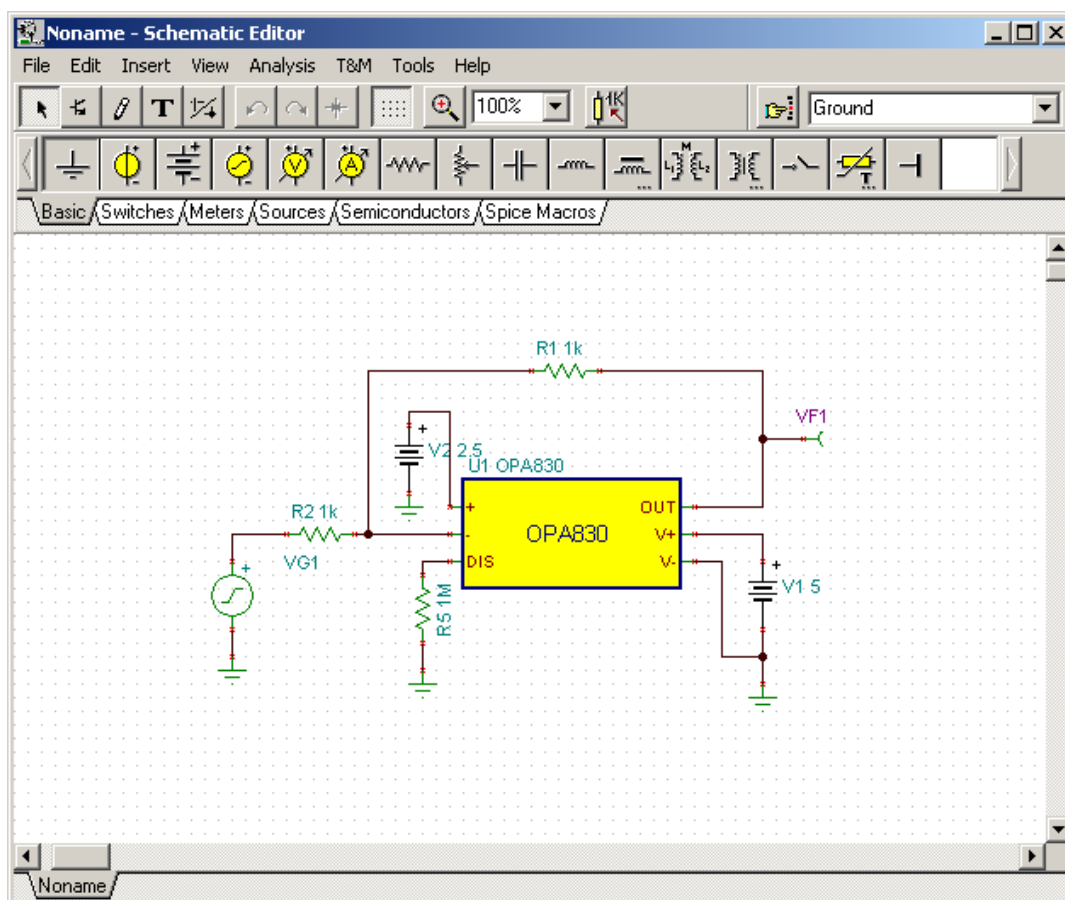


Figure 7. Final Schematic Showing Macromodel Shape and Additional Components

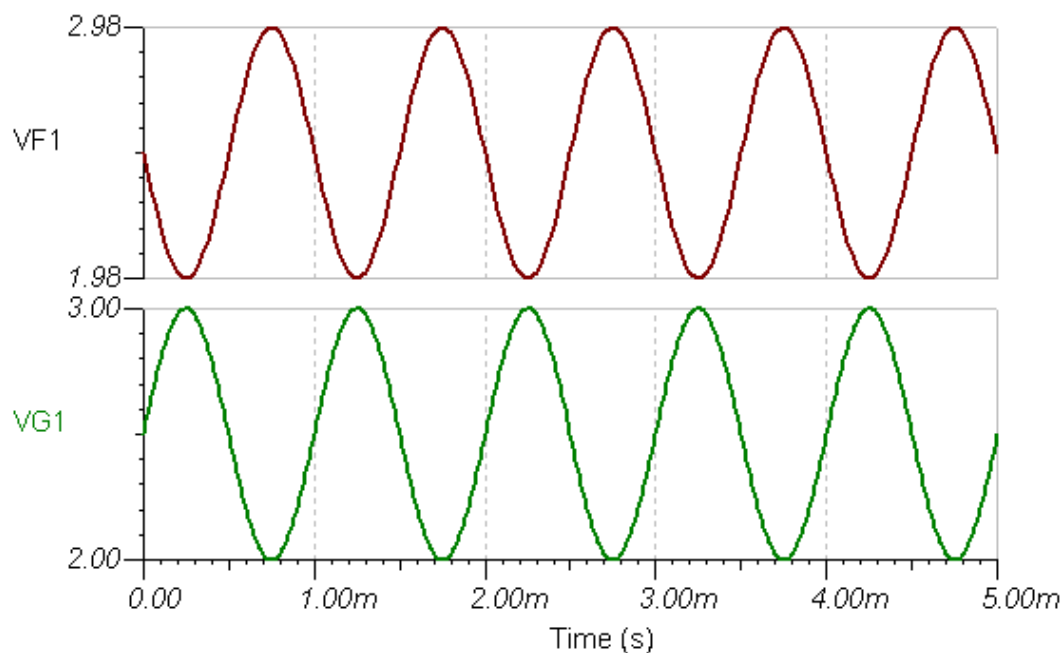


Figure 8. Probe Window Showing the Output Waveform from a Transient Simulation

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].)

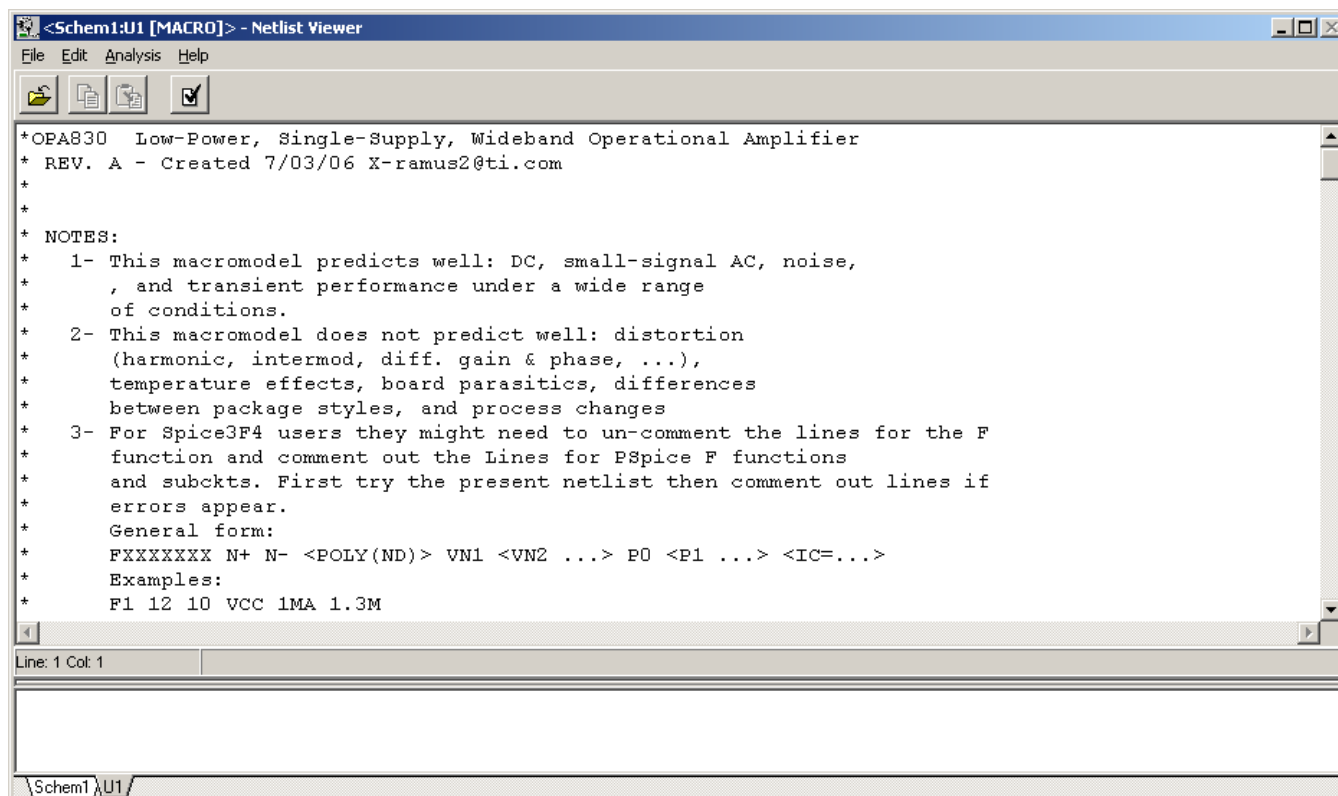


Figure 9. Netlist Viewer Window

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).

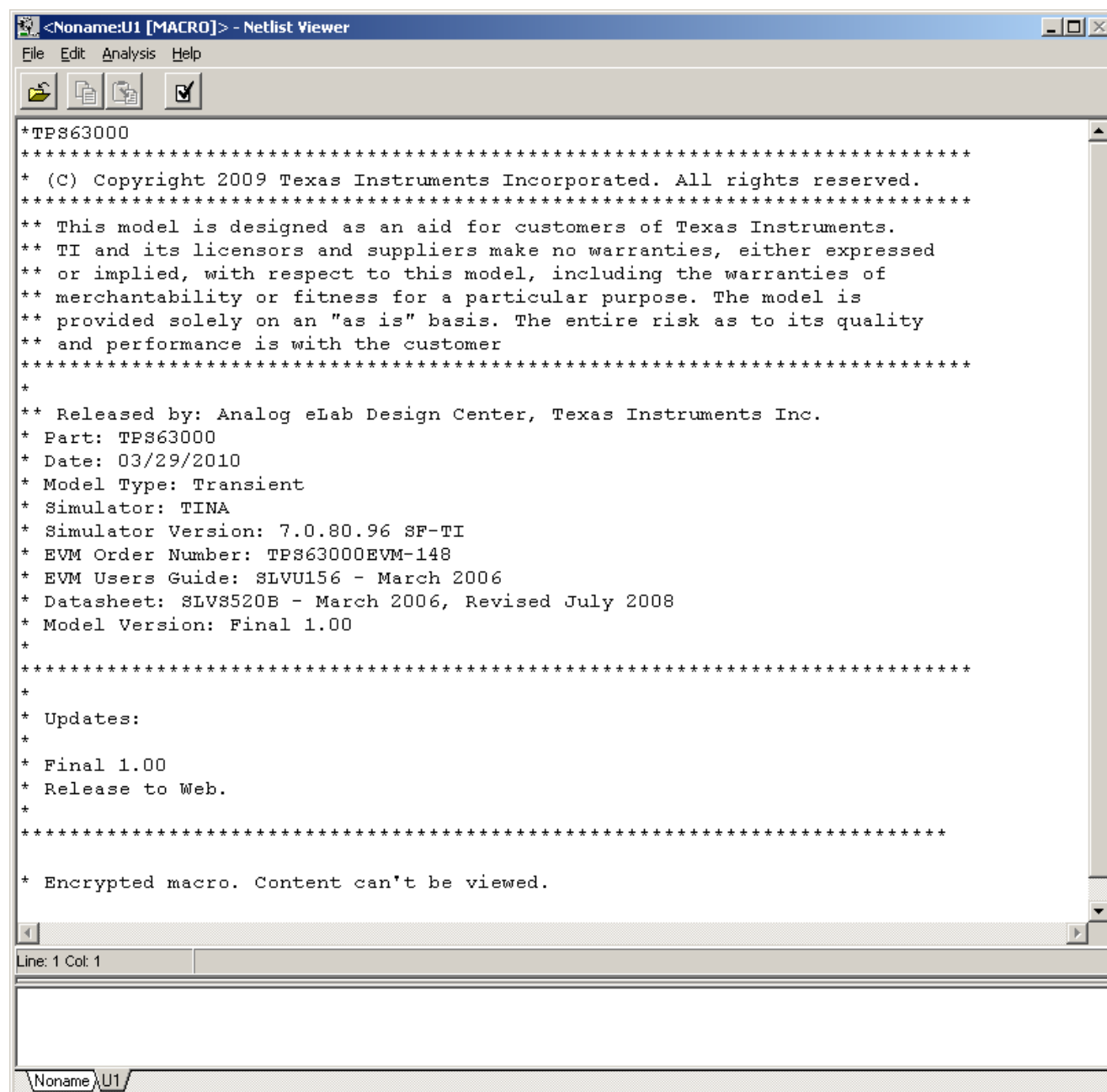


Figure 10. Netlist Editor Display for an Encrypted Netlist

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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