# Defining a Subnetwork in ADS:

Subnetworks allow you to take advantage of the heirarchy possible in ADS. You can save circuits or portions of circuits that you plan to reuse as subnetworks which can then be accessed in the Component Library.

Here are the steps:

Begin from your schematic of the circuit that you want to represent as a subnetwork.

1. Insert and label connectors from the tool bar. In a mixer, port 1 is the RF port, 2 is the IF and 3 is the LO port.
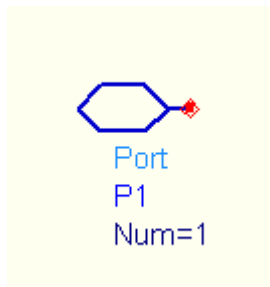
Complete the construction of your schematic for the subnetwork. Note that you will need to include transistor models into the subnetwork if your circuit requires transistors. Name and save the subnetwork.

2. . Create Subnetwork symbol:
   View > Create/Edit Schematic Symbol
   The Symbol Generator panel opens up. Click on the *Copy/Modify* Tab
   There is a library of symbols already available. For a mixer, use the *System-Amps & Mixers* lib.
   To return to the schematic, choose *View > Create/Edit Schematic Symbol* (again)
   Save the file

3. Name the circuit and set the design parameters
   File > Design Parameters

   General tab. The component name will be shown, BJT_SB in this example. Name the component instance. For example: Mix. When the component is included in a schematic, each instance will be numbered sequentially.
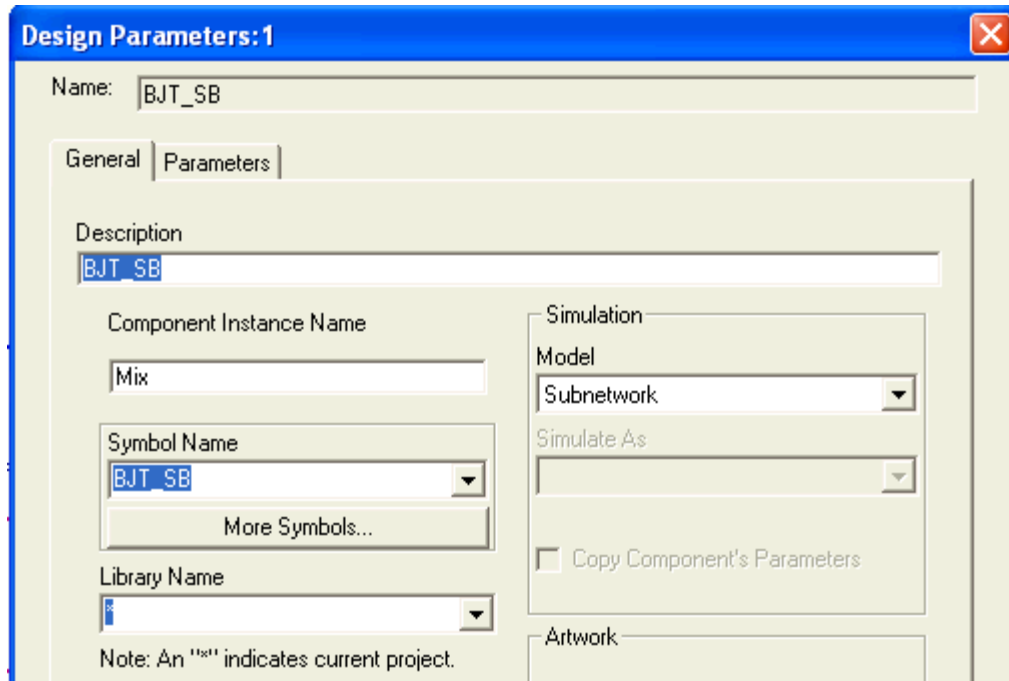
5. If you want to allow adjustable parameters from outside the subnetwork, use the Parameters menu tab. This is useful when you want to sweep some parameter that is inside the subnetwork. In this example, 4 parameters are declared to be adjustable. Their values are given a default, but can be specified again outside the model in the schematic where it is being used.
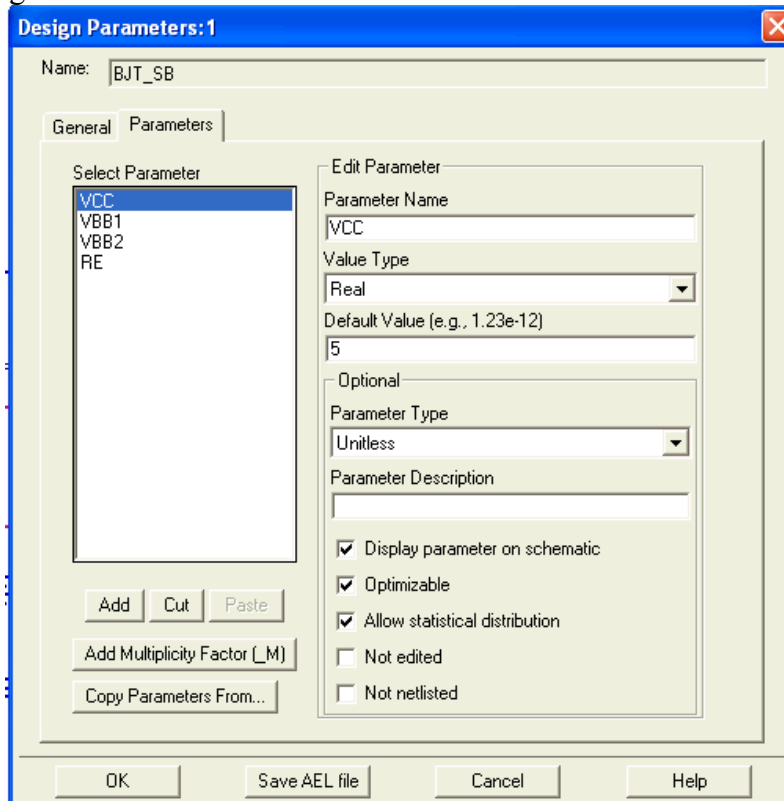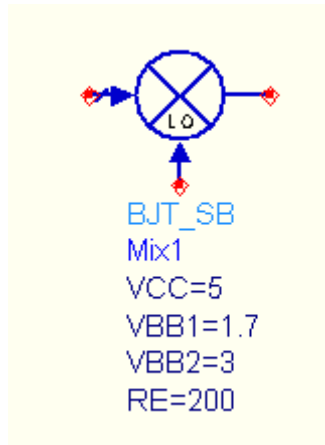
6. Save the subnetwork again.

7. To insert your mixer into the schematic, use the component library icon (the bookshelf icon) on the tool bar to open the library. Select your project, then the component you wish to insert. You can then point and click into the schematic.
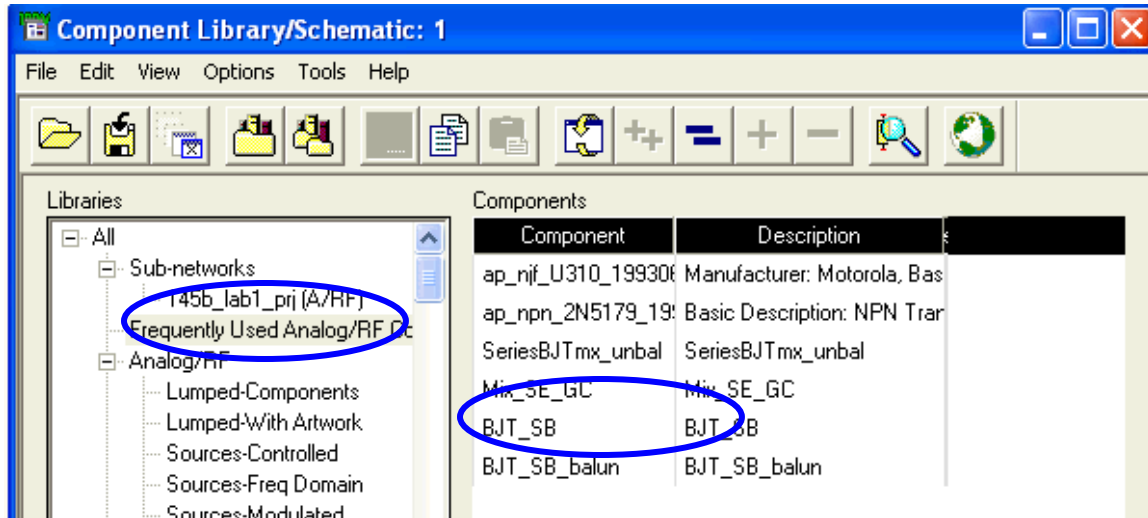
The symbol appears like this in the schematic:

7. You can push into the subnetwork to view or modify it with the down arrow icon on the toolbar.