

# Guide to the Curve Tracer in LabVIEW

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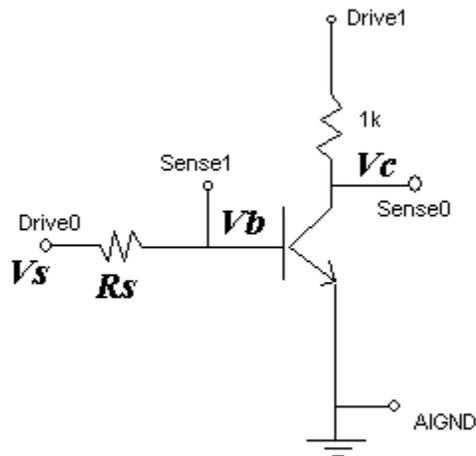
## 1. How to use?

First of all, you need to set-up the channel names. Refer to the tutorials for "Measurement & Automation Explorer". The Channel names that I set up were:

Sense0 (Pin68/ACH0), Analog input  
Sense1 (Pin33/ACH1), Analog input  
Drive0 (Pin22/Dac0out) , Analog output  
Drive1 (Pin21/Dac1out) , Analog output

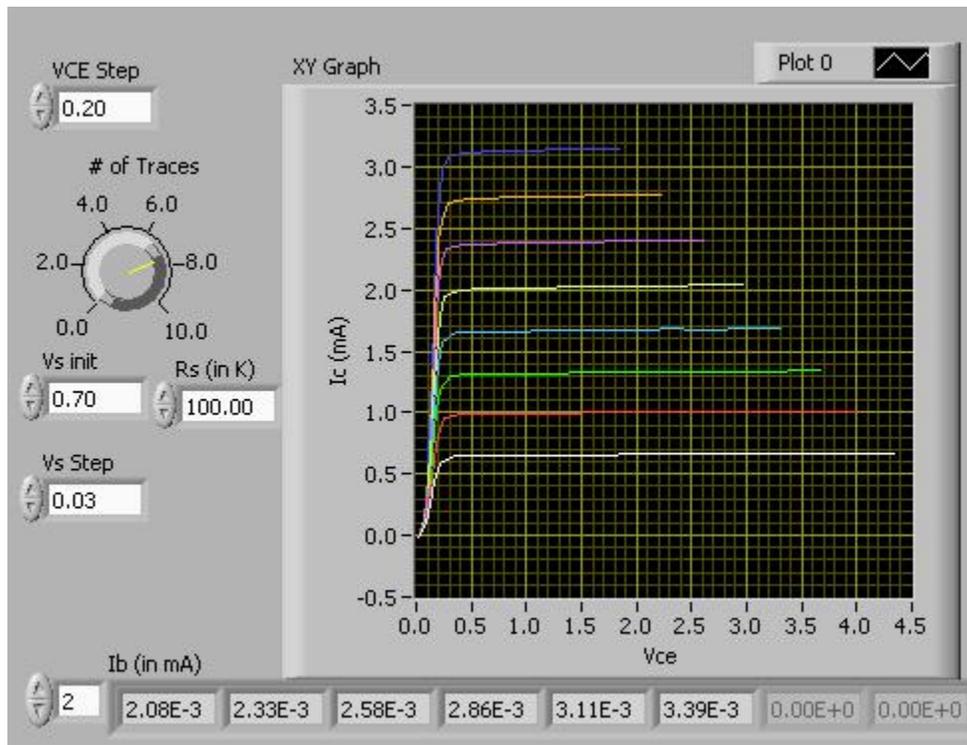
The "virtual channel name" (i.e, Sense0,1,... etc.) are the ones used in your diagram. You can change them to anything you want. Notice that the Device number is "1" in this example. You may have to change it to suit your hardware. The channel names and device number settings are next to the AO/AI icons in the diagram. Locate them and change if needed.

Next, build the circuit on the breadboard.



Then, connect the wires to your breadboard.

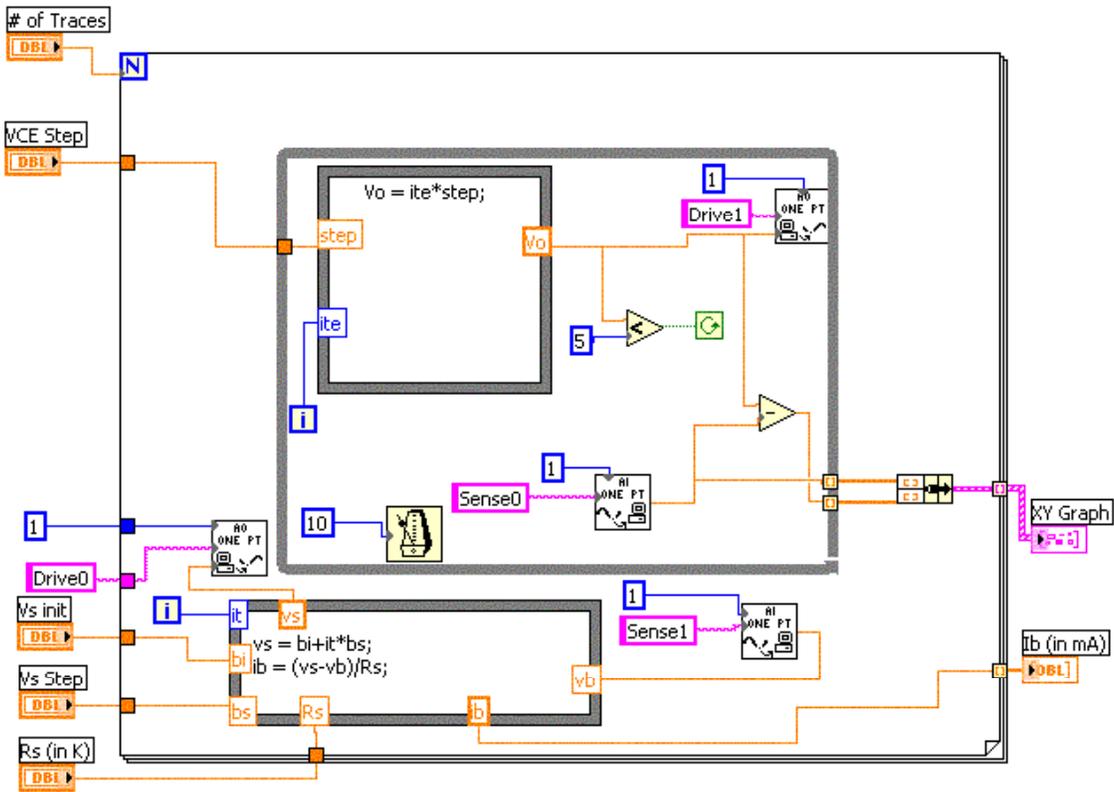
In the Panel, you can control the step size of VCE sweep, and number of traces, Vs initial value, Vs step size, and resistance value of Rs. Click the Run button in the toolbar, after a few seconds you should see the curves. At the bottom, the base currents are listed for each trace. See the figure below for the panel.



There should be a print command in the File manual. Use it to obtain a printout of your traces. Alternatively, you can always use the key "Print Screen" and paste the picture in a graphic application and save it electronically.

## 2. How to build?

Refer to the Diagram.



If you have the VI, open it now. Do Help->Show Context help or Press <CTRL> + <H>. This should bring up a small window, and if you hover your mouse pointer over anything in the diagram, it will tell you what it is and how to use it. And there is no precedence of doing which first. So everything you need to know is what you see in the diagram.

Basically, there are two loops. The outer for loop controls the number of traces and the inner while loop controls VCE sweep. So if you want 5 traces the outer loop will run 5 times. The number of times the inner loop runs depends on the VCE step size and the max voltage possible. In this example  $V_{max}$  is set to 5V, but you can change it easily. Note the Formula Box is where to put the code for each iteration. You have to wire the variables and numbers in or out from this box, using the wiring tool. Add the variable name by right click on the border of this Formula Box. Write the code inside the Formula Box. The syntax is similar to C.

