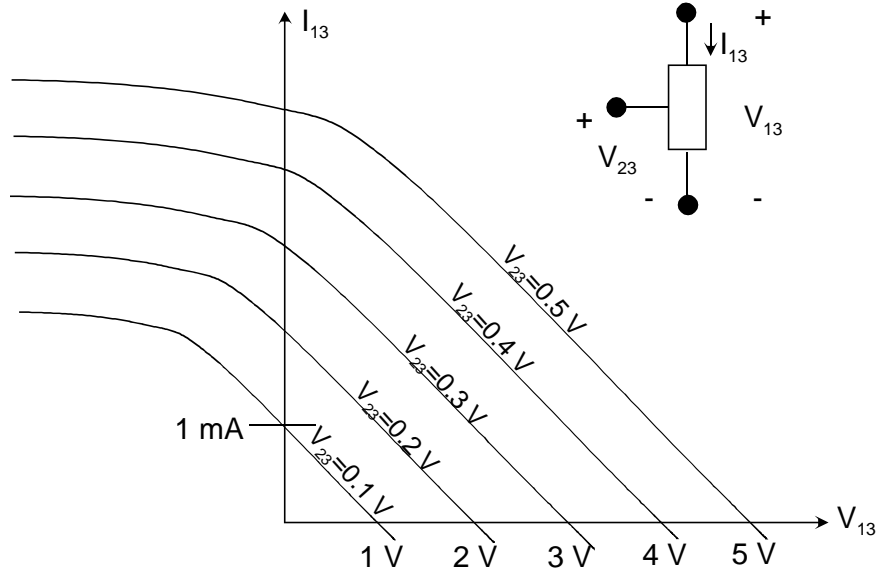


ELEG240- Spring, 2006
Homework 11
Due 5/17, noon

1. You invent a three terminal device that has the following characteristics:



Construct an approximate equivalent circuit model.

2. If a pnp transistor is composed of silicon, and the emitter is heavily doped (meaning the Fermi level in the emitter is essentially at the valence band), while the Fermi level in the base is 90 % of the way up from the valence band, and 99 % of the holes injected from the emitter make it to the collector, calculate the current gain I_c / I_b .
3. Describe how to construct an OR gate with a single MOSFET. Draw a picture of it. Write down the drain-source current as a function of the various voltages on this MOSFET. (Problem 10.3 in the textbook may help).