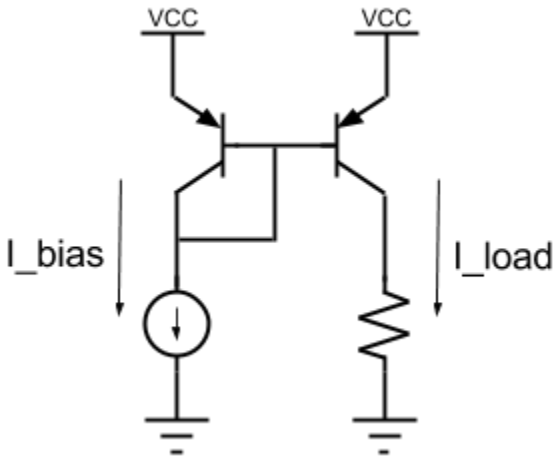
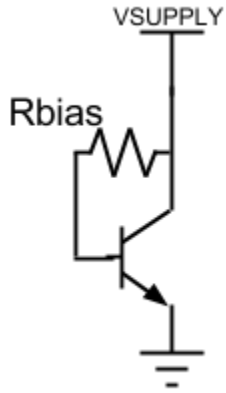
Lecture 6, PNPs and BJT Biasing
E151/3 F17 – Matthew Spencer



1. The above configuration of transistors is referred to as a current mirror. Current mirrors are another common way to bias transistors.

(a) Find the load current in terms of the bias current. Assume the right transistor is not saturated.

(b) Draw an NPN version of a current mirror



2. This circuit is a common biasing circuit for transistors in high frequency designs

(a) Simulate the collector current vs. supply voltage over a supply voltage range from 100mV to 5V for values of Rbias that range from 100 ohms to 500 ohms in steps of 100 ohms. Assume the transistor is a 2N3904.

(b) What region of operation does the BJT operate in? Looking at the base voltage may help to figure this out. Explain why the transistor stays in this region qualitatively. (This is sometimes called "foolproof" biasing.)