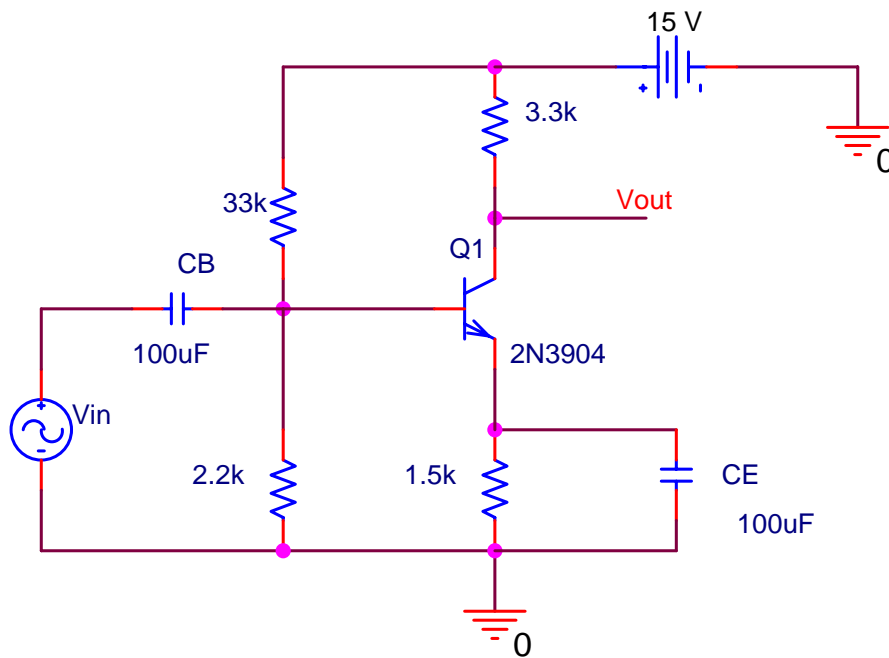


## EECE-315 Prelab 11

1. Assume  $\beta = 120$ . Calculate  $I_{CQ}$  and the midband voltage gain for the circuit shown below.
2. Calculate the corner frequency due to each capacitor individually using the short-circuit time constant method. What is the estimated lower -3 dB cutoff frequency?
3. Use PSPICE to plot the magnitude response and determine the lower -3 dB cutoff frequency.
4. Repeat steps 2 and 3 for  $C_E = 10 \mu\text{F}$  and  $C_B = 0.1 \mu\text{F}$ .



## EECE-315 Lab 11

1. Connect the circuit given in the prelab, and measure  $I_{CQ}$ .
2. Measure the midband voltage gain at 10 kHz. Decrease the frequency and measure the voltage gain between the frequencies of 10 kHz and the  $-3$  dB cutoff frequency. If the output voltage waveform gets clipping, reduce the input amplitude. Take several data points in each decade and spread them out over the decade. Take more data points around the  $-3$  dB cutoff frequency. Plot this data on a semi-log paper. Compare the measured midband voltage gain to the theoretical calculated value, and compare the measured  $-3$  dB cutoff frequency to the PSPICE determined value, and the estimated value. If you express the gain in dB, express the error in dB (NOT in percent). If you give the gain as a pure number, express the error in percent.
3. Repeat step 2 for  $C_E = 10$  uF and  $C_B = 0.1$  uF.