

EE105 Lab Experiments

## Report 7: Frequency Response

Name:

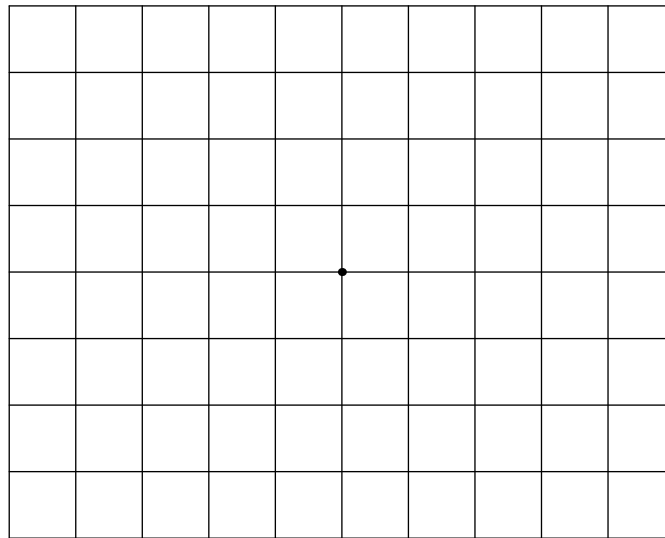
Lab Section:

3.1.3 Measure  $I_{BIAS}$  and the DC voltage at  $V_{OUT}$ .

$I_{BIAS} =$

$V_{OUT} =$

3.1.4 Sketch the waveforms at  $v_{IN}$  and  $v_{OUT}$ .



3.1.5 What are the magnitude and phase of  $v_{out}/v_{in}$  measured from the oscilloscope?

$|v_{out}/v_{in}| =$

$\angle v_{out}/v_{in} =$

3.1.7 What are the magnitude and phase of  $v_{out}/v_{in}$  measured from the software? How different is this measurement compared to the one obtained with the oscilloscope?

$$|v_{out}/v_{in}| =$$

$$\angle v_{out}/v_{in} =$$

3.1.8 What is the frequency at which the gain drops by 3 dB? What is the phase at this frequency? Is the phase consistent with the magnitude?

$$f_{-3 \text{ dB}} =$$

$$\angle v_{out}/v_{in}|_{f_{-3 \text{ dB}}} =$$

3.1.9 Attach the Bode plot to the Lab Report.

3.2.2 Frequency response of the amplifier with a Miller capacitor.

$$f_{-3 \text{ dB}} =$$

$$\angle v_{out}/v_{in}|_{f_{-3 \text{ dB}}} =$$

Attach the Bode plot to the Lab Report.

3.2.3 How does the dominant pole of this amplifier compare to the dominant pole of the previous amplifier? Is this expected?

3.2.4 If we are to design an amplifier with high bandwidth, is a transistor with large  $C_\mu$  desirable?

3.3.2 Frequency response of the amplifier with an output capacitor.

$$f_{-3 \text{ dB}} =$$

$$\angle v_{out}/v_{in}|_{f_{-3 \text{ dB}}} =$$

Attach the Bode plot to the Lab Report.

3.3.3 How does the dominant pole of this amplifier compare to the dominant pole of the previous two amplifiers? Is this expected?

3.4.2 Frequency response of the common collector amplifier.

$$f_{-3 \text{ dB}} =$$

$$\angle v_{out}/v_{in}|_{f_{-3 \text{ dB}}} =$$

Attach the Bode plot to the Lab Report.

3.4.3 How does the bandwidth of this amplifier compare to the bandwidths of the previous amplifiers?