UNIVERSITY OF CALIFORNIA AT BERKELEY
College of Engineering
Department of Electrical Engineering and Computer Sciences

EE105 Lab Experiments

Experiment 3: Single Stage CE & CS Amplifier Lab Worksheet

1 Lab

Please remember to bring USB storage to save oscilloscope captures. Make sure you have desired measurement results displayed on the picture you saved.

1.1 Attenuation Network

Measured Attenuation Ratio:_____

1.2 Single Stage CE BJT Amplifier

Table 1: Component Values

Component Values	Measurement	Simulation(Refer to Prelab)
R_{b1}		
R_{b2}		
R_c		
R_e		

Table 2: Device Operating Points

Operating Points	Measurement	Simulation(Refer to Prelab)
V_{be}		
V_{ce}		
I_b		
I_c		

Table 3: Performance

Performance	Measurement	Simulation(Refer to Prelab)
Middle Band Gain(A_{mid})		
Low Cutoff Frequency(f_L)		
High Cutoff Frequency(f_H)		
Output Swing(SW)		
Total Power Consumption(P_{total})		

Attach the Bode plot of voltage gain(in dB) with frequency from 100Hz to 100kHz (in log scale). Mark A_{mid}, f_L and f_H on the curve.

Attach output waveform with V_{source}=1V at middle band frequency. Record the magnitude(pk-pk) and frequency of the function generator aside.

Attach output waveform when output is swing limited. Record the magnitude(pk-pk) and frequency of the function generator aside.

1.3 Single Stage CS MOS Amplifier

Table 4: Component Values

Component Values	Measurement	Simulation(Refer to Prelab)
R_{g1}		
R_{g2}		
R_d		
R_s		

Table 5: Device Operating Points

Operating Points	Measurement	Simulation(Refer to Prelab)
V_{gs}		
V_{ds}		
I_d		

Table 6: Performance

Performance	Measurement	Simulation(Refer to Prelab)
Middle Band Gain(A_{mid})		
Low Cutoff Frequency(f_L)		
High Cutoff Frequency(f_H)		
Output Swing(SW)		
Total Power Consumption(P_{total})		

Attach the Bode plot of voltage gain(in dB) with frequency from 100Hz to 100kHz (in log scale). Mark A_{mid}, f_L and f_H on the curve.

Attach output waveform with V_{source}=1V at middle band frequency. Record the magnitude(pk-pk) and frequency of the function generator aside.

Attach output waveform when output is swing limited. Record the magnitude(pk-pk) and frequency of the function generator aside.