Experiment 4
Frequency Response of Single-Stage Common-Emitter Amplifier

Connect the common-emitter amplifier as shown in Figure 1. Connect function generator (VSINE) at the input of the amplifier circuit. Set input voltage at 10 mV and frequency at 10 Hz. Connect the oscilloscope at the input and the output of the amplifier circuit. Observe the amplified signal in Figure 2. Record amplitude of output signal in the table. Increase frequency from function generator to 10 MHz and repeat the above step. Calculate voltage gain for different frequencies and gain in dB. Plot the frequency response.

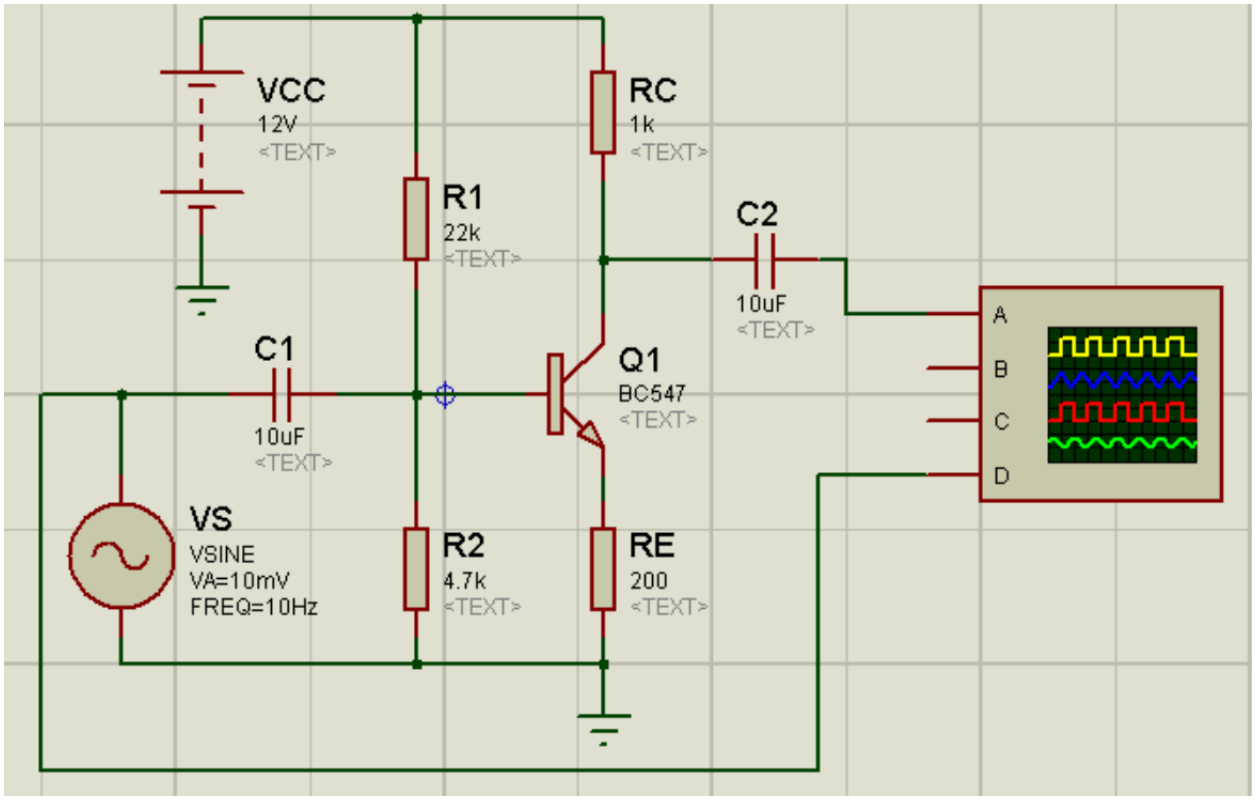

Figure 1: Single-Stage Common-Emitter Amplifier.

Table 1: Voltage Gain Results

Frequency at input	Output Voltage	Voltage Gain	Gain in dB
10 Hz			
50 Hz			
500 Hz			
500 kHz			
1 MHz			
10 MHz			

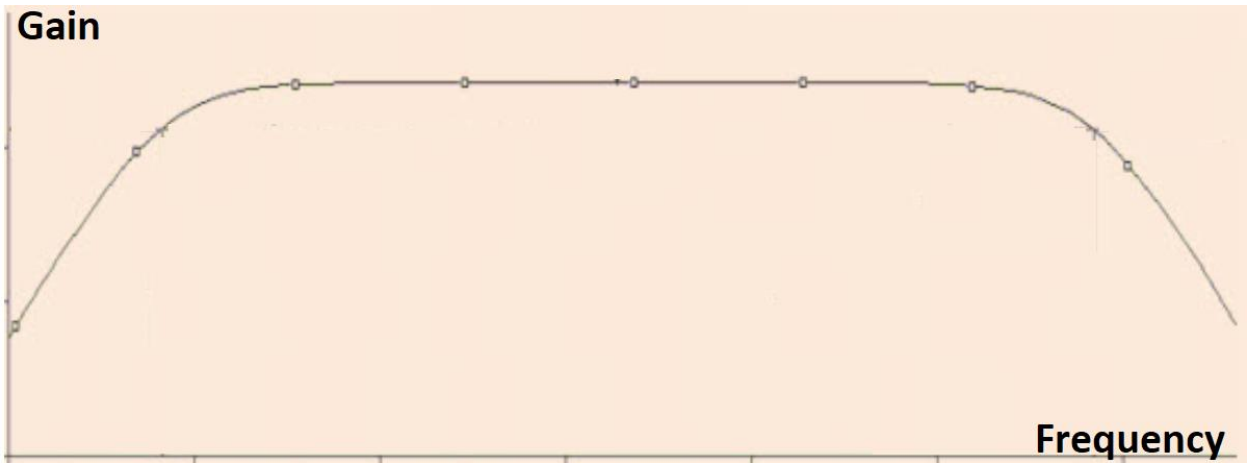

Figure 8: Frequency Response of Common-Emitter Amplifier.

Experiment 5

Frequency Response of Two-Stage Common-Emitter Amplifier

Connect the two-stage common-emitter amplifier as shown in Figure 1. Connect function generator (VSINE) at the input of the amplifier circuit. Set input voltage V_1=1 mV and frequency at 100 Hz. Connect the oscilloscope at the output of the first amplifier circuit at point V_2. Observe the amplified signal at V_2 (green wave in Figure 2). Record in the table, the amplitude of the output signal, V_2, and the gain of the first stage $A_1 = \frac{V_2}{V_1}$.

Observe the amplified signal at the output of the second amplifier at point V_3 (blue wave in Figure 2). Record the amplitude of the output signal, V_3, and the gain of the second stage $A_2 = \frac{V_3}{V_2}$. Find overall gain of amplifier $A = \frac{V_3}{V_1} = A_1 A_2$.

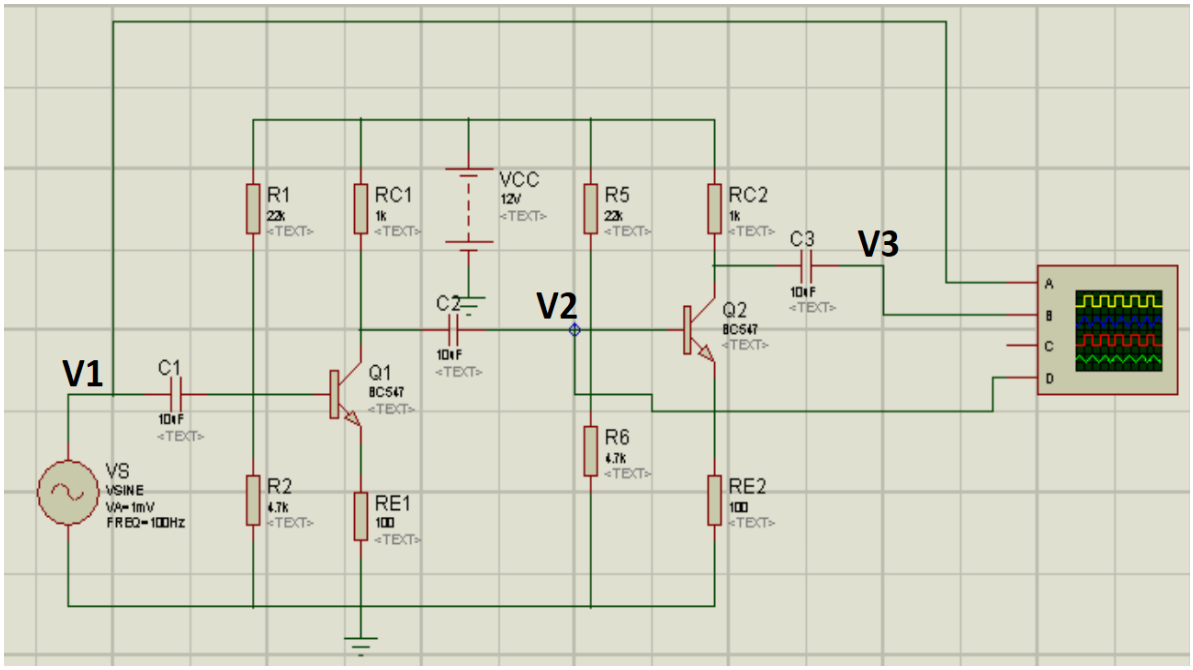

Figure 1: Two-Stage Common-Emitter Amplifier

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Increase frequency from function generator to 10 MHz and repeat the above steps. Calculate voltage gain for different frequencies and gain in dB. Plot the frequency response.

Table 1: Voltage Gain Results

Frequency at input	Output Voltage V3	Voltage Gain	Gain in dB
100 Hz			
:			
500 Hz			
100 kHz			
:			
500 kHz			
: :			