ELEC-313
Lab 9: Common-Emitter Transistor Amplifier

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1 Objective

The objective is to construct and observe the operation of a common-emitter transistor amplifier.

2 Equipment

Transistor: 2N2222A	Capacitor: 0.1 µF
Resistors: 100 kΩ, 20 kΩ, 1 kΩ, 470 Ω	Power supply: HP E3631A
Function generator: HP 33120	Oscilloscope: Agilent 54622D
Multimeters: HP 34401A, Fluke 8010A (x2)	

3 Schematics

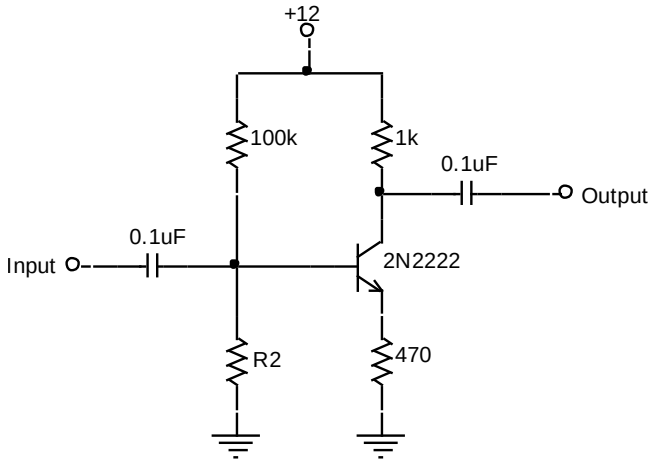

Figure 1: Common-emitter transistor amplifier (without the emitter bypass capacitor). $R_2 = 20\,\text{k}\Omega$

4 Procedure

5 Results

V_B (V)	V_C (V)	V_E (V)	V_i (mV)	V_o (mV)	A_V
1.788	9.58	1.153	500	970	1.94

Table 1: Transistor amplifier characteristics

R (Ω)	V_{OC} (mV)
958	477

Table 2: Port impedances

R (kΩ)	V_i (V)
13.9	2.57

Table 3: Large-signal performance

6 Conclusion

7 Equations

V_B (V)	V_C (V)	V_E (V)	V_i (V)	V_o (V)	A_V
1.783	9.547	1.164	0.122	6.19	52.0

Table 4: Transistor amplifier characteristics (with emitter bypass capacitor)