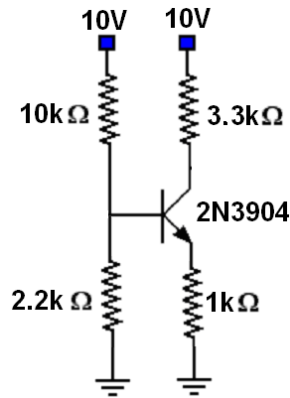


Electronics Lab

BJT Amplifiers

Amplifier 1: Common Emitter Amplifier.

a) Connect the circuit shown in the figure:



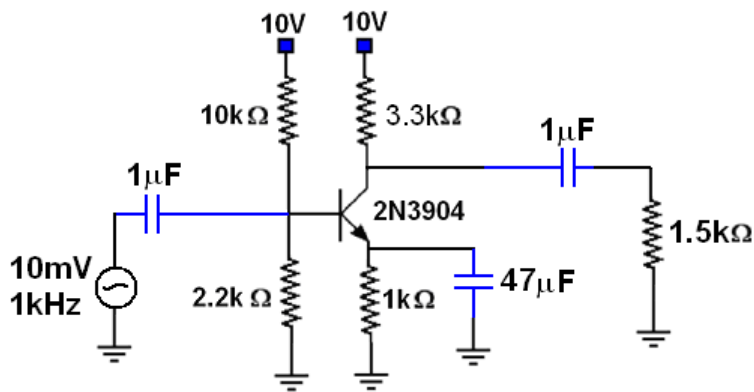
b) Calculate and measure the voltage collector-emitter checking that the transistor is in the active region.

c) Add two $1\mu\text{F}$ coupling capacitors to the circuit as shown in the figure below.

d) Connect a $47\mu\text{F}$ capacitor in parallel with the emitter resistor to short that resistor for AC. [Be careful to use the right polarities with electrolytic capacitors]

e) Inject a small signal to the base (try 10mV at 1kHz) and connect a $1.5\text{k}\Omega$ load resistor to the collector output.

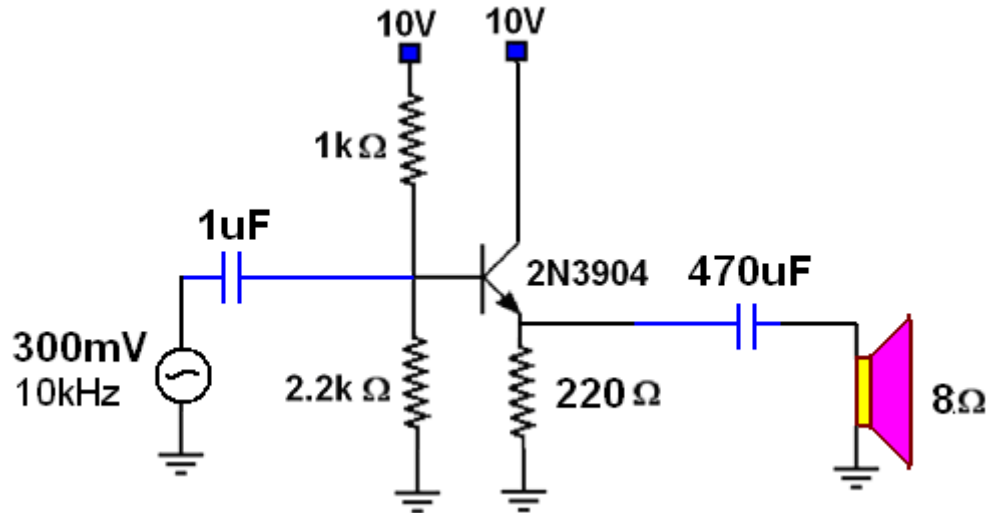
Note: If the signal generator cannot give you a low enough signal, you can use a voltage divider to reduce the amplitude, for example, a 100-ohm resistor in series with a 10-kohm resistor will reduce the signal to $1/100$ of its value.



d) Calculate the voltage gain that you expect. Measure the gain using the oscilloscope. Check that the input and output signals are shifted 180° .

Amplifier 2: Emitter Follower.

a) Connect the circuit shown in the figure:



b) Calculate the voltage gain that you expect. Measure the gain using the oscilloscope.