

# **ELECTRONICS LABORATORY**

## **PART 5 EXPERIMENTS**

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# EXPERIMENT: 5.1

## EXAMINATION OF EMITTER GROUND AMPLIFIER

### EXPERIMENTAL PROCEDURE:

Plug the Y-0016/009 module. Make the circuit connections as in figure 14.5

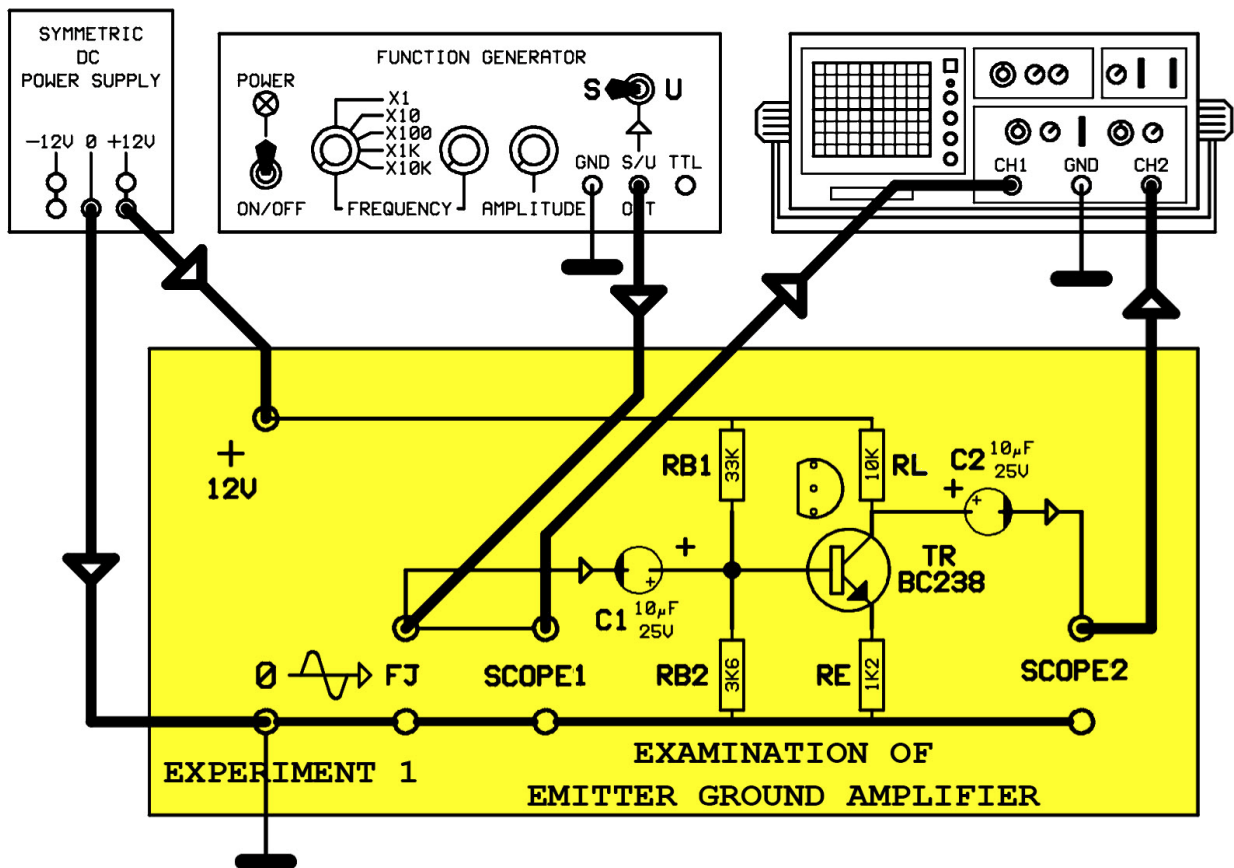


Figure 14.5

- 1- Adjust the amplitude potentiometer of function generator to zero. (**mid-terminal will be on left**).
- 2- Adjust the output waveform to sine, frequency to 1KHz and amplitude to peak to peak  $V_{ipp}=100mV$
- 3- See the input and output signals at oscilloscope. What is the phase relation between input and output signals?

4- Measure the output signal amplitude (**V<sub>opp</sub>**). Calculate the circuit gain (**A**).

$$A = \frac{V_{O_{PP}}}{V_{i_{PP}}} =$$

5- Write the properties of emitter ground amplifier.

- a- *Input impedance* .....
- b- *Output impedance* .....
- c- *Voltage gain* .....
- d- *Current gain* .....
- e- *Power gain* .....

## EXPERIMENT: 5.2

### EXAMINATION OF BASE GROUND AMPLIFIER

#### EXPERIMENTAL PROCEDURE:

Plug the Y-0016/009 module. Make the circuit connections as in figure 14.7

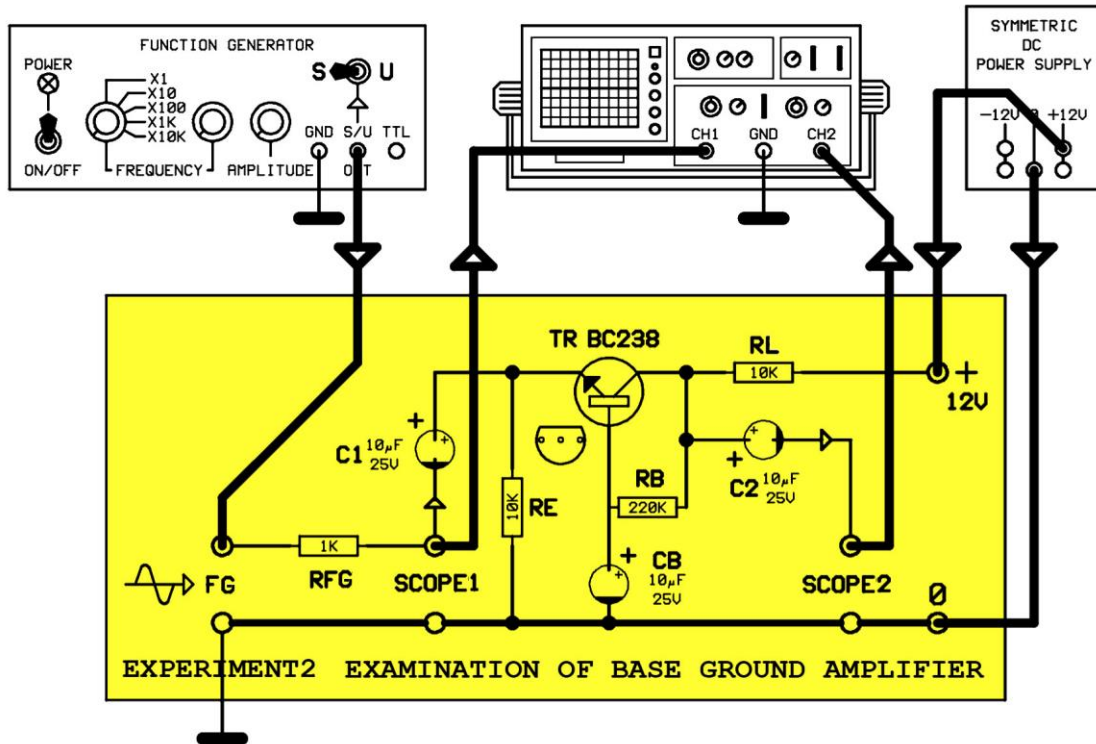


Figure 14.7

- 1- Adjust the amplitude potentiometer of function generator to zero. (**mid-terminal will be on left**). RFG resistor is used to prevent the function generator's short-circuiting because input impedance of base ground amplifier is too low.
- 2- Adjust the output signal to sine wave at point scope1, frequency to 1KHz and amplitude to peak to peak **V<sub>ipp</sub>=10mV**. Apply power to the circuit.
- 3- See the input and output signals displayed by oscilloscope. What is the phase relation between input and output signals?

4- Measure the output signal amplitude (**V<sub>opp</sub>**). Calculate the circuit gain (**A**).

*Peak to peak output signal amplitude is ..... V<sub>opp</sub>*

*Gain is the ratio of output voltage to input voltage.*

**Gain:**

$$A = \frac{V_{O_{pp}}}{V_{i_{pp}}} =$$

5-Write the properties of base ground amplifier.

*a- Input impedance .....*

*b- Output impedance .....*

*c- Voltage gain .....*

*d- Current gain .....*

*e- Power gain .....*

## EXPERIMENT: 5.3

### EXAMINATION OF COLLECTOR GROUND AMPLIFIER

#### EXPERIMENTAL PROCEDURE:

Plug Y-0016/009 module. Make the circuit connections as in figure 14.9

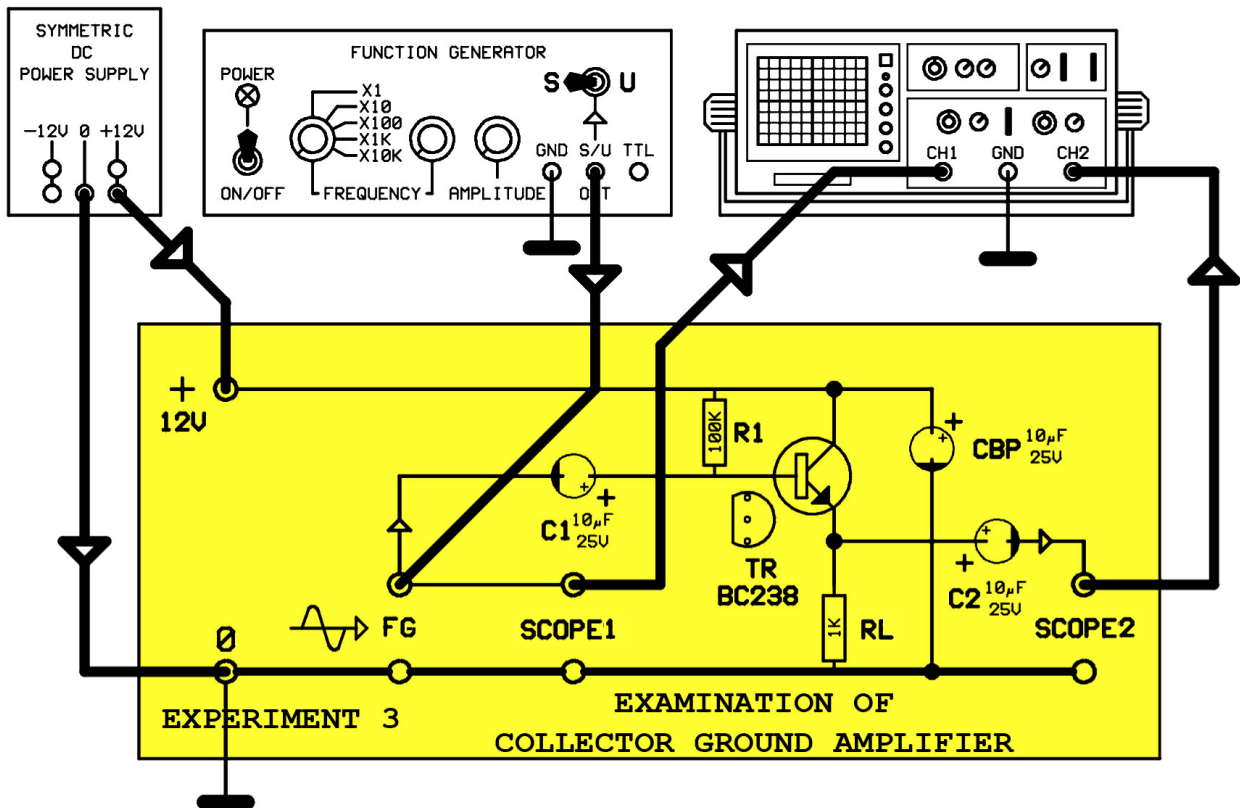


Figure 14.9

- 1- Adjust the amplitude potentiometer of function generator to zero. (**mid-terminal will be on left**). Apply power to the circuit.
- 2- Adjust the output signal to sine wave, frequency to 1KHz and amplitude to peak to peak  $V_{ipp}=1V$ .
- 3- See the input and output signals displayed by oscilloscope. What is the phase relation between input and output signals

4- Measure the output signal amplitude (**V<sub>opp</sub>**). Calculate the circuit gain (**A**).

*Output signal amplitude is a little smaller than the input. Peak to peak output signal is ..... V<sub>opp</sub>.*

*Gain is the ratio of output voltage to input voltage.*

**Gain:**

$$A = \frac{V_{oPP}}{V_{iPP}} =$$

5-Write the properties of collector ground amplifier.

*a- Input impedance .....*

*b- Output impedance .....*

*c- Voltage gain .....*

*d- Current gain .....*

*e- Power gain .....*