

ECE101-1L – FUNDAMENTALS OF ELECTRONIC CIRCUITS (LAB)

Activity #6a: Transistor Biasing

Objectives:

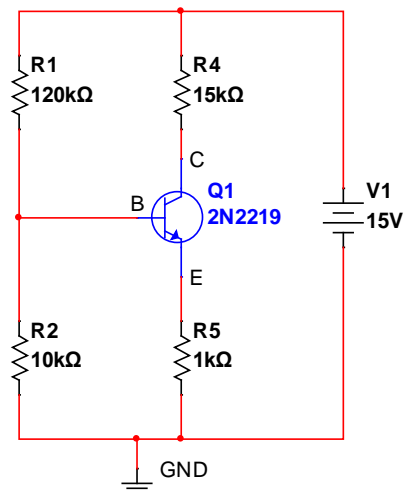
- Determine different transistor circuit configurations
- Identify the terminals of transistor in Multisim and TinkerCAD
- Construct different transistor circuit configurations

Procedures:

1. Identify three different transistor circuit configurations

2. Base from your answer on Question #1. Include one screenshot schematic diagrams of each transistor configurations.

3. Open Multisim
4. Create the schematic diagram shown below



5. Calculate and record the Base Voltage (V_B) for Q1

$$V_B = V_A \left(\frac{R_2}{R_1 + R_2} \right)$$

6. Measure the V_B using Multimeter (+)-probe to the base of transistor and (-)-probe at GND

7. Measure the VBE using Multimeter (+)-probe to the base of transistor and (-)-probe at Emitter of the Transistor

8. Is the transistor forward biased?

9. Measure the VCB using Multimeter (+)-probe to the collector of transistor and (-)-probe at base of the Transistor

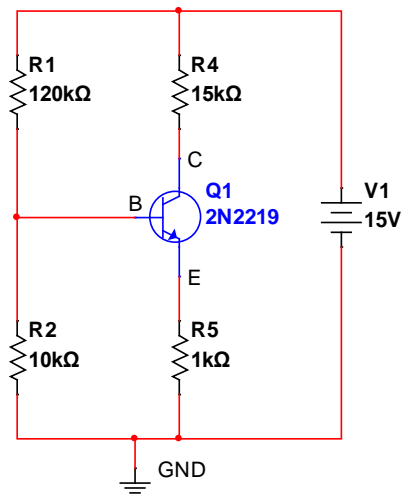
10. Is the transistor reversed biased?

11. Measure the Voltage Across R5 (VE)

12. Calculate the Current (IE) using formula ($I_E = V_E/R_5$)

13. Measure the VC using Multimeter (+)-probe to the collector of transistor and (-)-probe at GND.

14. Using TinkerCAD create the schematic shown below
Replace 2N2219 with NPN Transistor, for 15V use Power supply and set to 15V



15. Screenshot your tinkercad work



Discussions:
