Laboratory Application Assignment

In this lab application assignment you will examine two different biasing techniques used with transistors: base bias and voltage divider bias. You will see that with base bias, I_C and V_{CE} are beta-dependent values, whereas with voltage divider bias they are not.

Equipment: Obtain the following items from your instructor.

- Two 2N2222A *npn* transistors or equivalent
- DMM
- Assortment of carbon-film resistors
- Variable dc power supply

Beta, β_{dc}

Most handheld and bench-top DMMs available today are capable of measuring the dc beta of a transistor. If your DMM has this capability, measure and record the dc beta of each *npn* transistor supplied to you for this experiment. Keep each transistor separate.

Q_1, β_{dc} = _____
Q_2, β_{dc} = _____

Base Bias

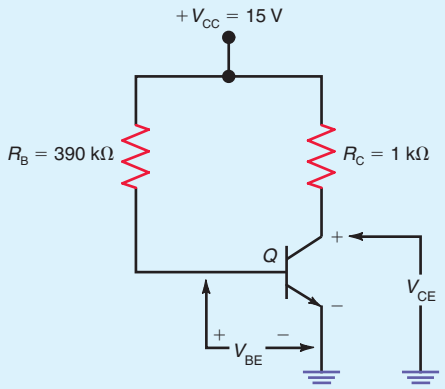
Examine the circuit in Fig. 28–32. Calculate and record the following dc values for each of the two transistor betas:

Q_1	Q_2
I_B = _____	I_B = _____
I_C = _____	I_C = _____
V_{CE} = _____	V_{CE} = _____

Construct the circuit in Fig. 28–32. Measure and record the following dc values for each of the two transistors:

Q_1	Q_2
I_B = _____	I_B = _____
I_C = _____	I_C = _____
V_{CE} = _____	V_{CE} = _____

Figure 28–32



Voltage Divider Bias

Examine the circuit in Fig. 28–33. Calculate and record the following circuit values:

V_B = _____ V_C = _____
V_E = _____ V_{CE} = _____
I_E = _____

Construct the circuit in Fig. 28–33. Measure the following circuit values using Q_1 as the transistor:

V_B = _____ V_C = _____
V_E = _____ V_{CE} = _____
I_E = _____

Replace Q_1 with Q_2 and repeat the measurements listed.

V_B = _____ V_C = _____
V_E = _____ V_{CE} = _____
I_E = _____

Which form of bias produces more stable results, base bias or voltage divider bias? _____ Explain your answer.

_____
_____
_____
_____
_____
_____
_____
_____

Figure 28–33