SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

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Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

COURSE NAME : **19EC304 – ELECTRONIC CIRCUITS I**

II YEAR / III SEMESTER

Unit I- **BIASING OF DISCRETE BJT,FET**

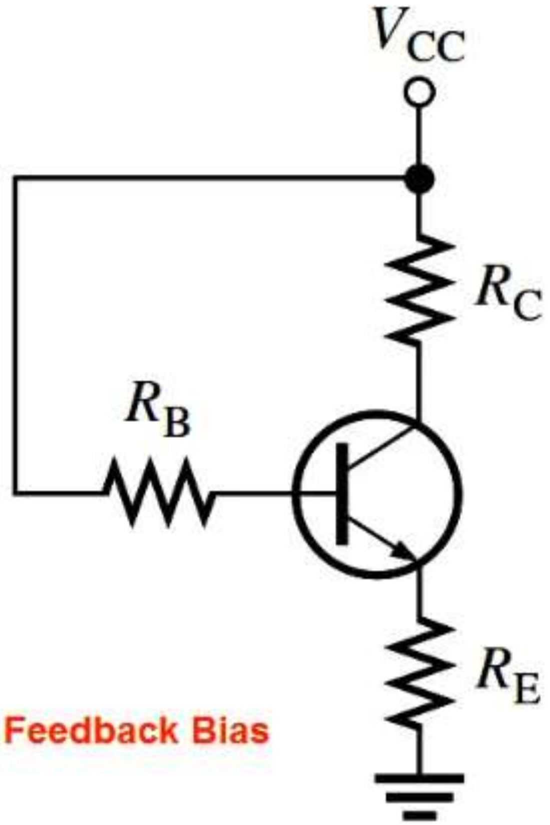
Topic : Collector feedback bias, Emitter feedback bias

Collector feedback bias, Emitter feedback bias

While two-supply emitter bias and voltage divider bias can produce very high stability, there are other bias configurations available. Their stability tends not to be quite as good, but they are superior to simple base bias. They also tend to use fewer components than their high stability cousins. As a group, we refer to these as feedback biasing configurations. They use the concept of negative feedback. This is a technique where a change in the output can be reflected back to the input in such a way that it tends to partially offset the output change.

Collector Feedback Bias

If an emitter resistor is added to the base-bias circuit, the result is emitter-feedback bias, as shown in Figure. The idea is to help make base bias more predictable with negative feedback, which negates any attempted change in collector current with an opposing change in base voltage. If the collector current tries to increase, the emitter voltage increases, causing an increase in base voltage because $V_B = V_E + V_{BE}$.



Emitter Feedback Bias

This increase in base voltage reduces the voltage across R_B, thus reducing the base current and keeping the collector current from increasing. A similar action occurs if the collector current tries to decrease. While this is better for linear circuits than base bias, it is still dependent on β_{DC} and is not as predictable as voltage-divider bias. To calculate I_E, you can write Kirchhoff's voltage law (KVL) around the base circuit.

$$-V_{CC} + I_B R_B + V_{BE} + I_E R_E = 0$$

Substituting I_E/β_{DC} for I_B, you can see that I_E is still dependent on β_{DC}.

$$I_E = \frac{V_{CC} - V_{BE}}{R_E + R_B/\beta_{DC}}$$

Any Query????

Thank you……