Understanding Basic Concept of Electrical and Electronic Systems

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16. COMMON EMITTER AMPLIFIER WITH SELF BIAS

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16.0 Abstract:

A bipolar junction transistor is very versatile. It can be used in many ways, as an amplifier, and a switch. A bias circuit allows the operating conditions of a transistor to be defined, so that it will operate over a pre-determined range. This is normally achieved by applying a small fixed dc voltage to the input terminals of a transistor.

16.1 Basic Circuit:

The simplest bias circuit is shown in Figure 16.1. It consists only of a fixed bias resistor and load resistor. The BJT is operating in common emitter mode. The dc current gain or beta, h_{FE} is the ratio of dc collector current divided by dc base current. The BJT is a BC107A. The values of Rb and Rc can be determined by either mathematical approach or by using the output characteristic curves for the BC107A.