

EXPERIMENT- 8

Objective: To study class-A power amplifier

Resources Required: Trainer kit of class-A power amplifier

Theory:

Class A Amplifiers are the most common type of amplifier topology as they use just one output switching transistor (Bipolar, FET, IGBT, etc) within their amplifier design. This single output transistor is biased around the Q-point within the middle of its load line and so is never driven into its cut-off or saturation regions thus allowing it to conduct current over the full 360 degrees of the input cycle. Then the output transistor of a class-A topology never turns “OFF” which is one of its main disadvantages.

Class “A” amplifiers are considered the best class of amplifier design due mainly to their excellent linearity, high gain and low signal distortion levels when designed correctly. Although seldom used in high power amplifier applications due to thermal power supply considerations, class-A amplifiers are probably the best sounding of all the amplifier classes mentioned here and as such are used in high-fidelity audio amplifier designs.

Circuit Diagram

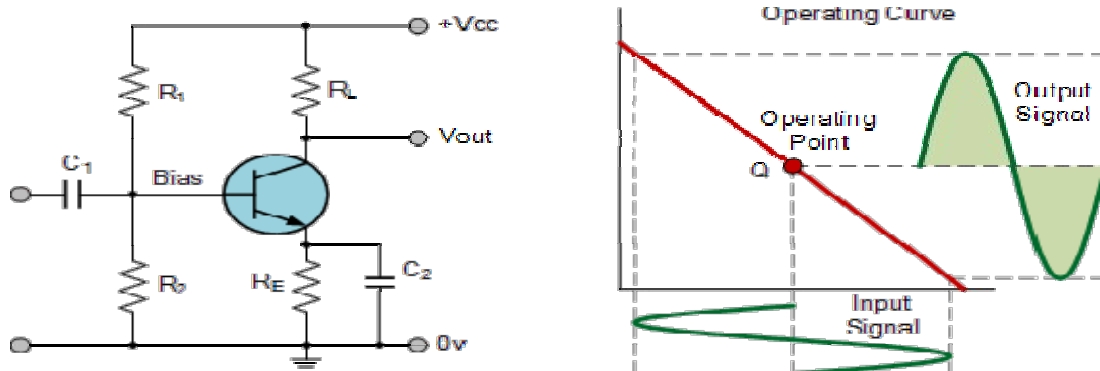


Fig: Class A Amplifier

PROCEDURE:

1. We should take all the components for this experiment.
2. Make the connection as per circuit diagram.
3. Switch ON the kit using ON/OFF toggle switch

4. The input signal is applied with the function generator.
5. The values of the voltage are observed and noted.
6. Calculate Gain.

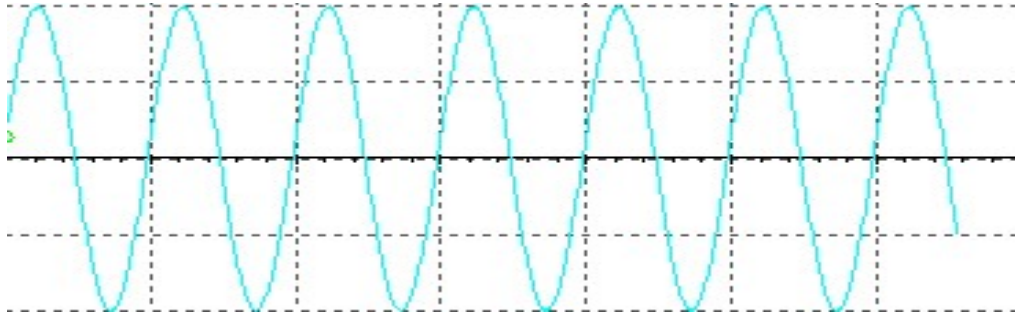
Calculations in a Class A Amplifier

The biasing base current is given by the formula $I(B) = (DC \text{ Input Voltage} - V(BE))/R(b)$

$$I(C) = I(B) \times DC \text{ current gain}$$

$$V(CE) = DC \text{ Input Voltage} - (I(C) \times R(c)) \text{ Voltage gain} = V(out)/V(in)$$

Model Graph:



Result: - From the above experiment, we learnt about the class of amplifier.