SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)
COIMBATORE-35
Accredited by NBA-AICTE and Accredited by NAAC – UGC with A++ Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

23EET104 / ANALOG ELECTRONICS CIRCUITS
I YEAR / II SEMESTER

UNIT-III: TRANSISTOR AMPLIFIER

POWER AMPLIFIER & CLASS A AMPLIFIER

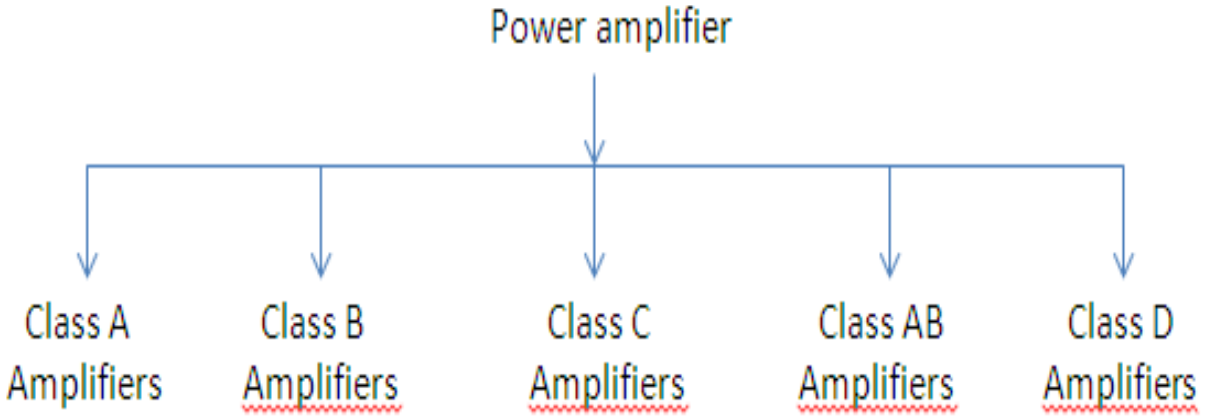
Power Amplifier

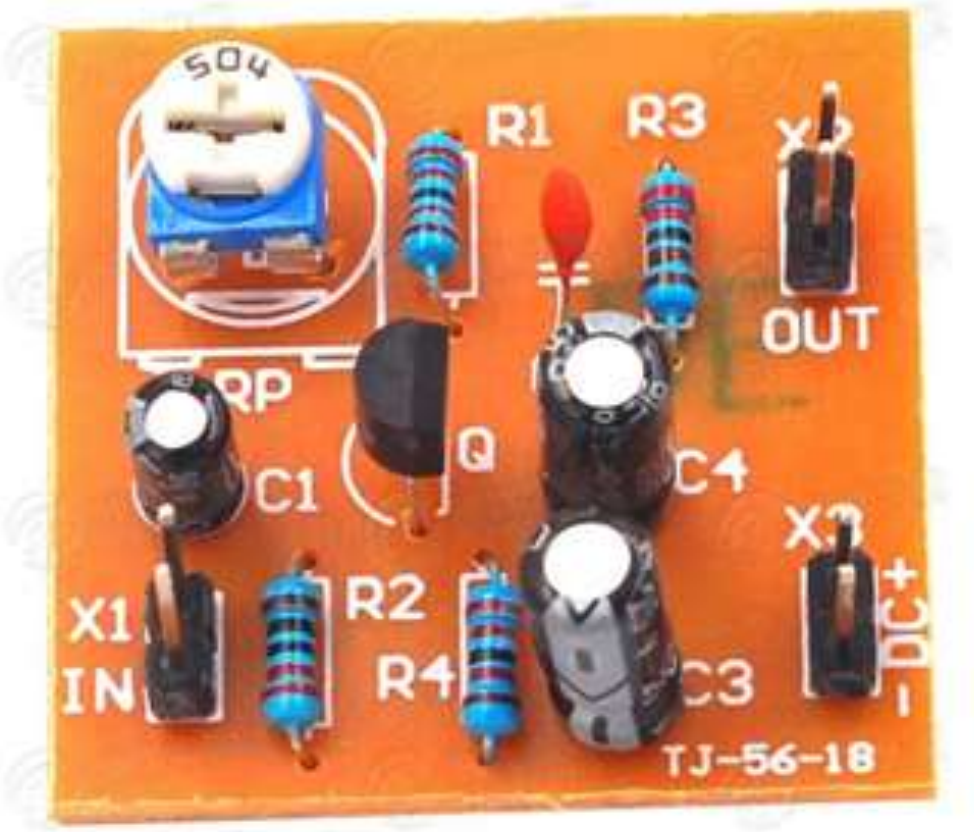
Power amplifiers are capable of providing large amount of power to the load**.** They are used as last stage in an electronic systems.

Important Features of Power Amplifiers:

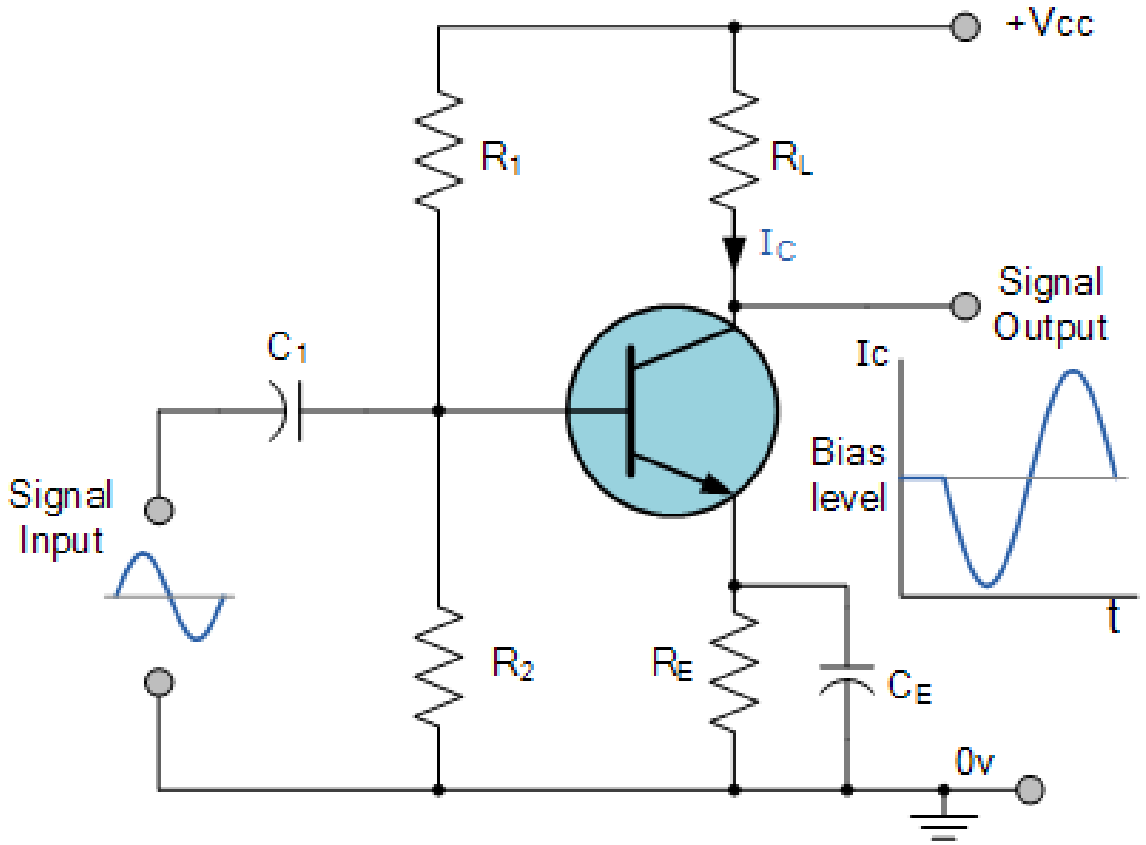
- Impedance matching with the load is necessary for delivering max power to the load.
- Power transistors are needed. (To withstand large voltages and currents)
- Power amplifiers are bulk.
- Due to the non–linear characteristics of transistors, Harmonic Distortions are available at the output.

CLASSIFICATION OF POWER AMPLIFIER





CLASS A AMPLIFIER (with R&C)



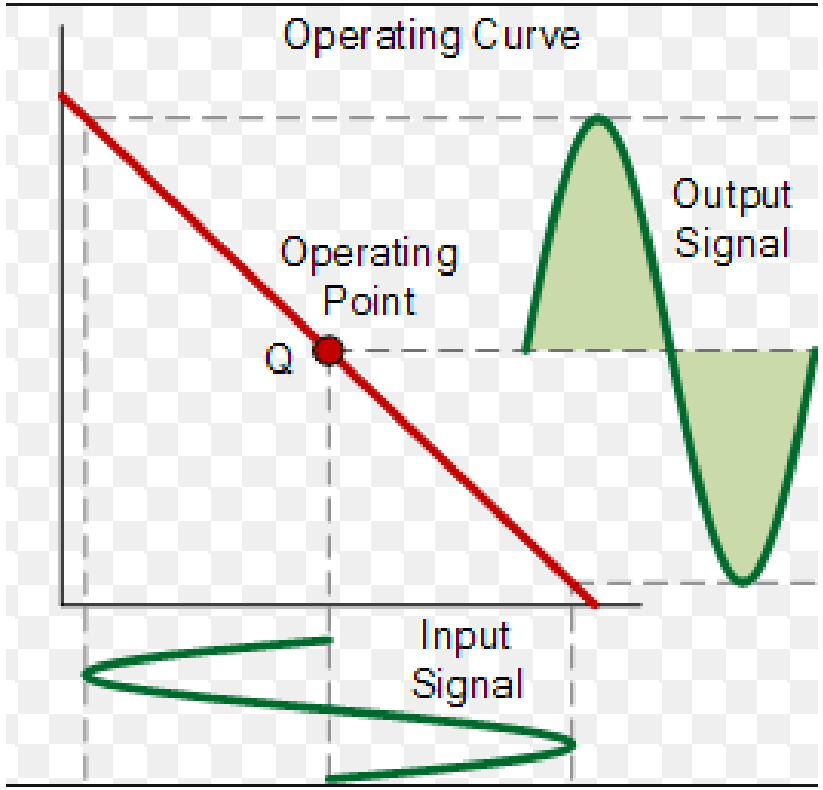
•The operating point(Q) is selected approximately at the (Biased) centre, so that the output current faithfully follows the input signal.

• The transistor remains in the active region for the full input signal. Transistor is not operated in Cut off or Saturation region.

•Transistor conducts for full 360 degree.

•The collector current also flows for full 360. Or full cycle .

Contd.,



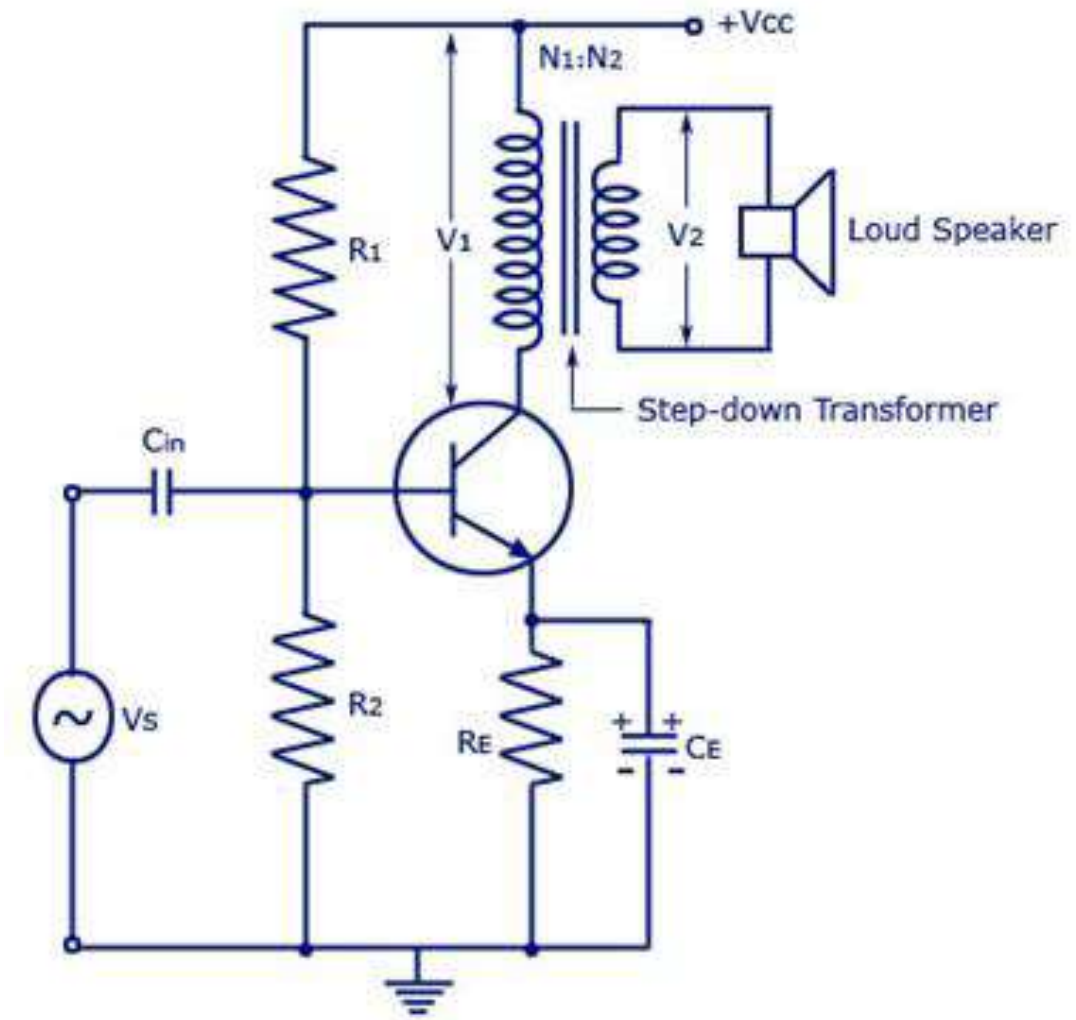
•Input is amplified faithfully **without any distortions.**

•Since transistor is operatedin active region continuously the collector current and voltage are high.

•This high collector output produces large power which is dissipated as heat.

•Hence the **efficiency of Class A power amplifier is Low**.

Transformer Coupled Class A Amplifier



•Instead of connecting the load directly, the output is connected to the load through a **transformer** as shown.

• This set up is used for Impedance matching.

•This circuit can be useful for low impedance loads like Loudspeakers.

Contd.,

This type is also known as **Single ended Class A amplifier**.

The primary has negligible d .c. resistance hence no loss of d.c. power.

This gives the necessary d.c. isolation to load.

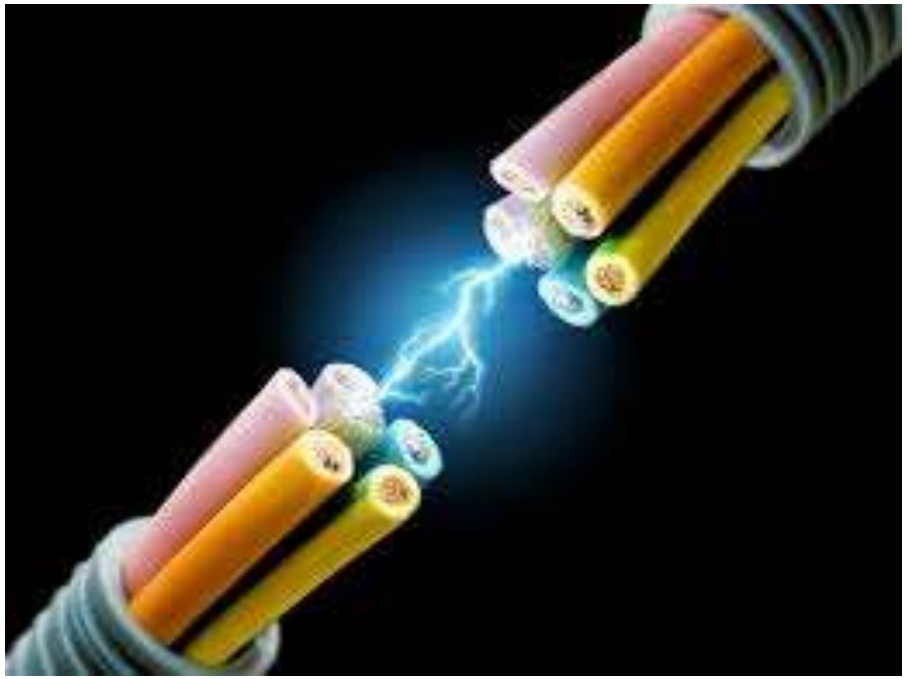
Advantages:

- Max power transfer is done.
- DC biasing current is doesn’t flow through the load so power is saved.
- High efficiency when compared with direct coupled class A amplifier.

Disadvantage:

- Circuit design is complicated.
- Circuit is bulky and expensive.
- Due to saturation of transformer core ,secondary induced voltage is zero and primary current becomes very large.

RECAP….



…THANK YOU