

PRESENTED ON ELECTRONICS DEVICES AND CIRCUITS

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OUTLINE:

- 1. WHAT IS THE CLASS B PUSH PULL AMPLIFIER
- 2. CLASS B PUSH PULL AMPLIFIER WAVEFORM
- 3. CLASS B PUSH PULL AMPLIFIER CIRCUIT DIAGRAM
- 4. CLASS B PUSH PULL AMPLIFIER OPERATION

CLASS B PUSH PULL AMPLIFIER

- ▶ The collector current flows only during the positive half cycle of the input signal, the power amplifier is known as class B power amplifier.

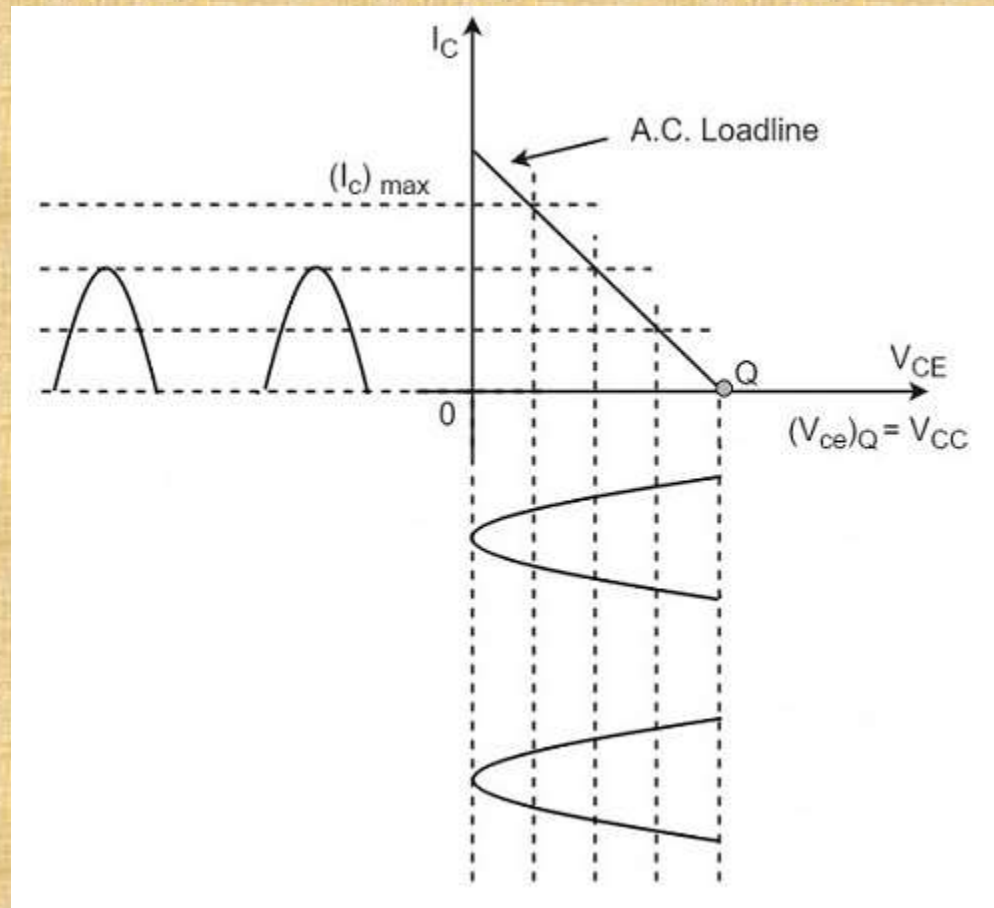
▶ Class B Operation

- ▶ The biasing of the transistor in class B operation is in such a way that at zero signal condition, there will be no collector current. The **operating point** is selected to be at collector cut off voltage. So, when the signal is applied, **only the positive half cycle** is amplified at the output.
- ▶ The figure below shows the input and output waveforms during class B operation.

▶

CLASS B PUSH PULL AMPLIFIER

WAVE:



CLASS B PUSH PULL AMPLIFIER

WAVE DETAILS::

- ▶ When the signal is applied, the circuit is forward biased for the positive half cycle of the input and hence the collector current flows. But during the negative half cycle of the input, the circuit is reverse biased and the collector current will be absent. Hence **only the positive half cycle** is amplified at the output.
- ▶ As the negative half cycle is completely absent, the signal distortion will be high. Also, when the applied signal increases, the power dissipation will be more. But when compared to class A power amplifier, the output efficiency is increased.
- ▶ Well, in order to minimize the disadvantages and achieve low distortion, high efficiency and high output power, the push-pull configuration is used in this class B amplifier.

❖ CLASS B PUSH PULL AMPLIFIER CIRCUIT:

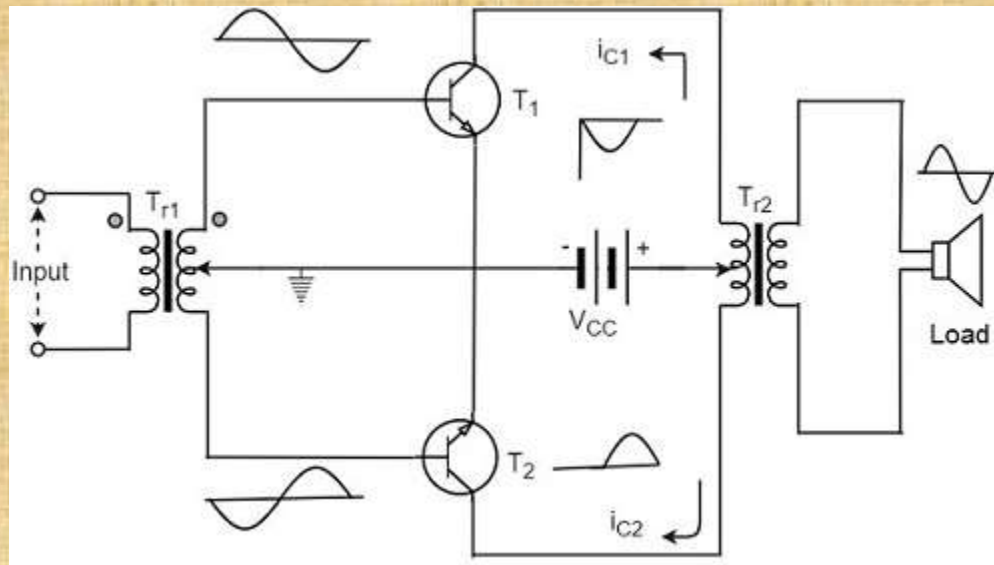
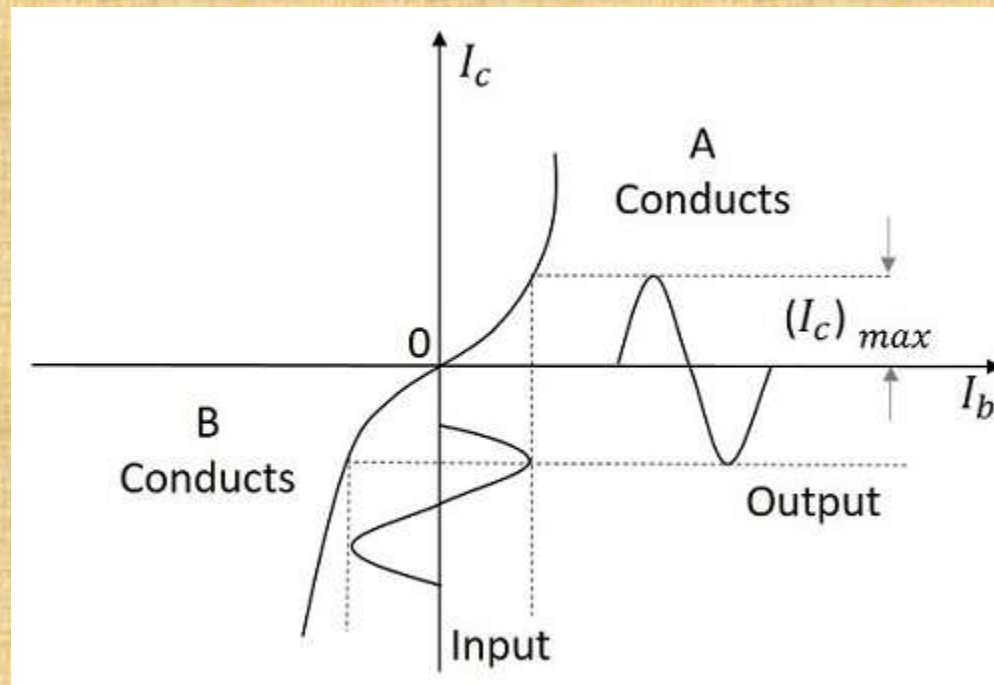


Figure: Class B Push-Pull Amplifier

CLASS B PUSH PULL AMPLIFIER CIRCUIT OPERATION

- ▶ The circuit of class B push-pull amplifier shown in the above figure clears that both the transformers are center-tapped. When no signal is applied at the input, the transistors T_1 and T_2 are in cut off condition and hence no collector currents flow. As no current is drawn from V_{CC} , no power is wasted.
- ▶ When input signal is given, it is applied to the input transformer T_{r1} which splits the signal into two signals that are 180° out of phase with each other. These two signals are given to the two identical transistors T_1 and T_2 . For the positive half cycle, the base of the transistor T_1 becomes positive and collector current flows. At the same time, the transistor T_2 has negative half cycle, which throws the transistor T_2 into cutoff condition and hence no collector current flows. The waveform is produced as shown in the following figure.

The waveform is produced as shown in the following figure



- ▶ For the next half cycle, the transistor T_1 gets into cut off condition and the transistor T_2 gets into conduction, to contribute the output. Hence for both the cycles, each transistor conducts alternately. The output transformer T_{r3} serves to join the two currents producing an almost undistorted output waveform.

THANK YOU