EXPERIMENT- 10

Objective: To study complementary symmetry push pull amplifier

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Resources Required: Trainer kit of complementary symmetry push pull amplifier

Theory:

The Class B amplifier circuit above uses complimentary transistors for each half of the waveform and while Class B amplifiers have a much high efficiency than the Class A types, one of the main disadvantages of class B type push-pull amplifiers is that they suffer fromaneffect known commonly as Crossover Distortion. It takes approximately 0.7 volts (measured from base to emitter) to get a bipolar transistor to start conducting. In a class B amplifier, the output transistors are not "pre -biased" to an "ON" state of operation. This means that the part of the output waveform which falls belowthis 0.7 volt window will not be reproduced accurately as the transition between the two transistors (when they are switching over from one to the other), the transistors do not stop or start conducting exactly at the zero crossover point even if they are specially matched pairs. The output transistors for each half of the waveform (positive and negative) will each havea 0.7 volt area in which they will not be conducting resulting in both transistors being "OFF" at the same time. A simple way to eliminate crossover distortion in a Class B amplifier is to add two small voltage sources to the circuit to bias both the transistors at a point slightly above their cut- off point.. However, it is impractical to add additional voltage sources to the amplifier circuitso pn-junctions are used to provide the additional bias in the form of silicon diodes.

We know that we need the base-emitter voltage to be greater than 0.7v for a silicon bipolartransistor to start conducting, so if we were to replace the two voltage divider biasing resistors connected to the base terminals of the transistors with two silicon Diodes, the biasing voltage applied to the transistors would now be equal to the forward voltage drop of the diode. These two diodes are generally called Biasing Diodes or Compensating Diodes and are chosen to match the characteristics of the matching transistor

Circuit Diagram

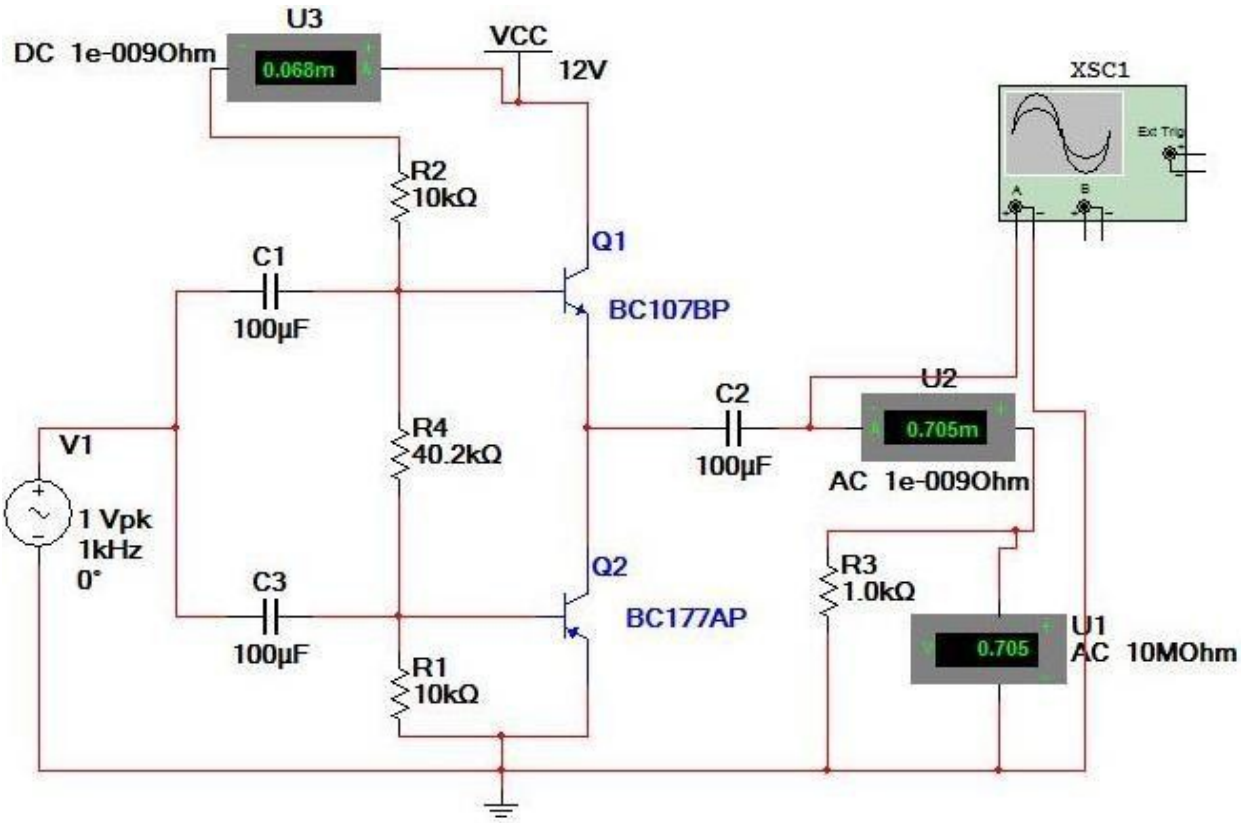
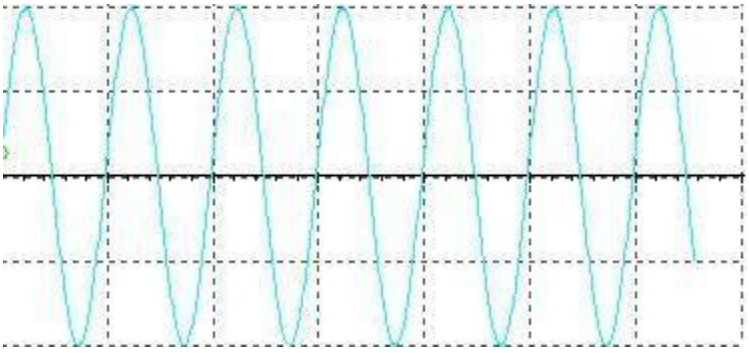


Fig : complementary symmetry push pull amplifier

Model Graph:



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. Connect the output to the CRO.
6. Now very the amplitude and frequency of the signal by their respective points.
7. See the output on CRO and verify the difference between input and output.
8. Then observe the wave form.

Result: From the above experiment, we learnt about the complementary symmetry push pull amplifier

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