

Exp. No.

Date:

OSCILLATORS AND MULTIVIBRATORS**OBJECTIVE**

The purpose of the experiment is to analyze the performance of RC phase shift oscillator and astable multivibrator.

EQUIPMENT AND COMPONENTS USED

30 MHz Dual Channel Digital Storage Oscilloscope (DSO)

0-30 V dc regulated power supply

4 ½ digit Digital Multimeter

BC107 Transistor

Resistors, ½ W

Electrolytic Capacitors 1 uF/63V, 22 uF/63V

Ceramic Capacitors 0.01 uF

Breadboard and Connecting wires

BNC Cables and Probes

PRE-LAB

1. Use SPICE to create a RC phase shift oscillator and observe the output amplitude and frequency of oscillation.

2. Observe the operation of RC feedback network. Comment on the phase shift in each RC network

- Use SPICE to create astable multivibrator and observe the output waveform. Measure the amplitude and frequency.

- Comment on the output waveforms of astable multivibrator at V_{01} and V_{02} .

- In astable multivibrator circuit change the value of R and C to observe different frequency waveform. Show full computations.

DESIGN FORMULA

Phase Shift Oscillator

- The voltage gain of the BJT amplifier should be atleast 29 in order to sustain oscillations.
- The minimum current gain of transistor, h_{fe} , required to sustain oscillations is 56.
- Frequency of oscillations, $f = \frac{1}{2\pi RC\sqrt{6+4R_C/R}}$.

Astable Multivibrators

- Period of output waveform, $T = 0.69(R_3C_1 + R_4C_2)$
- If $R_3 = R_4 = R$ and $C_1 = C_2 = C$ then $T = 1.38RC$

CIRCUIT DIAGRAM

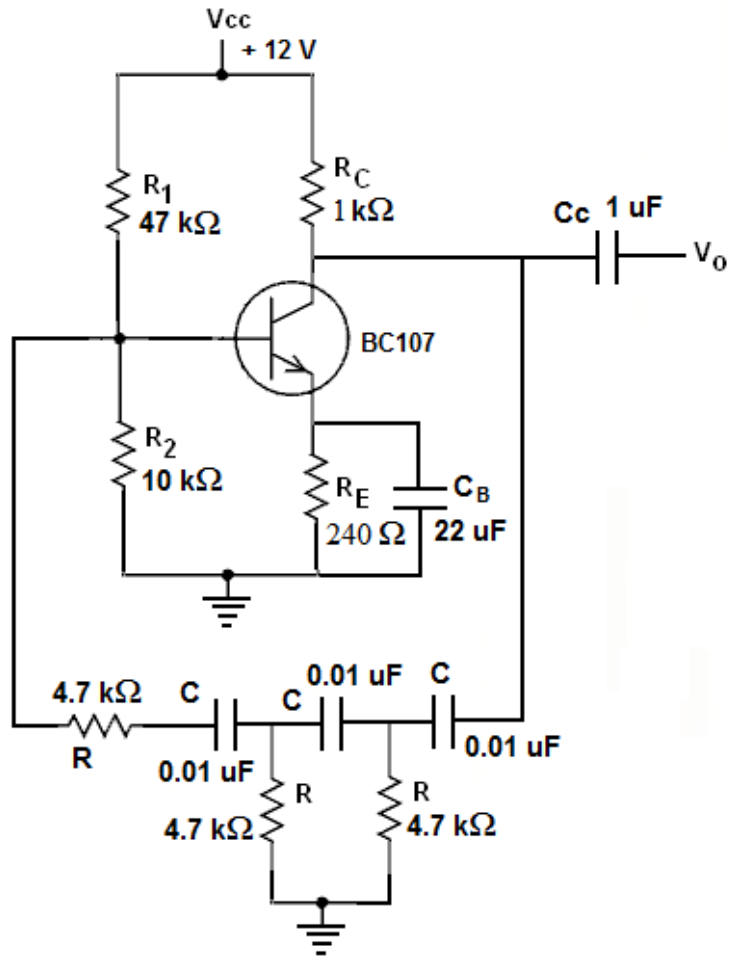


Figure 1: RC Phase Shift Oscillator

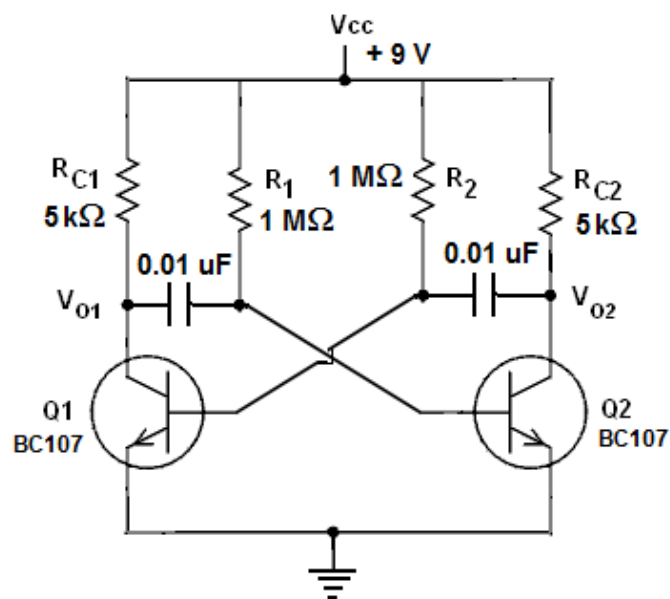


Figure 2: Astable Multivibrator

RESULTS AND CONCLUSION

Prepared by:
Name: _____

Reg. No.: _____

Date of Experiment:

ASSESSMENT

Date of Report Submission:

Student Task	Max. Marks	Graded Marks
Pre-lab Preparation / Conduction	10	
Results & Inference	10	
Post-lab / Viva-voce	10	
Total	30	

Signature