



SCHMITT TRIGGER

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INTRODUCTION

- ▣ A **Schmitt trigger** is a logic input circuit that uses hysteresis to apply positive feedback to the Noninverting input of a comparator or differential amplifier. This allows the output to retain its value until the input changes sufficiently to **trigger** a change.

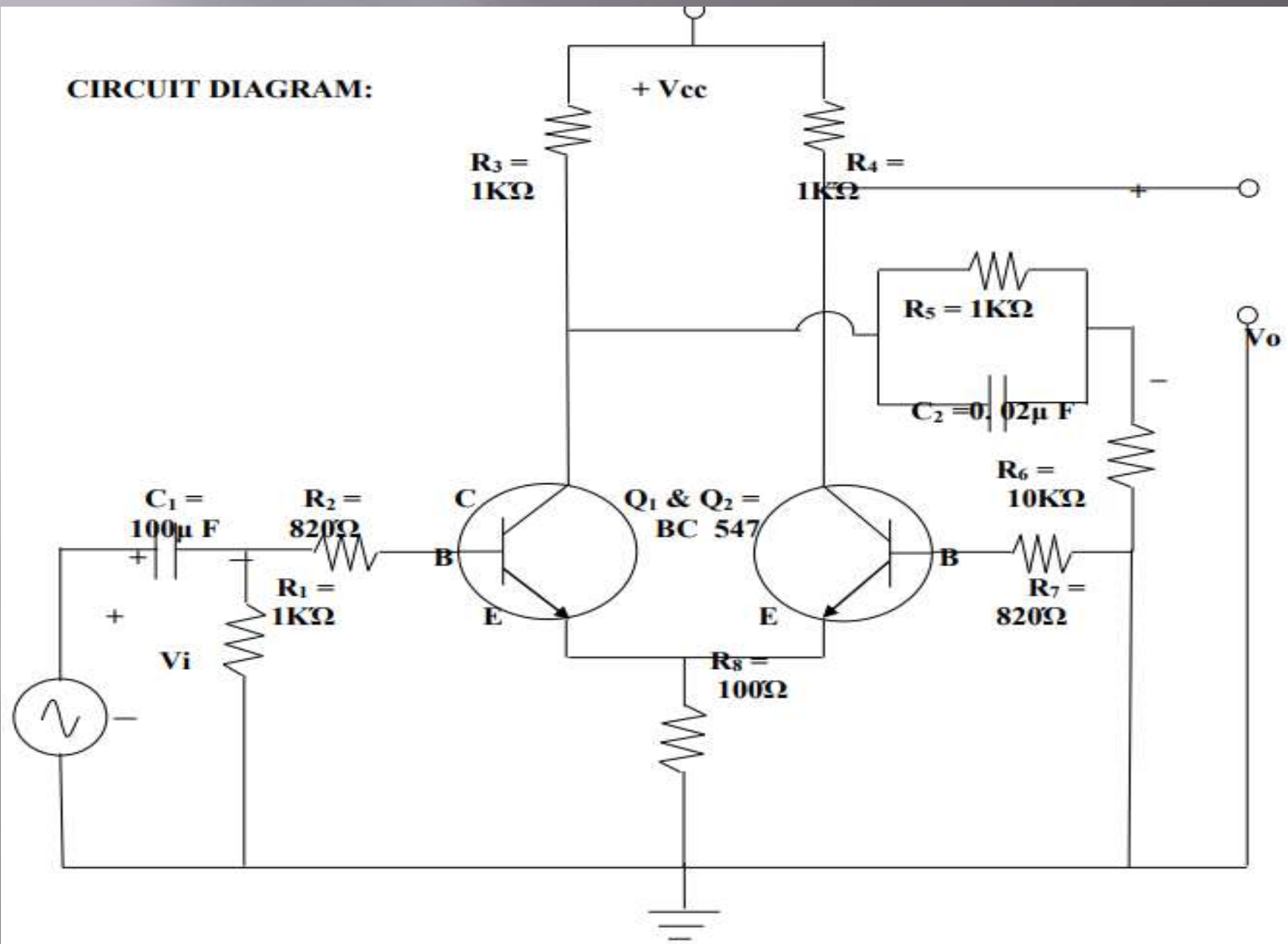
SCHMITT TRIGGER

▣ **AIM:** To construct and study the characteristics of Schmitt Trigger.

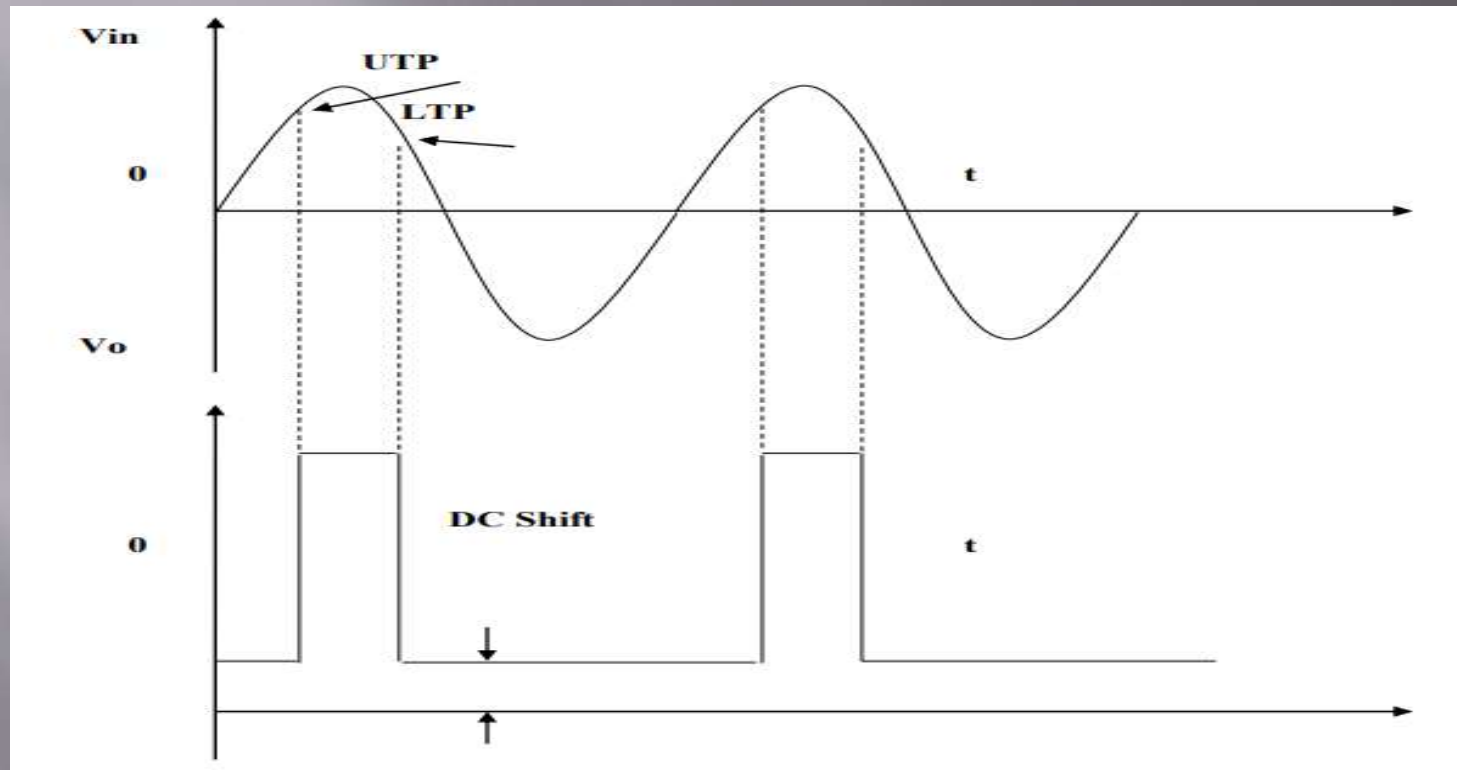
▣ **COMPONENTS REQUIRED:**

- ▣ 1. Transistor BC 547 -----
- ▣ 2 No's 2. Capacitor 100 μF , 0.01 μF ----- 1 No each
- ▣ 3. Resistors 100 Ω ----- 1 No
- ▣ 820 $\text{K}\Omega$ ----- 2 No's
- ▣ 1 $\text{K}\Omega$ ----- 4 No's
- ▣ 10 $\text{K}\Omega$ ----- 1 No
- ▣ 4. Bread Board
- ▣ 5. Connecting wires as required
- ▣ 6. CRO & Probes
- ▣ 7. Function Generator
- ▣ 8. Regulated Power Supply (0 - 30V)

CIRCUIT DIAGRAM:



Input & Output Waveforms



The values of UTP & LTP is given by

$$UTP = V_{\gamma} + i C_2 R_E \text{ and}$$

$$LTP = V_{BE} (\text{ACTIVE}) + i C_2 R_E$$

Advantages of Schmitt trigger

- ▣ The **advantage** of positive feedback is that the resulting comparator **Schmitt trigger** circuit is immune to erratic **triggering** caused by noise or slowly changing input signals within the hysteresis band producing a cleaner output signal as the op-amp comparators output is only triggered once.

Disadvantages of Schmitt trigger

- ▣ For a very slowly varying input.
- ▣ The output swing can be rather slow.
- ▣ if the input is noisy, the output may make several transitions as the input passes through the **trigger** point

APPLICATIONS

- ▣ Simple Oscillators
- ▣ Switch Debouncing
- ▣ Analog to digital conversion

CONCLUSION

- ▣ Conclusion can be made on designed and practical values of U.T.P and L.T.P. and also made on output waveform of Schmitt trigger for the given sinusoidal input.

THANK YOU