

## Experiment No: 2

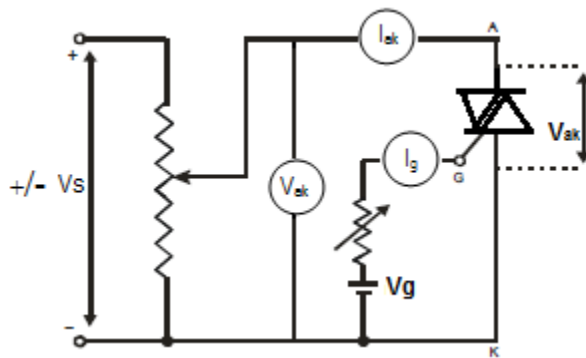
**Experiment Name:** Study of V- I Characteristics of TRIAC.

**Aim:** To study the V-I characteristics of TRIAC.

**Apparatus Required:**

1. NV6532 TRIAC Characteristic Trainer
2. 2mm Patch cords.

**Circuit Diagram:**



**Theory:** An TRIAC is a device which can be turned on through the gate pulse for both positive and negative values of  $V_{AK}$  and turned off using power circuit i.e., turn on is controlled but turn off is uncontrolled in a TRIAC. The voltage at which the TRIAC gets into conduction state is called forward breakover voltage ( $V_{BO}$ ) for positive voltages and reverse breakover voltage ( $V_{BR}$ ) for negative voltages. If the gate current is increased then the forward breakover and reverse breakover voltages will be reduced. The current at which the TRIAC turns on is called latching current ( $I_L$ ). Once the TRIAC is turned on, no need of the gate pulse i.e., gate pulse can be removed once the device is turned on. The minimum current required for the device to keep the thyristor on is holding current ( $I_H$ ). The ratio of latching to holding currents will be 3-5. When the gate current is increased, the breakover voltage values will be reduced.

**Procedure:**

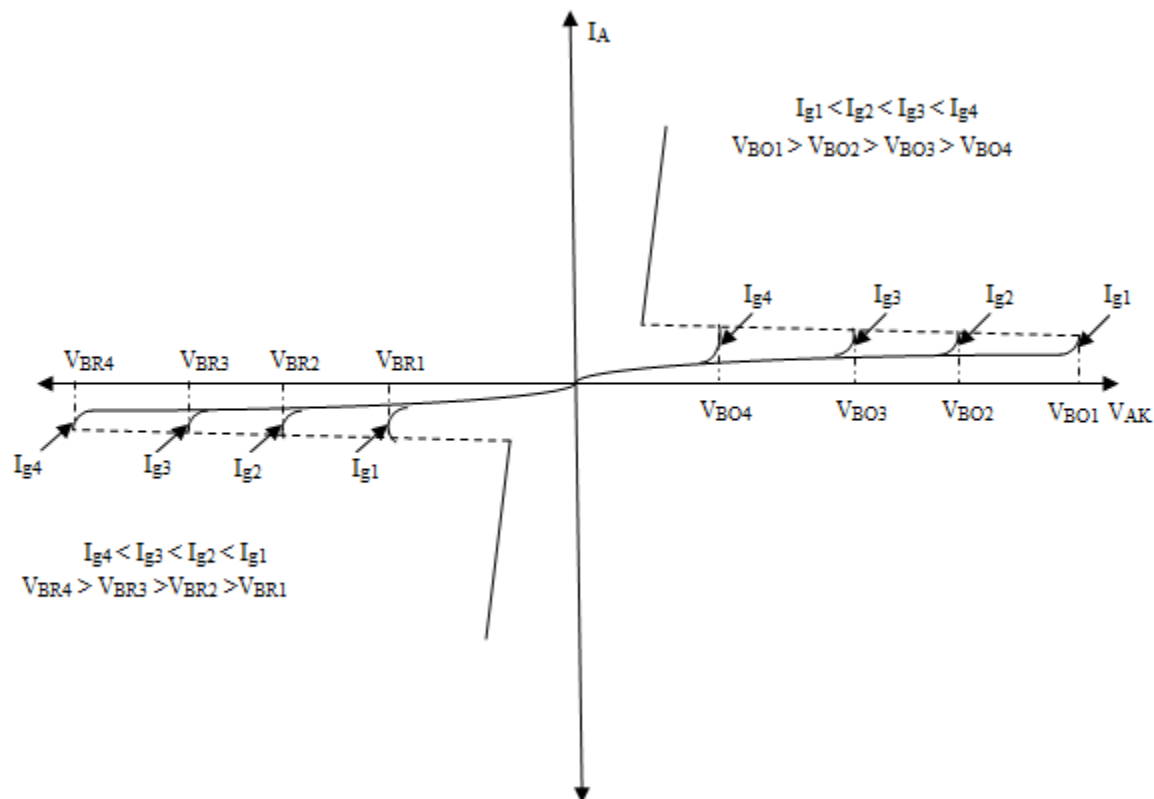
1. Connect the circuit as per the connection diagram.
2. Keep the gate current a fixed value ( $I_{g1}$ ).
3. By varying the anode to cathode voltage note the voltage ( $V_{ak}$ ) and current ( $I_a$ ).
4. Note the forward breakover voltage ( $V_{BO}$ ), latching current ( $I_L$ ) and holding current ( $I_H$ ).
5. Change the gate current value ( $I_{g2}$ ,  $I_{g3}$ ) and repeat steps 3 and 4.
6. Plot the graph between  $V_{ak}$  and  $I_a$ , denoting  $I_L$ ,  $I_H$ ,  $V_{BO}$ 's.

**Precautions:**

1. While changing the gate current, first make the  $V_{ak}$  equal to zero and then vary  $I_g$ .
2. Avoid double connections if possible.

3. The connections should be proper and tight.

**Model Graph:**



**Observation Table:**

Positive $V_{AK}$				Negative $V_{AK}$			
Gate Current $I_{g1}$		Gate Current $I_{g2}$		Gate Current $I_{g1}$		Gate Current $I_{g2}$	
$V_{ak}$	$I_a$	$V_{ak}$	$I_a$	$V_{ak}$	$I_a$	$V_{ak}$	$I_a$

**Result:**

V-I characteristics of TRIAC are obtained.

**Conclusion:**

1. When the gate current is increased, the forward breakover voltage and reverse breakover voltages are reduced and the values are.....
2. The ratio of latching to holding current is .....