

Experiment no.14

§ V-I Characteristics of SCR §

14.1 Objective:

To study the V-I characteristics of SCR.

14.2 Theory:

An SCR is a device which can be turned on through the gate pulse and turned off using power circuit i.e., turn on is controlled but turn off is uncontrolled in an SCR.

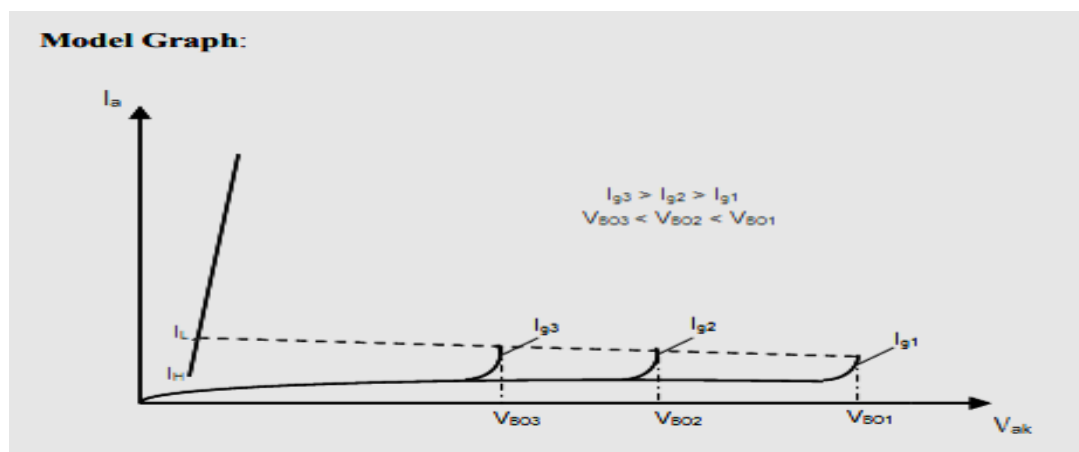


Figure (1)

The voltage at which the SCR gets into conduction state is called forward break over voltage (VBO). If the gate current is increased then the forward break over will be reduced. The current at which the SCR turns on is called latching current (IL). Once the thyristor 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) the gate current is increased; the break over voltage values will be reduced.

14.3 Procedure:

1. Connect the circuit shown in the figure (2).

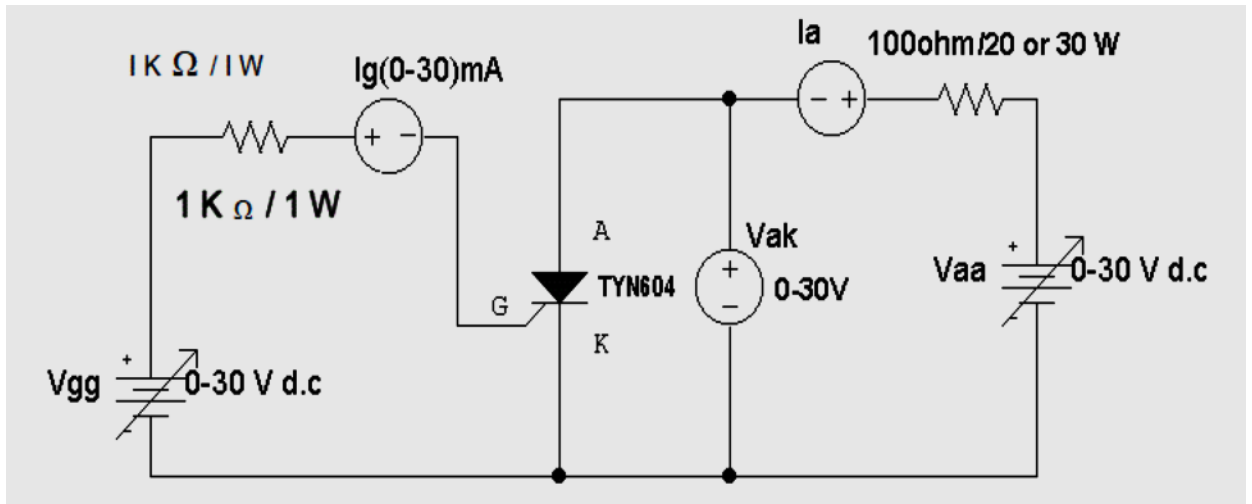


Figure (2)

2. Keep the gate current a fixed value (I_{g1}).
3. By varying the anode to cathode voltage, note the (V_{ak}) and current (I_a) and record at the table.
4. Note the forward break over 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.
6. Plot the graph between V_{ak} and I_a denoting I_L , I_H , V_{BO} 's.

Gate Current I_{g1}		Gate Current I_{g2}		Gate Current I_{g3}	
V_{ak}	I_a	V_{ak}	I_a	V_{ak}	I_a

14.4 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.

14.5 Discussion:

1. Plot the graph between V_{AK} and I_a denoting I_L , I_H , V_{BO} 's.?
2. What The ratio of latching to holding current?