SCR CHARACTERISTICS

Aim To plot the characteristics of an SCR experimentally and to plot its VI characteristics.

Equipments and components required SCR, ammeters, voltmeter, bread board, dc supplies and potentiometer.

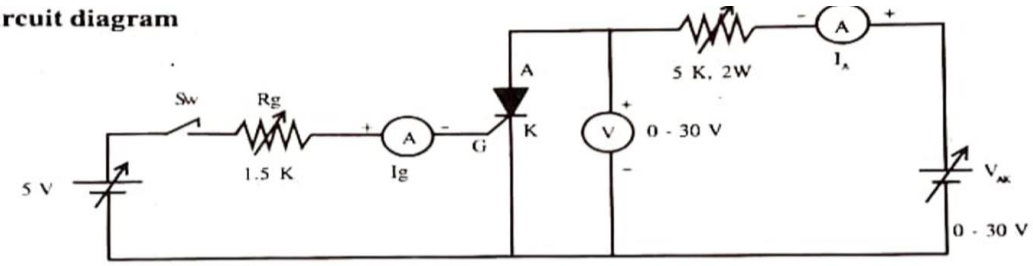
Theory Silicon controlled rectifier is a four layer PNPN device. It has three terminals namely, anode (A), cathode (K) and gate (G). Keeping gate open, if the forward voltage is applied across SCR, it will remain in OFF state. If the applied voltage exceeds the break over voitage, it will turn ON and heavy current will flow through it. The break over voltage can be reduced considerably, if a small voltage is applied at the gate. As the gate current increases, the break over voltage decreases.

Once the SCR is fired, gate loses control over the current through the device. Even if the gate circuit is disconnected, the anode current cannot be brought back to zero. To turn OFF the SCR, anode current should be made less than the holding current.

Procedure

1. Set up the circuit and switch ON the anode supply keeping at very low voltage.
3. Switch ON gate DC supply adjusting the potentiometer for minimum value of gate current.
4. Increase the gate current with the help of potentiometer in the gate circuit and watch the triggering of the SCR observing the DC ammeter connected in series with the load. Record the readings in the meters.
5. Repeat the above step for various values of gate current, say, 2.5 mA, 3 mA and 3.5 mA.
6. Plot the V-I characteristics of SCR with anode voltage along x-axis and anode current along y-axis.

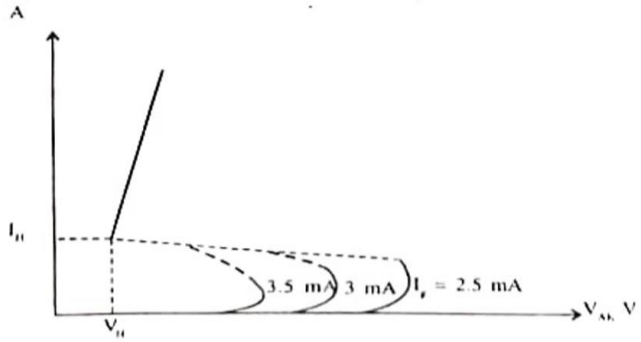
Circuit diagram



Observation

Ig = 2.5 mA		Ig = 3 mA		Ig = 3.5 mA	
V_{AK}	I_A	V_{AK}	I_A	V_{AK}	I_A

Graph



Reference

Electronics Lab Manual Volume I, K.A. Navas, **Rajath Publishers**