

1.2.3 V-I CHARACTERISTIC OF SCR

A typical V-I characteristics of a SCR is shown below in figure 1.3. The V-I characteristics of SCR can be explained with the help of three mode of operation ; such as forward blocking (off- state), forward conduction (on-state) and reverse blocking mode.

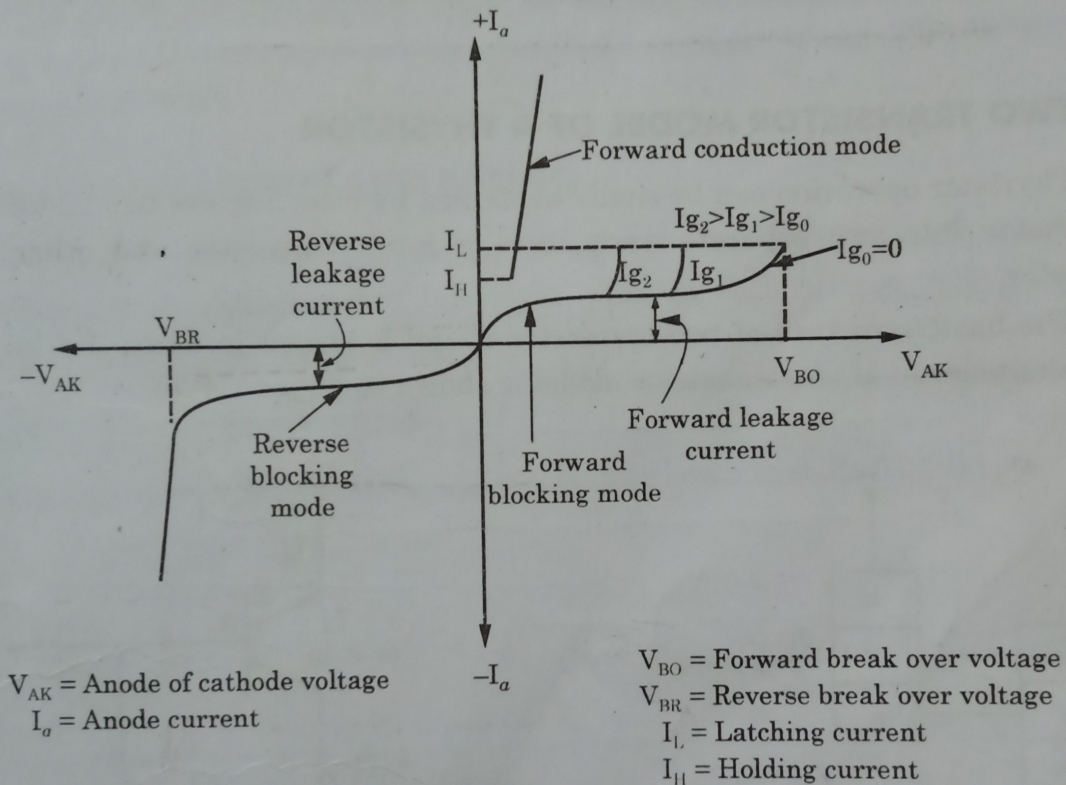


Fig. 1.3. V-I Characteristics of SCR

- (a) **Forward blocking mode :-** When the anode voltage is +ve w.r.t cathode, the thyristor is forward biased as shown in figure 1.2 (a). When the forward voltage is less than the forward breakdown voltage (V_{BO}) then it is known as forward blocking mode (off-state) .In this mode small forward leakage current will be flow, it will be mA.

- (b) **Forward conducting mode** :- When the anode to cathode voltage is greater than the forward breakdown voltage (V_{BO}), the thyristor is brought from forward blocking mode to conducting mode. The anode current must be more than the latching current (I_L). If the current is reduced to less than the holding current (I_H), the thyristor switches back to forward blocking mode.
- (c) **Reverse blocking mode**:- When the cathode is made positive w.r.t anode, the thyristor is reverse biased as shown in figure 1.2 (b). A small reverse current start flows. If the cathode to anode voltage (V_{KA}) is increased, then at a critical breakdown value, called reverse breakdown voltage (V_{BR}), an avalanche breakdown will occurs and a large amount of current start flows. This mode of operation is known as Reverse blocking mode.