

Class A Commutation

Commutation: Commutation is the process of turning Off, a conducting thyristor is called Commutation

Class A- Self Commutation By Resonating Load:

This is also known as resonant commutation. This type of commutation circuit using L-C components in-series-with the load is shown in Fig.1. In Fig. 1(a), load R_L is in parallel with the capacitor and in Fig. 1(b) load R_L is in series with the L-C circuit. In this process of commutation, the forward current passing through the device is reduced to less than the level of holding current of the device. Hence, this method is also known as the current commutation method. The waveforms of the thyristor voltage, current and capacitor voltages are shown in Fig. 2.

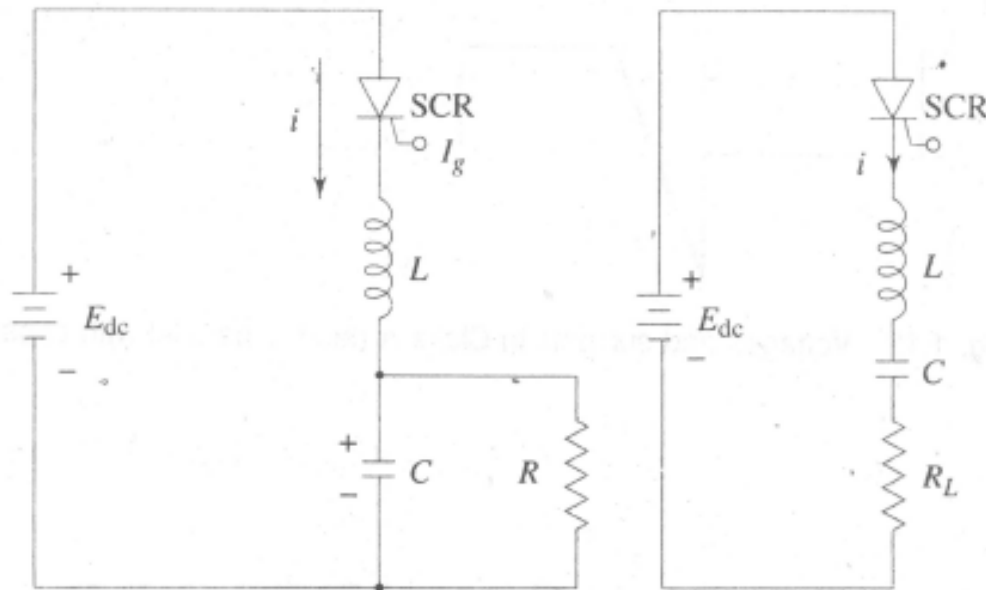


Fig.1

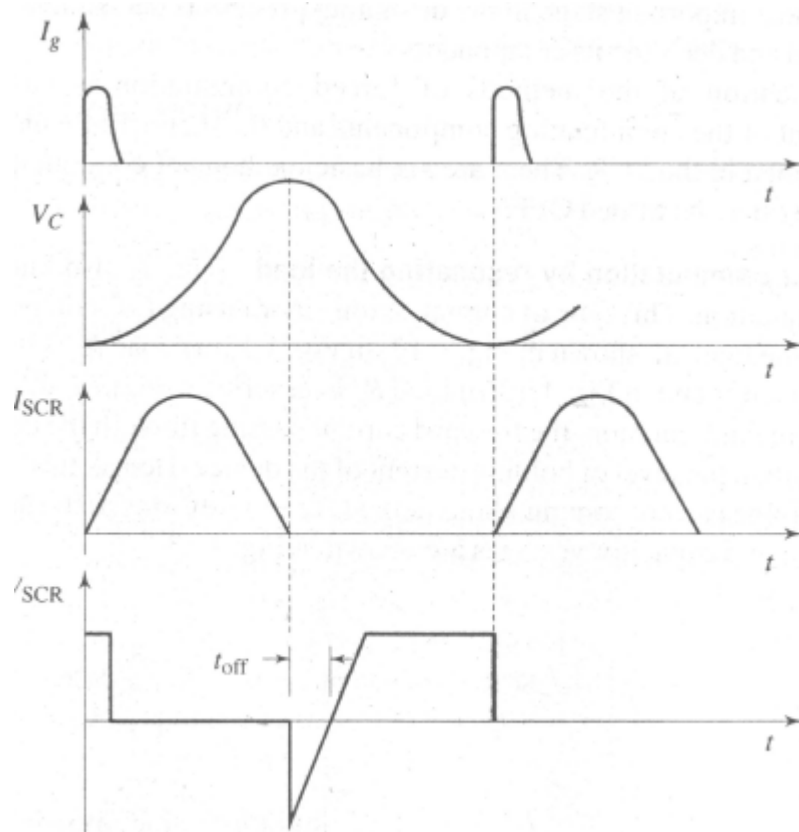


Fig. 2

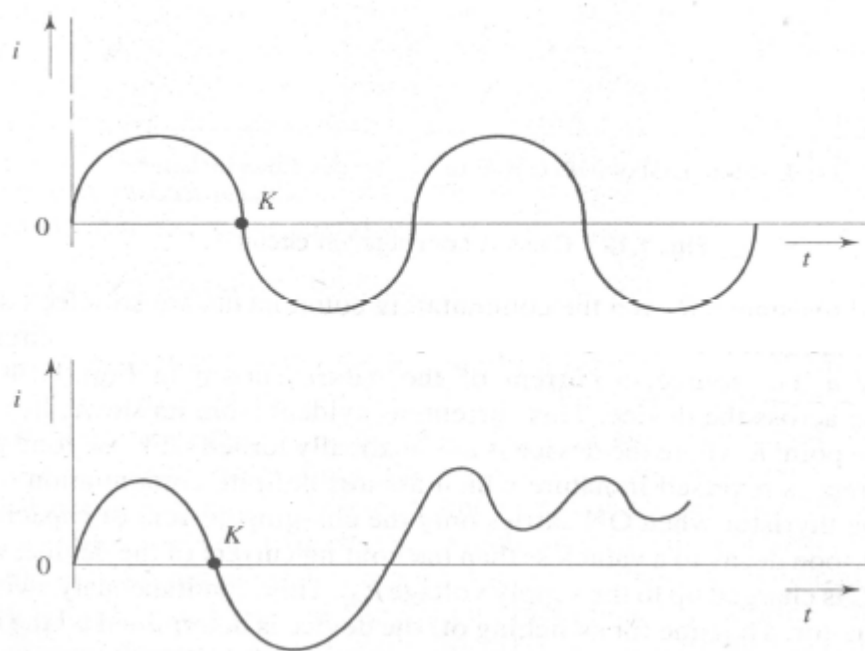


Fig.3

The load resistance R_L and the commutating components are so selected that their combination forms an under-damped resonant circuit. When such a circuit is excited by a d.c. source, a current of the nature shown in Fig.3 will be obtained across the device. This current, as evident from its shape, has zero value at the point K where the device is automatically turned OFF. Beyond point K , the current is reversed in nature which assures definite commutation of the device. The thyristor when ON carries only the charging current of capacitor C which will soon decay to a value less than the holding current of the device, when capacitor C is charged up to the supply voltage E_{dc} . This simultaneously switches off the thyristor. The time for switching off the device is determined by the resonant frequency which in turn depends on the values of the commutating components L and C , and the total load resistance.