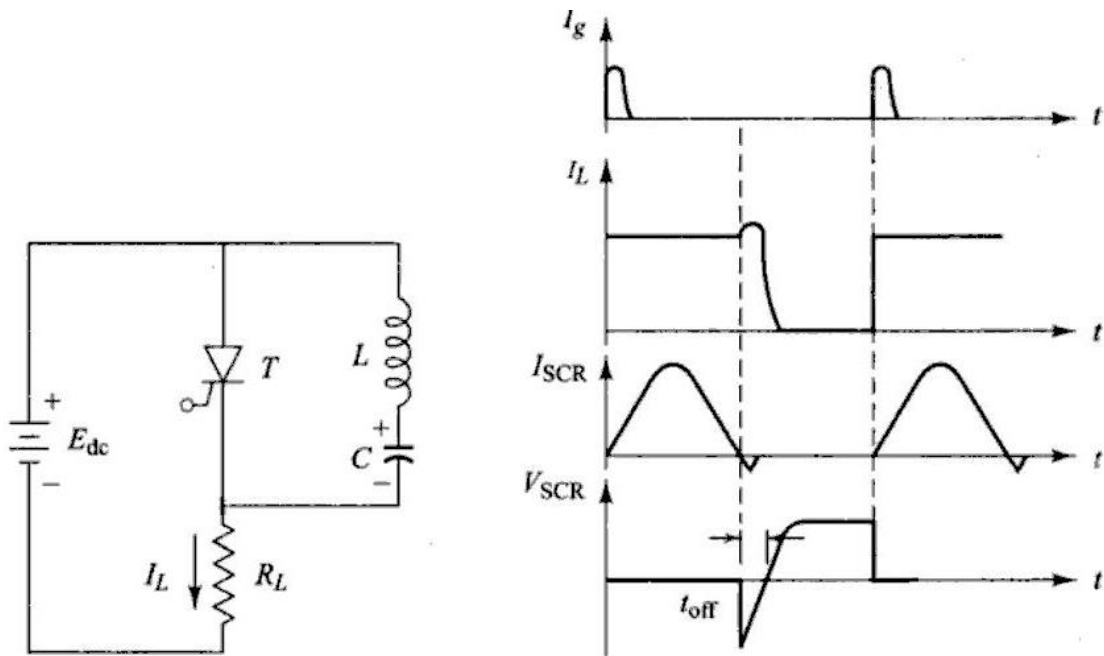


### Class B – Self Commutation by an LC Circuit:

In this Class-B circuit the advantage is that the commutation circuit does not carry the load current. Whereas, the Class-A commutation circuits carry the load current. The commutating circuit and the relevant waveforms are shown in Fig. 2.15 and 2.16.



**Fig. 2.15** Class B commutation circuit    **Fig. 2.16** Associated waveforms

Initially, as soon as the supply voltage  $E_d$  is applied, the capacitor  $C$  starts getting charged with its upper plate positive and the lower plate negative, and it charges up to the voltage  $E_d$ . When thyristor  $T$  is triggered the circuit current flows in two directions: (1) The load current  $I_L$  flows through the path  $+E_d, T, R_L, -E_d$ , and (2) Commutating current  $I_c$ .

The moment thyristor  $T$  is turned ON, capacitor  $C$  starts discharging through the path  $+C, L, T, -C$ . When the capacitor  $C$  becomes completely discharged, it starts getting charged with reverse polarity. Due to the reverse voltage, a commutating current  $I_c$  starts flowing which Opposes the load current  $I_L$ . When the commutating current is greater than the load current, thyristor becomes turned OFF. When the thyristor  $T$  is turned OFF, capacitor  $C$  again starts getting charged to its original polarity through  $L$  and the load.

Once the thyristor is ON, it switches off after sometime on its own, hence it is self commutation type. The desired frequency of ON and OFF states can be obtained by designing the commutating components as per the requirement. The main application of this process is in DC chopper circuits, where the thyristor is required to be in conduction state and off state for a specified duration of time.