

CLASS-B COMMUTATION: RESONANT PULSE COMMUTATION

Class-B commutation is also known as current commutation or resonant-pulse commutation. The below figure shows the circuit diagram of class-B commutation.

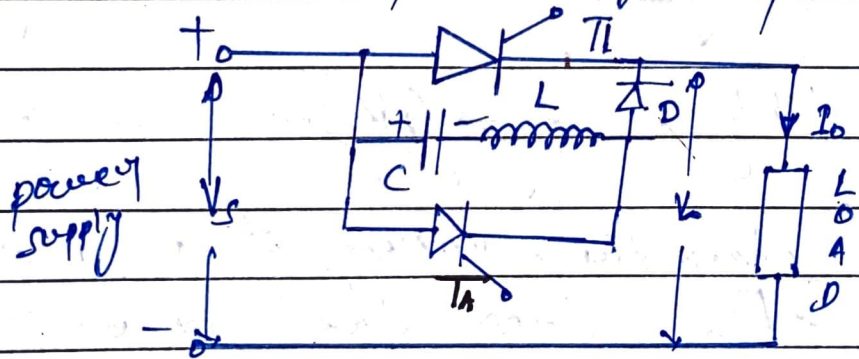
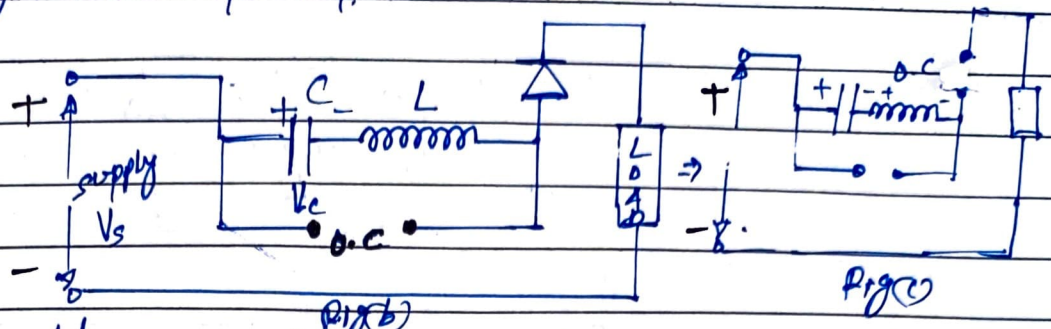


Fig A: class-B commutation

Clearing:

(Auxiliary SCR)

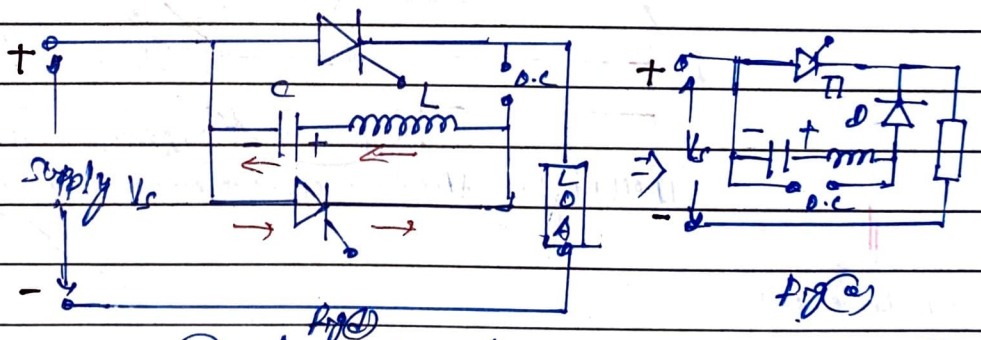
suppose the SCR T1 and TA are off. The supply voltage V_s will supply current in the circuit through C, L and Load, that will charge the capacitor.



Once the capacitor voltage is equal to V_s the polarity of C changes and it will reverse bias the diode. In this situation, there is no path for the capacitor to discharge.

Now, giving gate pulse I_g to SCR T1, it will turn on SCR T1 and the current starts to flow through T1, Load, V_s and still capacitor doesn't has path to discharge.

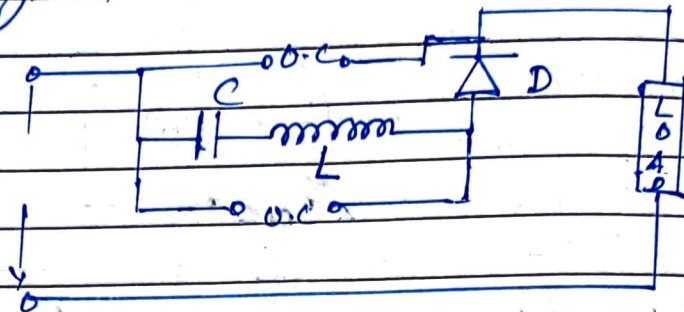
Now, give gate pulse to auxiliary SCR, TA, that will turn on SCR (TA) and capacitor gets path to discharge as shown below.



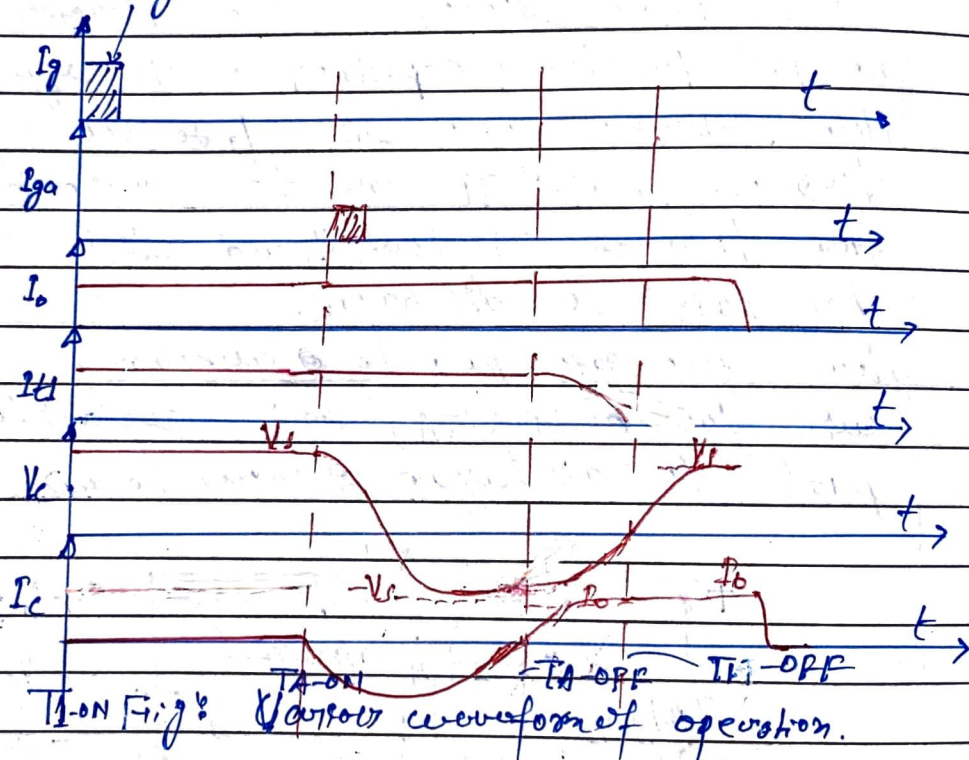
As the polarity of V_c is changed, the auxiliary SCR will be in reverse breaking mode and will behave as open circuit (R/TA)

Now, As the p-type diode D is connected to the terminals capacitor so it is in forward biased mode and current flows through C, L, D, T1 until the capacitor voltage V_c

is equal to supply (V_s). As $V_c = V_s$ the anode current I_A of SCR (T1) becomes less than I_H ($I_A < I_H$) and it turned off. and circuit's come in our original state as shown below.



Waveforms: gate pulse



Assumption:

- i) Load current is constant
- ii) LC circuit is resonating in nature.
- iii) C is initially charged by V_s