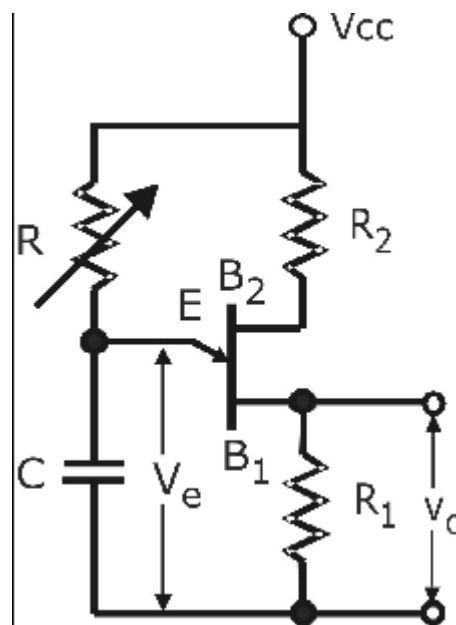


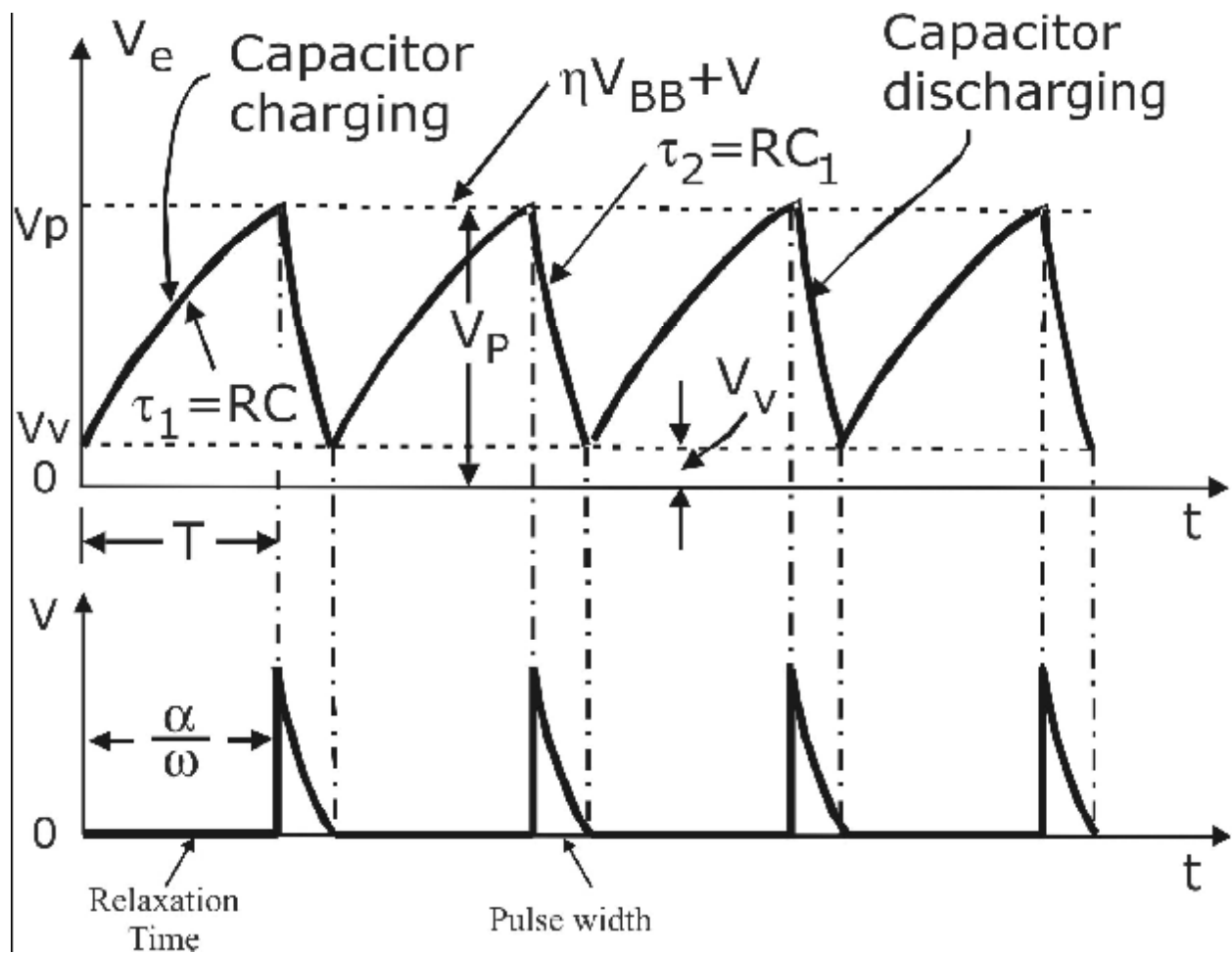
UJT Firing Circuits

UJT Firing Circuit: The Resistance and Resistance-Capacitance firing circuit cannot be used for automatic or feedback control system. These difficulties can be overcome by use of UJT firing circuit. The power loss can be limited by the use of this UJT in the firing circuit. Pulse triggering is preferred as it offers several merits over R and RC triggering and pulse triggering is more reliable and very efficient. UJT is often used as a trigger device for SCR's and TRIAC's. The most common UJT firing circuit in use today is the relaxation oscillator, which is shown in Fig.



Relaxation Oscillator

The above figure is called the relaxation oscillator. The resistor and capacitor connected to the emitter form an RC timing circuit. Normally, the value of capacitor is fixed and the value of resistor is of variable type. The charging rate of the capacitor depends on the value of the resistance and since the resistance is variable the RC time constant can be controlled. When the voltage across the capacitor is equal to more than the peak voltage V_P of the UJT, it starts conducting. Since the UJT has a negative resistance, its voltage starts decreasing up to the valley voltage, and the capacitor discharges up to the valley voltage. This repetitive process produces a train of pulses at its output as shown in fig.



Waveform of UJT firing circuit

From the output voltage waveform it is clear that the output pulses have a very small width and that a long relaxation time exists between the two pulses. Therefore it is said that the device is relaxed in this duration and this circuit is called the relaxation oscillator. The output pulse from UJT is connected to the SCR.