Monostabel Triggering

To change the monostble multivibrator state from the stable to quasi-state the external trigger pulses are to be applied. In general the negative triggering has grater sensitivity, because here the negative pulse amplitude should be enough, so as to bring the operating point from saturation to active region. Secondly when the base emitter voltage of a junction changes from forward bias to reverse bias, its input impedance is continuously rising, which avoids the loading of the triggering source. It should be further noted that the monostable period is affected by this method.

The positive pulse triggering has sensitivity, because to turn of the transistor from the OFF state, it is necessary to feed the excess stored charge in the base such that the amplitude of triggering pulse is enough and is derived from a low impedance source, which can supply a peak demand current to turn on.

Astable multivibrator:

It is also named as free running multivibrator.

The astable circuit has two states , both of which are Quasi- stable . Without the aid of an

External triggering signal the astable configuration will make successive transitions from

one Quasi-stable state to the other.

The circuit diagram for a free running multi using n-p-n transistors is given in figure below.

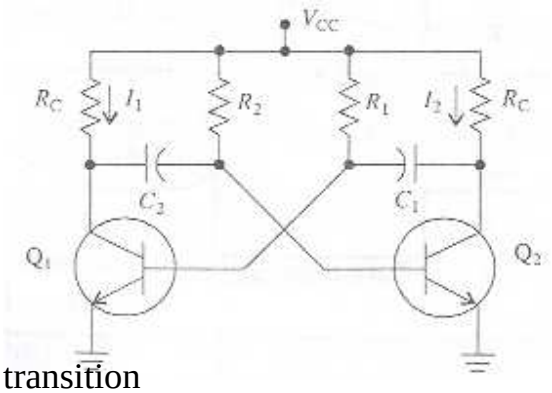
Here output of Q1 is coupled to the Input of Q2 through the capacitor C_2

And output of Q2 is coupled to the input of Q1 through the capacitor C_1.

The resistor R_2 at the input of Q2 is Returned to the supply voltage V_{CC} .

and the resistor R_1 at the input of Q1 is also returned to the supply voltage V_{CC}.

Operation:



Case(i): initially we may assume that

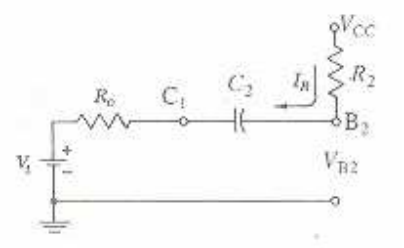
The state of the circuit is Q1 ON & Q2 OFF . (we may assume reverse state also)

This is considered as a one quasi stable state.

Case(ii): now let us see how can we induce a transition

from one quasi stable to the other state without using any triggering.

Now Base circuit of Q2 is shown below,



In this circuit the stage Q1 has been replaced

By a thevenin's equivalent generator V_t and a

Resistance R_o, which represents the amplifier

output impedance including the presence of R_c.

here capacitor C_2 tries to charge towards V_{CC} with a time constant $(R_2 + R_O)C_2$ since V_t is negligible.

So Voltage at the base terminal of Q2 is also increases. When ever voltage at the base

terminal of Q2 reaches its cutin voltage then Q2 starts conducting and Q1 stops

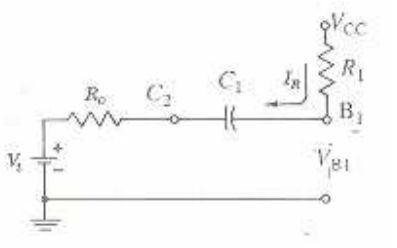
conducting. So now the state of the device is Q1 OFF & Q2 ON.

This is also a quasi stable state.

Case(iii): now let us see how can we induce a transition from second quasi stable

(Q1 OFF &Q2ON) to the First quasi stable state (Q1ON &Q2 OFF) without using any triggering.

Now Base circuit of Q1 is shown below,



In this circuit the stage Q2 has been replaced

By a thevenin's equivalent generator V_t and a

Resistance R_o, which represents the amplifier

output impedance including the presence of R_c.

here capacitor C_1 tries to charge towards V_{CC} with a time constant $(R_1 + R_O)C_1$ since V_t is negligible.

So Voltage at the base terminal of Q1 is also increases. When ever voltage at the base

terminal of Q1 reaches its cutin voltage then Q1 starts conducting and Q2 stops

conducting. So now the state of the device is Q1 ON & Q2 OFF.