Tri state output TTL (or) Three State

Tri state output TTL (or) Three State:

It allows the wired logic functions circuit the outputs of 2 TTL gates with totempole structures cannot be connected together (i.e, wired together). However a special type of totempole TTL gate allows wired logic function for the purpose of construction of common Bus. A totempole gate has this proper try is called tri state gate.

A 3 state gate exhibits 3 output states

1. A low level state when Q_3 on & Q_4 off

2. A high level state when Q_3 is off & Q_4 is on

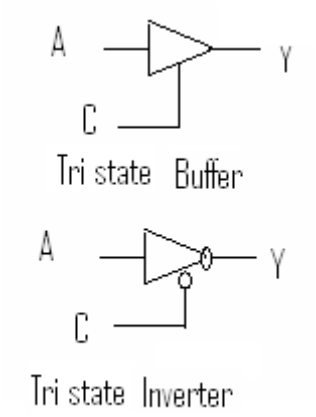
3. A open circuit or high impendence is provided when both Q_3 & Q_4 transistors are off

$$\left.\begin{matrix} Q_3\ on \\ Q_4\ off \end{matrix}\right\} low \qquad \left.\begin{matrix} Q_3\ off \\ Q_4\ on \end{matrix}\right\} high \qquad \left.\begin{matrix} Q_3\ off \\ Q_{43}\ on \end{matrix}\right\} high\ impendence$$

Tri state Buffer

Y = A when C is high

Y = high impedance when C is low



Y = A1 when C is low

Y = high impedance C is lhigh

Figure 6.12

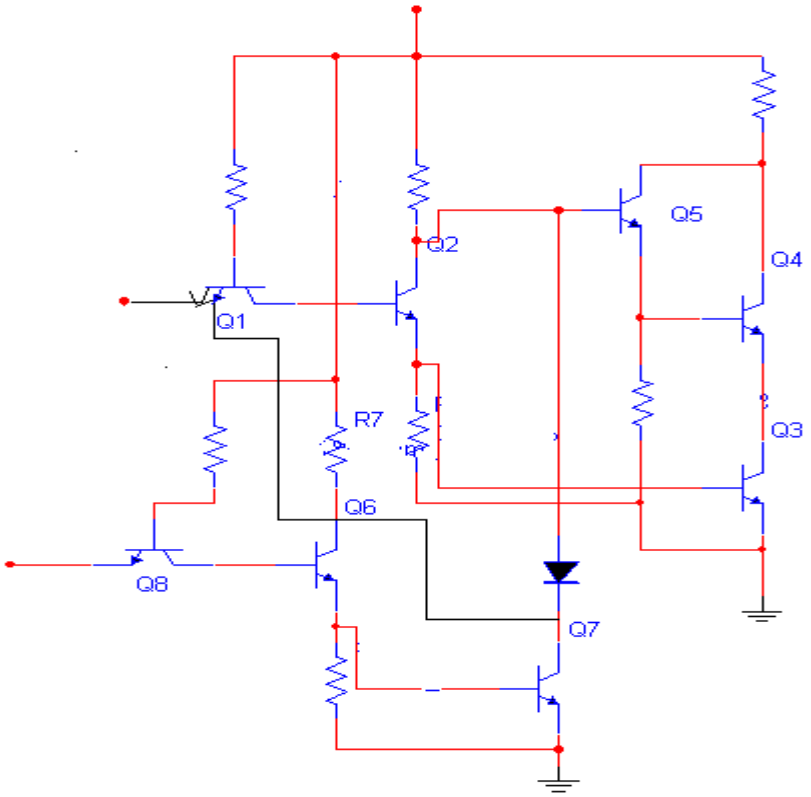


Figure 6.13

Application of Tri state TTL:

1. Wired logic function

2. Common Bus

The wired logic function can be created by connecting tri state output together. Tof form a common bus all the output's of tri state TTL should be in high impedance state except one tri state TTL input. The selected one which is not in high impedance state is used to transmit the binary information. Advantage is in high impedance state tri state TTL the leakage current is very very small as long as 100 logic gates outputs can be connected together to form a common bus.