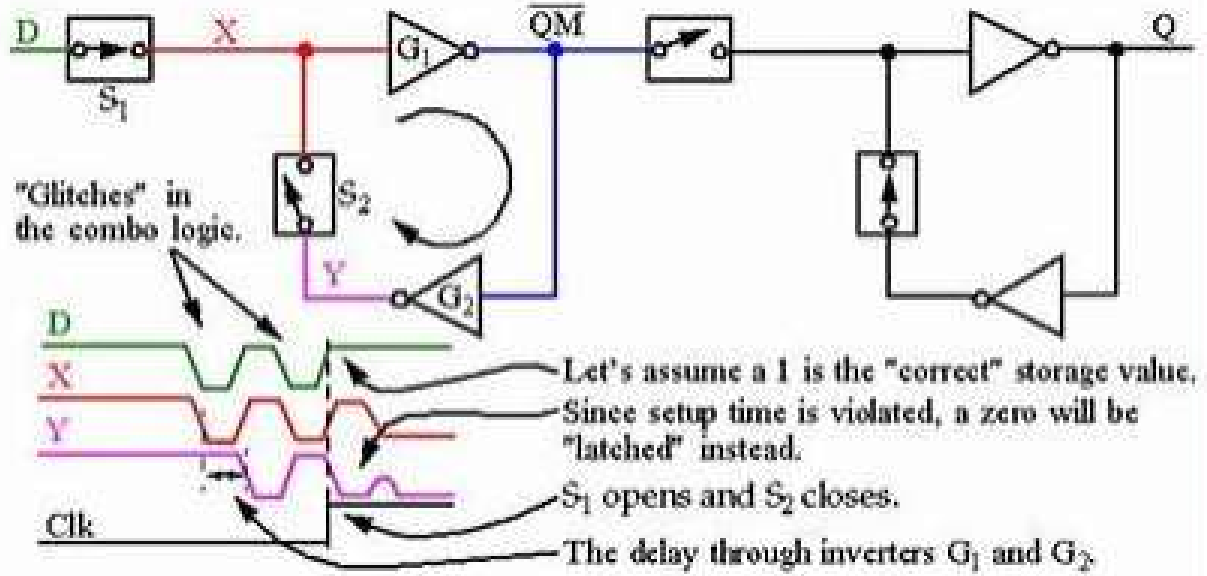
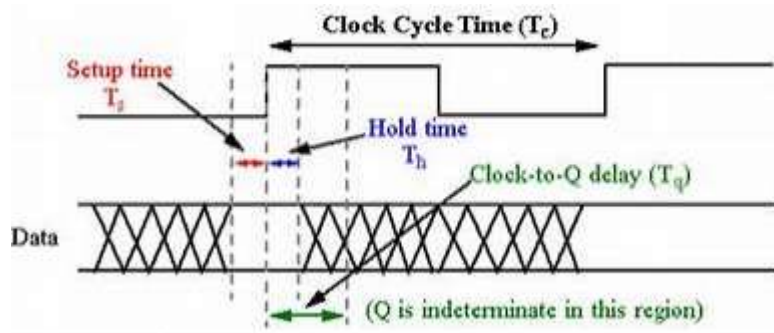
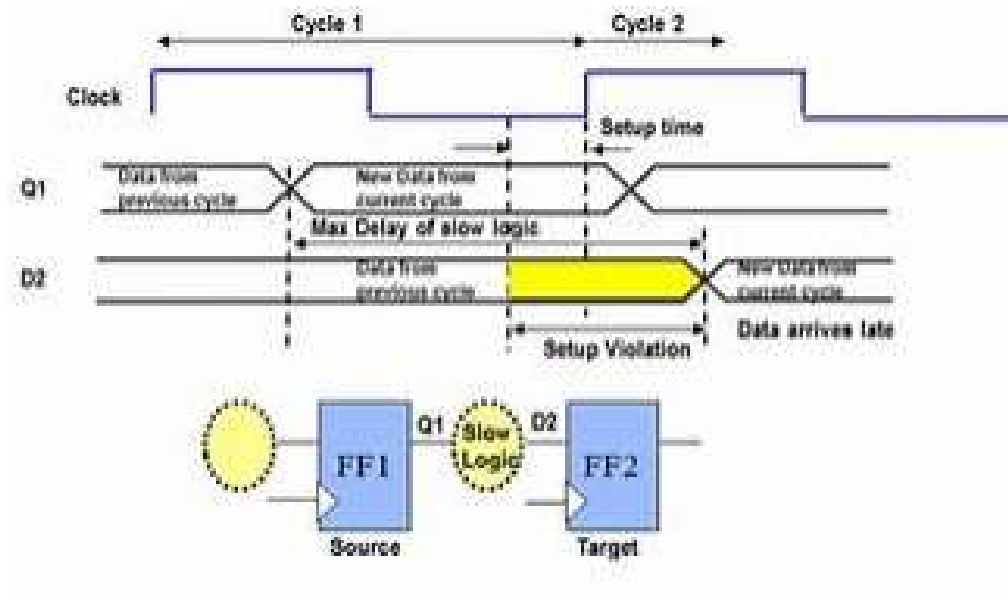
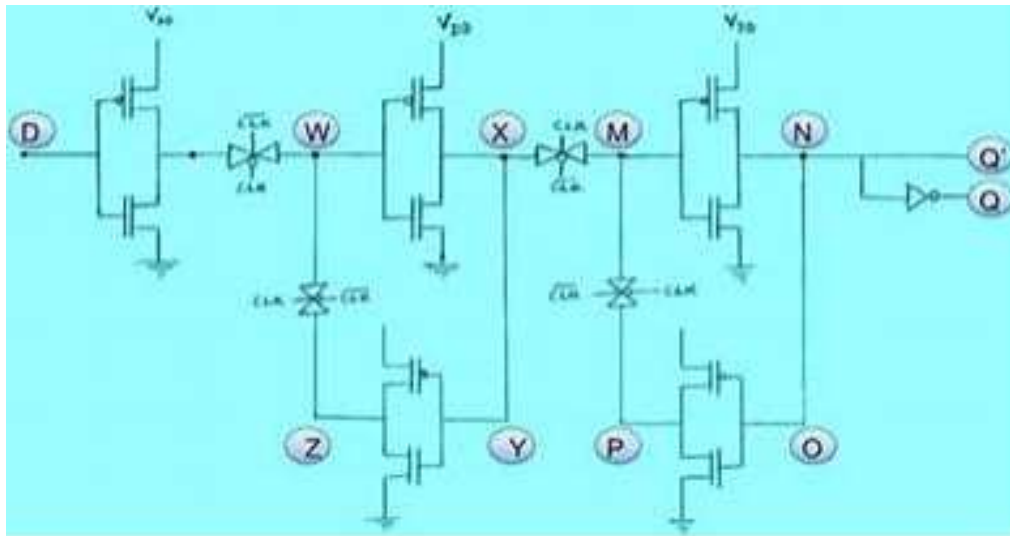


$$\text{Setup Slack} = \text{Data Required Time} - \text{Data Arrival Time}$$

Positive slack  
Timing requirement met

Negative slack  
Timing requirement not met





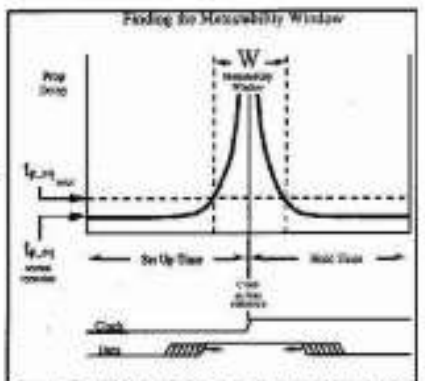
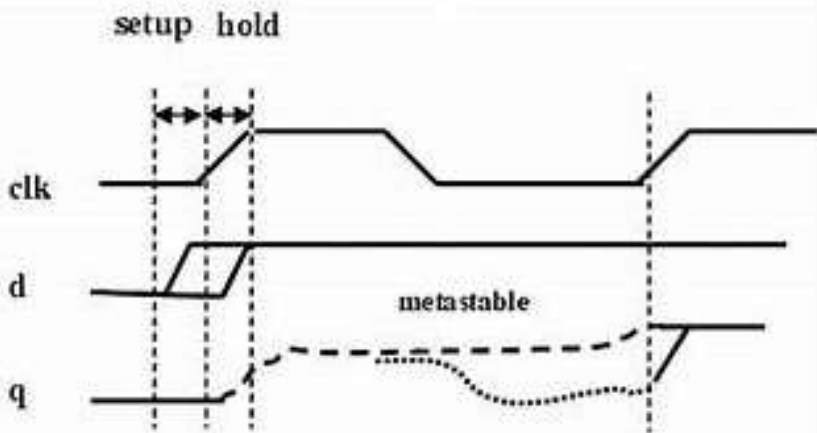
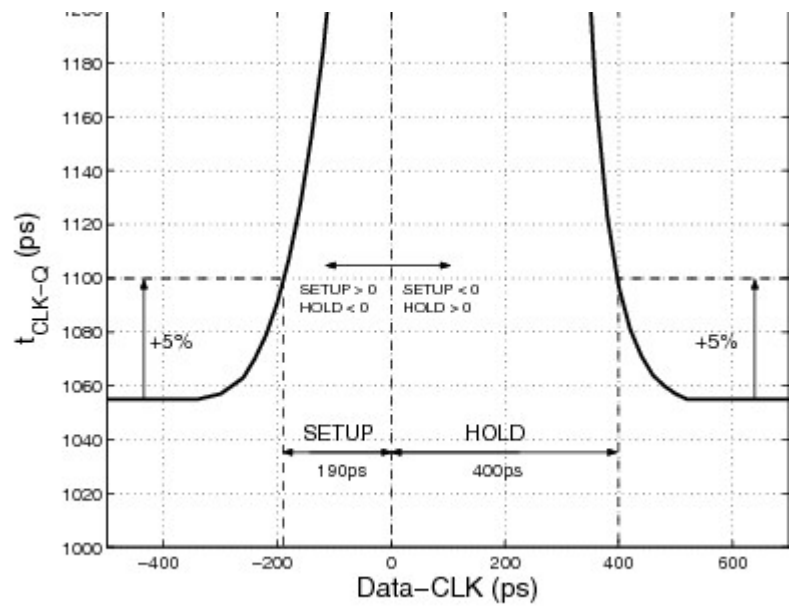


Figure 4. The Metastability Window,  $W$ , can be determined by accurately measuring the Propagation Delay time ( $t_{p,q}$ ) at different Set-up ( $t_{su}$ ) Hold ( $t_h$ ) times. The value for  $t_{p,q\_max}$  is given in the data sheet or chosen by the designer as the maximum tolerable Clock to Q Output delay.



**Figure 1. Definitions of setup and hold times.**