

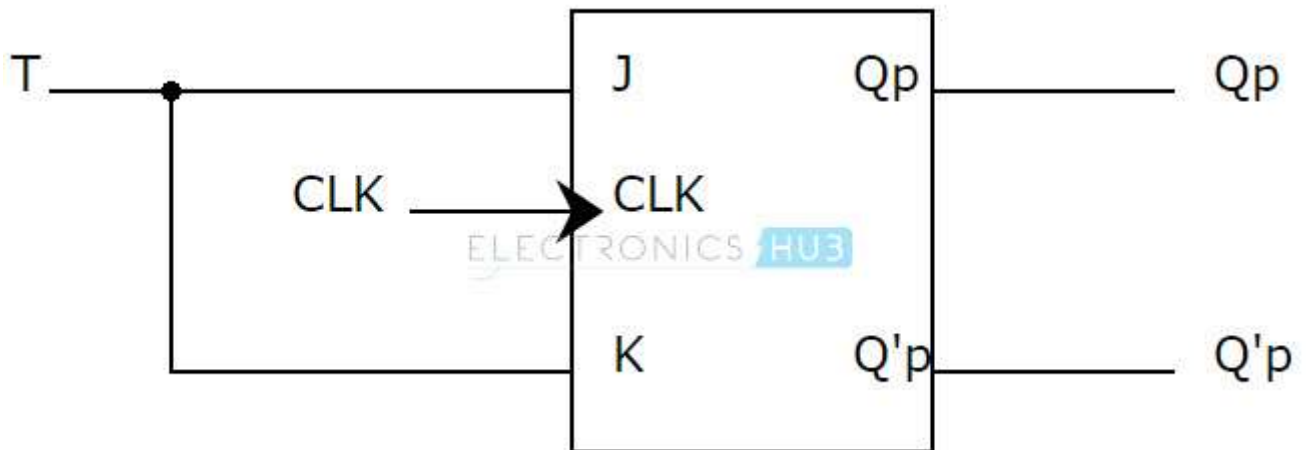
T- FLIP FLOPI (sinhroni in prožen na fronto)

Raziskal: Slavko Murko 16.10.2017

<http://ranger.uta.edu/~carroll/cse2341/fall98/chapter6/sld039.htm>

JK Flip – flop to T Flip – flop

Converting the JK flip – flop to T flip flop, involves in connecting the Toggle input (T) directly to the J and K inputs. So toggle (T) will be the external input to the combinational circuit. Its output is connected to the Input of actual flip – flop (JK flip – flop).



Clocked T Flip-Flop

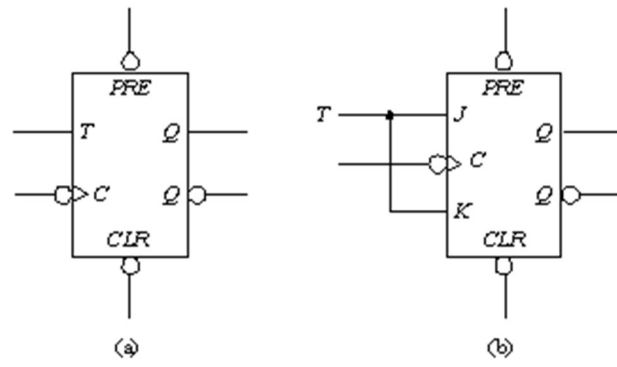


Figure 6.35

The Clocked T Flip-Flop Timing Diagram

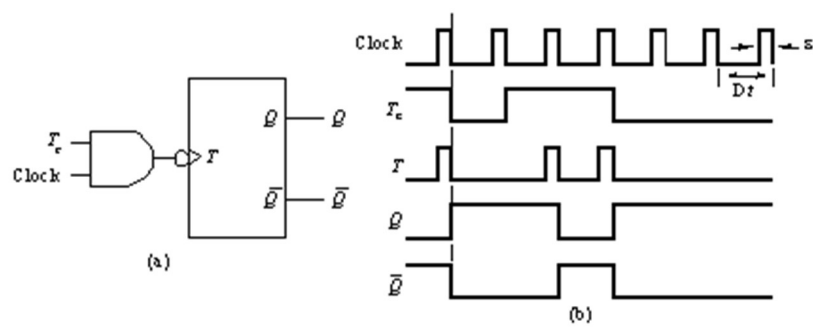


Figure 6.37

Negative-Edge-Triggered T Flip-Flop

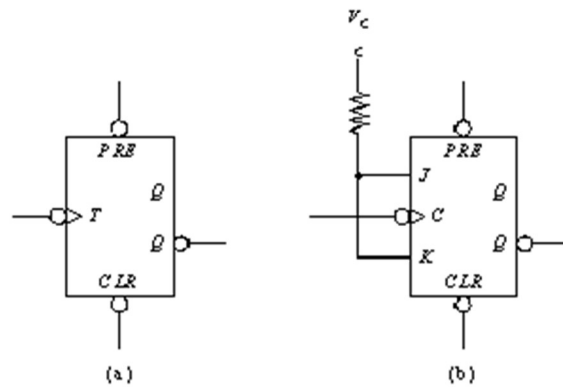


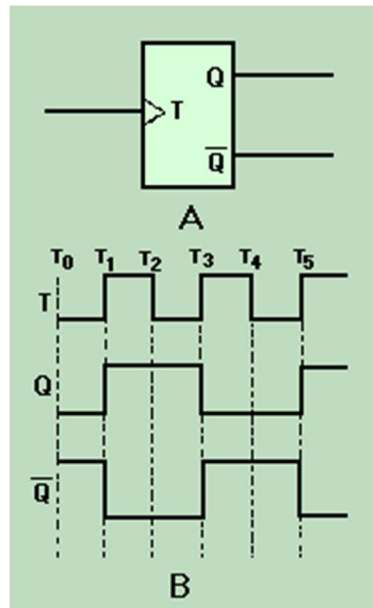
Figure 6.33

TOGGLE FLIP-FLOP

The toggle, or T, flip-flop is a bistable device that changes state on command from a common input terminal.

The standard symbol for a T FF is illustrated in figure 3-15, view A. The T input may be preceded by an inverter. An inverter indicates a FF will toggle on a HIGH-to-LOW transition of the input pulse. The absence of an [inverter](#) indicates the FF will toggle on a LOW-to-HIGH transition of the pulse.

Figure 3-15. - Toggle (T) flip-flop: A. Standard symbol; B. Timing diagram.



The timing diagram in figure 3-15, view B, shows the toggle input and the resulting outputs. We will assume an initial condition (T_0) of Q being LOW and \overline{Q} being HIGH. At T_1 , the toggle changes from a LOW to a HIGH and the device changes state; Q goes HIGH and \overline{Q} goes LOW. The outputs remain the same at T_2 since the device is switched only by a LOW-to-HIGH transition. At T_3 , when the toggle goes HIGH, Q goes LOW and \overline{Q} goes HIGH; they remain that way until T_5 .

Between T_1 and T_5 , two complete cycles of T occur. During the same time period, only one cycle is observed for Q or \overline{Q} . Since the output cycle is one-half the input cycle, this device can be used to divide the input by 2. The most commonly used T FFs are J-K FFs wired to perform a toggle function. This use will be demonstrated later in this section.

Q.22 How many inputs does a T FF have?

Q.23 What is the purpose of using T FFs?

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