

Circuite Logice cu diode.

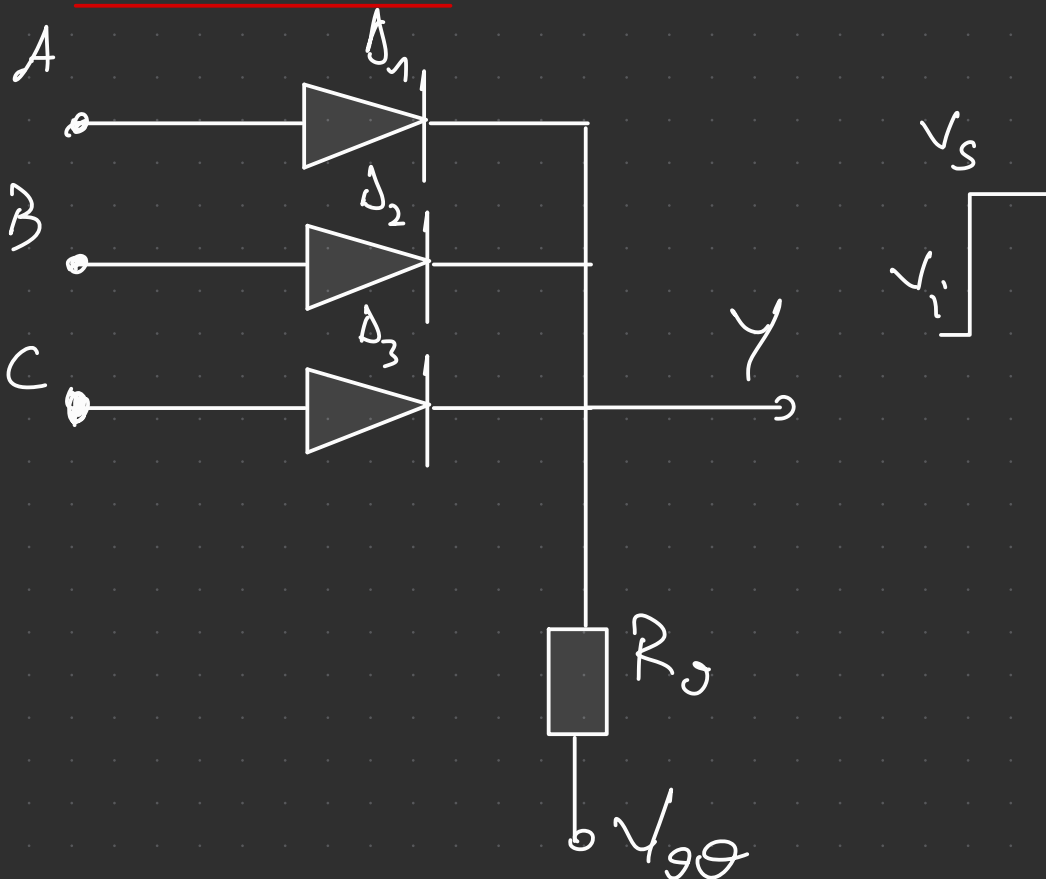
Poarta SAU

① Scopul lucrării

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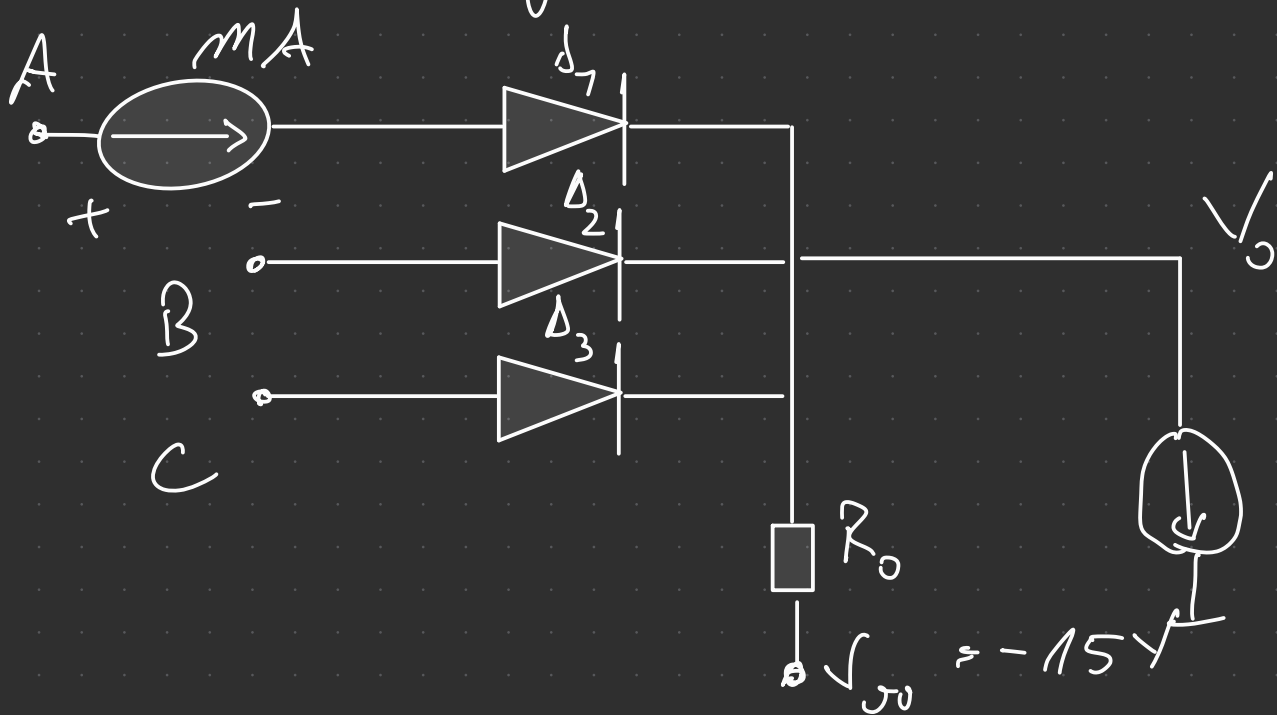
Se vor studia circuitele logice cu diode semiconductoare și rezistențe atât în regim static cât și în regim dinamic.

② Circuitul



③ Măsurul lucrării

Schema montajului



3.1 $V_{00} = -15V$
 $R_0 = 10.k\Omega$

$V_I = 0V$

$V_S = 5V$

a) $V_A = V_B = V_C = V_I$

b) $V_A = V_B = V_C = V_S$

c) $V_A = V_S, V_B = V_C = V_I$

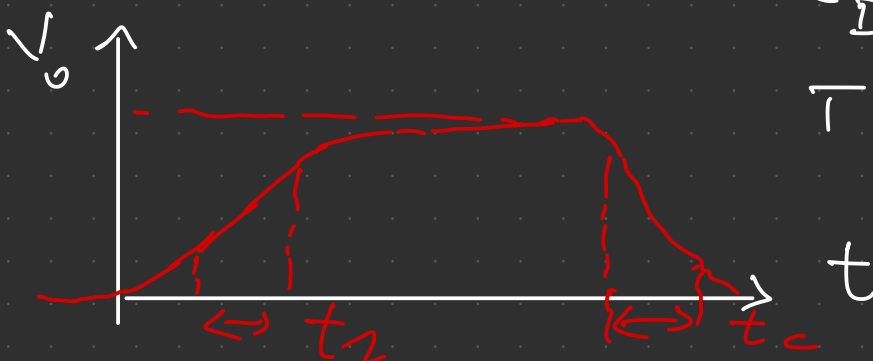
d) $V_A = V_B = V_S, V_C = V_I$

3.2 \rightarrow măsurare I_A

3.3 \rightarrow impuls: $T_i = 10\mu s$

$V_I = 0V, V_A = V_S = 5V$

$T = 20\mu s$



$$T = 25 \mu s$$

$$t_i = 10 \mu s$$

$$T_c = ?$$

$$T_n = ?$$

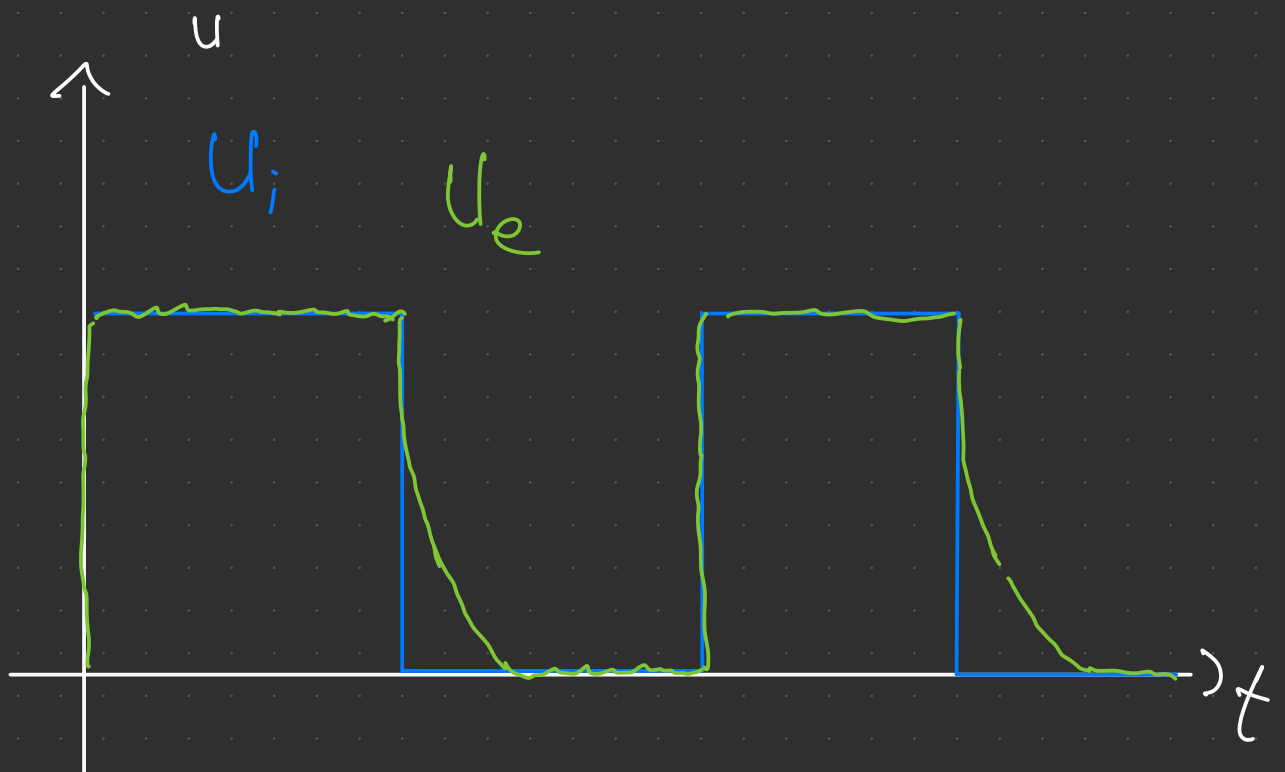
$$a) C = 152 pF$$

$$R_0 = 16 k \Omega$$

$$\begin{aligned} T_n &= RC \ln 2 = 16 \cdot 10^3 \cdot 152 \cdot 10^{-12} \ln 2 \\ &= 16 \cdot 152 \cdot 10^{-9} \ln 2 = 1685 \cdot 10^{-9} \\ &= 1,68 \cdot 10^{-6} = \underline{1,68 \mu s} \\ &\quad (\text{calcul}) \end{aligned}$$

$$T_n = 1 \mu s$$

$$T_c = 5,2 \mu s$$

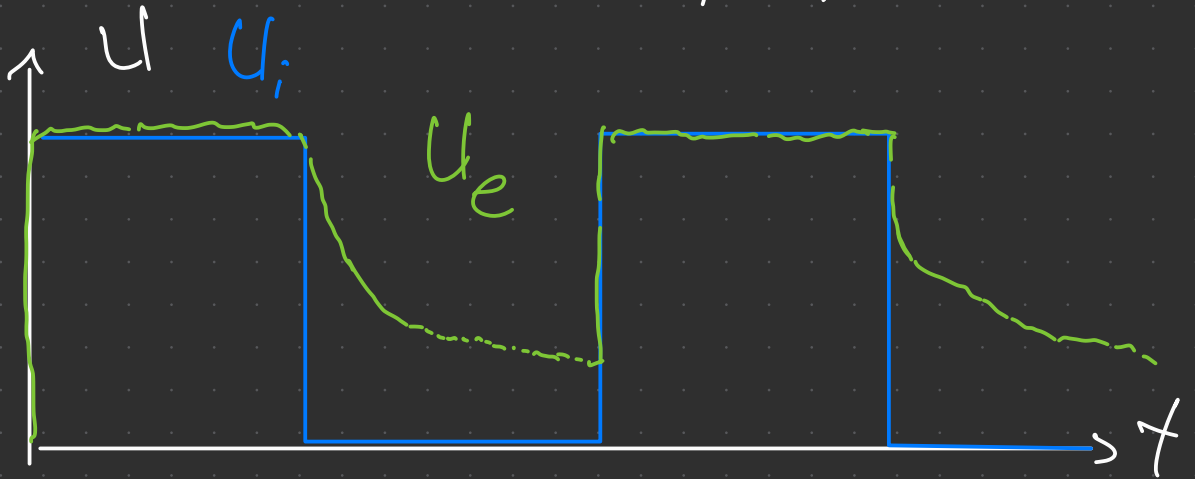


b) $C = 6,8 \text{ nF}$

$$T_R = 16 \cdot 10^3 \cdot 6,8 \cdot 10^{-9} \ln 2 = 75,41 \cdot 10^{-6} \\ = 75,41 \mu\text{s} \text{ (calcul)}$$

$$T_R = 1,2 \mu\text{s}$$

$$T_C = 14,4 \mu\text{s}$$

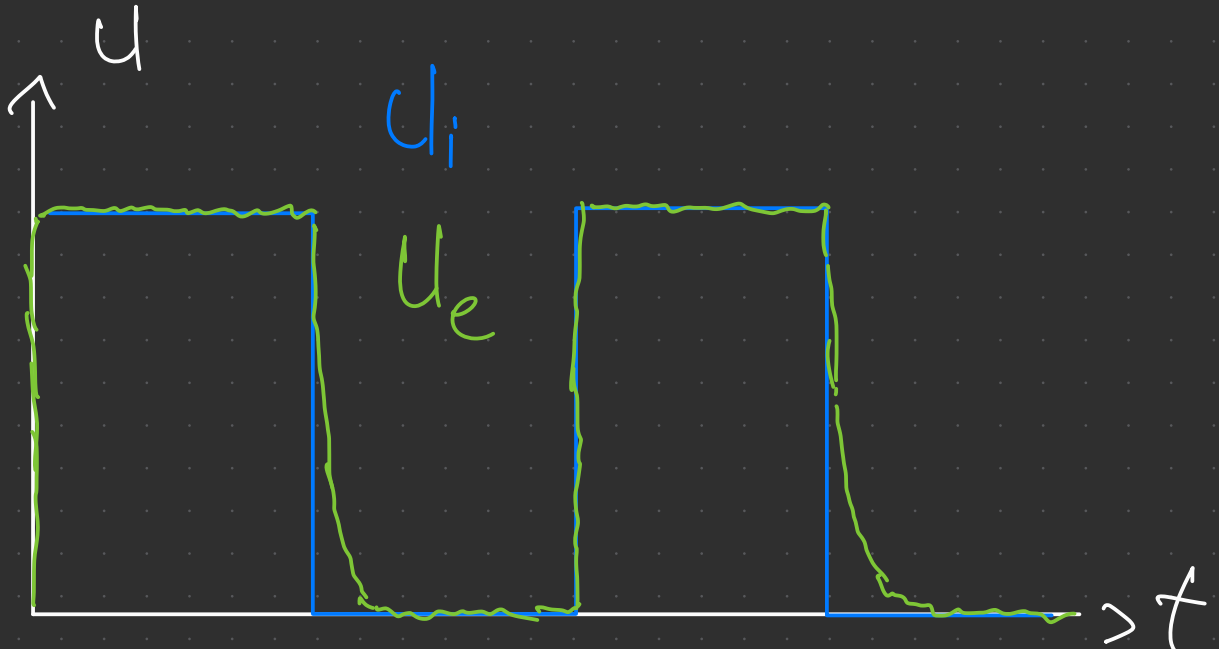


c) $C = 470 \text{ pF}$

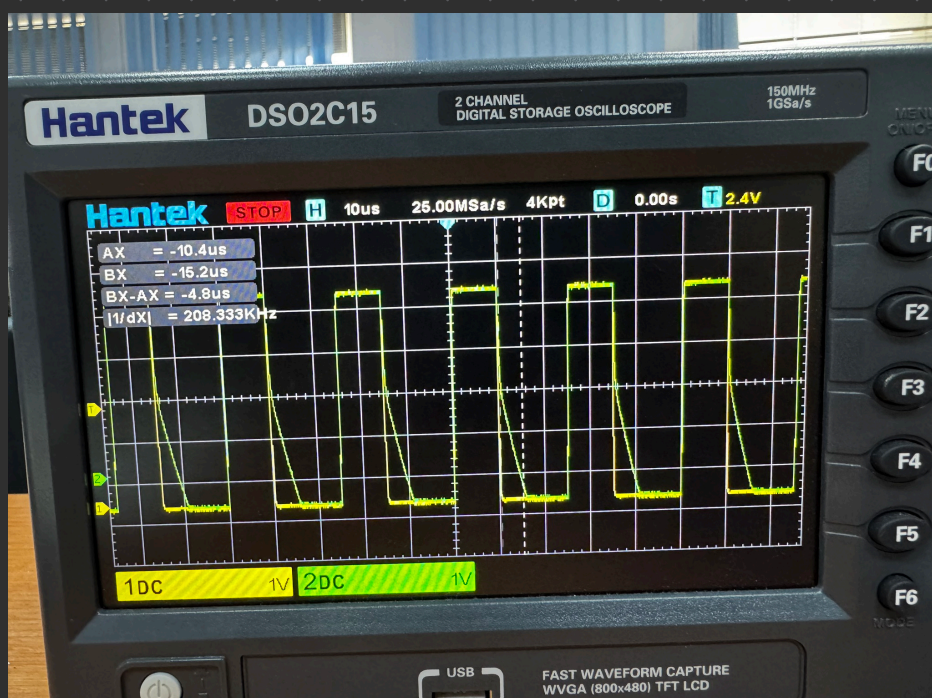
$$T_R = 16 \cdot 10^3 \cdot 470 \cdot 10^{-12} \ln 2 \\ = 11416 \cdot 10^{-9} = 11,416 \mu\text{s} \text{ (calcul)}$$

$$T_R = 200 \text{ ns}$$

$$T_C = 1,8 \mu\text{s}$$

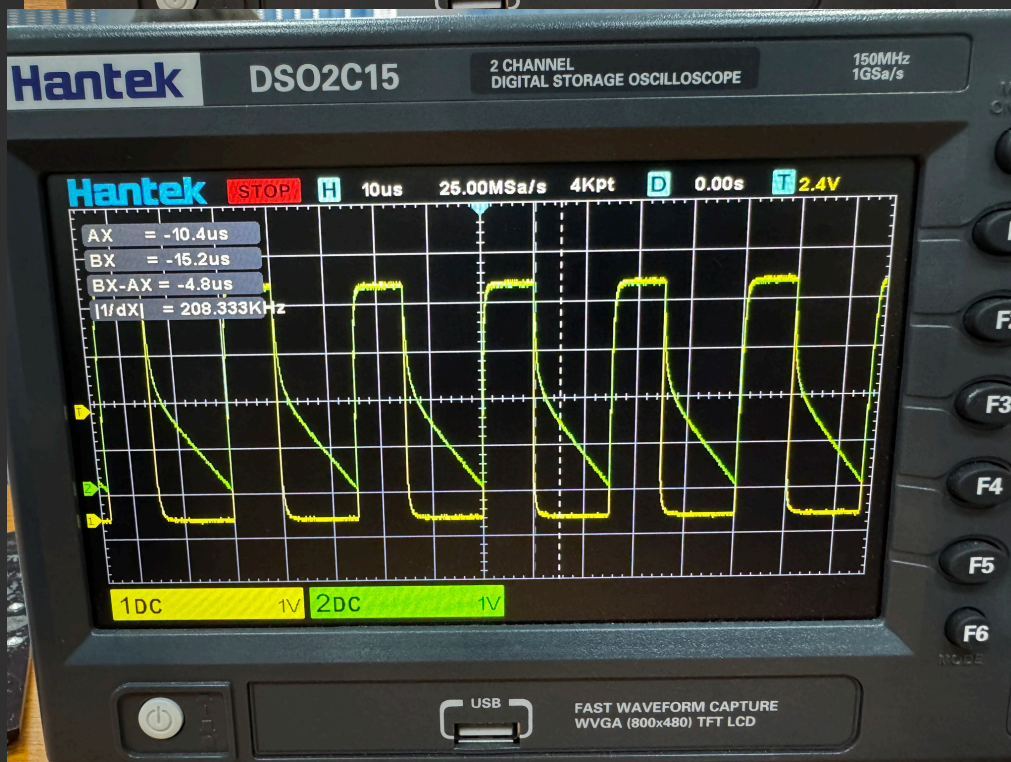


a)



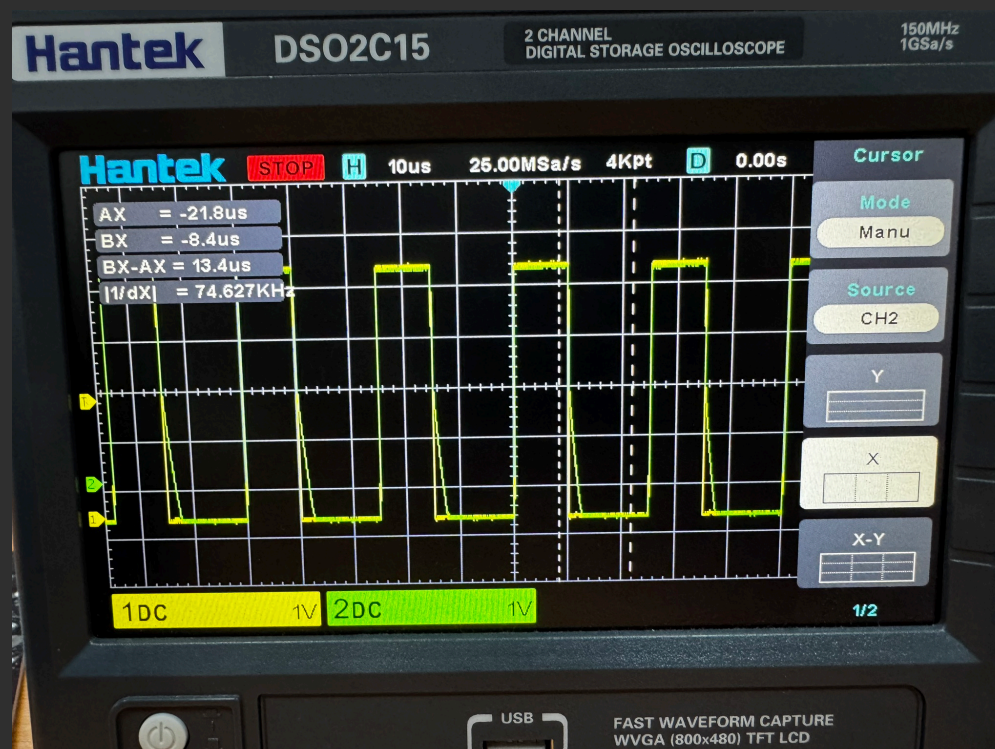
$$C = 152 \text{ pF}$$

b)



$$C = 68 \text{ nF}$$

c)



$$C = 470 \text{ pF}$$