

$$I_{OH} \geq \sum I_{IH}$$

$$I_{OL} \geq \sum I_{IL}$$

(4) Temps de propagation



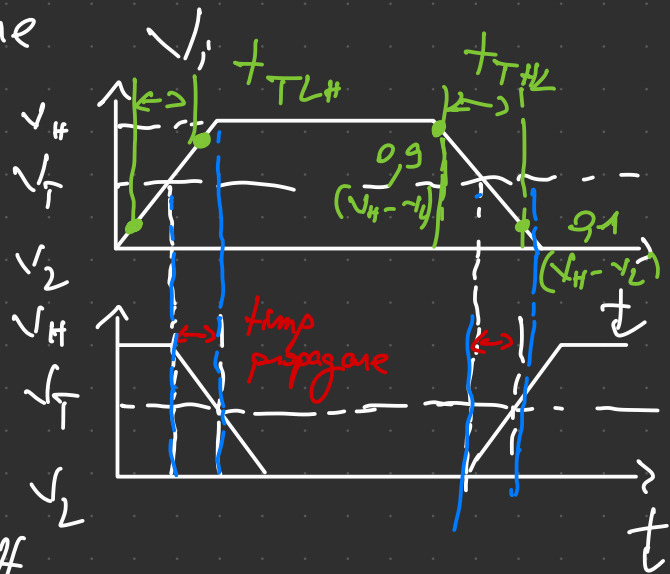
→ premier $t_p \rightarrow t_{pH2}$
transition $H \rightarrow L$ t_{pLH}

→ 2 $t_p \rightarrow$ trans. $L \rightarrow H$

$$t_{pH2} \neq t_{pLH}$$

$$t_{pd} = \frac{t_{pH2} + t_{pLH}}{2}$$

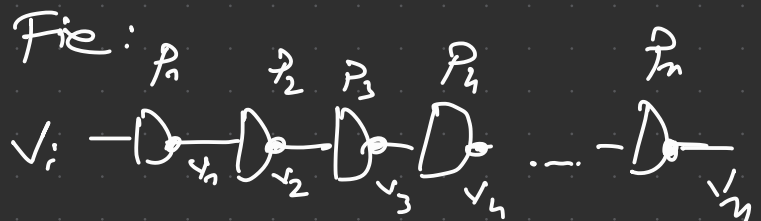
temp de latence

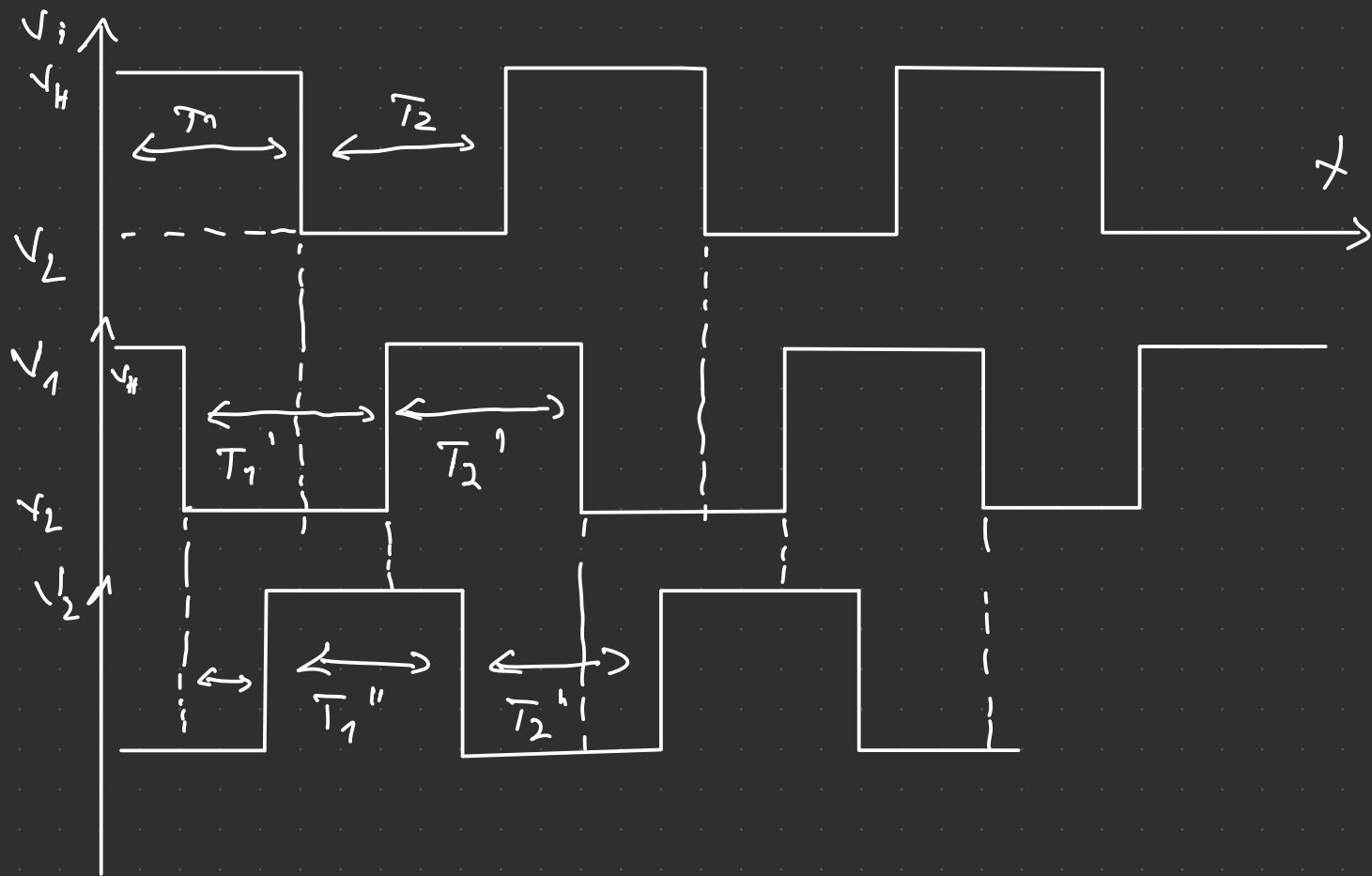


$$t_{pH2} = 2 t_{pLH}$$

$$t_{pH2} = \text{---|---|}$$

$$t_{pLH} = \text{---|}$$



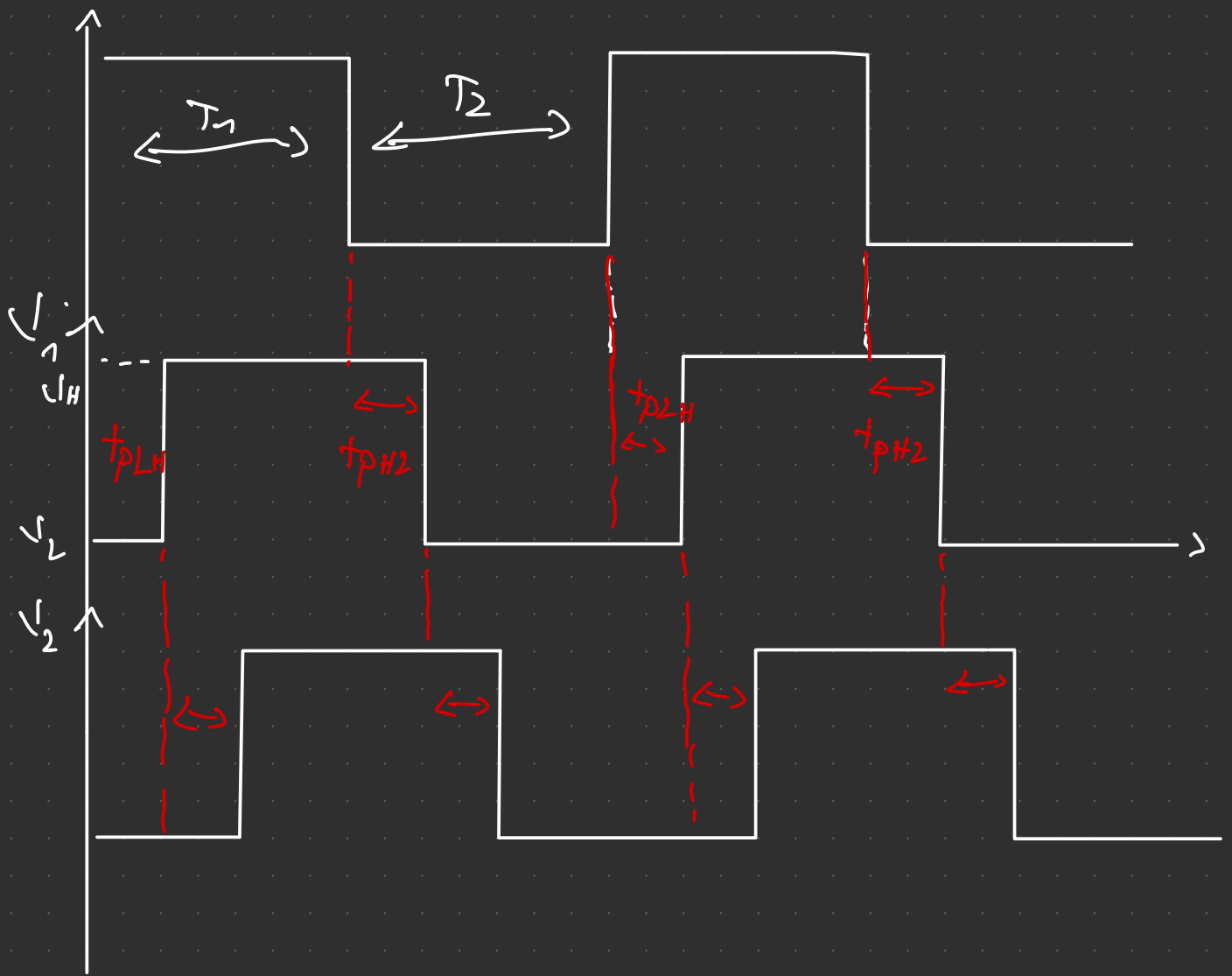


$$T_1' = T_1 - t_{pH2} + t_{pLM}$$

$$T_1'' = T_1 - t_{pLH} + t_{pH2} = T_1$$

$$T_2'' = T_2$$





$$T_1' = T_1 - t_{PLH} + t_{PHL}$$

$$T_1'' = T_1' - t_{PLH} + t_{PHL}$$

$$T_1''' = T_1 - n(t_{PLH} - t_{PHL})$$

ex. $t_{PLH} = 10 \text{ ns}$

$t_{PHL} = 20 \text{ ns}$

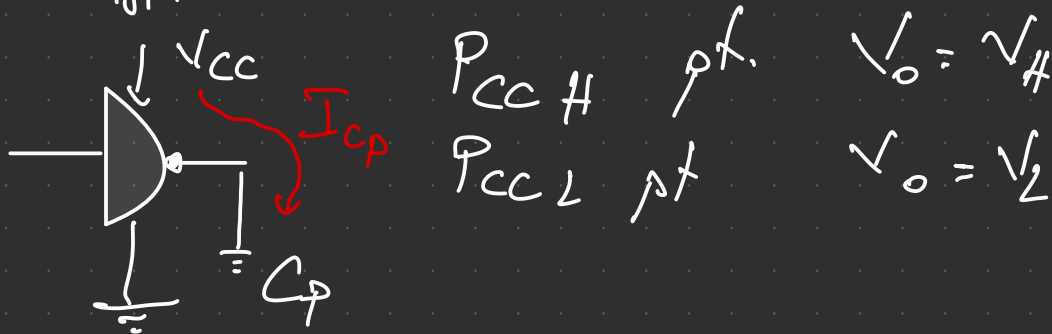
$T_1 = T_2 = 100 \text{ ns} \rightarrow$ se cere ca dupa cate ?
peri, semnalul dispare ?

$$N = \frac{T_1}{T_{PH2} - T_{PLH}} = \frac{100}{20-10} = \underline{\underline{10}}$$

⑤ Puterea consumată

$$P_{tot} = P_{CC} + P_D + P_{DS}$$

\nearrow \nearrow \nearrow
 putere statică puterea dinamică dinamică suplimentară



$$P_{CC} = \frac{I_{CCL} + I_{CCH}}{2} \cdot V_{CC}$$

$$C_P = \sum C_i + C_o + C_{fin.}$$

$$P_D = I_{CP} \cdot V_{CC} = \frac{C_P V_{CC}^2}{T}$$

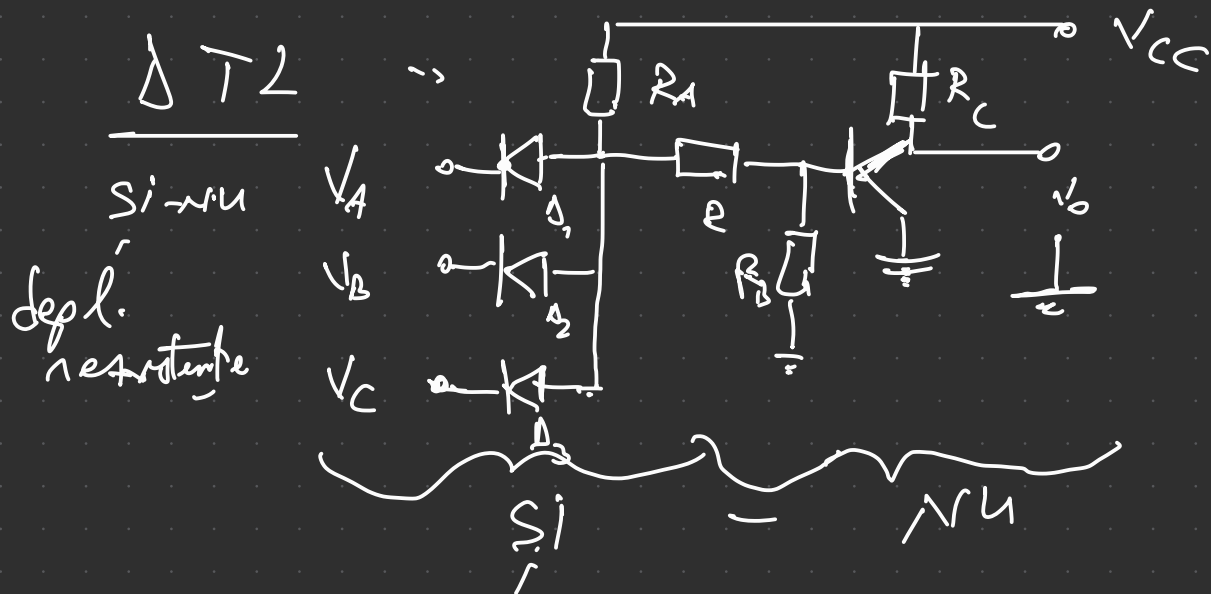
$$I_{CP} = C_P \frac{dU}{dt} = C_P F V_{CC}^2$$

$$C_P = 50 \text{ pF}$$

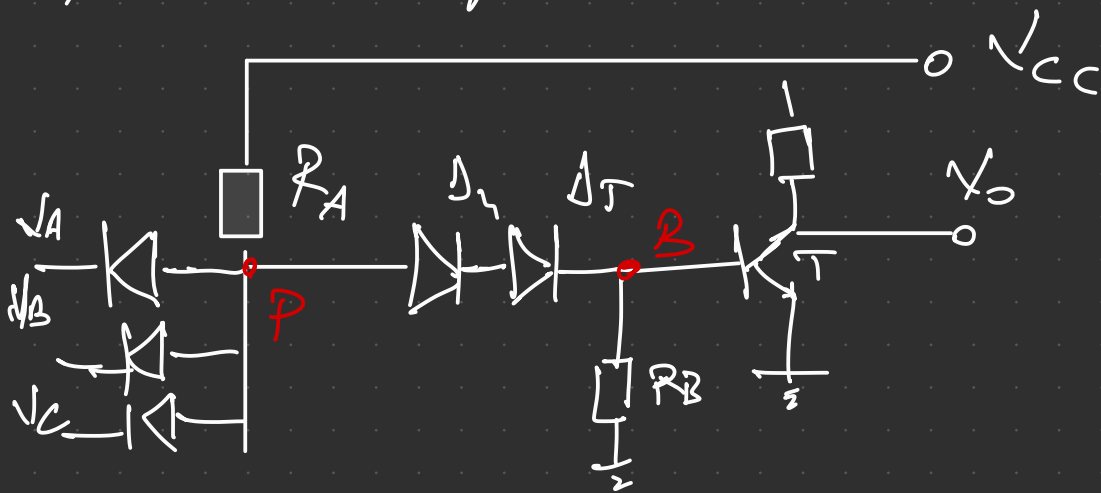
$$V_{CC} = 5 \text{ V}$$

$$F = 1 \text{ MHz}$$

$$P_D = 50 \cdot 10^{-12} \cdot 10^6 \cdot 25 = 1,25 \text{ mW}$$



Si - nu depl. cu diode



$$V_P \rightarrow V_{CC}$$

$$V_P = V_{D1} + V_{D2} + V_{BE} \sim 2,25V$$

$$V_A = V_B = V_C = V_H = V_{CC}$$

a) Transistorul + se alternează $\rightarrow V_P = 2,25$

$$\rightarrow V_O = V_{CES} = 0,1V = V_L$$

b) $V_{A..} = V_L$ (cel puțin o diodă cond.)

$$V_P = V_L + V_A = 0,1 + 0,75 = 0,85$$

pt. a descrie $D_{1,5} \xrightarrow{V_{BE}} T_{be} \rightarrow V_H$

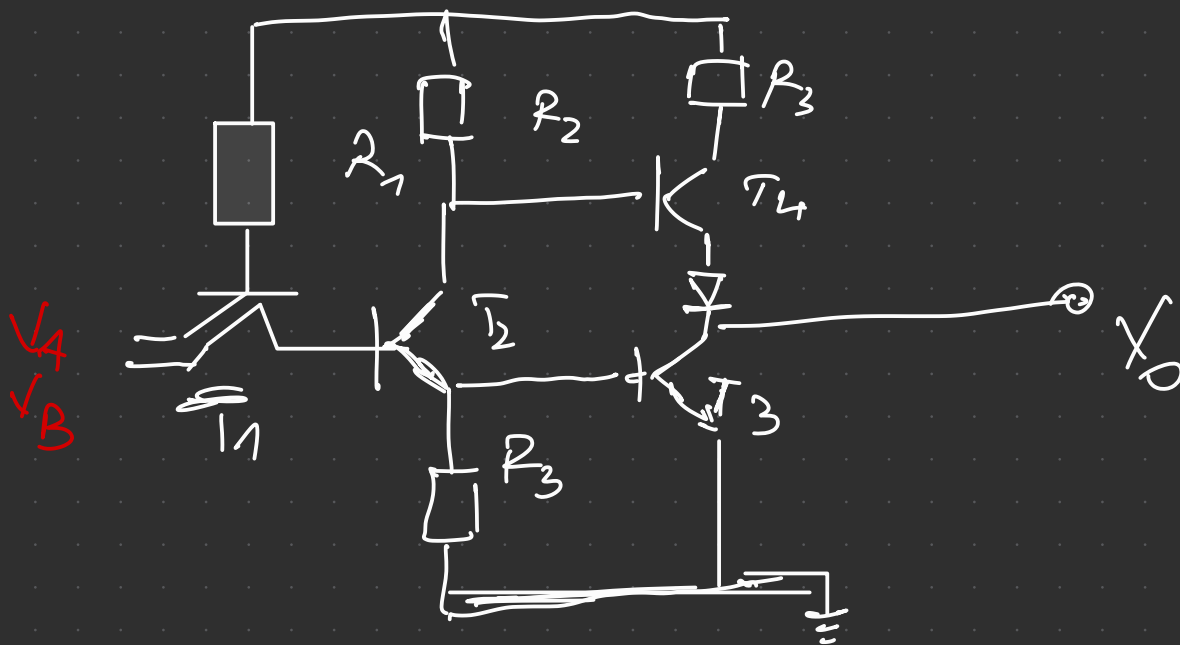
Pt. a conduce cele 3 jonctiuni
 $(\Delta_4, \Delta_5, j_{BE})$ over nivel I_n

$$V_p = V_{\Delta_{4T}} + V_{\Delta_{4T}} + V_{BE}^T$$

$$= 0,6V + 0,6V + 0,6V = 1,95V$$

$$TSL \rightarrow V_o = V_{CC} = V_H$$

→ TTL



$T_1 \rightarrow$ multiemitor

