

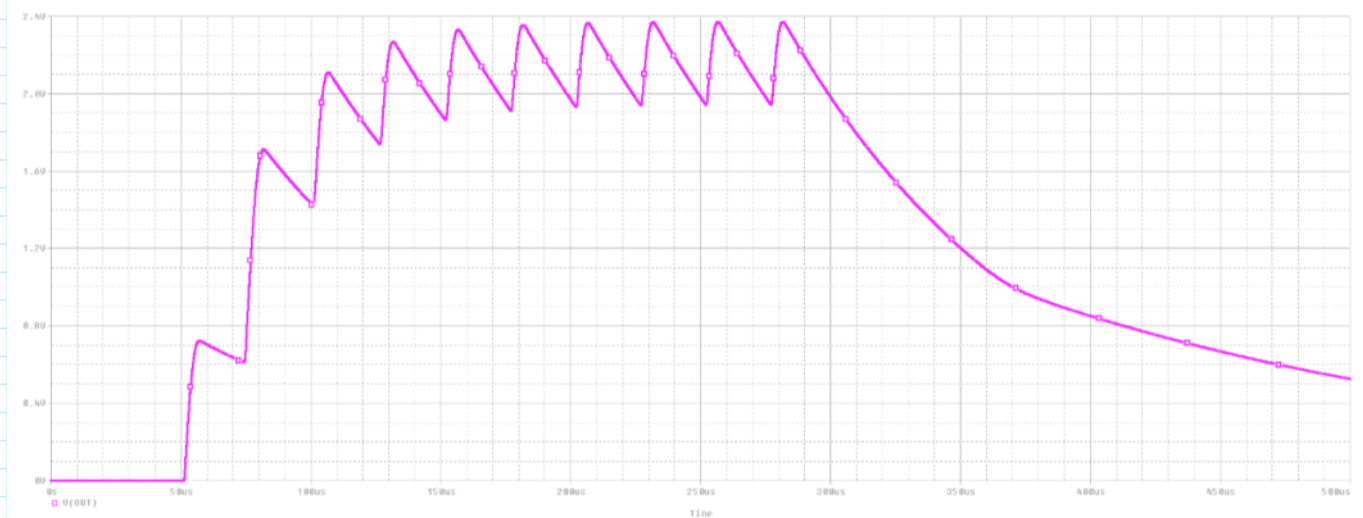
① $T_{OF} = \frac{2 \cdot d}{v}$

° 50 cm : $T_{OF} = \frac{2 \cdot 50 \cdot 10^{-2}}{340} = \underline{\underline{2,94 \text{ ms}}}$

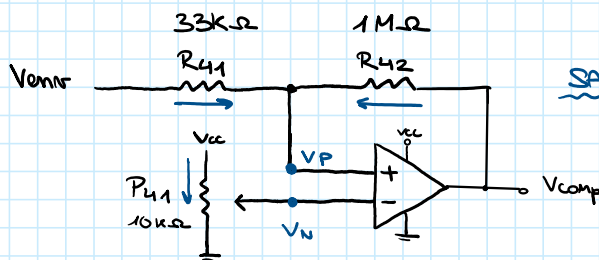
° 1 m : $T_{OF} = \frac{1 \cdot 2}{340} = \underline{\underline{5,88 \text{ ms}}}$

° 2 m : $T_{OF} = \frac{2 \cdot 2}{340} = \underline{\underline{11,76 \text{ ms}}}$

②



③



SAT. ⊕ $V_{comp} = V_{sat+} \approx V_{cc} : V_p > V_N$

(KCL V_p): $\frac{V_{env} - V_p}{R_{41}} + \frac{V_{comp} - V_p}{R_{42}} = 0$

(KCL V_N): "potenciometre al mig"

$$V_{cc} \cdot \frac{\frac{1}{2} \cdot 10k}{\frac{1}{2} \cdot 10k + \frac{1}{2} \cdot 10k} = \frac{V_{cc}}{2} = V_N //$$

$$\frac{V_{env}}{R_{41}} - V_p \left(\frac{1}{R_{41}} + \frac{1}{R_{42}} \right) + \frac{V_{cc}}{R_{42}} = 0$$

$$V_p = \frac{V_{env} \cdot R_{42} + V_{cc} \cdot R_{41}}{R_{42} + R_{41}} //$$

$$V_p > V_N \rightarrow \frac{V_{env} \cdot R_{42} + V_{cc} \cdot R_{41}}{R_{42} + R_{41}} > \frac{V_{cc}}{2}$$

$$\frac{V_{env} \cdot R_{42}}{R_{42} + R_{41}} > V_{cc} \left(\frac{1}{2} - \frac{R_{41}}{R_{42} + R_{41}} \right) = V_{cc} \left(\frac{R_{42} + R_{41} - R_{41} \cdot 2}{(R_{42} + R_{41})^2} \right)$$

$$\rightarrow V_{env} \cdot R_{42} > V_{cc} \frac{R_{42} - R_{41}}{2} \rightarrow V_{env} > V_{cc} \frac{R_{42} - R_{41}}{2 R_{41}} = 5,802V$$

$$V_{env} > 5,802V //$$

SAT ⊖ $V_{comp} = V_{sat-} \approx 0$; $V_p < V_N$

$$\left. \begin{array}{l} \text{(KCL } V_p): \quad V_p = \frac{R_{42}}{R_{41} + R_{42}} V_{env} \\ \text{(KCL } V_N): \quad \frac{V_{cc}}{2} = V_N \end{array} \right\} V_N > V_p \rightarrow \frac{V_{cc}}{2} > \frac{R_{42}}{R_{41} + R_{42}} V_{env} \rightarrow V_{env} < \frac{V_{cc}}{2 R_{42}} (R_{41} + R_{42}) = 6,198V$$

$$V_{env} < 6,198V //$$

Histeresi:

