

Punto 1 LABORATORIO

Create tabella con tutti i parametri utili. Qui sotto riporto le formule che ho utilizzato per le incognite

$$\text{MAXCNT} \Rightarrow \text{decimale} = n_s - 2$$

$$\hookrightarrow \text{binario} = \begin{cases} \text{se } \text{MAXCNT} > 255: \\ \hookrightarrow \text{arrotondamento per eccesso di} \end{cases}$$

$$\text{MAXCNT}/16;$$

risultato convertito in binario;

se no

$\hookrightarrow \text{MAXCNT convertito in binario}$

$$\text{DIVISOR} \Rightarrow \text{decimale} = \frac{f_{CK}}{(\text{MAXCNT} + 1) \cdot f_{PWN}} - 1$$

$$\hookrightarrow \text{binario} = \text{vedi MAXCNT binario}$$

$$\text{REGISTER} \Rightarrow \text{decimale} = 8 \cdot (\text{MAXCNT} + 1)$$

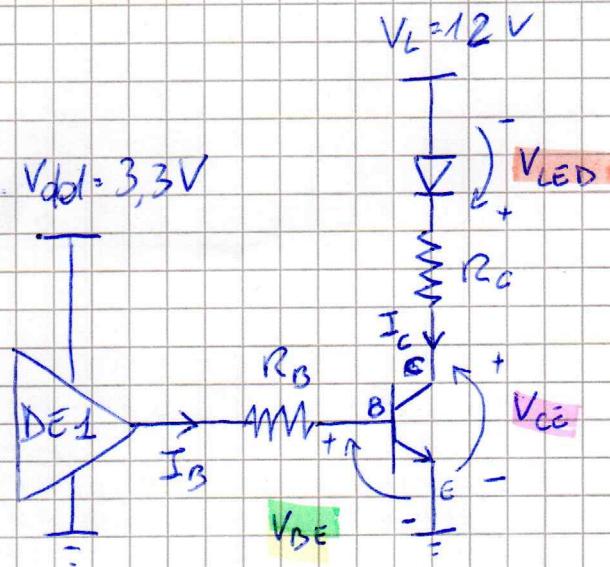
$$\hookrightarrow \text{binario} = \text{vedi MAXCNT binario}$$

$$t_{PWN} \Rightarrow \text{calculated} = 1/f_{PWN}$$

$$t_{ON} \Rightarrow \text{calculated} = 8 \cdot t_{PWN}$$

$$t_{OFF} \Rightarrow \text{calculated} = t_{PWN} - t_{ON}$$

II PUNTO 2 LABORATORIO



$$V_{LED} = 1,85 \text{ V} \quad (\text{guardare datasheet led})$$

$$V_{CE(SAT)} = 0,3 \text{ V} \quad (\text{guardare datasheet 2N2222A})$$

$$V_{BE(SAT)} \Rightarrow \min 0,6 \text{ V}$$

$$\hookrightarrow \max 1,2 \text{ V}$$

$$I_B = 16 \text{ mA} \quad (\text{consegna del lab})$$

$$I_C = 20 \text{ mA} \quad (\text{consegna del lab})$$

$$V_{DD} = 3,3 \text{ V} \quad (\text{consegna del lab})$$

$$V_L = 12 \text{ V} \quad (\text{consegna del lab})$$

$$R_C = \frac{V_L - V_{CE(SAT)} - V_{LED}}{I_C} = \frac{12 - 0,3 - 1,85}{20 \cdot 10^{-3}} \text{ V} =$$

$$= 492,5 \Omega \approx 500$$

$$R_{B_{MAX}} = \frac{V_{DD} - V_{BE \min(SAT)}}{I_B} = \frac{3,3 \text{ V}}{16 \cdot 10^{-3} \text{ A}} = 168,7 \Omega$$

$$R_{B_{MIN}} = \frac{V_{DD} - V_{BE \max(SAT)}}{I_B} = \frac{3,3 \text{ V}}{16 \cdot 10^{-3} \text{ A}} = 131,2 \Omega$$