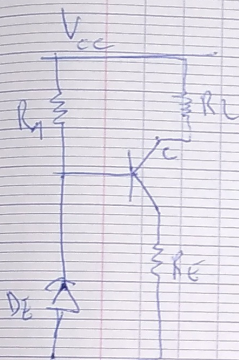


Source de Courant :
et une circuit
livre un courant
constant à une charge.

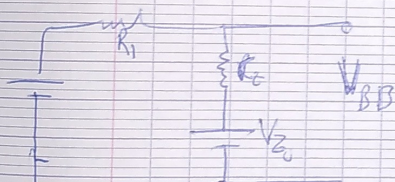
Modif. $I_C = I_{R_L} = \beta I_B \approx R_L$
Saturation $V_{CE} = 0.2V \Rightarrow$

$$I_C = I_{emsa} = \frac{V_{CC} - V_{CEsat}}{R_C + R_E} = f(R_L)$$



$$R_E = 0.435 \Omega$$

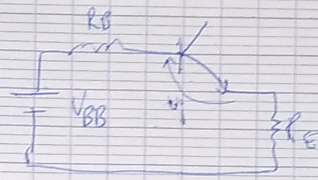
$$\beta = 200, V_f = 0.6V$$



$$V_{BB} = \frac{\frac{V_{CC}}{R_1} + \frac{V_{Z0}}{R_2}}{\frac{1}{R_1} + \frac{1}{R_2}}$$

$$V_{BB} = \frac{r_2 V_{CC} + R_1 V_{Z0}}{r_2 + R_1} \approx 6.01V$$

$$R_B = R_2 \parallel R_1 \approx R_2 = 6 \Omega$$



$$I_C = \beta I_B$$

$$-V_{BB} + R_B I_B + V_f + R_E (\beta + 1) I_B = 0$$

$$I_B = \frac{V_{BB} - V_f}{R_B + (\beta + 1) R_E} \approx 57 \mu A$$

$$I_C = 200 \times 57 = 11.4 \text{ mA}$$

$$V_{CE} = V_{CC} - R_L I_C - R_E I_E$$

$$R_L = \frac{V_{CC} - 0.2 - 0.43 \times 11.4}{11.4}$$

$$V_{CC} = 24V$$

$$R_L = \frac{23,8 - 5,17}{11,4} \approx 1,65 \text{ k}\Omega$$

$$R_L \in [0, 1,65 \text{ k}\Omega] \rightarrow I_{R_L} = 11,4 \text{ mA}$$

$$1,65 < R_L \rightarrow I_{R_L} = I_{\text{max}} = \frac{24 - 0,2}{R_L + R_E} = f(R_L)$$

1

2

U_1
 U_2

U_4