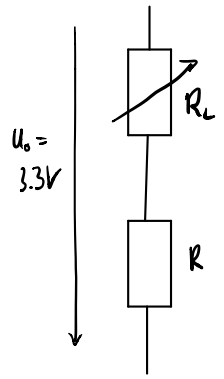


Es gilt

$R_L$ => Widerstand NCT von 182,6 Ω bis 10 kΩ

$$P_L = U_L \cdot I = I^2 \cdot R_L = \frac{U_0^2}{(R+R_L)^2} \cdot R_L$$

$$\frac{dP_L}{dR_L} = U_0^2 \cdot \left( \frac{1}{(R+R_L)^2} - \frac{2R_L}{(R+R_L)^3} \right)$$

$$= U_0^2 \cdot \left( \frac{R_L + R - 2R_L}{(R+R_L)^3} \right)$$

$$= U_0^2 \cdot \left( \frac{R - R_L}{(R+R_L)^3} \right)$$

$$\Rightarrow \frac{dP_L}{dR_L} = 0 \quad \text{wenn} \quad R = R_L$$

... also

$$P_{Lmax} = \frac{U_0^2}{(2R)^2} \cdot R = \frac{U_0^2}{4R}$$

$$\Rightarrow \quad R = \frac{U_0^2}{4 \cdot P_{Lmax}}$$

$P_{Lmax} \overset{!}{\leq} 15\,mW$

$$R \geqslant \frac{U_0^2}{4 \cdot P_{Lmax}} \geqslant \frac{(3{,}3V)^2}{4 \cdot 15 \cdot 10^{-3} W} = 181{,}5\,\Omega$$