

# Calculul rezistoarelor

de tip "Meandru"

Se da:

$$R_i = 10 \text{ k}\Omega$$

$$\frac{\Delta R}{R} = 20\% = 0,2$$

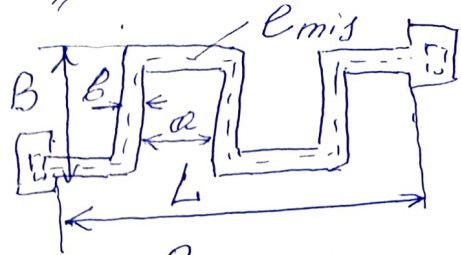
$$P_s = 300 \frac{\text{W}}{\text{cm}^2}$$

$$P_i = 2 \text{ mW}$$

$$\Delta T = 60^\circ \text{C}$$

$$P_o = 0,5 \frac{\text{W}}{\text{mm}^2}$$

$$\alpha_R = 0,5 \cdot 10^{-3} \frac{\text{mm}^2}{^\circ \text{C}}$$



$$K_f = \frac{R_i}{P_s} = \frac{10.000 \Omega}{300 \frac{\text{W}}{\text{cm}^2}} = 33,33$$

$K_f > 10$ . R de tip "Meandru"

$$b_{calc} \geq \{ b_{texn}, b_{pr}, b_p \}$$

$l_{mij} = ?$   
 $L = ?$   
 $B = ?$

$$b_{pr} = \left( \frac{\Delta l}{K_f} + \Delta b \right) \frac{K_f}{\Delta K_f}$$

$3, \mu\text{m}$

$\Delta l = \Delta b = 0,1 \mu\text{m}$

$$\frac{\Delta K_f}{K_f} = \frac{\Delta R}{R} - \frac{\Delta P_s}{P_s} - \alpha_R \Delta T = 0,2 - 0,05 - 0,5 \cdot 10^{-3} \cdot 60$$

$$b_{pr} = \left( \frac{0,1}{13,33} + 0,1 \right) \frac{1}{0,12} \approx 0,9 \mu\text{m}$$

$$= 0,2 - 0,05 - 0,03 = 0,12$$

$$b_p = \sqrt{\frac{P_i}{P_o \cdot K_f}} = \sqrt{\frac{2 \cdot 10^{-3} \text{ W}}{0,5 \frac{\text{W}}{\text{mm}^2} \cdot 33,33}} = 1,09 \cdot 10^{-2} \text{ mm} \cdot 10^3 = 10,9 \mu\text{m}$$

$$b_{calc} = 10,9 \mu\text{m}$$

$$b_{masca} = b_{calc} - 2(\Delta x + \Delta y) = 10,9 - 2(0,5 + 1,3) = 10,9 - 3,6 = 7,3 \mu\text{m}$$

$$l = l_{mij} = b_{masca} \cdot K_f = 7,3 \cdot 33,33 = 243 \mu\text{m}$$

$$L = n(a + b) \quad n = \sqrt{\frac{K_f}{2}} = \sqrt{\frac{33,33}{2}} \approx 4$$

$$B = \frac{l_{mij} - na}{n}$$

Daca  $a = b$ , atunci

$$L = 4(7,3 + 7,3) = 58,4 \mu\text{m}$$

$$B = \frac{243 - 4 \cdot 7,3}{4} = 53,4 \mu\text{m}$$