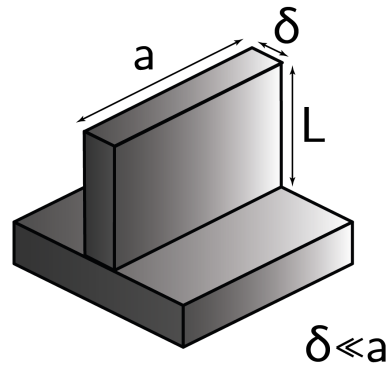


Fins - Parameter 1

Determine the fin parameter m^2 for the shown fin geometry.



Given the standard definition of the fin parameter:

$$m^2 = \frac{\alpha \cdot U}{\lambda \cdot A_c}$$

Where the circumference can be stated as follows:

$$U = 2\delta + 2a$$

And the cross-sectional area:

$$A_c = \lambda \cdot a$$

Which gives:

$$m^2 = \frac{\alpha \cdot 2 \cdot (\delta + a)}{\lambda \cdot \delta \cdot a} = \frac{2 \cdot \alpha}{\lambda} \cdot \left(\frac{1}{\delta} + \frac{1}{a} \right)$$

It is known that $\frac{1}{\delta} \gg \frac{1}{a}$, which leads to the simplification:

$$m^2 \approx \frac{2\alpha}{\lambda\delta}$$