

7.30 Repeat Problem 7.29 at 10 MHz.

Solution:

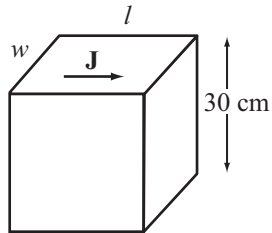


Figure P7.30 Copper block of Problem 7.30.

$$\text{d-c resistance } R_{\text{dc}} = \frac{l}{\sigma A} = \frac{l}{0.6 \sigma w},$$

$$\text{a-c resistance } R_{\text{ac}} = \frac{l}{\sigma w \delta_s}.$$

$$\begin{aligned} \frac{R_{\text{ac}}}{R_{\text{dc}}} &= \frac{0.6}{\delta_s} = 0.6 \sqrt{\pi f \mu \sigma} = 0.6 [\pi \times 10^7 \times 4\pi \times 10^{-7} \times 5.8 \times 10^7]^{1/2} \\ &= 2.88 \times 10^4. \end{aligned}$$
