

4. (20 pts.) The duration of a photo flash is related to an RC time constant, which is $0.100 \mu\text{s}$ for a certain camera. If the resistance of the flashlamp is 0.0400Ω during discharge, what is the capacitance of the capacitor?

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$$\tau = RC$$

$$C = \frac{\tau}{R} = \frac{0.1 \times 10^{-6} \text{ s}}{0.04 \Omega} = 2.50 \times 10^{-6} \text{ F}$$
$$= 2.50 \mu\text{F}.$$