

**Chapter 11, Solution 65.**

$$C = 1 \text{ nF} \longrightarrow \frac{1}{j\omega C} = \frac{-j}{10^4 \times 10^{-9}} = -j100 \text{ k}\Omega$$

At the noninverting terminal,

$$\frac{4\angle 0^\circ - \mathbf{V}_o}{100} = \frac{\mathbf{V}_o}{-j100} \longrightarrow \mathbf{V}_o = \frac{4}{1+j}$$

$$\mathbf{V}_o = \frac{4}{\sqrt{2}} \angle -45^\circ$$

$$v_o(t) = \frac{4}{\sqrt{2}} \cos(10^4 t - 45^\circ)$$

$$P = \frac{V_{\text{rms}}^2}{R} = \left( \frac{4}{\sqrt{2}} \cdot \frac{1}{\sqrt{2}} \right)^2 \left( \frac{1}{50 \times 10^3} \right) \text{ W}$$

$$P = \mathbf{80 \text{ }\mu\text{W}}$$