

Single Device in AC Circuit: Application (3)



Consider an ac generator $\mathcal{E}(t) = \mathcal{E}_{\max} \cos(\omega t)$, $\mathcal{E}_{\max} = 25\text{V}$, $\omega = 377\text{rad/s}$ connected to a capacitor with capacitance $C = 4.15\mu\text{F}$.

- (a) Find the maximum value of the current.
- (b) Find the current when the emf is zero and decreasing.
- (c) Find the current when the emf is -12.5V and increasing.
- (d) Find the power supplied by the generator at the instant described in (c).

