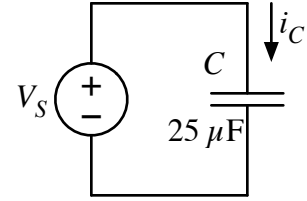


A time-varying voltage source is connected to a 25- μF capacitor. The source has the following time-dependence:



For $0 < t \leq 7.5$ ms, the voltage increases linearly:

$$V_S(t) = (667 \text{ V/s}) \cdot t$$

For $7.5 \text{ ms} < t \leq 10$ ms, the voltage decreases linearly:

$$V_S(t) = 5 \text{ V} - (2000 \text{ V/s}) (t - 7.5 \text{ ms})$$

For $10 \text{ ms} < t \leq 15$ ms, the voltage increases parabolically:

$$V_S(t) = 5 \text{ A} - (2 \times 10^5 \text{ V/s}^2) (t - 15 \text{ ms})^2$$

For $15 \text{ ms} < t \leq 20$ ms, the current decreases parabolically:

$$V_S(t) = (2 \times 10^5 \text{ A/s}^2) (t - 20 \text{ ms})^2$$

