

$$C = .25 \cdot 10^{-6} \text{ F} \quad L = 4 \text{ H}$$

$$Q(0) = 3 \cdot 10^{-3} \text{ C}$$

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$$I(0) = Q'(0) = Q_0' = 0 \text{ A}$$

$$\begin{cases} LQ'' + \frac{1}{C}Q = 0 \\ Q(0) = Q_0 \\ Q'(0) = Q_0' \end{cases}$$

→

$$\begin{cases} 4Q'' + 4 \cdot 10^6 Q = 0 \\ Q(0) = 3 \cdot 10^{-3} \text{ C} \\ Q'(0) = 0 \end{cases}$$

$$4r^2 + 4 \cdot 10^6 = 0$$

$$r^2 = -10^6 \quad r = \pm 10^3 i$$

$$Q(t) = B \sin(10^3 t) + A \cos(10^3 t)$$

$$Q(0) = A = 3 \cdot 10^{-3} \text{ C}$$

$$0 = B(10^3) \cdot \cos(10^3 t) + -A'(10^3) \sin(10^3 t)$$

$$B(10^3) = 0$$

$$B = 0$$

$$Q(t) = (3 \cdot 10^{-3}) \cos(10^3 t)$$