## **RC Circuit**

au = time constant, amount of time for q to reach 63.2% of  $\varepsilon C$ 

$$q_{\max} = \varepsilon C$$

$$i_{\mathrm{max}} = rac{arepsilon}{R}$$

$$\tau = RC$$

## Equations $q = Q_0 e^{-t/\tau}$

$$q = Q_0 e^{-t/ au}$$

$$i = \frac{\varepsilon}{R} e^{-t/\tau}$$

$$i = -\frac{Q_0}{\tau}e^{-t/\tau}$$

$$i = I_0 e^{-t/\tau}$$

$$V = V_0 e^{-t/\tau}$$

$$\begin{aligned} \mathbf{Charging} \\ q &= \varepsilon C \big( 1 - e^{-t/\tau} \big) \end{aligned}$$

## Discharging $q = \varepsilon C e^{-t/\tau}$

$$a = \varepsilon C e^{-t/\tau}$$