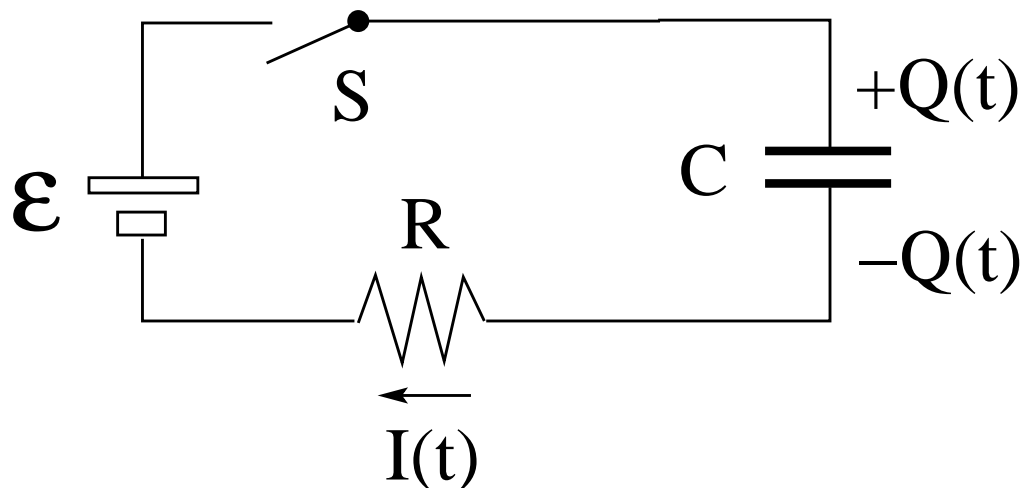


# RC Circuit: Some Physical Properties



Specification of  $RC$  circuit by 3 device properties:

- $\mathcal{E}$  [V] (emf)
- $R$  [ $\Omega$ ] (resistance)
- $C$  [F] (capacitance)



Physical properties of  $RC$  circuit during charging process determined by 3 combinations of the device properties:

- $\mathcal{E}/R = I(t = 0)$ : rate at which current flows onto capacitor initially
- $\mathcal{E}C = Q(t = \infty)$ : total charge placed on capacitor ultimately
- $RC = \tau$ : time it takes to place 63% of the charge onto the capacitor  
[ $1 - e^{-1} = 0.632 \dots$ ]