

CAPACITOR

Defining relationship: $I_c = C \frac{dv}{dt}$, also $\frac{1}{C} I_c = \frac{dv}{dt}$

This tells us that...

- 1) with constant current, the change in voltage w.r.t. time is constant, i.e., its a straight line

I in gnd CAP-in PULSE (0 10mA 0 1ps 1ps 25ms 50ms)

C1 CAP-in gnd 1uF

R1 CAP-in gnd 10G ; requires to converge

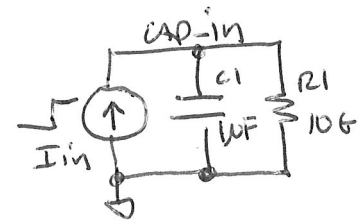
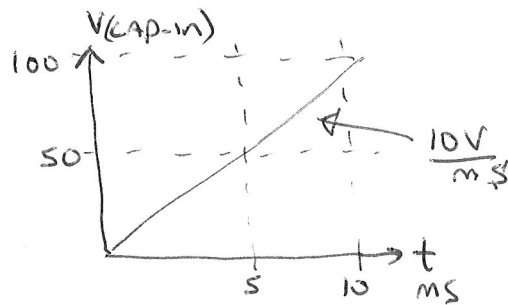
. control

tran 1us 10ms

plot V(CAP-in)

. endc

. end



if $C = 1 \times 10^{-6} F$, $I = 10 mA$

$$\frac{dv}{dt} = \frac{1}{10^{-6} F} \cdot 1 \times 10^{-2} A$$

$$= \frac{1}{10^{-6} \frac{C}{V}} \cdot 10^{-2} \frac{C}{Sec}$$

$$= \frac{10^4 V}{Sec} = \underline{\underline{\frac{10V}{ms}}}$$

- 2) if voltage is not changing, no current flows
therefore, A CAP is open circuit to DC!