



Carga de capacitores

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Link: <https://youtu.be/78OtZ0HA68Y?si=URfA8fBPpyPRtJ0X/#>

Voltaje
inicial 0

Voltaje
inicial 5

Escriba R en K Ω , C en μ f y t en s	
τ	
9.4	
V_C (calc)	
8.0	
% error	
0.4	
R	20
C	470
V	13.3
V _i	0
t	9
V _C (med)	8.01

Escriba R en K Ω , C en μ f y t en s	
τ	
9.4	
V_C (calc)	
9.9	
% error	
9.8	
R	20
C	470
V	13.3
V _i	5
t	9
V _C (med)	10.38

①

$$\tau = 9.4 \text{ s}$$

$$R = 20 \text{ k}\Omega$$

$$T = 9 \text{ s}$$

$$C = 470 \mu\text{F}$$

$$V_C(t) = V(t) \left(1 - e^{-\frac{t}{\tau}}\right) + 0$$

$$V_C(t) = 13.3 \left(1 - e^{-\frac{9}{9.4}}\right) + 0.13 \quad T = (20 \times 10^3) \times (470 \times 10^{-6})$$

$$T = 9.4 \text{ s}$$

$$V_C(t) = (13.3 \times 0.6)$$

$$V_C(t) = 7.98 \text{ V}$$

$$\text{error} = \frac{8.01 - 7.98}{7.98} \times 100 = 0.38\%$$

②

$$V_C(t) = V(t) \left(1 - e^{-\frac{t}{\tau}}\right) + V_f e^{-(t/\tau)}$$

$$V_C(t) = (13.3 \times 0.616) + (5 \times 0.384)$$

$$V_C(t) = 18.32 + 1.92$$

$$V_C = 9.90 \text{ V}$$

$$V_{\text{orga (calc)}} = 9.90 - 5 = 4.90 \text{ V}$$

$$V_{\text{orga (med)}} = 10.38 - 5 = 5.38 \text{ V}$$

$$\text{error} = \frac{10.38 - 9.90}{9.90 - 5} \times 100 = 9.80\%$$