

RC Time Constant Calculator

Estimates the ideal first-order RC time constant and exponential target time from resistance, capacitance, transition mode, and target percentage.

Generated October 10, 2026

<https://www.elecatrix.com/circuits-components/rc-time-constant-calculator/>

Inputs

Input	Value	Unit
Resistance	10000	ohm
Capacitance	10	uF
Transition mode	Charge	
Target percentage	50	%

Results

Result	Value	Unit
Time constant	0.1	s
Target time	0.0693	s
Target fraction	0.5	

Calculation details

Detail	Value	Unit
Calculation basis	Ideal first-order RC model. Charge uses the fraction reached; discharge uses the fraction remaining.	
Circuit boundary	No source impedance, threshold, leakage, load interaction, tolerance, temperature, dielectric, transient, or safety result is included in this ideal RC estimate.	

Formulas

$$C_F = C_{\mu F} \times 10^{-6}$$

$$\tau = RC$$

$$t_{\text{charge}} = -\tau \ln(1-f)$$

$$t_{\text{discharge}} = -\tau \ln(f)$$

Warnings and limitations

RC Time Constant Calculator

Estimates the ideal first-order RC time constant and exponential target time from resistance, capacitance, transition mode, and target percentage.

Generated October 10, 2026

<https://www.elecatrrix.com/circuits-components/rc-time-constant-calculator/>

This RC time estimate uses an ideal first-order circuit. It does not model leakage, source impedance, switch resistance, thresholds, load interaction, dielectric behavior, tolerance, temperature, or safety.