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Electronics

In this section we'll discuss the three basic electronic components:

Name	Property	Unit	Symbol	Picture	Source
Resistor (R)	Resistance	Ohm (Ω)	×	×	
Inductor (L)	Inductance	Henry (H)	×	×	
Capacitor (C)	Capacitance	Farad (F)	×	×	๑ Capacitor

Resistor

The easiest component to start with is the resistor.

Resistors have many usage:

In electronic circuits, resistors are used to reduce current flow, adjust signal levels, divide voltages, bias active elements, and terminate transmission lines, among other uses. High-power resistors that can dissipate many watts of electrical power as heat [...] or as test loads for generators. Fixed resistors have resistances that only change slightly with temperature, time or operating voltage. Variable resistors can be used to adjust circuit elements (such as a volume control or a lamp dimmer), or as sensing devices for heat, light, humidity, force, or chemical activity." Wikipedia: Resistor

RLC Impedance



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Impedance (Ω)	Low Frequency	Medium Frequency	High Frequency
Resistance, R	Doesn't depend on frequency		
Inductive Reactance \\$X_L = 2\pi f L\\$	Low	Medium	High
Capacitive Reactance \\$X_C = \frac{1}{2\pi f C}\\$	High	Medium	Low

RLC Addition

	Series	Parallel

	Series	Parallel
	×	×
Resistor, R [Ω]	$\$R = R_1 + R_2 \$$	$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$
	×	×
Inductor, L [H]	$\L = L_1 + L_2\$	$\frac{1}{L} = \frac{1}{L_1} + \frac{1}{L_2}$
	×	×
Capacitor, C [F]	\\$\frac{1}{C} =\frac{1}{C_1} + \frac{1}{C_2}\\$	\\$C = C_1 + C_2\\$

Questions





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