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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)			Resistor
Inductor (L)	Inductance	Henry (H)			Inductor
Capacitor (C)	Capacitance	Farad (F)			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

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