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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 ( $\Omega$ )			<a href="#">Resistor</a>
Inductor (L)	Inductance	Henry (H)			<a href="#">Inductor</a>
Capacitor (C)	Capacitance	Farad (F)			<a href="#">Capacitor</a>

## Resistor

The easiest component to start with is the resistor.

“

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 ( $\Omega$ )	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
Resistor, R [ $\Omega$ ]	$R = R_1 + R_2$	$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2}$

	Series	Parallel
		
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

