Meaning of Variables

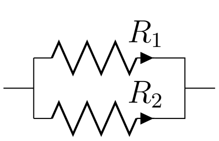
Meaning	Letter	Unit
Admittance	$Y = \frac{1}{Z}$	Siemens (S)
Capacitance	C	Farads (F)
Capacitive Resistance	X_C	Ohms (Ω)
Charge	Q	Coulombs (C)
Conductance	$G = \frac{1}{R}$	Siemans (S)
Current	I	Amps (A)
Frequency	f	Hertz (Hz)
Impedance	Z	Ohms (Ω)
Inductive Resistance	X_L	Ohms (Ω)
Inductance	L	Henry (H)
Reactance	X	Ohms (Ω)
Resistance	R	Ohms (Ω)
Resistance, Total	R_t	Ohms (Ω)
Susceptance	B	Siemans (S)
Voltage	E	Volts (V)

Circuit Diagrams

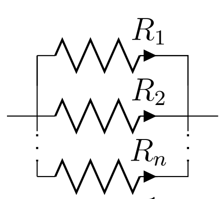
Series

$$R_t = R_1 + R_2 + \cdots + R_n$$

Parallel



$$R_t = \frac{R_1 \cdot R_2}{R_1 + R_2}$$



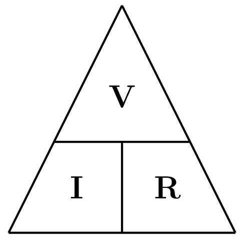
$$R_t = \frac{1}{\frac{1}{R_1} + \frac{1}{R_2} + \cdots + \frac{1}{R_n}}$$

Kirchhoff's Circuit Laws

Series
$V_t = V_1 + V_2 + \cdots + V_n$
$I_t = I_1 = I_2 = \cdots = I_n$

Parallel
$V_t = V_1 = V_2 = \cdots = V_n$
$I_t = I_1 + I_2 + \cdots + I_n$

Ohm's Law



$$V = I \cdot R$$

$$R = \tfrac{V}{I}$$

$$I = \tfrac{V}{R}$$

Power Formula

$P = IV = \dfrac{V^2}{R} = I^2R = \dfrac{QV}{t}$, where t is time in seconds.

Reactance and Impedance Formulas

$X = X_L - X_C$	$Z = R + jX$
$X_C = \dfrac{1}{2\pi f C}$	$C = \dfrac{1}{2\pi f X_C}$
$X_L = 2\pi f L$	$L = \dfrac{X_L}{2\pi f}$

Resonance Frequency Formula

$$f_r = \frac{1}{2\pi\sqrt{LC}}$$