

Extra Class Reference Sheet

Radio Units

Prefix	Symbol	Power X 10 ^x	Value Examples
giga	G	9	Hertz, Watts
mega	M	6	Hertz, Ohms, Watts
kilo	K	3	Hertz, Ohms, Watts, Volts
(unit)		0	
milli	m	-3	Volts, Amps, Watts, Henrys
micro	μ	-6	Volts, Amps, Henrys, Farads
nano	n	-9	Farads
pico	p	-12	Farads

Time Constants

$$T_C = RC$$

1Tc = 63.2% charging; 36.8% discharging

Reactance

$$X_C = \frac{1}{2\pi fC} \quad \text{"Negative"}$$

$$X_L = 2\pi fL \quad \text{"Positive"}$$

Power Factor

$$P_{REAL (Watts)} = P_{APPARENT (VA)} * PF$$

$$PF = \cos \theta$$

Resonant Frequency

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

Quality Factor or Q

$$\text{For resonant circuit: } Q_{SERIES} = \frac{X}{R}$$

$$Q_{PARALLEL} = \frac{R}{X}$$

Q and Resonant Circuit Half-Power Bandwidth

$$\text{Half-power bandwidth} = \frac{f_r}{Q}$$

Toroid Winding Value – number of turns

$$\text{Powdered Iron: } N = 100 \sqrt{\frac{L(\mu H)}{A_L(\mu H/100 \text{ turns})}}$$

$$\text{Ferrite Core: } N = 1000 \sqrt{\frac{L(mH)}{A_L(mH/1000 \text{ turns})}}$$

Aids

Direct and Inverse Relationships

E_LI the I_CE man

$$\text{Impedance (Z)} = \frac{1}{\text{Admittance (Y)}}$$

$$\text{Reactance (X)} = \frac{1}{\text{Susceptance (B)}} \quad \text{X to B phase angle reversal}$$