

Series/Parallel Resonance Comparison



STUDY FOR FE

| Quantity | Series Resonance | Parallel Resonance |
|--------------------|--|---|
| Impedance | $Z = \sqrt{R^2 + (X_L - X_C)^2}$ | $Z = \frac{1}{\sqrt{\frac{1}{R^2} + \left(\frac{1}{X_C} - \frac{1}{X_L}\right)^2}}$ |
| Power factor angle | $\phi = \tan^{-1} \frac{X_L - X_C}{R}$ | $\phi = \tan^{-1} R \left(\frac{1}{X_C} - \frac{1}{X_L} \right)$ |
| Resonant Frequency | $\omega_o = 1/\sqrt{LC}$ | $\omega_o = 1/\sqrt{LC}$ |
| @ Resonant | Current is maximum | Impedance is maximum |