DEPARTMENT OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE
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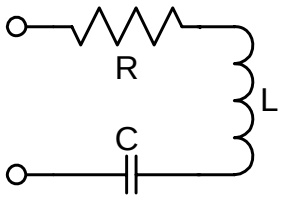
Impedance/Admittance Notation

$$X_L = j\omega L$$

$$X_C = \frac{1}{j\omega C}$$



$$Z = R + j\omega L + \frac{1}{j\omega C}$$

$$Z = R + j\left[\omega L - \frac{1}{\omega C}\right]$$

$$Z = R + j\left[X_L - X_C\right]$$

OHM's LAW:

$$V = I\,R; \quad V = I\,Z;$$

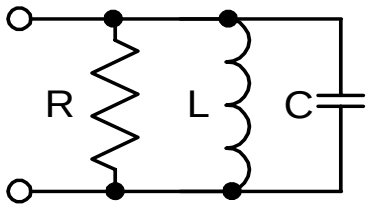
$$V = I\left[\frac{1}{Y}\right]; \quad V\,Y = I$$

$$Z = \frac{1}{\frac{1}{R} + \frac{1}{j\omega L} + j\omega C}$$

$$Y = \frac{1}{Z}; \quad B_L = \frac{1}{X_L}; \quad B_C = \frac{1}{X_C}; \quad G = \frac{1}{R}$$

$$Y = G + \frac{1}{j\omega L} + j\omega C = G + j\left[\omega C - \frac{1}{\omega L}\right]$$

$$Y = G + j\left[B_C - B_L\right]$$



Where does the $\sqrt{2}$ or $\frac{1}{\sqrt{2}}$ come from in –3dB point calculations?