

Formúlor - Síur 2019

RC síur

Launviðnám

$$X_C = \frac{1}{2\pi \cdot f \cdot C}$$

Marktíðni

$$f_C = \frac{1}{2\pi R \cdot C}$$

Fasvik

$$= \tan^{-1}\left(\frac{1}{2\pi f RC}\right)$$

RL síur

Launviðnám

$$X_L = 2\pi \times f \times L$$

Marktíðni

$$f_C = \frac{R}{2\pi \times L}$$

Fasvik

$$= \tan^{-1}\left(\frac{X_L}{R}\right)$$

RLC síur

Eigintíðni

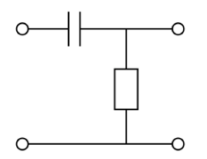
$$f_r = \frac{1}{2\pi \times \sqrt{L \cdot C}}$$

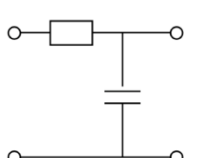
Ef reikna á stærðir íhluta út frá eigintíðni og L eða C

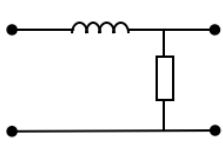
$$C = \frac{1}{(2\pi \times f_r)^2 \times L}$$

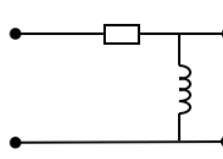
$$L = \frac{1}{(2\pi \times f_r)^2 \times C}$$

Spennudeiling

$$U_{\text{út}} = U_{\text{inn}} \times \frac{R}{\sqrt{R^2 + X_C^2}}$$


$$U_{\text{út}} = U_{\text{inn}} \times \frac{X_C}{\sqrt{R^2 + X_C^2}}$$


$$U_{\text{út}} = U_{\text{inn}} \times \frac{R}{\sqrt{R^2 + X_L^2}}$$


$$U_{\text{út}} = U_{\text{inn}} \times \frac{X_L}{\sqrt{R^2 + X_L^2}}$$


Desibel og mögnun/deyfiging

Spenna [V]

$$(\text{dB}) = 20 \times \log\left(\frac{U_{\text{út}}}{U_{\text{inn}}}\right)$$

Afl [W]

$$(\text{dB}) = 10 \times \log\left(\frac{P_{\text{út}}}{P_{\text{inn}}}\right)$$