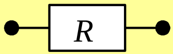
$$u(t)=U\cdot\cos(\omega t+\varphi_U)=\mathrm{Re}\left[U\cdot e^{j\varphi_U}\cdot e^{j\omega t}\right]=\mathrm{Re}\left[\hat{U}\cdot e^{j\omega t}\right]$$

$$i(t)=I\cdot\cos(\omega t+\varphi_I)=\mathrm{Re}\left[I\cdot e^{j\varphi_I}\cdot e^{j\omega t}\right]=\mathrm{Re}\left[\hat{I}\cdot e^{j\omega t}\right]$$

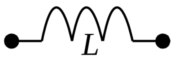
Kazalci

$$\hat{U}=U\cdot e^{j\varphi_U}$$

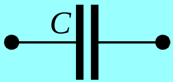
$$\hat{I}=I\cdot e^{j\varphi_I}$$



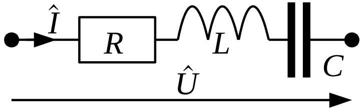
$$u(t)=R\cdot i(t)=\mathrm{Re}[R\cdot\hat{I}\cdot e^{j\omega t}] \longrightarrow \hat{U}=R\cdot\hat{I}$$



$$u(t)=L\cdot\frac{d\,i(t)}{dt}=\mathrm{Re}[L\cdot\hat{I}\cdot j\omega\cdot e^{j\omega t}] \longrightarrow \hat{U}=j\omega L\cdot\hat{I}$$

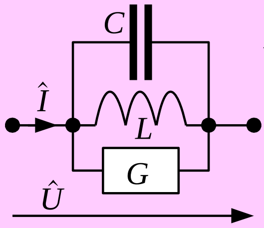


$$u(t)=\frac{1}{C}\cdot\int i(t)\,dt=\mathrm{Re}\left[\frac{1}{C}\cdot\hat{I}\cdot\frac{1}{j\omega}\cdot e^{j\omega t}\right] \longrightarrow \hat{U}=\frac{1}{j\omega C}\cdot\hat{I}$$



$$\hat{U}=\left(R+j\omega L+\frac{1}{j\omega C}\right)\cdot\hat{I}=Z\cdot\hat{I}$$

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



$$\hat{I}=\left(j\omega C+\frac{1}{j\omega L}+G\right)\cdot\hat{U}=Y\cdot\hat{U}$$

$$G=1/R$$

$$Y=j\omega C+\frac{1}{j\omega L}+G=G+jB$$