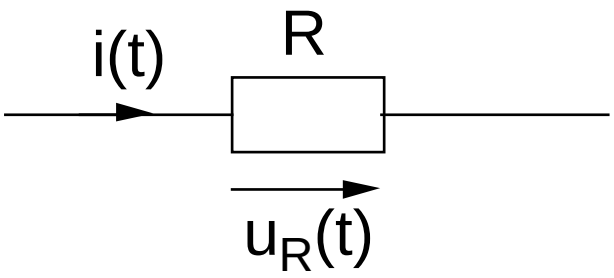
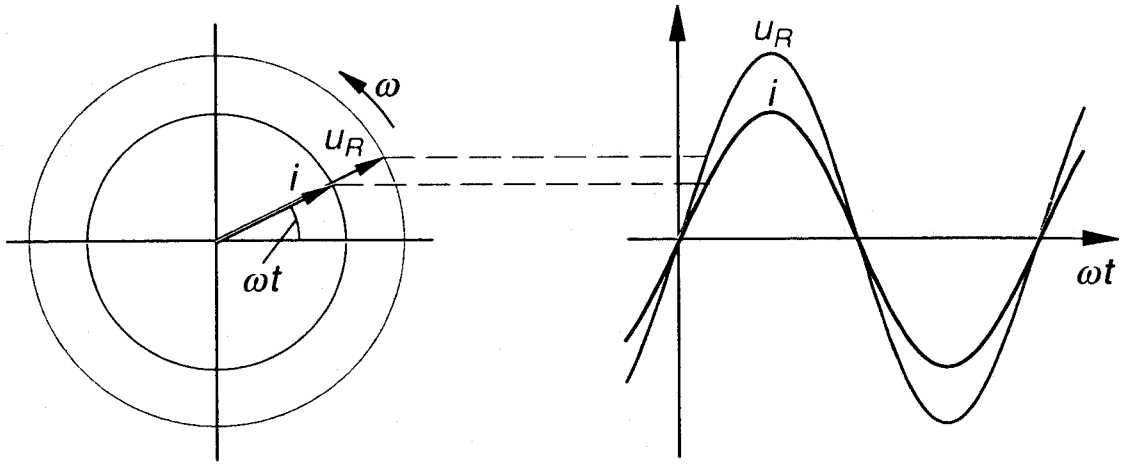
Ohm'scher Widerstand im Wechselstromkreis





reell

$i(t) = \hat{i} \sin(\omega t)$

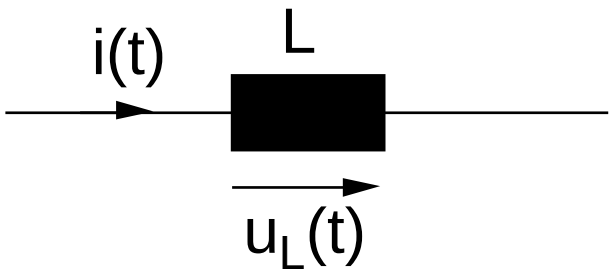
$u_R(t) = R\hat{i} \sin(\omega t)$

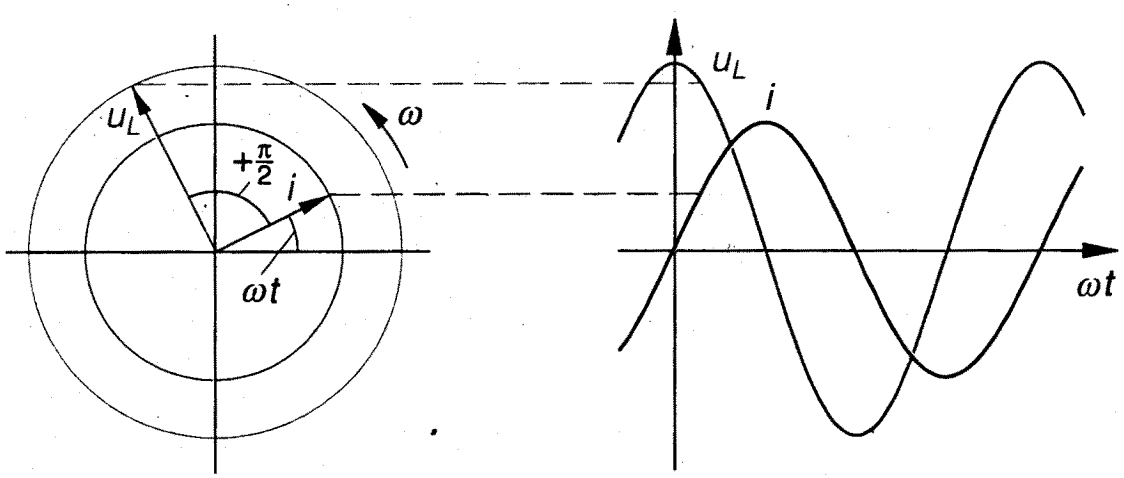
komplex

$\underline{i}(t) = \hat{i}\, e^{j\omega t}$

$\underline{u}_R(t) = R\hat{i}\, e^{j\omega t}$

Spule im Wechselstromkreis





reell

$$i(t) = \hat{i} \sin(\omega t)$$

$$u_L(t) = \omega L \hat{i} \sin\left(\omega t + \frac{\pi}{2}\right)$$

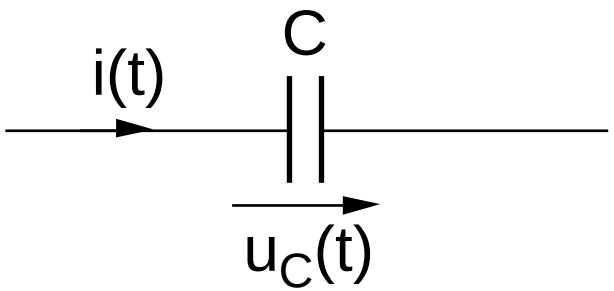
komplex

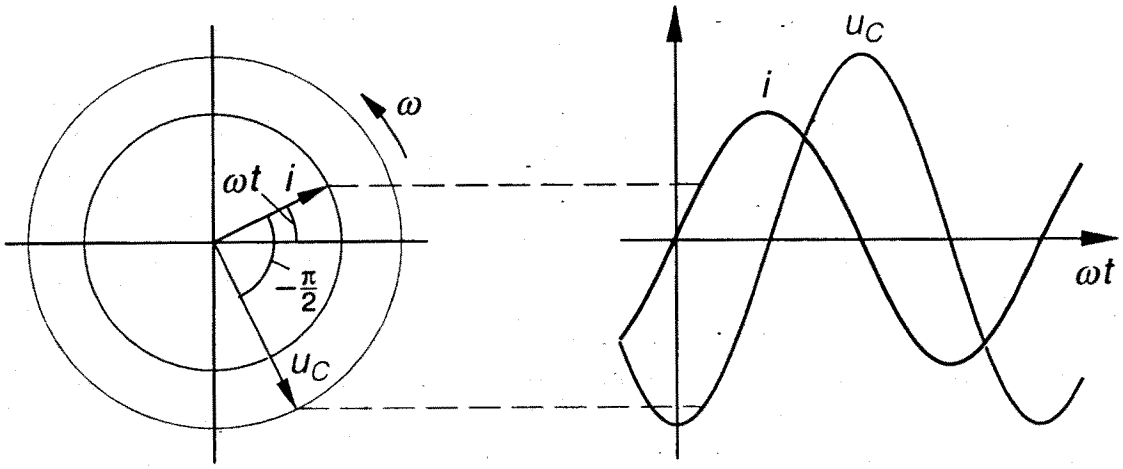
$$\underline{i}(t) = \hat{i}\, e^{j\omega t}$$

$$\underline{u}_L(t) = \omega L \hat{i}\, e^{j(\omega t + \pi/2)}$$

$$= j\omega L \hat{i}\, e^{j\omega t}$$

Kondensator im Wechselstromkreis





reell

$$i(t) = \hat{i} \sin(\omega t)$$

$$u_C(t) = \frac{\hat{i}}{\omega C} \sin\left(\omega t - \frac{\pi}{2}\right)$$

komplex

$$\underline{i}(t) = \hat{i}\, e^{j\omega t}$$

$$\underline{u}_C(t) = \frac{\hat{i}}{\omega C} e^{j(\omega t - \pi/2)}$$

$$= \frac{\hat{i}}{j\omega C} e^{j\omega t}$$