Single Device in AC Circuit: Resistor

Voltage of ac source : $\mathcal{E} = \mathcal{E}_{max} \cos \omega t$
Current through device: $I = I_{max} \cos(\omega t - \delta)$

Resistor

$V_R = RI = \mathcal{E}_{max} \cos \omega t \;\Rightarrow\; I = \dfrac{\mathcal{E}_{max}}{R} \cos \omega t$

amplitude: $I_{max} = \dfrac{\mathcal{E}_{max}}{R}$, phase angle: $\delta = 0$

impedance: $X_R \equiv \dfrac{\mathcal{E}_{max}}{I_{max}} = R$ (resistance)