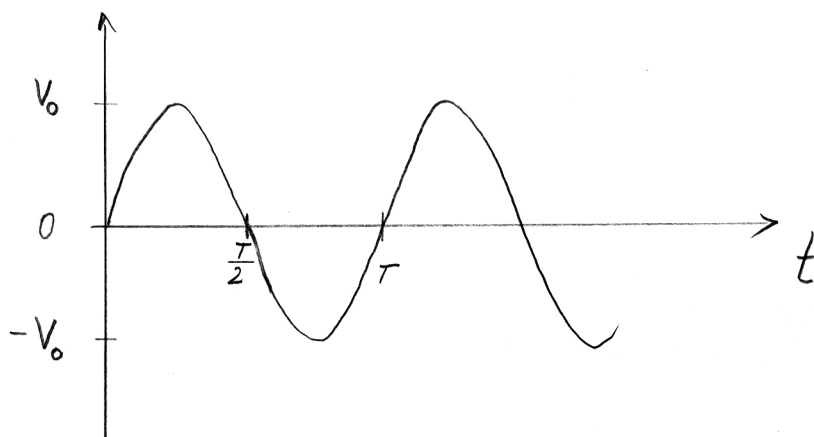# SINUSFORMET SIGNAL

$$V(t) = V_0 \cdot \sin \omega t$$

$$\omega = 2\pi \cdot f = \frac{2\pi}{T}$$

SPIDSVÆRDI, PEAK-VÆRDI: $\quad \underline{V_P = V_0}$ (AMPLITUDEN)

SPIDS-SPIDS-VÆRDI, PEAK-PEAK-VÆRDI: $\quad \underline{V_{P-P} = 2 \cdot V_0}$

MIDDELVÆRDI, DC-KOMPOSANT: $\quad V_{AV} = \frac{1}{T} \int_0^T V(t)\,dt = \underline{\underline{0}}$

NUMERISK MIDDELVÆRDI (ENSRETTET):

$$|V|_{AV} = \frac{1}{T} \int_0^T |V(t)|\,dt = \frac{2}{T} \int_0^{T/2} V_0 \sin \omega t\,dt = \frac{2}{T} \cdot V_0 \left[-\frac{\cos \omega t}{\omega} \right]_0^{T/2}$$

$$= \frac{-2 \cdot T}{T \cdot 2\pi} \cdot V_0 \left[\cos\left(\frac{2\pi}{T} \cdot \frac{T}{2}\right) - \cos 0 \right] = -\frac{V_0}{\pi} \left[-1 - 1 \right] = \underline{\underline{\frac{2 \cdot V_0}{\pi}}}$$

EFFEKTIV VÆRDI, RMS-VÆRDI:

$$V_{RMS} = \sqrt{\frac{1}{T} \int_0^T V^2(t)\,dt} = \sqrt{\frac{2}{T} \int_0^{T/2} V_0^2 \sin^2 \omega t\,dt}$$

$$= V_0 \sqrt{\frac{2}{T} \left[\frac{1}{2} \cdot t - \frac{1}{4\omega} \cdot \sin 2\omega t \right]_0^{T/2}}$$

$$= V_0 \sqrt{\frac{2}{T} \cdot \left[\frac{T}{4} - \frac{T}{4 \cdot 2\pi} \cdot \sin\left(2 \frac{2\pi}{T} \cdot \frac{T}{2}\right) - 0 \right]} = V_0 \sqrt{\frac{2}{T} \cdot \frac{T}{4}}$$

$$= \underline{\underline{\frac{V_0}{\sqrt{2}}}}$$