

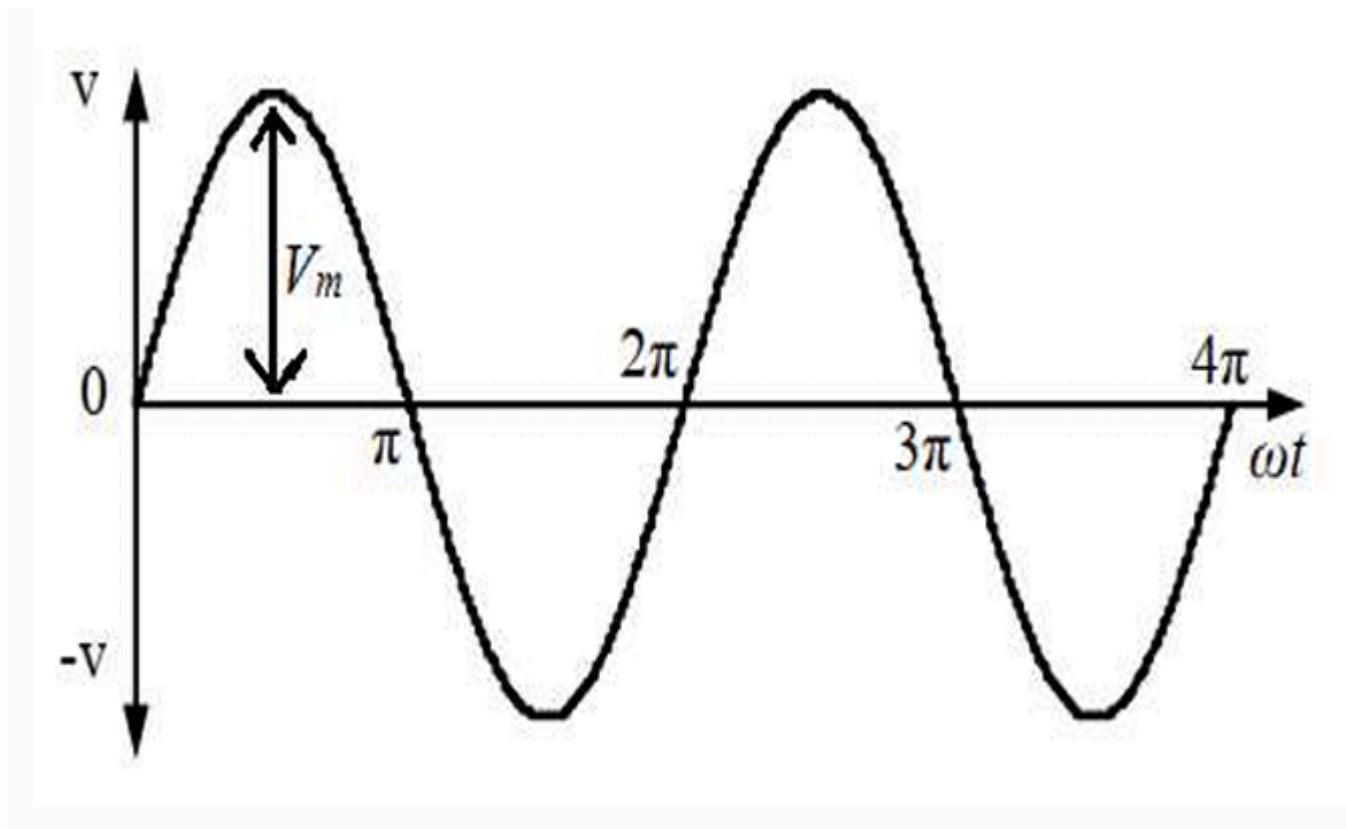
13 - RMS

RMS Value

For any periodic function $x(t)$, the rms value is given by

$$X_{rms} = \sqrt{\frac{1}{T} \int_0^T x^2 dt}$$

The effective value of a periodic signal is its root mean square (RMS) value.



If we calculate the RMS value for the above sinusoidal graph we get,

$$V_{rms} = \sqrt{\frac{1}{2\pi} \int_0^{2\pi} (V_m \sin(\omega t))^2 d(\omega t)}$$

The reason for $d(\omega t)$ is the y-axis is plotted by the values of ωt

Evaluating the RMS value we achieve the following

$$V_{rms} = \frac{V_m}{\sqrt{2}}$$

Average Value

For any periodic function $x(t)$, the average value is given by

$$X_{Avg} = \frac{1}{T} \int_0^T x dt$$