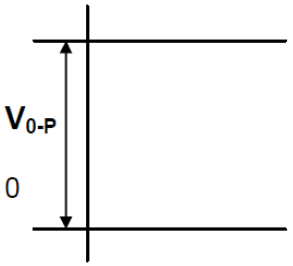
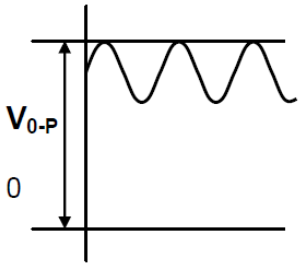
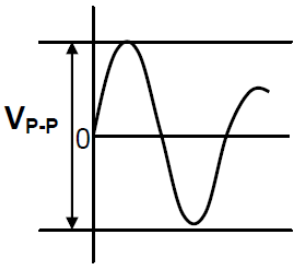
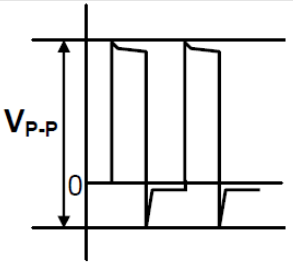
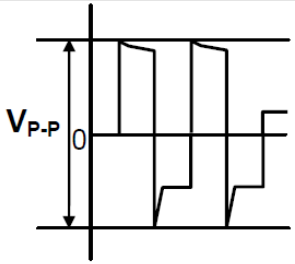
AC VOLTAGE RATING

1. Operating voltage across the terminals should be below the rated voltage.
When AC and DC are super imposed, V0-P must be below the rated voltage.
Reference: figures 1 and 2 below.
AC or pulse with overshooting, VP-P must be below the rated voltage.
Reference figures 3, 4, and 5 below.
When the voltage is started/ stopped to apply to the circuit an irregular voltage may be generated for a transit period because of resonance or switching. Be sure to use the capacitor within rated voltage during these Irregular voltage periods.

Voltage	(1) DC voltage	(2) DC+AC voltage	(3) AC voltage
Positional Measurement (Rated voltage)			

Voltage	(4) Pulse voltage (A)	(5) Pulse voltage (B)
Positional Measurement (Rated voltage)		

Voltage Cautions from TDK's general specification

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

Obtain an AC voltage rating from a DC rated MLCC by substituting the peak to peak voltage (Vpp) for the capacitor's rated voltage and solve for Vrms.

Therefore, a 630Vdc rated MLCC would have the following correlated AC rating:

$$V_{rms} = \frac{630Vpp}{2\sqrt{2}} = 222\text{Vrms}^{1}$$

[1]It is worth noting the intention of use is by no means a guarantee for any safety critical AC application where there is potentially a risk of bodily injury.

Maximum allowable rms voltage