

General introduction

Rated capacitance

The capacitance value for which the capacitor has been designed and which is usually indicated upon it.

Tolerance on rated capacitance

Preferred values of tolerance on rated capacitance are:
 -20/ +20%, -10/ +20%, -10/ +30%, -10/ +50%, -10/ +10%

Rated voltage

The maximum direct voltage, or peak value of pulse voltage which may be applied continuously to a capacitor at any temperature within operating temperature range.

Ripple voltage

An alternating voltage may be applied, provided that the peak voltage resulting from the alternating voltage, when superimposed on the direct voltage, does not exceed the value of rated voltage or fall under 0V and that the ripple current is not exceeded.

Surge voltage

The maximum instantaneous voltage which may be applied to the terminations of the capacitor for a specified time at any temperature with the operating temperature range.

Rated voltage (VDC)	4	6.3	10	16	25	35
Surge voltage (VDC)	5	8	13	20	32	44

Rated voltage (VDC)	40	50	63	80	100	160
Surge voltage (VDC)	50	63	79	100	125	200

Rated voltage (VDC)	200	250	275	315	350	375
Surge voltage (VDC)	250	300	316	365	400	425

Rated voltage (VDC)	400	420	450	500	550	600
Surge voltage (VDC)	450	470	500	550	600	650

Equivalent series resistance (ESR)

The ESR of an equivalent circuit having capacitance, inductance and resistance in series measured with alternating current of approximately sinusoidal waveform at a specified frequency.

$$ESR = \frac{\tan \delta}{2\pi fC}$$

where,

f = measurement frequency (120Hz)

C = measurement capacitance (F)

Dissipation factor (tan δ)

The power loss of the capacitor divided by the reactive power of the capacitor at a sinusoidal voltage of specified frequency.

Leakage current

Leakage current flows through a capacitor when DC voltage is applied in correct polarity. It is dependent on voltage, temperature and time.

Ripple current

Any pulsating voltage (or ripple voltage superimposed on DC bias) across a capacitor results in an alternating current through the capacitor. Because of ohmic and dielectric losses in the capacitor, this alternating current produced an increase of temperature in the capacitor cell. The capacitor should be used within specified permissible ripple current in each standard products table.

In other condition of ambient temperature and frequency, ripple current multiplied by following multiplier can be applied as maximum permissible ripple current.