

Technical Background Information



Subject: Superimposed alternating Voltage with max. DC Voltage

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Nippon Chemi-Con Corp. Group

Customer: ECC customer

Ref. No.: ECC-EN-13-1236

Current Catalogue Explanation:

What's the correct meaning of:



"the peak voltage shall not exceed the rated voltage?"



KZH Series

- Newly innovative electrolyte is employed to minimize impedance
- Endurance with ripple current: 5,000 to 6,000 hours at 105°C
- Non solvent resistant type
- RoHS Compliant

KZM P139
↑ Longer life
KZH
↓ Lower Z
KZE P144



SPECIFICATIONS

Items	Characteristics
Category	-40 to +105°C
Temperature Range	-40 to +105°C
Rated Voltage Range	6.3 to 35V _a
Capacitance Tolerance	±25% (M) (at 20°C, 120Hz)
Leakage Current	I = 0.01CV or 3μA, whichever is greater. Where, I = Max. leakage current (μA), C = Nominal capacitance (μF), V = Rated voltage (V) (at 20°C after 2 minutes)
Dielectric Factor (tanδ)	Rated voltage (V _a) 6.3V 10V 16V 25V 35V 0.22 0.19 0.16 0.14 0.12
Low Temperature Characteristics (Max. Impedance Ratio)	Z (-25°C) / Z (+20°C) 2max. Z (-40°C) / Z (+20°C) 3max. (at 120Hz)
Endurance	The following specifications shall be satisfied when the capacitors are restored to 20°C after subjected to DC voltage with the rated ripple current is applied. (the peak voltage shall not exceed the rated voltage) for the specified period of time at 105°C. Time 1.65 & 6.3: 5,000hours 6.3 to 45V: 6,000hours Capacitance change ≤ ±25% of the initial value (6.3, 10V _a : ≤ ±30%) D.F. (tanδ) ≤200% of the initial specified value Leakage current ≤ The initial specified value
Shelf Life	The following specifications shall be satisfied when the capacitors are restored to 20°C after exposing them for 500 hours at 105°C without voltage applied. Before the measurement, the capacitor shall be preconditioned by applying voltage according to item 4.1 of JIS C 5101-4. Capacitance change ≤ ±25% of the initial value (6.3, 10V _a : ≤ ±30%) D.F. (tanδ) ≤200% of the initial specified value Leakage current ≤ The initial specified value

Total DC Voltage curve [not scaled]



Explanations:

Rated V_{DC} : max. Voltage (not surge voltage) which is specified in the catalogue

Ripple V_{pp} : superimposed alternating voltage

Total V_{DC+AC} : total applied Voltage

Calculation Example:

EXCEEDED VOLTAGE

$$\text{Total } V_{DC+AC} = \text{Rated } V_{DC} + \frac{\text{Ripple } V_{pp}}{2}$$

$$325 V_{DC+AC} = 315V + \frac{20V}{2}$$

Please note:

The above mentioned Ripple V_{pp} is just only a theoretical value. Under normal conditions the Total V_{DC+AC} depends on the frequency and the ambient temperature.

Please consult us if you're using a Nippon Chemi-Con Capacitor in Range of his specified max. Rated Voltage.

The total V_{DC} should be less than the rated voltage.