# ALUMINUM ELECTROLYTIC CAPACITORS

nichicon

## ZP series

4.5mmL Chip Type, Bi-Polarized

For SMD | Smaller | Bi-polarized | Anti-Solvent Feature

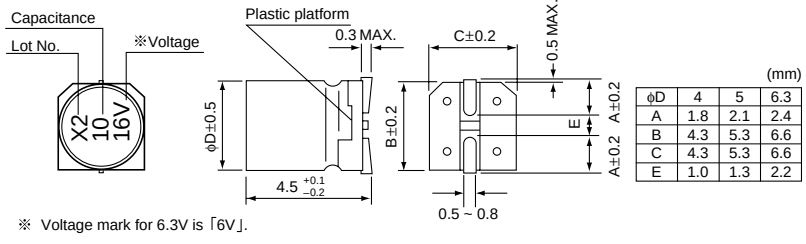
- Chip type with 4.5mm height.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine using carrier tape.
- Adapted to the RoHS directive (2002/95/EC).

WP
Smaller
ZP
Smaller
ZE

## ■Specifications

| Item | Performance Characteristics |
|---|---|
| Category Temperature Range | –40 ~ +85°C |
| Rated Voltage Range | 6.3 ~ 50V |
| Rated Capacitance Range | 0.1 ~ 47µF |
| Capacitance Tolerance | ±20% at 120Hz, 20°C |
| Leakage Current | After 2 minutes' application of rated voltage, leakage current is not more than 0.05 CV or 10 (µA) , whichever is greater. |
| tan δ | Measurement frequency : 120Hz, Temperature : 20°C<br>Rated voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50<br>tan δ (MAX.): 0.30 / 0.24 / 0.20 / 0.18 / 0.16 / 0.16 |
| Stability at Low Temperature | Measurement frequency : 120Hz<br>Rated voltage (V): 6.3 / 10 / 16 / 25 / 35 / 50<br>Impedance ratio ZT / Z20 (MAX.) Z–25°C / Z+20°C: 4 / 3 / 2 / 2 / 2 / 2<br>Z–40°C / Z+20°C: 8 / 8 / 4 / 4 / 3 / 3 |
| Endurance | After 2000 hours' application of rated voltage at 85°C with the polarity inverted every 250 hours, capacitors meet the characteristic requirements listed at right.<br>Capacitance change: Within ±20% of initial value<br>tan δ: 300% or less of initial specified value<br>Leakage current: Initial specified value or less |
| Shelf Life | After storing the capacitors under no load at 85°C for 1000 hours, and after performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they will meet the specified value for endurance characteristics listed above. |
| Resistance to soldering heat | The capacitors shall be kept on the hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature,they meet the characteristic requirements listed at right.<br>Capacitance change: Within ±10% of initial value<br>tan δ: Initial specified value or less<br>Leakage current: Initial specified value or less |
| Marking | Black print on the case top. |

## ■Chip Type




※ Voltage mark for 6.3V is 「6V」.

(mm)

| φD | 4 | 5 | 6.3 |
|---|---|---|---|
| A | 1.8 | 2.1 | 2.4 |
| B | 4.3 | 5.3 | 6.6 |
| C | 4.3 | 5.3 | 6.6 |
| E | 1.0 | 1.3 | 2.2 |

## Type numbering system (Example : 16V 10µF)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| U | Z | P | 1 | C | 1 | 0 | 0 | M | C | L | 1 | G | B |

- Taping code
- Configuration
- Capacitance tolerance (±20%)
- Rated Capacitance (10µF)
- Rated voltage (16V)
- Series name
- Type

## ■Dimensions

| Cap. (µF) \ V | Code | 6.3 | | 10 | | 16 | | 25 | | 35 | | 50 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 0J | | 1A | | 1C | | 1E | | 1V | | 1H | |
| **0.1** | 0R1 | | | | | | | | | | | 4 | 1.0 |
| **0.22** | R22 | | | | | | | | | | | 4 | 2.0 |
| **0.33** | R33 | | | | | | | | | | | 4 | 2.8 |
| **0.47** | R47 | | | | | | | | | | | 4 | 4.0 |
| **1** | 010 | | | | | | | | | | | 4 | 8.4 |
| **2.2** | 2R2 | | | | | | | | | 4 | 8.4 | 5 | 13 |
| **3.3** | 3R3 | | | | | | | 5 | 12 | 5 | 16 | 5 | 17 |
| **4.7** | 4R7 | | | | | 4 | 12 | 5 | 16 | 5 | 18 | 6.3 | 20 |
| **10** | 100 | | | 4 | 17 | 5 | 23 | 6.3 | 27 | 6.3 | 29 | | |
| **22** | 220 | 5 | 28 | 6.3 | 33 | 6.3 | 37 | | | | | | |
| **33** | 330 | 6.3 | 37 | 6.3 | 41 | 6.3 | 49 | | | | | | |
| **47** | 470 | 6.3 | 45 | | | | | | | | | Case size φD (mm) | Rated ripple |

Rated Ripple (mArms) at 85°C 120Hz

## ●Frequency coefficient of rated ripple current

| Frequency | 50 Hz | 120 Hz | 300 Hz | 1 kHz | 10 kHz~ |
|---|---|---|---|---|---|
| Coefficient | 0.70 | 1.00 | 1.17 | 1.36 | 1.50 |

- Taping specifications are given in page 24.
- Recommended land size, soldering by reflow are given in page 25, 26.
- Please select WP(p.47), UN(p.77) series if high C/V products are reqired.
- Please refer to page 3 for the minimum order quantity.