

ALUMINUM ELECTROLYTIC CAPACITORS

WD Chip Type, Low Impedance
High Temperature (260°C) Reflow
series



- Corresponding with 260°C peak reflow soldering
Recommended reflow condition : 260°C peak 5 sec. 230°C over 60 sec.
2 times ($\phi 10 \times 10 : 1$ time)
- Chip type, low impedance temperature range up to +105°C.
- Designed for surface mounting on high density PC board.
- Applicable to automatic mounting machine fed with carrier tape.
- Compliant to the RoHS directive (2011/65/EU).



Specifications

| Item | Performance Characteristics | | | | | | | |
|---------------------------------------|---|--|----|----|----|----|----|----------------------|
| Category Temperature Range | -55 to +105°C | | | | | | | |
| Rated Voltage Range | 6.3 to 50V | | | | | | | |
| Rated Capacitance Range | 1 to 1500 μ F | | | | | | | |
| Capacitance Tolerance | $\pm 20\%$ at 120Hz, 20°C | | | | | | | |
| Leakage Current | After 2 minutes' application of rated voltage, leakage current is not more than 0.01 CV or 3 (μ A), whichever is greater. | | | | | | | |
| Tangent of loss angle (tan δ) | Measurement frequency : 120Hz at 20°C | | | | | | | () is $\phi 8$ over |
| | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | |
| Stability at Low Temperature | Measurement frequency : 120Hz | | | | | | | |
| | Rated voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | |
| Endurance | The specifications listed at right shall be met when the capacitors are restored to 20°C after the rated voltage is applied for 5000 hours (2000 hours for $\phi D = 4, 5$ and 6.3) at 105°C. | | | | | | | |
| | Capacitance change | Within $\pm 30\%$ of the initial capacitance value | | | | | | |
| Shelf Life | After storing the capacitors under no load at 105°C for 1000 hours and then performing voltage treatment based on JIS C 5101-4 clause 4.1 at 20°C, they shall meet the specified values for the endurance characteristics listed above. | | | | | | | |
| | tan δ | 200% or less than the initial specified value | | | | | | |
| Resistance to soldering heat | The capacitors are kept on a hot plate for 30 seconds, which is maintained at 250°C. The capacitors shall meet the characteristic requirements listed at right when they are removed from the plate and restored to 20°C. | | | | | | | |
| | Leakage current | Less than or equal to the initial specified value | | | | | | |
| Marking | Black print on the case top. | | | | | | | |

Chip Type

($\phi 4$ to $\phi 6.3$)



($\phi 8$ to $\phi 10$)



Type numbering system (Example : 16V 22 μ F)



| $\phi D \times L$ | 4 × 5.8 | 5 × 5.8 | 6.3 × 5.8 | 6.3 × 7.7 | 8 × 10 | 10 × 10 |
|-------------------|------------|------------|------------|------------|------------|------------|
| A | 1.8 | 2.1 | 2.4 | 2.4 | 2.9 | 3.2 |
| B | 4.3 | 5.3 | 6.6 | 6.6 | 8.3 | 10.3 |
| C | 4.3 | 5.3 | 6.6 | 6.6 | 8.3 | 10.3 |
| E | 1.0 | 1.3 | 2.2 | 2.2 | 3.1 | 4.5 |
| L | 5.8 | 5.8 | 5.8 | 7.7 | 10 | 10 |
| H | 0.5 to 0.8 | 0.5 to 0.8 | 0.5 to 0.8 | 0.5 to 0.8 | 0.8 to 1.1 | 0.8 to 1.1 |

Voltage

| | | | | | | |
|------|-----|----|----|----|----|----|
| V | 6.3 | 10 | 16 | 25 | 35 | 50 |
| Code | j | A | C | E | V | H |

● Dimension table in next page.



■ Dimensions

| Cap. (μ F) | V Code | 6.3 | | | 10 | | | 16 | | | 25 | | | 35 | | | 50 | | | | | |
|--------------------|-----------|-----------|------|-----|-----------|------|-----|-----------|------|-----|-----------|------|-----|-----------|------|-----|-----------|------|-----|--------|------|-----|
| | | 0J | | | 1A | | | 1C | | | 1E | | | 1V | | | 1H | | | | | |
| 1 | 010 | | | | | | | | | | | | | | | | 4 × 5.8 | 5.00 | 30 | | | |
| 2.2 | 2R2 | | | | | | | | | | | | | | | | 4 × 5.8 | 5.00 | 30 | | | |
| 3.3 | 3R3 | | | | | | | | | | | | | | | | 4 × 5.8 | 5.00 | 30 | | | |
| 4.7 | 4R7 | | | | | | | | | | | | | 4 × 5.8 | 1.80 | 80 | 5 × 5.8 | 1.52 | 85 | | | |
| 10 | 100 | | | | | | | | | | 4 × 5.8 | 1.80 | 80 | 5 × 5.8 | 0.76 | 150 | 6.3 × 5.8 | 0.88 | 165 | | | |
| 15 | 150 | | | | | | | 4 × 5.8 | 1.80 | 80 | 5 × 5.8 | 0.76 | 150 | 5 × 5.8 | 0.76 | 150 | 6.3 × 5.8 | 0.88 | 165 | | | |
| 22 | 220 | | | | 4 × 5.8 | 1.80 | 80 | 5 × 5.8 | 0.76 | 150 | 5 × 5.8 | 0.76 | 150 | 5 × 5.8 | 0.76 | 150 | 6.3 × 5.8 | 0.88 | 165 | | | |
| 27 | 270 | 4 × 5.8 | 1.80 | 80 | 5 × 5.8 | 0.76 | 150 | 5 × 5.8 | 0.76 | 150 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 7.7 | 0.68 | 185 | | | |
| 33 | 330 | 5 × 5.8 | 0.76 | 150 | 5 × 5.8 | 0.76 | 150 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 7.7 | 0.68 | 185 | | | |
| 47 | 470 | 5 × 5.8 | 0.76 | 150 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 7.7 | 0.68 | 185 | | | |
| 56 | 560 | 5 × 5.8 | 0.76 | 150 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 7.7 | 0.34 | 280 | 8 × 10 | 0.34 | 300 |
| 68 | 680 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 7.7 | 0.34 | 280 | 8 × 10 | 0.34 | 300 |
| 100 | 101 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 7.7 | 0.34 | 280 | 8 × 10 | 0.17 | 450 | 8 × 10 | 0.34 | 300 | | | |
| 150 | 151 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 7.7 | 0.34 | 280 | 8 × 10 | 0.17 | 450 | 8 × 10 | 0.17 | 450 | 10 × 10 | 0.18 | 670 | | | |
| 220 | 221 | 6.3 × 5.8 | 0.44 | 230 | 6.3 × 7.7 | 0.34 | 280 | 6.3 × 7.7 | 0.34 | 280 | 8 × 10 | 0.17 | 450 | 10 × 10 | 0.09 | 670 | 10 × 10 | 0.18 | 670 | | | |
| 330 | 331 | 6.3 × 7.7 | 0.34 | 280 | 8 × 10 | 0.17 | 450 | 8 × 10 | 0.17 | 450 | 10 × 10 | 0.09 | 670 | 10 × 10 | 0.09 | 670 | | | | | | |
| 470 | 471 | 8 × 10 | 0.17 | 450 | 8 × 10 | 0.17 | 450 | 8 × 10 | 0.17 | 450 | 10 × 10 | 0.09 | 670 | | | | | | | | | |
| 680 | 681 | 8 × 10 | 0.17 | 450 | 10 × 10 | 0.09 | 670 | 10 × 10 | 0.09 | 670 | | | | | | | | | | | | |
| 1000 | 102 | 10 × 10 | 0.09 | 670 | 10 × 10 | 0.09 | 670 | | | | | | | | | | | | | | | |
| 1500 | 152 | 10 × 10 | 0.09 | 670 | | | | | | | | | | | | | | | | | | |

Max. Impedance (Ω) at 20°C 100kHz,
Rated ripple current (mA_{rms}) at 105°C 100kHz

● Frequency coefficient of rated ripple current

| Frequency | 50 Hz | 120 Hz | 300 Hz | 1 kHz | 10 kHz or more |
|-------------|-------|--------|--------|-------|----------------|
| Coefficient | 0.35 | 0.50 | 0.64 | 0.83 | 1.00 |

- Taping specifications are given in page 23.
- Recommended land size, soldering by reflow are given in page 18, 19.
- Please refer to page 3 for the minimum order quantity.

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