

ALUMINUM ELECTROLYTIC CAPACITORS

CHIP TYPE SERIES

Suntan®

DISCONTINUED

TS13CW

FEATURES

- Case diameter $\phi 4\text{mm} \sim \phi 18\text{mm}$.
- Life time 105°C 10000hrs standard product.
- High stability and reliability.
- Available for high density surface mounting.
- Reflow soldering is available.



◆ Specifications

| ITEMS | | PERFORMANCE CHARACTERISTICS | | | | | | | |
|--|--|---|------|------|--|---|------|---------|---------|
| Operating Temperature Range | -40°C ~ +105°C | | | | | | | | |
| Rated Voltage Range | 6.3 ~ 450V.DC | | | | | | | | |
| Capacitance Range | 1~1000 μF | | | | | | | | |
| Capacitance Tolerance | $\pm 20\%$ at 120Hz, 20°C | | | | | | | | |
| Leakage Current (Max) | 6.3V ~ 50V.DC | | | | 160V ~ 450V.DC | | | | 20°C |
| | $I \leq 0.03CV$ (μA) or 4 (μA) whichever is greater (after 2 minutes) | | | | $I \leq 0.04CV + 100$ (μA) (after 2 minutes) | | | | |
| | I = Leakage Current (μA) | | | | C = Nominal Capacitance (μF) V = Rated Voltage (V) | | | | |
| Dissipation Factor (Max) Tan δ (20°C, 120Hz) | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 160~250 | 400~450 |
| | Tan δ | 0.32 | 0.28 | 0.26 | 0.16 | 0.14 | 0.14 | 0.20 | 0.24 |
| Load Life | In 105°C degrees Celsius environment, continuous application of rated voltage for 10000 hours, after 16 hours was measured at room temperature, the capacitors shall meet the following requirements : | | | | | | | | |
| | Rated Voltage (V) | 6.3V ~ 50V | | | | 160V ~ 450V | | | |
| | Capacitance Change | Within $\pm 30\%$ of the initial value | | | | Within $\pm 20\%$ of the initial value | | | |
| | Dissipation Factor | Not more than 300% of the specified value | | | | Not more than 200% of the specified value | | | |
| | Leakage Current | Not more than the specified value | | | | Not more than the specified value | | | |
| Shelf Life | In 105°C degrees Celsius environment, without load for 1000 hours, after 16 hours was measured at room temperature, the capacitors shall meet the following requirements : | | | | | | | | |
| | Rated Voltage (V) | 6.3V ~ 50V | | | | 160V ~ 450V | | | |
| | Capacitance Change | Within $\pm 30\%$ of the initial value | | | | Within $\pm 20\%$ of the initial value | | | |
| | Dissipation Factor | Not more than 300% of the specified value | | | | Not more than 200% of the specified value | | | |
| | Leakage Current | Within 300% of initial specified value | | | | Within 200% of initial specified value | | | |
| Resistance to Soldering Heat | The capacitors shall be kept on then hot plate maintained at 250°C for 30 seconds. After removing from the hot plate and restored at room temperature, they meet the following requirement: | | | | | | | | |
| | Capacitance Change | Within $\pm 10\%$ of initial value | | | | | | | |
| | Dissipation Factor | Not more than the initial specified value | | | | | | | |
| | Leakage Current | Not more than the initial specified value | | | | | | | |
| Low Temperature Stability Impedance Ratio (MAX) 120Hz | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 160~250 | 400~450 |
| | Z-25°C / Z+20°C | 4 | 3 | 2 | 2 | 2 | 2 | 6 | 6 |
| | Z-40°C / Z+20°C | 10 | 8 | 6 | 4 | 3 | 3 | 10 | 18 |

◆ Drawing (Unit: mm)

Fig. 1 ($\Phi 4 \sim \Phi 10$)

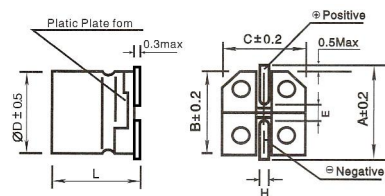
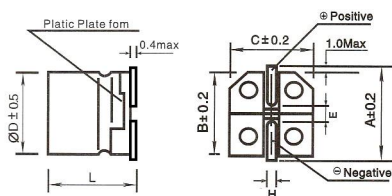


Fig. 2 ($\geq \Phi 12.5$)



| ΦD | L | A | B | C | E | H | Fig. No. |
|----------|----------------|------|------|------|-----|---------|----------|
| 6.3 | 7.7 \pm 0.3 | 7.2 | 6.6 | 6.6 | 2.1 | 0.5~0.9 | 1 |
| 6.3 | 10.2 \pm 0.3 | 7.2 | 6.6 | 6.6 | 2.1 | 0.5~0.9 | 1 |
| 8 | 10.2 \pm 0.5 | 9.1 | 8.3 | 8.3 | 3.1 | 0.8~1.1 | 1 |
| 8 | 12.5 \pm 0.5 | 9.1 | 8.3 | 8.3 | 3.1 | 0.8~1.1 | 1 |
| 10 | 10.2 \pm 0.5 | 11.1 | 10.3 | 10.3 | 4.5 | 0.8~1.1 | 1 |
| 10 | 12.5 \pm 0.5 | 11.1 | 10.3 | 10.3 | 4.5 | 0.8~1.1 | 1 |
| 12.5 | 13.5 \pm 0.5 | 13.7 | 13.0 | 13.0 | 4.4 | 1.0~1.4 | 2 |
| 12.5 | 16 \pm 0.5 | 13.7 | 13.0 | 13.0 | 4.4 | 1.0~1.4 | 2 |
| 16 | 16.5 \pm 0.5 | 18.0 | 17.0 | 17.0 | 6.4 | 1.0~1.4 | 2 |
| 16 | 21.5 \pm 0.5 | 18.0 | 17.0 | 17.0 | 6.4 | 1.0~1.4 | 2 |
| 18 | 16.5 \pm 0.5 | 20.0 | 19.0 | 19.0 | 6.4 | 1.0~1.4 | 2 |
| 18 | 21.5 \pm 0.5 | 20.0 | 19.0 | 19.0 | 6.4 | 1.0~1.4 | 2 |

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◆ Standard size

| WV | 6.3 | | | 10 | | | 16 | | | 25 | | | 35 | | | 50 | | |
|------|---------|-------|-----|--------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|---------|-------|-----|
| μF | DxL | Tan δ | mA | DxL | Tan δ | mA | DxL | Tan δ | mA | DxL | Tan δ | mA | DxL | Tan δ | mA | DxL | Tan δ | mA |
| 10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 6.3x7.7 | 0.14 | 31 | -- | -- | -- |
| 22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 6.3x7.7 | 0.14 | 43 | -- | -- | -- |
| 33 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 6.3x7.7 | 0.16 | 48 | -- | -- | -- | 8x10.2 | 0.14 | 79 |
| 47 | -- | -- | -- | -- | -- | -- | 6.3x7.7 | 0.26 | 50 | -- | -- | -- | 8x10.2 | 0.14 | 90 | 8x10.2 | 0.14 | 95 |
| 100 | 6.3x7.7 | 0.32 | 60 | -- | -- | -- | -- | -- | -- | 8x10.2 | 0.16 | 119 | 8x10.2 | 0.14 | 132 | 10x10.2 | 0.14 | 155 |
| 220 | -- | -- | -- | 8x10.2 | 0.28 | 145 | 8x10.2 | 0.26 | 159 | -- | -- | -- | 10x10.2 | 0.14 | 220 | -- | -- | -- |
| 330 | 8x10.2 | 0.32 | 165 | -- | -- | -- | 8x10.2 | 0.26 | 194 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 470 | 8x10.2 | 0.32 | 196 | -- | -- | -- | 10x10.2 | 0.26 | 260 | -- | -- | -- | -- | -- | -- | -- | -- | -- |
| 1000 | 10x10.2 | 0.32 | 315 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- |

| WV | 160 | | | 200 | | | 250 | | | 400 | | | 450 | | |
|-----|-----------|-------|-----|-----------|-------|-----|-----------|-------|-----|-----------|-------|----|-----------|-------|----|
| μF | DxL | Tan δ | mA | DxL | Tan δ | mA | DxL | Tan δ | mA | DxL | Tan δ | mA | DxL | Tan δ | mA |
| 1 | | | | | | | 6.3x10.5 | 0.20 | 20 | 6.3x10.5 | 0.24 | 17 | 8x10.2 | 0.24 | 20 |
| 2.2 | | | | | | | 6.3x10.5 | 0.20 | 31 | 8x10.2 | 0.24 | 30 | 10x10.2 | 0.24 | 35 |
| 3.3 | | | | | | | 8x10.2 | 0.20 | 43 | 10x10.2 | 0.24 | 39 | 10x10.2 | 0.24 | 38 |
| 4.7 | | | | 8x10.2 | 0.20 | 53 | 8x10.2 | 0.20 | 52 | 10x10.2 | 0.24 | 56 | 10x10.2 | 0.24 | 59 |
| 5.6 | | | | 8x10.2 | 0.20 | 58 | 8x12.5 | 0.20 | 62 | 10x10.2 | 0.24 | 66 | 12.5x13.5 | 0.24 | 75 |
| 6.8 | 8x10.2 | 0.20 | 68 | 8x10.2 | 0.20 | 64 | 10x10.2 | 0.20 | 72 | 12.5x13.5 | 0.24 | 72 | | | |
| 8.2 | 10x10.2 | 0.20 | 85 | 8x12.5 | 0.20 | 77 | 10x12.5 | 0.20 | 85 | | | | | | |
| 10 | 10x10.2 | 0.20 | 95 | 12.5x13.5 | 0.20 | 110 | 12.5x13.5 | 0.20 | 110 | | | | | | |
| 12 | 10x10.2 | 0.20 | 104 | 12.5x13.5 | 0.20 | 125 | 12.5x13.5 | 0.20 | 120 | | | | | | |
| 15 | 12.5x13.5 | 0.20 | 140 | 12.5x13.5 | 0.20 | 140 | | | | | | | | | |

Rated ripple current (mA, 105°C, 120Hz)

◆ Frequency coefficient

| Frequency | 120Hz | 1kHz | 10kHz | 100kHz |
|-------------|-------|------|-------|--------|
| Coefficient | 1.00 | 1.60 | 1.80 | 2.00 |

Note: Specifications are subject to change without notice. For more detail and update, please visit our website.