

AXIAL TYPE ALUMINUM ELECTROLYTIC CAPACITORS

Suntan®

LOW LEAKAGE CURRENT, 2 RUBBER TYPE

TS13AD

FEATURES

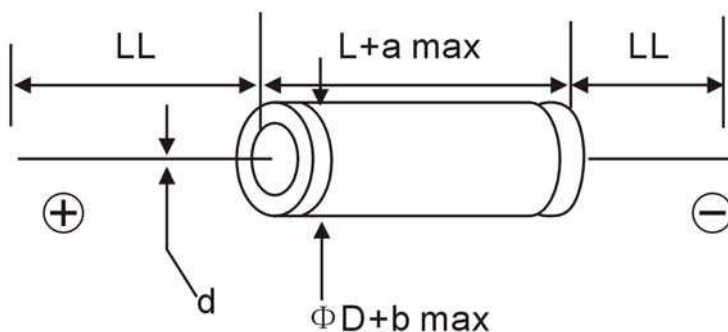
- 85°C, 2000 hours assured.
- For general purpose application



| I T E M S | | C H A R A C T E R I S T I C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|---|-----------------------------|----|----|----|--|----|-----|-----|--|--------------------|---------------------------------|--------------------|-----------------------------------|-----------------|---------------------------------|----|----|-----|-----|---------------|----|----|----|----|----|----|----|-----|-----|---------------|---|---|---|---|---|---|---|---|---|
| Capacitance Tolerance(120Hz 20°C) | ±20% (M) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Voltage Range | 6.3 ~ 160 WV | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Operating Temperature Range | -40°C ~ +85°C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Tolerance | ±20% (M) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Surge Voltage (V) (20°C) | <table border="1"> <tr> <td>WV</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> <td>160</td> </tr> <tr> <td>SV</td> <td>8</td> <td>13</td> <td>20</td> <td>32</td> <td>44</td> <td>63</td> <td>79</td> <td>125</td> <td>200</td> </tr> </table> | | | | | | | | | | WV | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | SV | 8 | 13 | 20 | 32 | 44 | 63 | 79 | 125 | 200 | | | | | | | | | | |
| WV | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SV | 8 | 13 | 20 | 32 | 44 | 63 | 79 | 125 | 200 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current(µA)(20°C) | $I \leq 0.005CV$ or $1 (\mu A)$ Whichever is greater (after 3 minutes applying the rated DC working voltage at 20°C) where: C = rated capacitance in µF. V = rated DC working voltage in V. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor (Tan δ) (At 20°C, 120Hz) | <table border="1"> <tr> <td>WV</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> <td>160</td> </tr> <tr> <td>DF</td> <td>24</td> <td>20</td> <td>16</td> <td>14</td> <td>12</td> <td>10</td> <td>10</td> <td>10</td> <td>20</td> </tr> </table> For capacitors whose capacitance exceeds 1,000µF, the specification of tan δ is increased by 0.02 for every addition of 1,000µF. | | | | | | | | | | WV | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | DF | 24 | 20 | 16 | 14 | 12 | 10 | 10 | 10 | 20 | | | | | | | | | | |
| WV | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| DF | 24 | 20 | 16 | 14 | 12 | 10 | 10 | 10 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Low Temperature Characteristics | Impedance ratio at 120Hz. <table border="1"> <tr> <td>Comparison Z\ WV</td> <td>6.3</td> <td>10</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63</td> <td>100</td> <td>160</td> </tr> <tr> <td>-25°C / +20°C</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> <td>3</td> <td>2</td> <td>3</td> </tr> <tr> <td>-40°C / +20°C</td> <td>8</td> <td>6</td> <td>4</td> <td>4</td> <td>4</td> <td>2</td> <td>3</td> <td>3</td> <td>-</td> </tr> </table> | | | | | | | | | | Comparison Z\ WV | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | -25°C / +20°C | 4 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | -40°C / +20°C | 8 | 6 | 4 | 4 | 4 | 2 | 3 | 3 | - |
| Comparison Z\ WV | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -25°C / +20°C | 4 | 3 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -40°C / +20°C | 8 | 6 | 4 | 4 | 4 | 2 | 3 | 3 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Load Life | After 2000 hours application of rated voltage at 85°C, capacitors meet the characteristics requirements listed at right. | | | | | <table border="1"> <tr> <td>Capacitance Change</td> <td>Less than ±25% of initial value</td> </tr> <tr> <td>Dissipation Factor</td> <td>Less than 200% of specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Initial specified value of less</td> </tr> </table> | | | | | Capacitance Change | Less than ±25% of initial value | Dissipation Factor | Less than 200% of specified value | Leakage Current | Initial specified value of less | | | | | | | | | | | | | | | | | | | | | | | | |
| Capacitance Change | Less than ±25% of initial value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dissipation Factor | Less than 200% of specified value | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Leakage Current | Initial specified value of less | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Shelf Life | After leaving capacitors under no load at 85°C for 500 hours and applying voltage they meet the specified value for load life characteristics listed above. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

DIAGRAM OF DIMENSIONS

Unit:mm



LEAD DIAMETER

| ØD | 5 | 6.3 | 8 | 10 | 13 | 16 | 18 | 22 | 25 |
|----|-----|-----|---|----|----|-----|----|----|----|
| Ød | 0.5 | 0.6 | | | | 0.8 | | | |
| a | 1.0 | | | | | 2.0 | | | |
| b | 0.5 | | | | | 1.0 | | | |

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DIMENSIONS: Diameter (DØ) x Length (L) m/m

RIPPLE CURRENT. mA at 85°C, 120Hz

| V.DC | 6.3V (0J) | | 10V (1A) | | 16V (1C) | | 25V (1E) | | 35V (1V) | | 50V (1H) | | 63V (1J) | | 100V (2A) | | 160V (2C) | | | |
|-------|--------------|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|------|--------------|------|--------------|-------|-------|-----|
| | µF | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA | ØDxL | mA | |
| 3.3 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8x16 | 33 | |
| 4.7 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8x16 | 39 | |
| 10 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8x20 | 60 | |
| 22 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8x16 | 120 | 10x26 | 120 |
| 33 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8x16 | 150 | 13x26 | 170 | |
| 47 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8x16 | 160 | 8x20 | 190 | 16x32 | 230 | | |
| 100 | -- | -- | -- | -- | -- | -- | -- | -- | 8x16 | 210 | 8x16 | 220 | 8x20 | 260 | 10x26 | 340 | 16x41.5 | 430 | | |
| 220 | -- | -- | -- | -- | 8x16 | 260 | 8x16 | 280 | 8x20 | 340 | 10x21 | 410 | 10x26 | 480 | 13x26 | 560 | 22x41 | 680 | | |
| 330 | 8x16 | 250 | 8x16 | 300 | 8x16 | 320 | 8x20 | 380 | 10x21 | 460 | 10x26 | 560 | 13x26 | 650 | 13x31 | 750 | 25x53 | 940 | | |
| 470 | 8x16 | 330 | 8x16 | 350 | 8x20 | 430 | 10x21 | 510 | 10x26 | 610 | 13x36 | 730 | 13x31 | 840 | 16x32 | 970 | 25x53 | 1200 | | |
| 1000 | 10x21 | 600 | 10x21 | 640 | 10x26 | 770 | 13x26 | 900 | 13x31 | 1060 | 16x32 | 1260 | 16x32 | 1330 | 22x41 | 1540 | -- | -- | | |
| 2200 | 13x26 | 1020 | 13x26 | 1090 | 13x31 | 1180 | 16x32 | 1480 | 16x32 | 1580 | 18x40 | 1920 | 22x41 | 2160 | 25x53 | 2430 | -- | -- | | |
| 3300 | 13x26 | 1200 | 13x31 | 1390 | 16x32 | 1620 | 16x40 | 1710 | 18x40 | 2050 | 22x41 | 2340 | 22x52 | 2470 | -- | -- | -- | -- | | |
| 4700 | 16x32 | 1500 | 16x32 | 1730 | 16x40 | 1840 | 18x40 | 2170 | 22x41 | 2470 | 22x52 | 2650 | 25x53 | 2710 | -- | -- | -- | -- | | |
| 6800 | 16x32 | 1840 | 16x40 | 1930 | 18x40 | 2310 | 22x41 | 2580 | 22x52 | 2720 | 25x53 | 2910 | -- | -- | -- | -- | -- | -- | | |
| 10000 | 16x32 | 2260 | 18x40 | 2350 | 22x41 | 2620 | 22x52 | 2940 | 25x53 | 3600 | -- | -- | -- | -- | -- | -- | -- | -- | | |
| 15000 | 22x41 | 2450 | 22x41 | 2730 | 22x52 | 2860 | 25x53 | 3880 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |
| 22000 | 22x52 | 2550 | 22x52 | 2940 | 25x53 | 3630 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | | |

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