



RoHS Compliant ALUMINIUM ELECTROLYTIC CAPACITOR

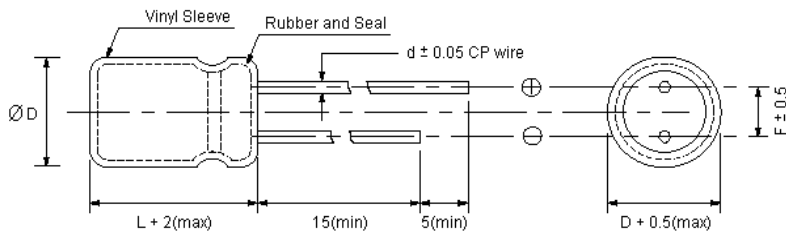
SM Series

■ **FEATURES**

- ◆ Miniaturized low profile with 9mm to 25mm height
- ◆ Load life of 2000 hours at 85°C



■ **OUTLINE**



| | mm | | | | | | |
|---|-----|-----|-----|-----|-----|----|----|
| D | 5 | 6.3 | 8 | 10 | 13 | 16 | 18 |
| F | 2.0 | 2.5 | 3.5 | 5.0 | 7.5 | | |
| d | 0.5 | | | 0.6 | 0.8 | | |

■ **SPECIFICATIONS**

| Items | Characteristics | | | | | | | | | | | | |
|---|--|---|------|------|------|------|--|------|------|------|------|------|------|
| Capacitance Tolerance (120Hz, 25°C) | ± 20% (M) | | | | | | | | | | | | |
| Rated Working Voltage Range | 6.3 ~ 250Vdc | | | | | | 350 ~ 450Vdc | | | | | | |
| Operation Temperature | -40°C ~ +85°C | | | | | | -25°C ~ +85°C | | | | | | |
| Leakage Current (25°C) | (After 2 minutes applying the DC working voltage) | | | | | | (After 1 minute applying the DC working voltage) | | | | | | |
| | $I \leq 0.01CV$ or 3 (μA) | | | | | | $I \leq 0.04CV + 100$ (μA) | | | | | | |
| ◆ I : Leakage Current (μA) ◆ C : Rated Capacitance (μF) ◆ V : Working Voltage (V) | | | | | | | | | | | | | |
| Surge Voltage (25°C) | W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 160 | 200 | 250 | 350 | 400 | 450 |
| | S.V. | 8 | 13 | 20 | 32 | 44 | 63 | 200 | 250 | 300 | 400 | 450 | 500 |
| Dissipation Factor (120Hz, 25°C) | W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 160 | 200 | 250 | 350 | 400 | 450 |
| | $\tan \delta$ | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.15 | 0.15 | 0.15 | 0.20 | 0.24 | 0.24 |
| ◆ For capacitance exceeding 1000 μF , add 0.02 per increment of 1000 μF | | | | | | | | | | | | | |
| Temperature Characteristics | W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 160 | 200 | 250 | 350 | 400 | 450 |
| | - 25°C / + 25°C | 5 | 4 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 6 | 6 | 6 |
| | - 40°C / + 25°C | 12 | 10 | 8 | 5 | 4 | 3 | 6 | 6 | 6 | - | - | - |
| ◆ Impedance ratio at 120Hz | | | | | | | | | | | | | |
| Load Test | After 2000 hours application of WV at +85°C, the capacitor shall meet the following limits: (1000 hours for 8 ϕ and smaller) | | | | | | | | | | | | |
| | Capacitance Change | $\leq \pm 20\%$ of initial value | | | | | | | | | | | |
| | $\tan \delta$ | $\leq 200\%$ of initial specified value | | | | | | | | | | | |
| | Leakage Current | \leq initial specified value | | | | | | | | | | | |
| Shelf Test | After 1000 hours, no voltage applied at +85°C, the capacitor shall meet the following limits: | | | | | | | | | | | | |
| | Capacitance Change | $\leq \pm 20\%$ of initial value | | | | | | | | | | | |
| | $\tan \delta$ | $\leq 200\%$ of initial specified value | | | | | | | | | | | |
| | Leakage Current | $\leq 200\%$ of initial specified value | | | | | | | | | | | |

DB LECTRO ^U_Z

■ DIMENSIONS

D x L (mm)

| WV uF | 6.3 | 10 | 16 | 25 | 35 | 50 | 160 | 200 | 250 | 350 | 400 | 450 |
|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1 | | | | |] | 5 x 9 | | | | | | |
| 2.2 | | | | |] | 5 x 9 | | | | | 8 x 9 | 10 x 9 |
| 3.3 | | | | |] | 5 x 9 | | | | 8 x 9 | 10 x 9 | 10 x 9 |
| 4.7 | | | | |] | 5 x 9 | 8 x 9 | 8 x 9 | 8 x 9 | 10 x 9 | 10 x 9 | |
| 10 | | | | |] | 5 x 9 | 10 x 9 | 10 x 9 | 10 x 9 | 13 x 13 | 13 x 13 | 16 x 16 |
| 22 | | | | |] | 5 x 9 | | | 13 x 16 | 13 x 16 | 13 x 16 | 16 x 20 |
| 33 | | | | | 5 x 9 | 6.3 x 9 | 13 x 16 | 13 x 16 | 16 x 16 | 16 x 20 | 16 x 20 | 18 x 20 |
| 47 | | |] | 5 x 9 |] | 6.3 x 9 | 13 x 16 | 16 x 16 | 16 x 20 | 18 x 20 | 18 x 20 | 18 x 25 |
| 100 |] | 5 x 9 |] | 6.3 x 9 | 8 x 9 | 10 x 9 | 16 x 20 | 16 x 20 | 18 x 20 | | | |
| 220 | 5 x 9 | 6.3 x 9 | 8 x 9 |] | 10 x 9 | | 18 x 25 | | | | | |
| 330 | 6.3 x 9 |] | 8 x 9 | 10 x 9 | | 13 x 13 | | | | | | |
| 470 |] | 8 x 9 | 10 x 9 |] | 13 x 13 | 16 x 16 | | | | | | |
| 1000 | 10 x 9 | 10 x 9 | 13 x 13 | 13 x 16 | 16 x 16 | 18 x 20 | | | | | | |
| 2200 |] | 13 x 16 | 16 x 16 | 18 x 16 | 18 x 20 | | | | | | | |
| 3300 |] | 16 x 16 | 18 x 16 | 18 x 20 | | | | | | | | |
| 4700 | 16 x 16 | 18 x 16 | 18 x 20 | 18 x 25 | | | | | | | | |
| 6800 | 18 x 16 | 18 x 20 | 18 x 25 | | | | | | | | | |
| 10000 | 18 x 20 | 18 x 25 | | | | | | | | | | |

■ PERMISSIBLE RIPPLE CURRENT

mA (rms) at 120Hz 85°C

| WV uF | 6.3 | 10 | 16 | 25 | 35 | 50 | 160 | 200 | 250 | 350 | 400 | 450 |
|----------|------|------|------|------|------|------|-----|-----|-----|-----|-----|-----|
| 1 | | | | |] | 13 | | | | | | |
| 2.2 | | | | |] | 26 | | | | | 34 | 35 |
| 3.3 | | | | |] | 31 | | | | 35 | 38 | 37 |
| 4.7 | | | | |] | 37 | 49 | 49 | 49 | 47 | 47 | |
| 10 | | | | |] | 63 | 83 | 83 | 83 | 98 | 98 | 74 |
| 22 | | | | |] | 84 | | | 154 | 148 | 148 | 168 |
| 33 | | | | | 89 | 107 | 175 | 175 | 228 | 235 | 235 | 226 |
| 47 | | |] | 100 |] | 128 | 220 | 255 | 275 | 310 | 310 | 250 |
| 100 |] | 126 |] | 163 | 209 | 233 | 395 | 402 | 420 | | | |
| 220 | 190 | 207 | 276 |] | 318 | | 602 | | | | | |
| 330 | 235 |] | 337 | 361 | | 498 | | | | | | |
| 470 |] | 366 | 390 |] | 556 | 708 | | | | | | |
| 1000 | 479 | 520 | 679 | 788 | 960 | 1102 | | | | | | |
| 2200 |] | 922 | 1102 | 1292 | 1482 | | | | | | | |
| 3300 |] | 1245 | 1387 | 1634 | | | | | | | | |
| 4700 | 1340 | 1482 | 1682 | 1967 | | | | | | | | |
| 6800 | 1577 | 1777 | 1996 | | | | | | | | | |
| 10000 | 1920 | 2252 | | | | | | | | | | |