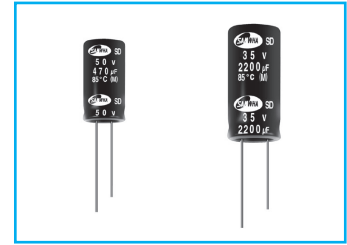
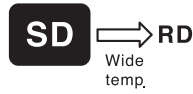


MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS



SD Standard, For General Purposes Series

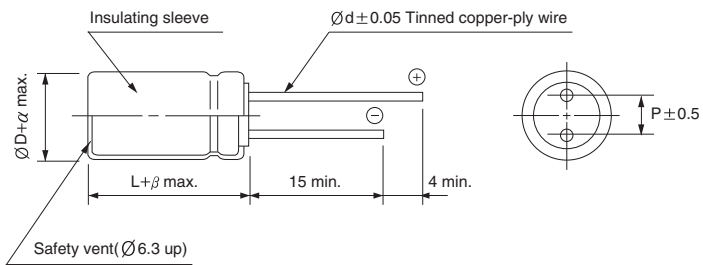
- Standard series for general purposes
- High voltage, high capacitance series
- Voltage range of 6.3~500V
- Complied to the RoHS directive



| Item | Characteristics | | | | | | | | | | |
|---|--|-----------------------------------|------|------|------|------|--------|------|---------|-----------|-----------|
| Operating temperature range | WV | 6.3 ~ 450 500 | | | | | | | | | |
| | Temperature range | -40 ~ +85°C -25 ~ +85°C | | | | | | | | | |
| Leakage current max. | WV ≤ 100 | WV > 100 | | | | | | | | | |
| | I = 0.01CV or 3µA whichever is greater (after 2 min) I = 0.03CV or 4µA whichever is greater (after 1 min) | | | | | | | | | | |
| Capacitance tolerance | ±20% at 120Hz, 20°C | | | | | | | | | | |
| Dissipation factor max. (at 120Hz, 20°C) | Capacitance > 1000µF : tanδ increases by 0.02 for each 1000µF from below value. | | | | | | | | | | |
| | WV | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 ~ 250 | 350 ~ 500 |
| tanδ | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 | 0.15 | 0.20 | |
| Low temperature characteristics (Impedance ratio at 120Hz) | WV | 6.3 | 10 | 16 | 25 | 35 | 50~100 | 160 | 200~350 | 400~450 | 500 |
| | Z-25°C/Z+20°C | 5 | 4 | 3 | 2 | 2 | 2 | 4 | 6 | 10 | 12 |
| | Z-40°C/Z+20°C | 12 | 10 | 8 | 5 | 4 | 3 | 6 | 8 | 12 | - |
| Load life (after application of the rated voltage for 2000 hours at 85°C) | Leakage current | Less than specified value | | | | | | | | | |
| | Capacitance change | Within ±20% of initial value | | | | | | | | | |
| | tanδ | Less than 200% of specified value | | | | | | | | | |
| Shelf life (at 85°C) | After 1000 hours no load test, leakage current, capacitance and tanδ are same as load life value. The measurement shall be performed at 20°C by the KS C IEC 60384 - 4 | | | | | | | | | | |

● DRAWING

Unit : mm

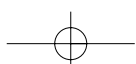


| ØD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 | 22 |
|----|-----|-----|-----|-----|------|-----|-----|------|
| P | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10.0 |
| Ød | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 1.0 |
| α | 0.5 | | | | | | | 1.0 |
| β | 1.5 | | 2.0 | | | | 3.0 | |

● FREQUENCY COEFFICIENT OF PERMISSIBLE RIPPLE CURRENT

| WV | µF | Frequency | 60Hz | 120Hz | 1kHz | 10kHz | 50kHz | 100kHz ≤ |
|---------|----|-----------|------|-------|------|-------|-------|----------|
| 6.3~100 | | ~ 47 | 0.75 | 1.00 | 1.55 | 2.00 | 2.00 | 2.00 |
| | | 68 ~ 680 | 0.80 | 1.00 | 1.35 | 1.50 | 1.62 | 1.75 |
| | | 1000 ~ | 0.85 | 1.00 | 1.15 | 1.15 | 1.32 | 1.50 |
| 160~500 | | ~ 220 | 0.80 | 1.00 | 1.40 | 1.60 | 1.70 | 1.80 |
| | | 330 ~ | 0.90 | 1.00 | 1.13 | 1.15 | 1.32 | 1.50 |

MINIATURE TYPES

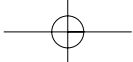


MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

SD series

● DIMENSIONS & MAXIMUM PERMISSIBLE RIPPLE CURRENT

| WV μF | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 | 500 |
|----------|-----------------|-----------------|-----------------|-----------------|-----------------|---|-----------------|-----------------|-----------------|-----------------|----------------|----------------|----------------|----------------|----------------|
| 1.0 | | | | | | 5×11 21 | 5×11 23 | 5×11 23 | | | | | | 8×11.5 26 | |
| 1.5 | | | | | | 5×11 26 | 5×11 28 | 5×11 28 | | | | | | 8×11.5 32 | |
| 2.2 | | | | | | 5×11 32 | 5×11 34 | 5×11 34 | | | | | | 8×11.5 33 | |
| 3.3 | | | | | | 5×11 39 | 5×11 42 | 5×11 42 | 6.3×11 45 | 6.3×11 45 | 6.3×11 48 | 8×11.5 53 | 8×11.5 56 | 8×11.5 50 | |
| 4.7 | | | | | | 5×11 46 | 5×11 50 | 5×11 50 | 6.3×11 53 | 6.3×11 57 | 6.3×11 57 | 8×11.5 66 | 10×12.5 61 | 10×12.5 72 | 10×16 69 |
| 6.8 | | | | | | 5×11 56 | 5×11 60 | 5×11 60 | 8×11.5 76 | 8×11.5 76 | 8×11.5 76 | 10×12.5 88 | 10×12.5 87 | 10×16 86 | 10×16 76 |
| 10 | | | | | | 5×11 68 | 5×11 72 | 5×11 76 | 8×11.5 96 | 8×11.5 96 | 10×12.5 107 | 10×12.5 107 | 10×16 115 | 10×20 115 | 12.5×25 178 |
| 15 | | | | | | 5×11 83 | 5×11 89 | 6.3×11 89 | 10×12.5 131 | 10×16 143 | 10×16 143 | 10×20 156 | 12.5×20 165 | 12.5×20 164 | |
| 22 | | | | | | 5×11 101 | 5×11 108 | 6.3×11 124 | 10×12.5 156 | 10×16 173 | 10×16 170 | 12.5×20 222 | 12.5×20 218 | 12.5×25 217 | 16×25 265 |
| 33 | | | | | | 5×11 123 | 6.3×11 151 | 8×11.5 178 | 10×16 209 | 10×20 232 | 10×20 247 | 16×20 297 | 12.5×25 296 | 16×25 294 | 16×31.5 310 |
| 47 | | | | | 5×11 131 | *6.3×11 169 | 6.3×11 181 | 8×11.5 222 | 10×20 293 | 10×20 293 | 12.5×20 319 | 16×20 353 | 16×25 387 | 16×31.5 384 | 18×31.5 412 |
| 68 | | | | 5×11 144 | *6.3×11 182 | 6.3×11 203 | 8×11.5 256 | 10×12.5 293 | 12.5×20 391 | 12.5×25 426 | 16×20 425 | 16×25 465 | 16×31.5 488 | 16×35.5 503 | 18×35.5 457 |
| 100 | | | 5×11 162 | * 5×11 181 | 6.3×11 220 | 8×11.5 291 | 8×11.5 311 | 10×16 388 | 12.5×25 516 | 16×25 516 | 16×25 564 | 18×31.5 592 | 18×35.5 667 | 18×40 546 | |
| 150 | | | * 5×11 198 | 6.3×11 246 | 8×11.5 318 | 10×12.5 414 | 10×12.5 422 | 10×20 528 | 16×20 632 | 16×25 691 | 16×31.5 726 | 18×40 845 | 18×40 863 | 22×45 1283 | |
| 220 | 5×11 201 | * 5×11 218 | 6.3×11 276 | 6.3×11 327 | 8×11.5 386 | 10×12.5 501 | 10×16 586 | 12.5×20 737 | 16×25 873 | 18×31.5 962 | 18×35.5 988 | 22×41 1112 | 22×45 1183 | | |
| 330 | *6.3×11 283 | 6.3×11 307 | 6.3×11 359 | 8×11.5 431 | 10×12.5 549 | 10×16 672 | 10×20 784 | 12.5×25 1002 | 16×35.5 1152 | 18×35.5 1206 | 22×41 1495 | | | | |
| 470 | 6.3×11 338 | 6.3×11 366 | 8×11.5 476 | 10×12.5 550 | 10×16 740 | 10×20 875 | 12.5×20 1098 | 16×25 1328 | 18×40 1434 | 22×41 1495 | | | | | |
| 680 | 8×11.5 480 | 8×11.5 520 | 8×11.5 600 | 10×16 754 | 10×20 947 | 12.5×20 1235 | 12.5×25 1440 | 16×31.5 1643 | 22×41 1831 | | | | | | |
| 1000 | 8×11.5 581 | 10×12.5 659 | 10×12.5 796 | 10×16 942 | 12.5×20 1306 | 12.5×25 1633 | 16×25 1937 | 18×31.5 1965 | | | | | | | |
| 2200 | 10×16 983 | 10×16 1051 | 10×20 1331 | 12.5×20 1542 | 16×25 2032 | 16×31.5 2220 | 18×31.5 2445 | | | | | | | | |
| 3300 | 10×20 1286 | 12.5×20 1545 | 12.5×20 1686 | 16×25 2194 | 16×31.5 2502 | 18×31.5 2765 | 18×40 2987 | | | | | | | | |
| 4700 | 12.5×20 1736 | 12.5×25 1903 | 12.5×25 2129 | 16×25 2448 | 16×35.5 2905 | 18×40 3272 | | | | | | | | | |
| 6800 | 12.5×25 2129 | 16×25 2332 | 16×25 2577 | 18×31.5 3114 | 18×40 3408 | ← Case size ØD×L (mm) ← Ripple current (mA rms) at 85°C, 120Hz | | | | | | | | | |
| 10000 | 16×25 2629 | 16×31.5 2830 | 16×31.5 3176 | 18×40 3544 | | | | | | | | | | | |
| 15000 | 16×35.5 2959 | 16×35.5 3284 | 18×35.5 3656 | | | | | | | | | | | | |
| 22000 | 18×40 3733 | 18×40 3843 | 22×41 4012 | | | | | | | | | | | | |



MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS



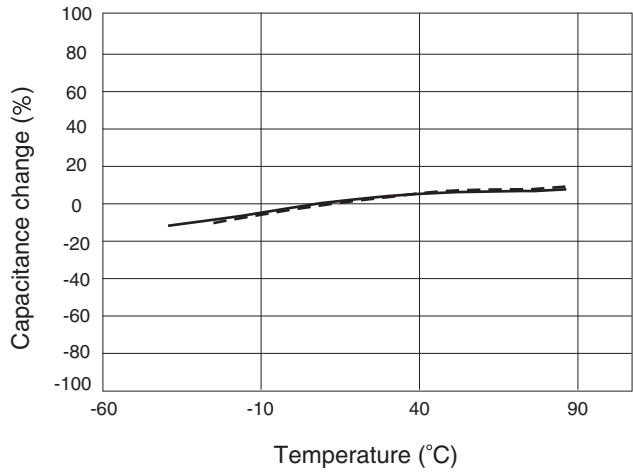
SD series

TYPICAL PERFORMANCE

— 16V 1000 μ F
 400V 10 μ F

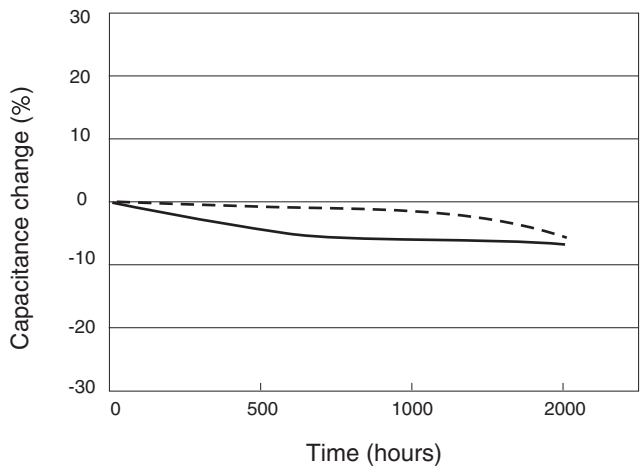
● TEMPERATURE CHARACTERISTICS

Capacitance change vs. temperature

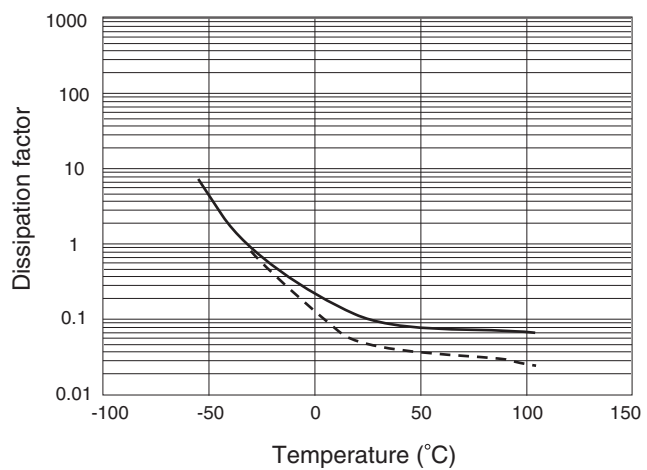


● LOAD LIFE (at +85°C)

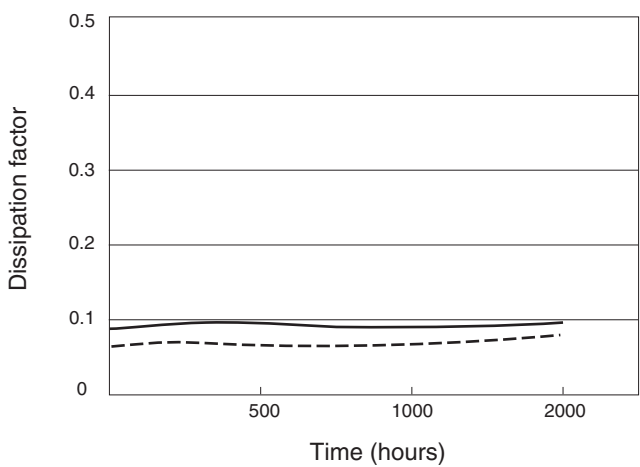
Capacitance change vs. time



Dissipation factor vs. temperature

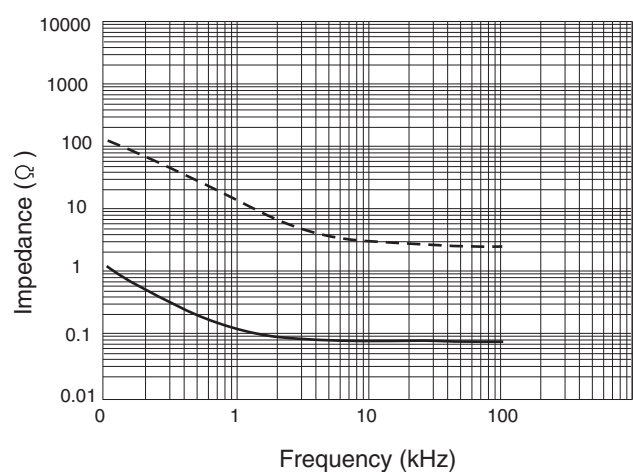


Dissipation factor vs. time

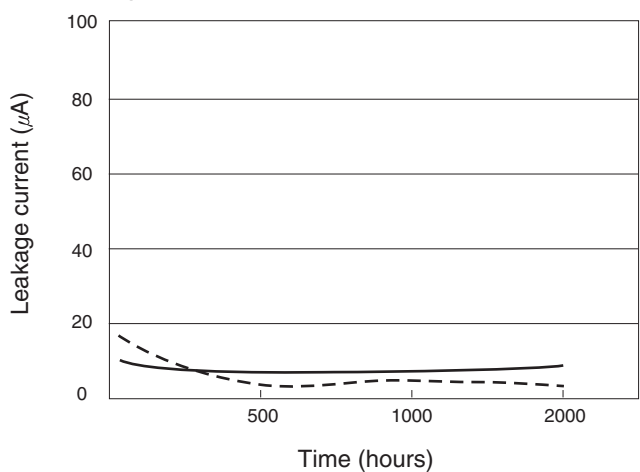


● FREQUENCY CHARACTERISTICS

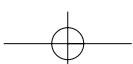
Impedance vs. frequency



Leakage current vs. time



MINIATURE TYPES



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