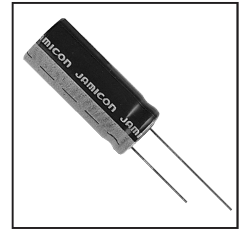


- High temperature 105°C and high reliability
- Corresponding product to RoHS



SPECIFICATION

| Item | Characteristic | | | | | | | | | | | | | | |
|---|--|--|------|------|------|-------------------------------------|--------|---------|---------|------|--------------|------|------|------|------|
| Operation Temperature Range | -55 ~ +105°C | | | | | -40 ~ +105°C | | | | | -25 ~ +105°C | | | | |
| Rated Working Voltage | 6.3 ~ 100VDC | | | | | 160 ~ 400VDC | | | | | 450VDC | | | | |
| Capacitance Tolerance (120Hz 20°C) | ±20%(M) | | | | | | | | | | | | | | |
| Leakage Current (20°C) | 6.3~100 VDC I ≤ 0.01CV or 4 (μA) | | | | | 160~450 VDC I ≤ 0.03CV + 40 (μA)max | | | | | | | | | |
| | *Whichever is greater after 3 minutes I : Leakage Current(μA) C : Rated Capacitance(μF) V : Working Voltage(V) | | | | | | | | | | | | | | |
| Surge Voltage (20°C) | W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
| | S.V. | 8 | 13 | 20 | 32 | 44 | 63 | 79 | 125 | 200 | 250 | 300 | 400 | 450 | 500 |
| Dissipation Factor (tan δ) (120Hz 20°C) | Add 0.02 per 1000 μF for more than 1000 μF | | | | | | | | | | | | | | |
| | W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | 160 | 200 | 250 | 350 | 400 | 450 |
| | tan δ | 0.24 | 0.20 | 0.17 | 0.15 | 0.12 | 0.10 | 0.10 | 0.08 | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 |
| Low Temperature Stability | Impedance ratio at 120Hz | | | | | | | | | | | | | | |
| | Rated Voltage (V) | 6.3 | | 10 | 16 | 25 | 35~100 | 160~250 | 350~400 | 450 | | | | | |
| | -25°C / +20°C | 4 | | 3 | 2 | 2 | 2 | 3 | 6 | 15 | | | | | |
| | -40°C / +20°C | 10 | | 8 | 6 | 4 | 3 | 4 | 10 | — | | | | | |
| Load Life | After 2000 hours application of W.V. and +105°C ripple current value, the capacitor shall meet the following limits. (DC + ripple peak voltage ≤ rate working voltage) | | | | | | | | | | | | | | |
| | Capacitance Change | ≤ ±25% of initial value for 6.3~16 W.V., ≤ ±20% of initial value for 25~450 W.V. | | | | | | | | | | | | | |
| | Dissipation Factor | ≤ 200% of initial specified value | | | | | | | | | | | | | |
| | Leakage current | ≤ initial specified value | | | | | | | | | | | | | |
| Shelf Life | At +105°C no voltage application after 1000 hours the capacitor shall meet the limits for load life characteristics. (with voltage treatment) | | | | | | | | | | | | | | |

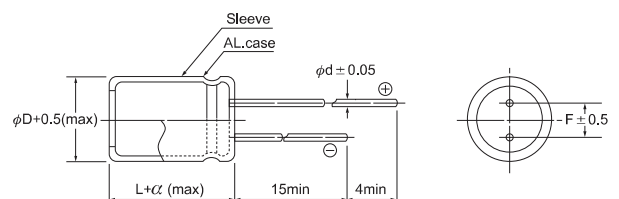
DIMENSIONS (mm)

| φD | 5 | 6.3 | 8 | 10 | 12.5 | 16 | 18 | 20 | 22 | 25 |
|----|-----|-----|-----|-----|------|-----|-----|------|------|------|
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 | 10.0 | 10.0 | 12.5 |
| d | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 | 0.8 | 1.0 | 1.0 |
| α | 1.5 | 1.5 | 1.5 | 1.5 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 |

RIPPLE CURRENT COEFFICIENTS

| Temperature(°C) | 65 | 85 | 105 |
|-----------------|------|------|------|
| Multiplier | 1.75 | 1.40 | 1.00 |

| Frequency(Hz) | 60 | 120 | 1k | ≥10k |
|---------------|------------|------|------|------|
| W.V. | Multiplier | | | |
| 6.3~25V | 0.85 | 1.00 | 1.10 | 1.20 |
| 35~100V | 0.80 | 1.00 | 1.15 | 1.25 |
| 160~250V | 0.75 | 1.00 | 1.25 | 1.40 |
| 350~450V | 0.70 | 1.00 | 1.30 | 1.80 |



● CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
Max ripple current : mA(rms) 105°C 120Hz

| μF | V(DC) Item | 6.3 | | 10 | | 16 | |
|-------|---------------|---------|------|---------|------|---------|------|
| | | DxL | R.C. | DxL | R.C. | DxL | R.C. |
| 47 | | | | | → | 5x11 | 90 |
| 100 | | 5x11 | 110 | 5x11 | 120 | 5x11 | 130 |
| 220 | | 5x11 | 160 | 5x11 | 180 | 6.3x11 | 220 |
| 330 | | 6.3x11 | 220 | 6.3x11 | 250 | 6.3x11 | 270 |
| | | | | | | 8x11 | 310 |
| 470 | | 6.3x11 | 270 | 6.3x11 | 290 | 8x11 | 370 |
| 1000 | | 8x11 | 460 | 10x12.5 | 560 | 10x12.5 | 600 |
| | | | | | | 10x16 | 670 |
| 2200 | | 10x16 | 810 | 10x16 | 880 | 12.5x20 | 1180 |
| | | | | 10x20 | 970 | | |
| 3300 | | 10x20 | 1050 | 12.5x20 | 1280 | 12.5x25 | 1510 |
| 4700 | | 12.5x20 | 1350 | 12.5x25 | 1590 | 16x25 | 1830 |
| 6800 | | 12.5x25 | 1680 | 16x25 | 1940 | 16x25 | 2040 |
| | | | | | | 16x32 | 2120 |
| 10000 | | 16x25 | 2020 | 16x32 | 2210 | 16x36 | 2430 |
| | | | | 16x36 | 2330 | 18x36 | 2590 |
| 15000 | | 16x32 | 2200 | 16x36 | 2540 | 18x40 | 2960 |
| | | 16x36 | 2320 | 18x36 | 2710 | 20x40 | 3040 |
| 22000 | | 18x36 | 2660 | 18x40 | 3050 | 22x40 | 3390 |
| | | 18x40 | 2810 | 20x40 | 3130 | 22x50 | 3740 |
| 33000 | | 22x40 | 3230 | 22x50 | 3840 | 25x50 | 4200 |
| | | 22x50 | 3560 | | | | |
| 47000 | | 22x50 | 3700 | 25x50 | 4260 | | |
| 68000 | | 22x50 | 3820 | | | | |

| μF | V(DC) Item | 25 | | 35 | | 50 | |
|-------|---------------|---------|------|---------|------|---------|------|
| | | DxL | R.C. | DxL | R.C. | DxL | R.C. |
| 1 | | | | | → | 5x11 | 17 |
| 2.2 | | | | | → | 5x11 | 25 |
| 3.3 | | | | | → | 5x11 | 31 |
| 4.7 | | | | | → | 5x11 | 36 |
| 10 | | 5x11 | 43 | 5x11 | 49 | 5x11 | 55 |
| 22 | | 5x11 | 65 | 5x11 | 70 | 5x11 | 80 |
| 33 | | 5x11 | 80 | 5x11 | 90 | 5x11 | 95 |
| 47 | | 5x11 | 95 | 5x11 | 110 | 6.3x11 | 130 |
| 68 | | 5x11 | 110 | 6.3x11 | 140 | 6.3x11 | 160 |
| 100 | | 5x11 | 140 | 6.3x11 | 170 | 8x11 | 220 |
| | | 6.3x11 | 160 | | | | |
| 220 | | 6.3x11 | 230 | 8x11 | 300 | 10x12.5 | 370 |
| | | 8x11 | 270 | | | | |
| 330 | | 8x11 | 330 | 10x12.5 | 410 | 10x16 | 500 |
| 470 | | 10x12.5 | 440 | 10x16 | 550 | 10x20 | 660 |
| 1000 | | 10x16 | 710 | 12.5x20 | 1000 | 12.5x25 | 1210 |
| | | 10x20 | 790 | | | | |
| 2200 | | 12.5x25 | 1370 | 16x25 | 1640 | 16x32 | 1850 |
| | | | | | | 16x36 | 1950 |
| 3300 | | 16x25 | 1730 | 16x32 | 1960 | 18x36 | 2360 |
| | | | | 16x36 | 2070 | | |
| 4700 | | 16x32 | 1990 | 16x36 | 2260 | | |
| | | | | 18x36 | 2410 | | |
| 6800 | | 16x36 | 2330 | 18x40 | 2780 | 22x50 | 3490 |
| | | 18x36 | 2480 | | | | |
| 10000 | | 18x40 | 2820 | 22x50 | 3540 | 25x50 | 3930 |
| | | 20x40 | 2890 | | | | |
| 15000 | | 22x50 | 3620 | 22x50 | 3750 | | |
| 22000 | | 25x50 | 4080 | | | | |

RADIAL TYPE

● CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
 Max ripple current : mA(rms) 105°C 120Hz

| μF | V(DC) Item | 63 | | 100 | |
|------|---------------|---------|------|---------|------|
| | | DxL | R.C. | DxL | R.C. |
| 10 | | 5x11 | 55 | 5x11 | 60 |
| | | | | 6.3x11 | 65 |
| 22 | | 5x11 | 80 | 6.3x11 | 100 |
| 33 | | 6.3x11 | 110 | 8x11 | 140 |
| 47 | | 6.3x11 | 130 | 8x15 | 190 |
| | | | | 10x12.5 | 190 |
| 68 | | 8x11 | 180 | 10x12.5 | 230 |
| 100 | | 8x11 | 220 | 10x16 | 310 |
| | | 10x12.5 | 250 | 10x20 | 340 |
| 220 | | 10x16 | 410 | 12.5x20 | 570 |
| | | | | 12.5x25 | 630 |
| 330 | | 10x20 | 550 | 12.5x25 | 780 |
| 470 | | 12.5x20 | 750 | 16x25 | 950 |
| 1000 | | 16x25 | 1310 | 18x36 | 1630 |
| | | | | 18x40 | 1720 |
| 2200 | | 18x36 | 2080 | 22x50 | 2730 |
| 4700 | | 22x50 | 3220 | | |
| 6800 | | 25x50 | 3740 | | |

| μF | V(DC) Item | 160 | | 200 | | 250 | |
|------|---------------|---------|------|---------|------|---------|------|
| | | DxL | R.C. | DxL | R.C. | DxL | R.C. |
| 0.47 | | 6.3x11 | 12 | 6.3x11 | 13 | 6.3x11 | 14 |
| 1 | | 6.3x11 | 18 | 6.3x11 | 19 | 6.3x11 | 21 |
| 2.2 | | 6.3x11 | 26 | 6.3x11 | 28 | 6.3x11 | 31 |
| 3.3 | | 6.3x11 | 32 | 6.3x11 | 34 | 6.3x11 | 37 |
| | | | | | | 8x11 | 44 |
| 4.7 | | 6.3x11 | 38 | 6.3x11 | 41 | 8x11 | 50 |
| | | | | 8x11 | 48 | | |
| 10 | | 8x11 | 65 | 8x11 | 70 | 10x12.5 | 85 |
| | | | | 10x12.5 | 80 | 10x16 | 95 |
| 22 | | 10x12.5 | 110 | 10x16 | 130 | 10x20 | 150 |
| | | 10x16 | 120 | 10x20 | 140 | 12.5x20 | 170 |
| 33 | | 10x16 | 150 | 10x20 | 170 | 10x25 | 210 |
| | | 10x20 | 160 | 12.5x20 | 200 | 12.5x20 | 210 |
| 47 | | 10x20 | 190 | 12.5x20 | 240 | 12.5x20 | 260 |
| | | 12.5x20 | 220 | | | 12.5x25 | 280 |
| 68 | | 12.5x20 | 260 | 12.5x25 | 310 | 16x25 | 350 |
| 100 | | 12.5x25 | 350 | 16x25 | 390 | 16x25 | 420 |
| | | | | | | 16x32 | 440 |
| 220 | | 16x32 | 560 | 16x36 | 640 | 18x36 | 740 |
| | | 16x36 | 590 | 18x40 | 720 | | |
| 330 | | 18x36 | 770 | 18x40 | 880 | 20x40 | 980 |
| | | 18x40 | 820 | | | | |
| 470 | | 18x40 | 970 | 22x40 | 1130 | 22x50 | 1360 |
| | | 22x40 | 1050 | | | | |
| 1000 | | 25x50 | 1820 | | | | |

RADIAL TYPE

● CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
 Max ripple current : mA(rms) 105°C 120Hz

| μF | V(DC) Item | 350 | | 400 | | 450 | |
|------|---------------|---------|------|---------|------|---------|------|
| | | DxL | R.C. | DxL | R.C. | DxL | R.C. |
| 0.47 | | 8x11 | 14 | 8x11 | 15 | 10x12.5 | 15 |
| 1 | | 8x11 | 21 | 8x11 | 21 | 10x12.5 | 22 |
| 2.2 | | 8x11 | 31 | 8x11 | 32 | 8x11 | 29 |
| | | | | 10x12.5 | 35 | 10x20 | 39 |
| 3.3 | | 8x11 | 37 | 8x11 | 39 | 10x16 | 44 |
| | | 10x12.5 | 42 | 10x12.5 | 43 | 12.5x20 | 55 |
| 4.7 | | 8x11 | 45 | 8x11 | 46 | 10x16 | 50 |
| | | 10x12.5 | 50 | 10x16 | 55 | 12.5x20 | 65 |
| 10 | | 10x16 | 80 | 10x16 | 85 | 10x20 | 85 |
| | | 10x20 | 90 | 12.5x20 | 100 | 16x25 | 110 |
| 22 | | 12.5x20 | 150 | 12.5x25 | 170 | 12.5x25 | 160 |
| | | 12.5x25 | 170 | | | 16x32 | 170 |
| 33 | | 12.5x20 | 180 | 16x25 | 220 | 16x32 | 200 |
| | | 16x25 | 210 | 16x32 | 220 | 18x36 | 230 |
| 47 | | 16x25 | 250 | 16x25 | 270 | 16x36 | 260 |
| | | 16x36 | 270 | 18x36 | 300 | | |
| 68 | | 16x32 | 310 | 16x32 | 320 | 18x36 | 330 |
| 100 | | 18x36 | 430 | 18x36 | 440 | 18x40 | 420 |
| | | 18x40 | 450 | 20x40 | 480 | | |
| 220 | | 22x50 | 820 | 25x50 | 880 | 25x50 | 800 |
| 330 | | 25x50 | 1080 | | | | |