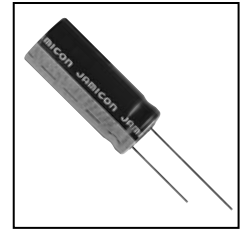


- High temperature 105°C and high reliability



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. at +105°C, the capacitor shall meet the following limits. | | | | | | | | | | | | | | |
| | 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) | | | | | | | | | | | | | | |

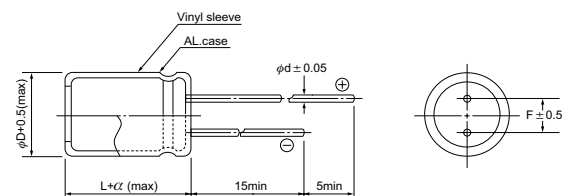
DIMENSIONS (mm)

| 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 | 1.5 | 1.5 | 1.5 | 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(Code) | | 6.3 (0J) | | 10 (1A) | | 16 (1C) | |
|-------|---------|------|----------|------|---------|------|---------|------|
| | Code | Item | DxL | R.C. | DxL | R.C. | DxL | R.C. |
| 47 | 470 | | | | | → | 5x11 | 75 |
| 100 | 101 | | 5x11 | 95 | 5x11 | 100 | 5x11 | 110 |
| 220 | 221 | | 5x11 | 140 | 5x11 | 150 | 6.3x11 | 190 |
| 330 | 331 | | 6.3x11 | 200 | 6.3x11 | 210 | 8x11.5 | 270 |
| 470 | 471 | | 6.3x11 | 230 | 6.3x11 | 260 | 8x11.5 | 320 |
| 1000 | 102 | | 8x11.5 | 400 | 10x12.5 | 460 | 10x16 | 550 |
| 2200 | 222 | | 10x16 | 660 | 10x20 | 790 | 12.5x20 | 910 |
| 3300 | 332 | | 10x20 | 860 | 12.5x20 | 990 | 12.5x25 | 1170 |
| 4700 | 472 | | 12.5x20 | 1040 | 12.5x25 | 1230 | 16x25 | 1310 |
| 6800 | 682 | | 12.5x25 | 1300 | 16x25 | 1390 | 16x31.5 | 1620 |
| 10000 | 103 | | 16x25 | 1450 | 16x35.5 | 1780 | 18x35.5 | 1970 |
| 15000 | 153 | | 16x35.5 | 1860 | 18x35.5 | 2060 | 20x40 | 2210 |
| 22000 | 223 | | 18x40 | 2250 | 20x40 | 2460 | 22x50 | 2940 |
| 33000 | 333 | | 22x50 | 2950 | 22x50 | 3020 | 25x50 | 3300 |

All blank voltage on sleeve marking is the same voltage as" → "point to.

| μF | V(Code) | | 25 (1E) | | 35 (1V) | | 50 (1H) | |
|-------|---------|------|---------|------|---------|------|---------|------|
| | Code | Item | DxL | R.C. | DxL | R.C. | DxL | R.C. |
| 0.1 | 0R1 | | | | | → | 5x11 | 5 |
| 0.22 | R22 | | | | | → | 5x11 | 7 |
| 0.33 | R33 | | | | | → | 5x11 | 8 |
| 0.47 | R47 | | | | | → | 5x11 | 10 |
| 1 | 010 | | | | | → | 5x11 | 15 |
| 2.2 | 2R2 | | | | | → | 5x11 | 22 |
| 3.3 | 3R3 | | | | | → | 5x11 | 27 |
| 4.7 | 4R7 | | | | | → | 5x11 | 32 |
| 10 | 100 | | 5x11 | 38 | 5x11 | 42 | 5x11 | 46 |
| 22 | 220 | | 5x11 | 55 | 5x11 | 65 | 5x11 | 70 |
| 33 | 330 | | 5x11 | 70 | 5x11 | 75 | 5x11 | 85 |
| 47 | 470 | | 5x11 | 80 | 5x11 | 90 | 6.3x11 | 110 |
| 100 | 101 | | 6.3x11 | 140 | 6.3x11 | 150 | 8x11.5 | 190 |
| 220 | 221 | | 8x11.5 | 240 | 8x11.5 | 260 | 10x12.5 | 300 |
| 330 | 331 | | 8x11.5 | 290 | 10x12.5 | 340 | 10x16 | 410 |
| 470 | 471 | | 10x12.5 | 360 | 10x16 | 450 | 10x20 | 540 |
| 1000 | 102 | | 10x20 | 650 | 12.5x20 | 770 | 12.5x25 | 930 |
| 2200 | 222 | | 12.5x25 | 1060 | 16x25 | 1180 | 16x35.5 | 1480 |
| 3300 | 332 | | 16x25 | 1240 | 16x35.5 | 1570 | 18x35.5 | 1790 |
| 4700 | 472 | | 16x31.5 | 1520 | 18x35.5 | 1840 | | |
| 6800 | 682 | | 18x35.5 | 1890 | | | | |
| 10000 | 103 | | 20x40 | 2270 | | | | |
| 15000 | 153 | | 22x50 | 2840 | | | | |
| 22000 | 223 | | 25x50 | 3210 | | | | |

● CASE SIZE & MAX RIPPLE CURRENT

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

| μF | V(Code) | | 63 (1J) | | 100 (2A) | |
|------|---------|------|---------|------|----------|------|
| | Code | Item | DxL | R.C. | DxL | R.C. |
| 0.1 | 0R1 | | | → | 5x11 | 5 |
| 0.22 | R22 | | | → | 5x11 | 8 |
| 0.33 | R33 | | | → | 5x11 | 9 |
| 0.47 | R47 | | | → | 5x11 | 11 |
| 1 | 010 | | | → | 5x11 | 16 |
| 2.2 | 2R2 | | | → | 5x11 | 24 |
| 3.3 | 3R3 | | | → | 5x11 | 30 |
| 4.7 | 4R7 | | | → | 5x11 | 35 |
| 10 | 100 | | 5x11 | 46 | 6.3x11 | 55 |
| 22 | 220 | | 5x11 | 70 | 6.3x11 | 85 |
| 33 | 330 | | 6.3x11 | 95 | 8x11.5 | 120 |
| 47 | 470 | | 6.3x11 | 110 | 10x12.5 | 160 |
| 100 | 101 | | 10x12.5 | 200 | 10x20 | 280 |
| 220 | 221 | | 10x16 | 340 | 12.5x25 | 490 |
| 330 | 331 | | 10x20 | 460 | 12.5x25 | 600 |
| 470 | 471 | | 12.5x20 | 580 | 16x25 | 720 |
| 1000 | 102 | | 16x25 | 940 | 18x40 | 1380 |
| 2200 | 222 | | | | 22x50 | 2260 |

All blank voltage on sleeve marking is the same voltage as" → "point to.

| μF | V(Code) | | 160 (2C) | | 200 (2D) | | 250 (2E) | |
|------|---------|------|----------|------|----------|------|----------|------|
| | Code | Item | DxL | R.C. | DxL | R.C. | DxL | R.C. |
| 0.47 | R47 | | 6.3x11 | 9 | 6.3x11 | 10 | 6.3x11 | 11 |
| 1 | 010 | | 6.3x11 | 14 | 6.3x11 | 15 | 6.3x11 | 16 |
| 2.2 | 2R2 | | 6.3x11 | 20 | 6.3x11 | 22 | 6.3x11 | 24 |
| 3.3 | 3R3 | | 6.3x11 | 25 | 6.3x11 | 26 | 8x11.5 | 34 |
| 4.7 | 4R7 | | 6.3x11 | 29 | 8x11.5 | 37 | 8x11.5 | 40 |
| 10 | 100 | | 8x11.5 | 50 | 10x12.5 | 55 | 10x16 | 70 |
| 22 | 220 | | 10x16 | 85 | 10x20 | 100 | 12.5x20 | 120 |
| 33 | 330 | | 10x20 | 120 | 12.5x20 | 130 | 12.5x20 | 150 |
| 47 | 470 | | 12.5x20 | 150 | 12.5x20 | 160 | 12.5x25 | 190 |
| 100 | 101 | | 12.5x25 | 240 | 16x25 | 260 | 16x31.5 | 310 |
| 220 | 221 | | 16x35.5 | 420 | 18x40 | 510 | | |
| 330 | 331 | | 18x40 | 580 | | | | |
| 470 | 471 | | 22x40 | 770 | | | | |
| 1000 | 102 | | 25x50 | 1330 | | | | |

| μF | V(Code) | | 350 (2V) | | 400 (2G) | | 450 (2W) | |
|------|---------|------|----------|------|----------|------|----------|------|
| | Code | Item | DxL | R.C. | DxL | R.C. | DxL | R.C. |
| 0.47 | R47 | | 8x11.5 | 11 | 8x11.5 | 11 | 10x12.5 | 11 |
| 1 | 010 | | 8x11.5 | 16 | 8x11.5 | 16 | 10x12.5 | 17 |
| 2.2 | 2R2 | | 8x11.5 | 24 | 10x12.5 | 26 | 10x20 | 30 |
| 3.3 | 3R3 | | 10x12.5 | 30 | 10x12.5 | 31 | 12.5x20 | 40 |
| 4.7 | 4R7 | | 10x12.5 | 36 | 10x16 | 42 | 12.5x20 | 47 |
| 10 | 100 | | 10x20 | 65 | 12.5x20 | 70 | 16x25 | 75 |
| 22 | 220 | | 12.5x25 | 110 | 12.5x25 | 120 | 16x31.5 | 130 |
| 33 | 330 | | 16x25 | 140 | 16x31.5 | 160 | 18x35.5 | 170 |
| 47 | 470 | | 16x35.5 | 190 | 18x35.5 | 210 | | |
| 100 | 101 | | 18x40 | 320 | 20x40 | 350 | | |
| 220 | 221 | | 22x50 | 580 | | | | |