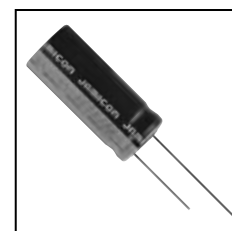


RADIAL TYPE

TK Series

Wide Temperature Range

- 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. 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) | | | | | | | | | | | | | | |

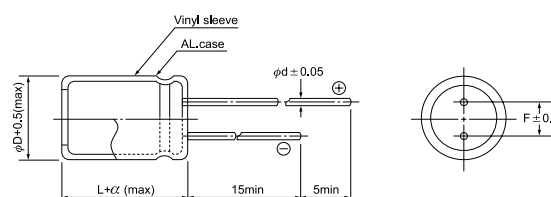
DIMENSIONS (mm)

| 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 | 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 | 90 |
| 100 | 101 | | 5x11 | 110 | 5x11 | 120 | 5x11 | 130 |
| 220 | 221 | | 5x11 | 160 | 5x11 | 180 | 6.3x11 | 220 |
| 330 | 331 | | 6.3x11 | 220 | 6.3x11 | 250 | 8x11.5 | 310 |
| 470 | 471 | | 6.3x11 | 270 | 6.3x11 | 290 | 8x11.5 | 370 |
| 1000 | 102 | | 8x11.5 | 460 | 10x12.5 | 530 | 10x16 | 630 |
| 2200 | 222 | | 10x16 | 760 | 10x20 | 910 | 12.5x20 | 1050 |
| 3300 | 332 | | 10x20 | 990 | 12.5x20 | 1140 | 12.5x25 | 1340 |
| 4700 | 472 | | 12.5x20 | 1200 | 12.5x25 | 1420 | 16x25 | 1510 |
| 6800 | 682 | | 12.5x25 | 1500 | 16x25 | 1600 | 16x31.5 | 1860 |
| 10000 | 103 | | 16x25 | 1660 | 16x35.5 | 2040 | 18x35.5 | 2270 |
| 15000 | 153 | | 16x35.5 | 2140 | 18x35.5 | 2370 | 20x40 | 2550 |
| 22000 | 223 | | 18x40 | 2590 | 20x40 | 2830 | 22x50 | 3380 |
| 33000 | 333 | | 22x50 | 3390 | 22x50 | 3470 | 25x50 | 3790 |

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 | 8 |
| 0.33 | R33 | | | | | → | 5x11 | 10 |
| 0.47 | R47 | | | | | → | 5x11 | 12 |
| 1 | 010 | | | | | → | 5x11 | 17 |
| 2.2 | 2R2 | | | | | → | 5x11 | 25 |
| 3.3 | 3R3 | | | | | → | 5x11 | 31 |
| 4.7 | 4R7 | | | | | → | 5x11 | 36 |
| 10 | 100 | | 5x11 | 43 | 5x11 | 49 | 5x11 | 55 |
| 22 | 220 | | 5x11 | 65 | 5x11 | 70 | 5x11 | 80 |
| 33 | 330 | | 5x11 | 80 | 5x11 | 90 | 5x11 | 95 |
| 47 | 470 | | 5x11 | 95 | 5x11 | 110 | 6.3x11 | 130 |
| 100 | 101 | | 6.3x11 | 160 | 6.3x11 | 170 | 8x11.5 | 220 |
| 220 | 221 | | 8x11.5 | 270 | 8x11.5 | 300 | 10x12.5 | 350 |
| 330 | 331 | | 8x11.5 | 330 | 10x12.5 | 390 | 10x16 | 480 |
| 470 | 471 | | 10x12.5 | 420 | 10x16 | 520 | 10x20 | 630 |
| 1000 | 102 | | 10x20 | 740 | 12.5x20 | 890 | 12.5x25 | 1070 |
| 2200 | 222 | | 12.5x25 | 1220 | 16x25 | 1350 | 16x35.5 | 1700 |
| 3300 | 332 | | 16x25 | 1420 | 16x35.5 | 1810 | 18x35.5 | 2060 |
| 4700 | 472 | | 16x31.5 | 1740 | 18x35.5 | 2110 | | |
| 6800 | 682 | | 18x35.5 | 2170 | | | | |
| 10000 | 103 | | 20x40 | 2610 | | | | |
| 15000 | 153 | | 22x50 | 3270 | | | | |
| 22000 | 223 | | 25x50 | 3690 | | | | |

● 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 | 6 |
| 0.22 | R22 | | | → | 5x11 | 9 |
| 0.33 | R33 | | | → | 5x11 | 11 |
| 0.47 | R47 | | | → | 5x11 | 13 |
| 1 | 010 | | | → | 5x11 | 19 |
| 2.2 | 2R2 | | | → | 5x11 | 28 |
| 3.3 | 3R3 | | | → | 5x11 | 34 |
| 4.7 | 4R7 | | | → | 5x11 | 41 |
| 10 | 100 | | 5x11 | 55 | 6.3x11 | 65 |
| 22 | 220 | | 5x11 | 80 | 6.3x11 | 100 |
| 33 | 330 | | 6.3x11 | 110 | 8x11.5 | 140 |
| 47 | 470 | | 6.3x11 | 130 | 10x12.5 | 180 |
| 100 | 101 | | 10x12.5 | 240 | 10x20 | 320 |
| 220 | 221 | | 10x16 | 390 | 12.5x25 | 560 |
| 330 | 331 | | 10x20 | 520 | 12.5x25 | 690 |
| 470 | 471 | | 12.5x20 | 670 | 16x25 | 830 |
| 1000 | 102 | | 16x25 | 1080 | 18x40 | 1580 |
| 2200 | 222 | | | | 22x50 | 2590 |

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 | 12 | 6.3x11 | 13 | 6.3x11 | 14 |
| 1 | 010 | | 6.3x11 | 18 | 6.3x11 | 19 | 6.3x11 | 21 |
| 2.2 | 2R2 | | 6.3x11 | 26 | 6.3x11 | 28 | 6.3x11 | 31 |
| 3.3 | 3R3 | | 6.3x11 | 32 | 6.3x11 | 34 | 8x11.5 | 44 |
| 4.7 | 4R7 | | 6.3x11 | 38 | 8x11.5 | 48 | 8x11.5 | 50 |
| 10 | 100 | | 8x11.5 | 65 | 10x12.5 | 75 | 10x16 | 90 |
| 22 | 220 | | 10x16 | 110 | 10x20 | 130 | 12.5x20 | 160 |
| 33 | 330 | | 10x20 | 150 | 12.5x20 | 180 | 12.5x20 | 190 |
| 47 | 470 | | 12.5x20 | 190 | 12.5x20 | 210 | 12.5x25 | 250 |
| 100 | 101 | | 12.5x25 | 310 | 16x25 | 340 | 16x31.5 | 410 |
| 220 | 221 | | 16x35.5 | 540 | 18x40 | 660 | | |
| 330 | 331 | | 18x40 | 750 | | | | |
| 470 | 471 | | 22x40 | 1000 | | | | |
| 1000 | 102 | | 25x50 | 1730 | | | | |

| 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 | 14 | 8x11.5 | 15 | 10x12.5 | 15 |
| 1 | 010 | | 8x11.5 | 21 | 8x11.5 | 21 | 10x12.5 | 22 |
| 2.2 | 2R2 | | 8x11.5 | 31 | 10x12.5 | 33 | 10x20 | 39 |
| 3.3 | 3R3 | | 10x12.5 | 39 | 10x12.5 | 41 | 12.5x20 | 50 |
| 4.7 | 4R7 | | 10x12.5 | 47 | 10x16 | 55 | 12.5x20 | 60 |
| 10 | 100 | | 10x20 | 85 | 12.5x20 | 90 | 16x25 | 100 |
| 22 | 220 | | 12.5x25 | 150 | 12.5x25 | 150 | 16x31.5 | 160 |
| 33 | 330 | | 16x25 | 180 | 16x31.5 | 210 | 18x35.5 | 230 |
| 47 | 470 | | 16x35.5 | 250 | 18x35.5 | 280 | | |
| 100 | 101 | | 18x40 | 410 | 20x40 | 450 | | |
| 220 | 221 | | 22x50 | 760 | | | | |