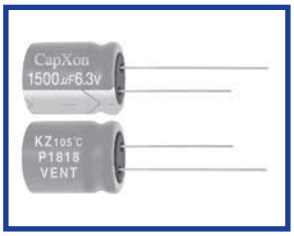
# KZ Series Low Impedance




## Features

- ◆ Used in communication equipments, switching power supply, industrial measuring instruments, etc.
- ◆ Endurance 1000~2000hrs.
- ◆ Safety vent construction design.
- ◆ RoHS Compliant

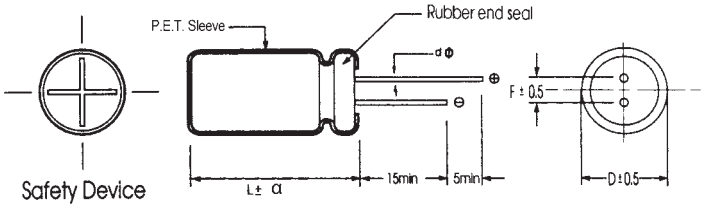
## Specifications

| Item | Performance Characteristics |
|---|---|
| Operating Temperature Range | -40 to +105℃ |
| Rated Voltage Range | 6.3 to 50 VDC |
| Capacitance Range | 0.47 to 6800 μF |
| Capacitance Tolerance | ±20%(120Hz,+20℃) |
| Leakage Current (+20℃,max.) | I≦0.01 CV or 3 (μA) After 2 minutes whichever is greater measured with rated working voltage applied. |
| Dissipation Factor (tan δ ，at 20℃，120Hz) | Working Voltage(VDC): 6.3 / 10 / 16 / 25 / 35 / 50<br>D.F. (%)max.: 18 / 16 / 14 / 12 / 10 / 9<br>For capacitance ＞1000 μF, add 2% per another 1000uF. |
| Low Temperature Characteristics (at 120Hz) | Impedance ratio max<br>Working Voltage(VDC): 6.3 / 10 / 16 / 25 / 35 / 50<br>Z-25℃／Z+20℃: 4 / 3 / 3 / 3 / 3 / 3<br>Z-40℃／Z+20℃: 8 / 6 / 4 / 3 / 3 / 3<br>For capacitance ＞1000 μF, add 0.5 per another 1000uF for -25℃ / +20℃<br>add 1 per another 1000uF for -40℃ / +20℃ |
| Endurance | Test conditions<br>Duration time : as right<br>Ambient temperature : +105℃<br>Applied voltage : Rated DC working voltage<br>Dφ / Life hours: 5-6.3φ / 1000; ≧8φ / 2000<br>After test requirement at +20℃<br>Capacitance change : ≦ ±20% of the initial measured value<br>Dissipation factor : ≦ 200% of the initial specified value<br>Leakage current : ≦ The initial specified value |
| Shelf Life | Test conditions<br>Duration time : 1000Hrs<br>Ambient temperature : +105℃<br>Applied voltage : None<br>After test requirement at +20℃: Same limits as Endurance.<br>Pre-treatment for measurements shall be conducted after application of DC working voltage for 30 minutes. |

## Multiplier for Ripple Current vs. Frequency

| CAP(μF)／Frequency(Hz) | 50(60) | 120 | 400 | 1K | 10K | 50K~100K |
|---|---|---|---|---|---|---|
| CAP≦10 | 0.47 | 0.59 | 0.76 | 0.85 | 0.97 | 1.0 |
| 10＜CAP≦100 | 0.52 | 0.65 | 0.80 | 0.89 | 0.97 | 1.0 |
| 100＜CAP≦1000 | 0.58 | 0.72 | 0.84 | 0.90 | 0.98 | 1.0 |
| 1000＜CAP | 0.63 | 0.78 | 0.87 | 0.91 | 0.98 | 1.0 |

## Diagram of Dimensions:(unit:mm)




| Dφ | 5 | 6.3 | 8 | | 10 | 13 | 16 | 18 |
|---|---|---|---|---|---|---|---|---|
| F | 2.0 | 2.5 | 3.5 | | 5.0 | 5.0 | 7.5 | 7.5 |
| dφ | 0.5 | | L＜20: 0.5 | L≧20: 0.6 | 0.6 | | 0.8 | |

| α | D＜16 | D=16 | | D=18 | | D＞18 |
|---|---|---|---|---|---|---|
| | | L:25~35.5 | L＜25 and L≧40 | L:25~31.5 | L＜25 and L≧35.5 | |
| | 1.5 | 1.5 | 2.0 | 1.5 | 2.0 | 2.0 |

Radial

## Case Size

| WV (Vdc) | Cap (uF) | Size (mm) | Ripple current (mArms/105℃ /100KHz) | Max ESR( Ω) at 20℃/100KHz |
|---|---|---|---|---|
| 6.3 | 22 | 5x11 | 80 | 3.00 |
| 6.3 | 33 | 5x11 | 90 | 2.00 |
| 6.3 | 47 | 5x11 | 140 | 1.50 |
| 6.3 | 56 | 5x11 | 150 | 1.50 |
| 6.3 | 68 | 5x11 | 160 | 1.10 |
| 6.3 | 100 | 5x11 | 170 | 1.00 |
| 6.3 | 120 | 5x11 | 173 | 0.90 |
| 6.3 | 150 | 5x11 | 178 | 0.85 |
| 6.3 | 180 | 6.3x11 | 215 | 0.72 |
| 6.3 | 220 | 6.3x11 | 295 | 0.62 |
| 6.3 | 270 | 6.3x11 | 320 | 0.50 |
| 6.3 | 330 | 6.3x11 | 380 | 0.45 |
| 6.3 | 470 | 8x11.5 | 460 | 0.22 |
| 6.3 | 560 | 8x11.5 | 490 | 0.22 |
| 6.3 | 680 | 8x11.5 | 520 | 0.19 |
| 6.3 | 820 | 8x11.5 | 605 | 0.19 |
| 6.3 | 1000 | 8x11.5 | 680 | 0.18 |
| 6.3 | 1200 | 10x12.5 | 750 | 0.15 |
| 6.3 | 1500 | 10x12.5 | 820 | 0.14 |
| 6.3 | 1800 | 10x16 | 920 | 0.12 |
| 6.3 | 2200 | 10x20 | 1150 | 0.10 |
| 6.3 | 2700 | 10x20 | 1500 | 0.075 |
| 6.3 | 3300 | 10x20 | 1620 | 0.060 |
| 6.3 | 3900 | 13x25 | 1820 | 0.058 |
| 6.3 | 4700 | 13x25 | 1920 | 0.040 |
| 6.3 | 5600 | 13x30 | 2210 | 0.038 |
| 6.3 | 6800 | 16x25 | 2380 | 0.032 |
| 10 | 22 | 5x11 | 90 | 2.50 |
| 10 | 33 | 5x11 | 105 | 2.00 |
| 10 | 47 | 5x11 | 155 | 1.30 |
| 10 | 56 | 5x11 | 165 | 1.20 |
| 10 | 68 | 5x11 | 175 | 1.00 |
| 10 | 100 | 5x11 | 215 | 0.75 |
| 10 | 120 | 6.3x11 | 240 | 0.73 |
| 10 | 150 | 6.3x11 | 225 | 0.60 |
| 10 | 180 | 6.3x11 | 280 | 0.58 |
| 10 | 220 | 6.3x11 | 300 | 0.43 |
| 10 | 270 | 8x11.5 | 405 | 0.28 |
| 10 | 330 | 8x11.5 | 465 | 0.25 |
| 10 | 470 | 8x11.5 | 500 | 0.22 |
| 10 | 560 | 8x11.5 | 620 | 0.17 |
| 10 | 680 | 8x11.5 | 750 | 0.12 |
| 10 | 820 | 10x12.5 | 805 | 0.10 |
| 10 | 1000 | 10x12.5 | 1050 | 0.08 |
| 10 | 1200 | 10x16 | 1150 | 0.065 |
| 10 | 1500 | 10x16 | 1210 | 0.062 |
| 10 | 1800 | 10x20 | 1280 | 0.060 |
| 10 | 2200 | 10x20 | 1520 | 0.050 |
| 10 | 2700 | 13x20 | 1580 | 0.048 |
| 10 | 3300 | 13x20 | 1700 | 0.043 |
| 10 | 3900 | 13x25 | 1860 | 0.040 |
| 10 | 4700 | 13x25 | 1950 | 0.038 |
| 10 | 5600 | 16x25 | 2290 | 0.033 |
| 10 | 6800 | 16x25 | 2480 | 0.028 |
| 16 | 10 | 5x11 | 80 | 4.00 |
| 16 | 22 | 5x11 | 110 | 2.00 |
| 16 | 33 | 5x11 | 114 | 1.80 |
| 16 | 47 | 5x11 | 160 | 1.00 |
| 16 | 56 | 5x11 | 180 | 0.80 |

| WV (Vdc) | Cap (uF) | Size (mm) | Ripple current (mArms/105℃ /100KHz) | Max ESR( Ω) at 20℃/100KHz |
|---|---|---|---|---|
| 16 | 68 | 5x11 | 200 | 0.65 |
| 16 | 100 | 5x11 | 255 | 0.55 |
| 16 | 120 | 6.3x11 | 270 | 0.45 |
| 16 | 150 | 6.3x11 | 292 | 0.40 |
| 16 | 180 | 6.3x11 | 380 | 0.32 |
| 16 | 220 | 6.3x11 | 430 | 0.25 |
| 16 | 270 | 8x11.5 | 480 | 0.20 |
| 16 | 330 | 8x11.5 | 595 | 0.15 |
| 16 | 470 | 8x11.5 | 650 | 0.15 |
| 16 | 560 | 8x11.5 | 730 | 0.12 |
| 16 | 680 | 10x12.5 | 890 | 0.09 |
| 16 | 820 | 10x12.5 | 980 | 0.085 |
| 16 | 1000 | 10x16 | 1180 | 0.070 |
| 16 | 1200 | 10x20 | 1320 | 0.060 |
| 16 | 1500 | 10x20 | 1450 | 0.056 |
| 16 | 1800 | 10x20 | 1510 | 0.053 |
| 16 | 2200 | 13x20 | 1820 | 0.040 |
| 16 | 2700 | 13x20 | 2050 | 0.035 |
| 16 | 3300 | 13x25 | 2300 | 0.033 |
| 16 | 3900 | 16x25 | 2550 | 0.033 |
| 16 | 4700 | 16x25 | 2580 | 0.032 |
| 16 | 5600 | 16x31.5 | 2650 | 0.030 |
| 16 | 6800 | 16x31.5 | 2900 | 0.024 |
| 25 | 4.7 | 5x11 | 72 | 3.50 |
| 25 | 5.6 | 5x11 | 75 | 3.50 |
| 25 | 6.8 | 5x11 | 83 | 2.80 |
| 25 | 10 | 5x11 | 87 | 2.50 |
| 25 | 22 | 5x11 | 118 | 1.80 |
| 25 | 33 | 5x11 | 155 | 1.40 |
| 25 | 47 | 5x11 | 183 | 0.90 |
| 25 | 56 | 5x11 | 207 | 0.83 |
| 25 | 68 | 5x11 | 210 | 0.69 |
| 25 | 100 | 6.3x11 | 378 | 0.34 |
| 25 | 120 | 6.3x11 | 380 | 0.33 |
| 25 | 150 | 8x11.5 | 390 | 0.325 |
| 25 | 180 | 8x11.5 | 430 | 0.25 |
| 25 | 220 | 8x11.5 | 550 | 0.15 |
| 25 | 270 | 8x11.5 | 520 | 0.15 |
| 25 | 330 | 8x11.5 | 710 | 0.13 |
| 25 | 470 | 8x11.5 | 980 | 0.078 |
| 25 | 470 | 8x16 | 1050 | 0.070 |
| 25 | 560 | 10x16 | 1080 | 0.065 |
| 25 | 680 | 10x16 | 1100 | 0.065 |
| 25 | 820 | 10x20 | 1350 | 0.050 |
| 25 | 1000 | 10x20 | 1580 | 0.045 |
| 25 | 1200 | 13x20 | 1720 | 0.040 |
| 25 | 1500 | 13x20 | 1780 | 0.040 |
| 25 | 1800 | 13x20 | 1980 | 0.035 |
| 25 | 2200 | 13x25 | 2000 | 0.033 |
| 25 | 2700 | 13x25 | 2250 | 0.032 |
| 25 | 3300 | 16x25 | 2580 | 0.027 |
| 25 | 4700 | 16x31.5 | 2850 | 0.025 |
| 25 | 5600 | 16x35.5 | 3000 | 0.025 |
| 25 | 6800 | 18x35.5 | 3550 | 0.025 |
| 35 | 4.7 | 5x11 | 87 | 3.50 |
| 35 | 5.6 | 5x11 | 95 | 3.00 |
| 35 | 6.8 | 5x11 | 98 | 2.70 |
| 35 | 10 | 5x11 | 107 | 2.20 |
| 35 | 22 | 5x11 | 150 | 1.50 |

| WV (Vdc) | Cap (uF) | Size (mm) | Ripple current (mArms/105℃ /100KHz) | Max ESR( Ω) at 20℃/100KHz |
|---|---|---|---|---|
| 35 | 33 | 5x11 | 180 | 1.20 |
| 35 | 47 | 5x11 | 257 | 0.75 |
| 35 | 56 | 6.3x11 | 283 | 0.60 |
| 35 | 68 | 6.3x11 | 290 | 0.55 |
| 35 | 100 | 6.3x11 | 430 | 0.26 |
| 35 | 120 | 8x11.5 | 470 | 0.20 |
| 35 | 150 | 8x11.5 | 510 | 0.20 |
| 35 | 180 | 8x11.5 | 570 | 0.18 |
| 35 | 220 | 8x11.5 | 620 | 0.13 |
| 35 | 270 | 10x12.5 | 850 | 0.12 |
| 35 | 330 | 8x16 | 1050 | 0.08 |
| 35 | 470 | 10x16 | 1100 | 0.065 |
| 35 | 560 | 13x20 | 1300 | 0.060 |
| 35 | 680 | 13x20 | 1570 | 0.056 |
| 35 | 820 | 13x20 | 1700 | 0.048 |
| 35 | 1000 | 13x20 | 1820 | 0.042 |
| 35 | 1200 | 13x25 | 2130 | 0.038 |
| 35 | 1500 | 13x25 | 2150 | 0.038 |
| 35 | 1800 | 13x25 | 2450 | 0.035 |
| 35 | 2200 | 16x25 | 2650 | 0.034 |
| 35 | 2700 | 16x31.5 | 2690 | 0.030 |
| 35 | 3300 | 16x35.5 | 2750 | 0.027 |
| 35 | 4700 | 18x35.5 | 2940 | 0.025 |
| 35 | 5600 | 18x35.5 | 3050 | 0.024 |
| 50 | 0.47 | 5x11 | 28 | 5.00 |
| 50 | 1 | 5x11 | 42 | 3.80 |
| 50 | 2.2 | 5x11 | 55 | 2.80 |
| 50 | 3.3 | 5x11 | 62 | 2.00 |

| WV (Vdc) | Cap (uF) | Size (mm) | Ripple current (mArms/105℃ /100KHz) | Max ESR( Ω) at 20℃/100KHz |
|---|---|---|---|---|
| 50 | 4.7 | 5x11 | 90 | 2.00 |
| 50 | 5.6 | 5x11 | 108 | 1.80 |
| 50 | 6.8 | 5x11 | 112 | 1.80 |
| 50 | 10 | 5x11 | 120 | 1.75 |
| 50 | 22 | 5x11 | 150 | 1.50 |
| 50 | 33 | 6.3x11 | 233 | 0.78 |
| 50 | 47 | 6.3x11 | 270 | 0.65 |
| 50 | 56 | 6.3x11 | 290 | 0.60 |
| 50 | 68 | 6.3x11 | 310 | 0.50 |
| 50 | 100 | 8x11.5 | 480 | 0.17 |
| 50 | 120 | 10x12.5 | 500 | 0.164 |
| 50 | 150 | 10x12.5 | 560 | 0.16 |
| 50 | 180 | 10x12.5 | 580 | 0.14 |
| 50 | 220 | 10x16 | 640 | 0.09 |
| 50 | 270 | 10x16 | 905 | 0.08 |
| 50 | 330 | 10x16 | 1050 | 0.07 |
| 50 | 470 | 13x20 | 1450 | 0.05 |
| 50 | 560 | 13x20 | 1510 | 0.05 |
| 50 | 680 | 13x20 | 1750 | 0.05 |
| 50 | 820 | 13x25 | 1980 | 0.04 |
| 50 | 1000 | 13x25 | 2000 | 0.04 |
| 50 | 1200 | 16x25 | 2200 | 0.038 |
| 50 | 1500 | 16x25 | 2300 | 0.038 |
| 50 | 1800 | 16x31.5 | 2610 | 0.036 |
| 50 | 2200 | 16x31.5 | 2900 | 0.033 |
| 50 | 2700 | 18x35.5 | 3000 | 0.028 |
| 50 | 3300 | 18x35.5 | 3050 | 0.026 |