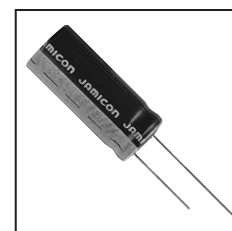


- Features : Low Impedance, high ripple current long life
- Recommended Applications : Used switching regulator applications in computers. Especially for high frequency.
- Corresponding product to RoHS

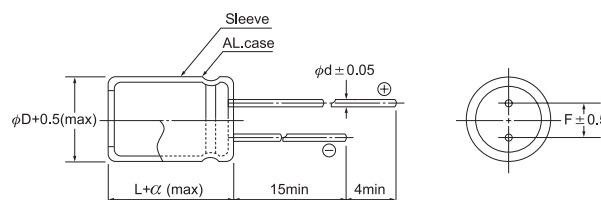


● SPECIFICATION

| Item | Characteristic | | | | | | | | | | |
|---|--|-----------------------------------|------|------------|------|----------------------------|-----------|------|----------|--|--|
| Operation Temperature Range | -40 ~ +105°C | | | | | | | | | | |
| Rated Working Voltage | 6.3 ~ 100VDC | | | | | | | | | | |
| Capacitance Tolerance (120Hz 20°C) | ±20% (M) | | | | | | | | | | |
| Leakage Current (20°C) | I ≤ 0.01CV or 3(μA) | | | | | I : Leakage Current (μA) | | | | | |
| | Whichever is greater after 2 minutes | | | | | C : Rated Capacitance (μF) | | | | | |
| | | | | | | V : Working Voltage (V) | | | | | |
| Surge Voltage (20°C) | W.V. | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | | |
| | S.V. | 8 | 13 | 20 | 32 | 44 | 63 | 79 | 125 | | |
| 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 | | |
| | tan δ | 0.22 | 0.19 | 0.16 | 0.14 | 0.12 | 0.10 | 0.09 | 0.08 | | |
| Low Temperature Stability | Impedance ratio at 120Hz | | | | | | | | | | |
| | Rated Voltage (V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 | | |
| | -25°C / +20°C | 4 | 3 | 2 | 2 | 2 | 2 | 2 | 2 | | |
| | -40°C / +20°C | 8 | 6 | 4 | 3 | 3 | 3 | 3 | 3 | | |
| Load Life | After 3000~6000 hours application of W.V. at +105°C, the capacitor shall meet the following limits. (DC + ripple peak voltage ≤ rate working voltage) | | | | | | | | | | |
| | Dφ | 5~6.3φ | | 8~10φx12.5 | | | 10x15~12φ | | 12.5~18φ | | |
| | Life (hours) | 3000hrs | | 4000hrs | | | 5000hrs | | 6000hrs | | |
| | Capacitance Change | ≤ ±25% of initial value | | | | | | | | | |
| | 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 | 13 | 16 | 18 |
|----|-----|-----|-----|-----|-----|-----|-----|
| F | 2.0 | 2.5 | 3.5 | 5.0 | 5.0 | 7.5 | 7.5 |
| d | 0.5 | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| α | 1.5 | 1.5 | 1.5 | 1.5 | 2.0 | 2.0 | 2.0 |



● RIPPLE CURRENT COEFFICIENTS

| Temperature(°C) | ≤50 | 70 | 85 | 105 |
|-----------------|------|------|------|------|
| Coefficient | 1.90 | 1.75 | 1.40 | 1.00 |

| Frequency(Hz) | 120 | 1k | 10k | 100k |
|---------------|------|------|------|------|
| 10~180μF | 0.40 | 0.75 | 0.90 | 1.00 |
| 220~560μF | 0.50 | 0.85 | 0.94 | 1.00 |
| 680~1800μF | 0.60 | 0.87 | 0.95 | 1.00 |
| 2200~3900μF | 0.75 | 0.90 | 0.95 | 1.00 |
| ≥4700μF | 0.85 | 0.95 | 0.98 | 1.00 |

● CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
 Max impedance : Ω 20°C 100kHz
 Max ripple current : mA(rms) 105°C 100kHz

| μF | V(DC) Item | 6.3 | | | 10 | | | 16 | | |
|-------|---------------|---------|-------|------|---------|-------|------|---------|-------|------|
| | | DxL | IMP. | R.C. | DxL | IMP. | R.C. | DxL | IMP. | R.C. |
| 100 | | | | | 5x11 | 0.580 | 210 | 5x11 | 0.580 | 210 |
| | | | | | | | | 6.3x11 | 0.230 | 250 |
| 120 | | | | | | | | 6.3x11 | 0.220 | 340 |
| 150 | | 5x11 | 0.580 | 210 | | | | | | |
| 220 | | | | | 6.3x11 | 0.220 | 340 | 6.3x11 | 0.185 | 469 |
| | | | | | | | | 8x11 | 0.150 | 582 |
| 330 | | 6.3x11 | 0.220 | 340 | | | | 8x11 | 0.130 | 640 |
| 470 | | 6.3x11 | 0.160 | 510 | 8x11 | 0.130 | 640 | 8x15 | 0.087 | 840 |
| | | | | | | | | 8x20 | 0.078 | 950 |
| | | | | | | | | 10x12.5 | 0.080 | 865 |
| | | | | | | | | 10x16 | 0.060 | 1210 |
| 680 | | 8x11 | 0.130 | 640 | 8x15 | 0.087 | 840 | 8x20 | 0.069 | 1050 |
| | | | | | | | | 10x16 | 0.060 | 1210 |
| 820 | | 10x12.5 | 0.080 | 865 | 10x12.5 | 0.080 | 865 | | | |
| 1000 | | 8x15 | 0.087 | 840 | 8x20 | 0.069 | 1050 | 8x20 | 0.069 | 1050 |
| | | | | | 10x16 | 0.060 | 1210 | 10x16 | 0.060 | 1210 |
| | | | | | | | | 10x20 | 0.046 | 1400 |
| | | | | | | | | 12.5x16 | 0.049 | 1450 |
| 1200 | | 8x20 | 0.069 | 1050 | 10x20 | 0.046 | 1400 | 10x25 | 0.042 | 1650 |
| | | 10x16 | 0.060 | 1210 | | | | | | |
| 1500 | | 8x20 | 0.069 | 1050 | 10x25 | 0.042 | 1650 | 10x30 | 0.031 | 1910 |
| | | 10x16 | 0.060 | 1210 | 12.5x16 | 0.049 | 1450 | 12.5x20 | 0.035 | 1900 |
| | | 10x20 | 0.046 | 1400 | | | | 16x16 | 0.042 | 1940 |
| 1800 | | 12.5x16 | 0.049 | 1450 | | | | | | |
| 2200 | | 10x20 | 0.046 | 1400 | 10x30 | 0.031 | 1910 | 12.5x25 | 0.027 | 2230 |
| | | 10x25 | 0.042 | 1650 | 12.5x20 | 0.042 | 1900 | 18x16 | 0.043 | 2210 |
| | | | | | 16x16 | 0.042 | 1940 | | | |
| 2700 | | 10x30 | 0.031 | 1910 | 18x16 | 0.043 | 2210 | 12.5x30 | 0.024 | 2650 |
| | | 16x16 | 0.042 | 1940 | | | | 16x20 | 0.027 | 2530 |
| 3300 | | 10x25 | 0.042 | 1650 | 10x30 | 0.031 | 1910 | 12.5x35 | 0.020 | 2880 |
| | | 12.5x20 | 0.035 | 1900 | 12.5x25 | 0.027 | 2230 | | | |
| 3900 | | 12.5x25 | 0.027 | 2230 | 12.5x30 | 0.024 | 2650 | 12.5x40 | 0.017 | 3350 |
| | | 18x16 | 0.043 | 2210 | 16x20 | 0.027 | 2530 | 16x25 | 0.021 | 2930 |
| | | | | | | | | 18x20 | 0.026 | 2860 |
| 4700 | | 12.5x30 | 0.024 | 2650 | 12.5x35 | 0.020 | 2880 | 16x32 | 0.017 | 3450 |
| | | | | | | | | 18x25 | 0.019 | 3140 |
| 5600 | | 12.5x35 | 0.020 | 2880 | 12.5x40 | 0.017 | 3350 | 16x36 | 0.015 | 3610 |
| | | 16x20 | 0.027 | 2530 | 16x25 | 0.021 | 2930 | 18x32 | 0.015 | 4170 |
| | | | | | 18x20 | 0.026 | 2860 | | | |
| 6800 | | 12.5x40 | 0.017 | 3350 | 16x32 | 0.017 | 3450 | 16x40 | 0.013 | 4080 |
| | | 16x25 | 0.021 | 2930 | 18x25 | 0.019 | 3140 | | | |
| | | 18x20 | 0.026 | 2860 | | | | | | |
| 8200 | | 16x32 | 0.017 | 3450 | 16x36 | 0.015 | 3610 | 18x36 | 0.014 | 4220 |
| | | | | | 18x32 | 0.015 | 4170 | | | |
| 10000 | | 16x36 | 0.015 | 3610 | 16x40 | 0.013 | 4080 | 18x40 | 0.012 | 4280 |
| | | 18x25 | 0.017 | 3140 | 18x36 | 0.014 | 4220 | | | |
| 12000 | | 18x32 | 0.015 | 4170 | 18x40 | 0.012 | 4280 | | | |
| 15000 | | 18x36 | 0.014 | 4220 | | | | | | |

RADIAL TYPE

● CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
 Max impedance : Ω 20°C 100kHz
 Max ripple current : mA(rms) 105°C 100kHz

| μF | V(DC) Item | 25 | | | 35 | | | 50 | | |
|------|---------------|---------|-------|------|---------|-------|------|---------|-------|------|
| | | DxL | IMP. | R.C. | DxL | IMP. | R.C. | DxL | IMP. | R.C. |
| 10 | | | | | | | | 5x11 | 1.200 | 135 |
| 22 | | | | | | | | 5x11 | 0.700 | 180 |
| 33 | | | | | 5x11 | 0.580 | 210 | 6.3x11 | 0.490 | 245 |
| 47 | | 5x11 | 0.580 | 210 | 6.3x11 | 0.390 | 275 | 6.3x11 | 0.520 | 300 |
| 56 | | | | | 6.3x11 | 0.220 | 340 | 6.3x11 | 0.300 | 295 |
| 68 | | | | | 6.3x11 | 0.170 | 500 | | | |
| 82 | | | | | 6.3x11 | 0.160 | 540 | | | |
| 100 | | 6.3x11 | 0.220 | 340 | 8x11 | 0.150 | 580 | 8x11 | 0.170 | 555 |
| 120 | | | | | | | | 8x15 | 0.120 | 730 |
| 150 | | 8x11 | 0.160 | 640 | 8x11 | 0.130 | 640 | 10x12.5 | 0.120 | 760 |
| 180 | | | | | | | | 8x20 | 0.091 | 910 |
| 220 | | 8x11 | 0.130 | 640 | 8x15 | 0.087 | 840 | 10x16 | 0.084 | 1050 |
| | | | | | 10x12.5 | 0.080 | 865 | | | |
| 270 | | | | | 8x20 | 0.069 | 1050 | 10x20 | 0.060 | 1220 |
| | | | | | | | | 12.5x16 | 0.061 | 1260 |
| 330 | | 8x15 | 0.087 | 840 | 10x16 | 0.060 | 1210 | 10x20 | 0.058 | 1400 |
| | | 10x12.5 | 0.080 | 865 | 10x20 | 0.046 | 1400 | 10x25 | 0.055 | 1440 |
| 470 | | 8x20 | 0.069 | 1050 | 10x20 | 0.046 | 1400 | 10x30 | 0.043 | 1690 |
| | | 10x12.5 | 0.070 | 1050 | 12.5x16 | 0.049 | 1450 | 12.5x20 | 0.045 | 1660 |
| | | 10x16 | 0.060 | 1210 | | | | 16x16 | 0.055 | 1690 |
| 560 | | | | | 10x25 | 0.042 | 1650 | 12.5x25 | 0.034 | 1950 |
| | | | | | | | | 18x16 | 0.054 | 1930 |
| 680 | | 10x20 | 0.046 | 1400 | 10x30 | 0.031 | 1910 | 12.5x30 | 0.030 | 2310 |
| | | 12.5x16 | 0.049 | 1450 | 12.5x20 | 0.035 | 1900 | | | |
| | | | | | 16x16 | 0.042 | 1940 | | | |
| 820 | | 10x25 | 0.042 | 1650 | 12.5x20 | 0.035 | 1900 | 12.5x35 | 0.025 | 2510 |
| | | | | | | | | 16x20 | 0.034 | 2210 |
| 1000 | | 10x30 | 0.031 | 1910 | 12.5x25 | 0.027 | 2230 | 12.5x40 | 0.021 | 2920 |
| | | 12.5x20 | 0.035 | 1900 | 18x16 | 0.043 | 2210 | 16x25 | 0.025 | 2555 |
| | | 16x16 | 0.042 | 1940 | | | | 18x20 | 0.036 | 2490 |
| 1200 | | 18x16 | 0.043 | 2210 | 12.5x30 | 0.024 | 2650 | 16x32 | 0.022 | 3010 |
| | | | | | 16x20 | 0.027 | 2530 | 18x25 | 0.026 | 2740 |
| 1500 | | 12.5x20 | 0.035 | 1900 | 12.5x35 | 0.020 | 2880 | 16x36 | 0.019 | 3150 |
| | | 12.5x25 | 0.027 | 2230 | | | | | | |
| 1800 | | 12.5x30 | 0.024 | 2650 | 12.5x40 | 0.017 | 3350 | 16x40 | 0.016 | 3710 |
| | | 16x20 | 0.027 | 2530 | 16x25 | 0.021 | 2930 | 18x32 | 0.021 | 3635 |
| | | | | | 18x20 | 0.026 | 2860 | | | |
| 2200 | | 12.5x35 | 0.020 | 2880 | 16x32 | 0.017 | 3450 | 18x36 | 0.017 | 3680 |
| | | 18x20 | 0.026 | 2860 | 18x25 | 0.019 | 3140 | | | |
| 2700 | | 12.5x40 | 0.017 | 3350 | 16x36 | 0.015 | 3610 | 18x40 | 0.014 | 3800 |
| | | 16x25 | 0.021 | 2930 | 18x32 | 0.015 | 4170 | | | |
| 3300 | | 16x32 | 0.017 | 3450 | 16x40 | 0.013 | 4080 | | | |
| | | 18x25 | 0.019 | 3140 | 18x36 | 0.014 | 4220 | | | |
| 3900 | | 18x32 | 0.015 | 4170 | 18x40 | 0.012 | 4280 | | | |
| 4700 | | 18x36 | 0.014 | 4220 | | | | | | |
| 5600 | | 18x40 | 0.012 | 4280 | | | | | | |

● CASE SIZE & MAX RIPPLE CURRENT

Case size : D x L (mm)
 Max impedance : Ω 20°C 100kHz
 Max ripple current : mA(rms) 105°C 100kHz

| μF | V(DC) Item | 63 | | | 100 | | |
|------|---------------|---------|-------|------|---------|-------|------|
| | | DxL | IMP. | R.C. | DxL | IMP. | R.C. |
| 15 | | 5x11 | 2.300 | 55 | | | |
| 22 | | | | | 6.3x11 | 0.850 | 200 |
| 27 | | | | | 8x12 | 0.630 | 232 |
| 33 | | 6.3x11 | 1.200 | 115 | | | |
| 39 | | | | | 8x15 | 0.450 | 300 |
| 47 | | | | | 10x12.5 | 0.430 | 288 |
| 56 | | 8x12 | 0.630 | 232 | 8x20 | 0.330 | 362 |
| 68 | | | | | 10x16 | 0.310 | 357 |
| 82 | | 8x15 | 0.450 | 300 | 10x20 | 0.210 | 466 |
| | | 10x12.5 | 0.430 | 288 | 12.5x16 | 0.230 | 466 |
| 100 | | | | | 10x25 | 0.200 | 531 |
| 120 | | 8x20 | 0.330 | 362 | 10x30 | 0.150 | 663 |
| | | 10x16 | 0.310 | 357 | 12.5x20 | 0.160 | 690 |
| 150 | | | | | 16x16 | 0.140 | 795 |
| 180 | | 10x20 | 0.210 | 466 | 12.5x25 | 0.120 | 784 |
| | | 12.5x16 | 0.230 | 466 | 18x16 | 0.120 | 920 |
| 220 | | 10x25 | 0.200 | 531 | 12.5x30 | 0.100 | 905 |
| | | | | | 16x20 | 0.091 | 1040 |
| 270 | | 10x30 | 0.150 | 663 | 12.5x35 | 0.083 | 1050 |
| | | 12.5x20 | 0.160 | 690 | 16x25 | 0.073 | 1250 |
| | | 16x16 | 0.140 | 795 | | | |
| 330 | | 12.5x25 | 0.120 | 784 | 12.5x40 | 0.071 | 1180 |
| | | | | | 18x20 | 0.080 | 1240 |
| 390 | | 18x16 | 0.120 | 920 | 16x32 | 0.054 | 1570 |
| | | | | | 18x25 | 0.057 | 1490 |
| 470 | | 12.5x30 | 0.100 | 905 | 16x36 | 0.045 | 1790 |
| | | 16x20 | 0.091 | 1040 | 18x32 | 0.047 | 1630 |
| 560 | | 12.5x35 | 0.083 | 1050 | 16x40 | 0.040 | 2020 |
| | | 16x25 | 0.073 | 1250 | | | |
| 680 | | 12.5x40 | 0.071 | 1180 | 18x36 | 0.040 | 1790 |
| | | 18x20 | 0.080 | 1240 | | | |
| 820 | | 16x32 | 0.054 | 1570 | 18x40 | 0.036 | 2330 |
| | | 18x25 | 0.057 | 1490 | | | |
| 1000 | | 16x36 | 0.045 | 1790 | | | |
| | | 18x32 | 0.047 | 1630 | | | |
| 1200 | | 16x40 | 0.040 | 2020 | | | |

RADIAL TYPE