CHANGYU

# *Miniature Aluminum Electrolytic Capacitors*

Series

**CTK**

## FEATURESS

1.Roted Working Voltage Range6.3 to 100 VDC/160 to 450VDC at Operation Temperature Range –40to +105℃

2. This series is for communication equipments, switching power supply, industrial measuring instruments, Automotive electric products, etc

## SPECIFICATIONS

| Item | Performance Characteristics |
|---|---|
| Operating Temperature Range | -40 to +105℃ |
| Rated Working voltage Range | 6.3 to 100V DC / 160 to 450V DC |
| Nominal Capacitance Range | 0.1- 33000(uF) |
| Capacitance Tolerance | ±20%（120Hz，+20℃） |
| Leakage Current | I≤0.01CV or 3(uA)Whichever is greater / I≤0.03CV+40(uA) after 2 minutes application of rated working voltage at +20℃ |

**Dissipation Factor tan δ (120Hz+20℃)**

| Working voltage(V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
|---|---|---|---|---|---|---|---|---|
| tan δ (max.) | 0.28 | 0.24 | 0.20 | 0.16 | 0.14 | 0.12 | 0.10 | 0.08 |

| Working voltage(V) | 160 | 200 | 250 | 350 | 400 | 450 |
|---|---|---|---|---|---|---|
| tan δ (max.) | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |

For capacitance value >1000uF add 0.02per another 1000uF

**Ripple Current**

Refer to standard products table (120Hz,+105℃)

Correction factor for frequency

| Voltage (V) | CAP(uF) \ Freq(Hz) | 50Hz | 120Hz | 300Hz | 1kHz | 10kHz~ |
|---|---|---|---|---|---|---|
| 6.3~100 | 0.1~47 | 0.75 | 1.00 | 1.35 | 1.57 | 2.00 |
| | 100~470 | 0.80 | 1.00 | 1.23 | 1.34 | 1.50 |
| | 1000~33000 | 0.85 | 1.00 | 1.10 | 1.13 | 1.15 |
| 160~450 | 0.47~220 | 0.80 | 1.00 | 1.25 | 1.40 | 1.60 |
| | 330~1000 | 0.90 | 1.00 | 1.10 | 1.13 | 1.15 |

**Multiplier for Ripple Current vs. Temperature**

| Temperature℃ | 45 | 60 | 70 | 85 | 105 |
|---|---|---|---|---|---|
| Multiplier | 2.10 | 1.90 | 1.40 | 1.25 | 1.00 |

**Low Temperature Characteristics**

Impedance ratio max. at 120Hz

| Working voltage(V) | 6.3 | 10 | 16 | 25 | 35 | 50 | 63 | 100 |
|---|---|---|---|---|---|---|---|---|
| Z-25℃/Z+20℃ | 5 | 4 | 3 | 2 | 2 | 2 | 2 | 2 |
| Z-40℃/Z+20℃ | 12 | 10 | 8 | 5 | 4 | 3 | 3 | 3 |

| Working voltage(V) | 160 | 200 | 250 | 350 | 400 | 450 |
|---|---|---|---|---|---|---|
| Z-40℃/Z+20℃ | 3 | 3 | 4 | 4 | 6 | 15 |

For capacitance value >1000uF Add0.5 per another 1000uF for Z-25℃/Z+20℃

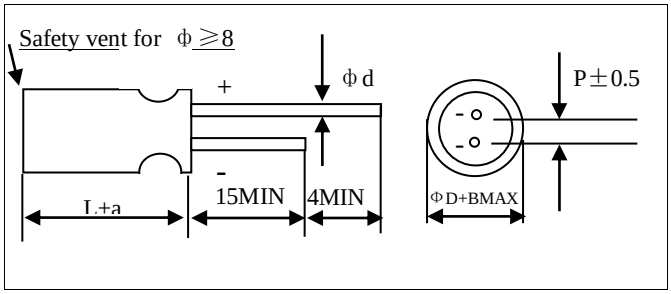
Add1.0 per another 1000uF for Z-40℃/Z+20℃

# *Miniature Aluminum Electrolytic Capacitors*

| | |
|---|---|
| High temperature Loading | Test conditions<br>Duration : 2000 hours<br>Ambient temperature : +105℃<br>Applied voltage : DC voltage with maximum permissible ripple current specified at +105℃(Sum of the DC voltage and superimposed pea AC voltage for maximum permissible ripple current should be equal to rated DC working voltage )<br>Post test requirements at +20℃<br>Leakage current : ≤ Initial specified value<br>Capacitance change : ≤±20% of initial measured value<br>tan δ : ≤200% of initial specified value |
| Shelf life | Test conditions<br>Duration : 1000 hours<br>Ambient temperature : +105℃<br>Applied voltage : (None)<br>Post test requirements at +20℃<br>Same Limits for high temperature loading |
| Others | JIS C-5141 JIS C-5102 |

## CASE SIZE TABLE

Unit:mm




| DΦ | 5 | 6.3 | 8 | 8 | 10 | 13 | 16 | 18 | 22 |
|---|---|---|---|---|---|---|---|---|---|
| P | 2.0 | 2.5 | 3.5 | 3.5 | 5 | 5 | 7.5 | 7.5 | 10 |
| dΦ±0.05 | 0.5 | | | 0.6 | | | 0.8 | | |

| | |
|---|---|
| aMAX | (L<20)1.5 |
| | (L≥20)2.0 |

| | |
|---|---|
| BMAX | (D<20)0.5 |
| | (D≥20)1.0 |

## DIMENSIONS

ΦD×L(mm)

| WV(SV) | | 6.3V(8) | | 10V(13) | | 16V(20) | | 25V(32) | | 35V(44) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cap.(uF) | Code | 0J | | 1A | | 1C | | 1E | | 1V | |
| 4.7 | 475 | | | | | | | 5×11 | 28 | 5×11 | 32 |
| 10 | 106 | | | | | 5×11 | 42 | 5×11 | 45 | 5×11 | 46 |
| 22 | 226 | 5×11 | 48 | 5×11 | 52 | 5×11 | 65 | 5×11 | 66 | 5×11 | 75 |
| 33 | 336 | 5×11 | 65 | 5×11 | 76 | 5×11 | 82 | 5×11 | 81 | 5×11 | 92 |
| 47 | 476 | 5×11 | 76 | 5×11 | 89 | 5×11 | 95 | 5×11 | 95 | 5×11 | 100 |
| | | | | | | | | | | 6.3×11 | 115 |
| 68 | 686 | 5×11 | 82 | 5×11 | 100 | 5×11 | 120 | 6.3×11 | 130 | 8×11 | 160 |
| 100 | 107 | 5×11 | 110 | 5×11 | 142 | 5×11 | 156 | 5×11 | 160 | 6.3.×11 | 190 |
| | | | | | | | | 6.3×11 | 162 | 8×12 | 198 |
| 220 | 227 | 6.3×11 | 178 | 6.3×11 | 215 | 6.3×11 | 240 | 6.3×12 | 264 | 8×14 | 320 |
| | | | | | | 8×11 | 260 | 8×12 | 294 | 10×12.5 | 336 |
| 330 | 337 | 6.3×11 | 238 | 6.3×11 | 278 | 8×12 | 320 | 10×12.5 | 372 | 10×17 | 482 |
| 470 | 477 | 6.3×11 | 260 | 6.3×12 | 295 | 8×12 | 378 | 8×14 | 435 | 10×17 | 540 |
| | | | | 8×12 | 302 | 10×12.5 | 390 | 10×12.5 | 435 | 10×20 | 583 |
| 680 | 687 | 8×12 | 300 | 8×12 | 330 | 10×15 | 450 | 10×17 | 600 | 10×20 | 820 |
| 1000 | 108 | 8×12 | 485 | 8×14 | 533 | 10×17 | 619 | 10×20 | 748 | 13×21 | 910 |
| | | | | 10×12.5 | 583 | 10×20 | 630 | | | | |
| 2200 | 228 | 10×17 | 706 | 10×20 | 920 | 13×21 | 1001 | 13×25 | 1135 | 16×26 | 1345 |
| | | 10×20 | 776 | | | | | | | | |
| 3300 | 338 | 13×21 | 965 | 13×21 | 1092 | 13×25 | 1225 | 16×26 | 1430 | 16×35 | 1725 |
| 4700 | 478 | 13×21 | 1165 | 13×25 | 1302 | 16×26 | 1610 | 16×30 | 1720 | 18×36 | 1920 |
| 6800 | 688 | 13×25 | 1490 | 16×26 | 1680 | 16×35 | 1862 | 18×36 | 2060 | 22×40 | 2150 |
| 10000 | 109 | 16×26 | 1700 | 16×35 | 1910 | 18×36 | 2080 | 22×40 | 2150 | 22×50 | 2650 |
| 15000 | 159 | 16×35 | 2085 | 18×36 | 2110 | 22×40 | 2430 | 22×50 | 2750 | 25×50 | 3100 |

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| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 22000 | 229 | 18×40 | 2290 | 22×40 | 2650 | 22×50 | 3000 | 25×50 | 3250 | | |
| 33000 | 339 | 22×50 | 2800 | 22×50 | 3250 | 25×50 | 3450 | | | Case size | Allowable ripple |

Allowable Ripple（mA rms）at105℃ 120HZ

## DIMENSIONS

ΦD×L(mm)

| WV(SV) / Cap.(uF) | Code | 50V(63) 1H | | 63V(79) 1J | | 100V(125) 2A | | 160V(200) 2C | | 200V(250) 2D | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.1 | 104 | 5×11 | 12 | 5×11 | 12 | 5×11 | 15 | | | | |
| 0.22 | 224 | 5×11 | 12 | 5×11 | 12 | 5×11 | 15 | | | | |
| 0.33 | 334 | 5×11 | 12 | 5×11 | 12 | 5×11 | 15 | | | | |
| 0.47 | 474 | 5×11 | 12 | 5×11 | 12 | 5×11 | 15 | 6.3×11 | 12 | 6.3×11 | 12 |
| 1 | 105 | 5×11 | 16 | 5×11 | 18 | 5×11 | 21 | 6.3×11 | 22 | 6.3×11 | 24 |
| 2.2 | 225 | 5×11 | 26 | 5×11 | 28 | 5×11 | 30 | 6.3×11 | 32 | 6.3×11 | 37 |
| 3.3 | 335 | 5×11 | 32 | 5×11 | 33 | 5×11 | 36 | 6.3×11 | 38 | 8×12 | 45 |
| 4.7 | 475 | 5×11 | 37 | 5×11 | 40 | 5×11 | 49 | 6.3×11 | 56 | 8×12 | 64 |
| 6.8 | 685 | 5×11 | 45 | | | | | | | 8×12 | 75 |
| 10 | 106 | 5×11 | 55 | 5×11 | 61 | 6.3×11 | 68 | 10×12.5 | 85 | 10×12.5 | 108 |
| 22 | 226 | 5×11 | 89 | 6.3×11 | 105 | 8×12 | 120 | 10×20 | 160 | 10×20 | 140 |
| 33 | 336 | 6.3×11 | 116 | 6.3×11 | 124 | 8×14 | 147 | 10×20 | 180 | 13×21 | 200 |
| 47 | 476 | 6.3×11 | 148 | 8×12 | 165 | 10×15 | 190 | 13×21 | 220 | 13×21 | 230 |
| 100 | 107 | 8×12 | 257 | 10×12.5 | 265 | 10×20 | 280 | 13×25 | 320 | 16×30 | 360 |
| 220 | 227 | 10×17 | 390 | 10×20 | 420 | 13×25 | 530 | 16×35 | 600 | 18×36 | 750 |
| 330 | 337 | 10×20 | 500 | 13×21 | 600 | 16×26 | 700 | 18×40 | 750 | 22×40 | 850 |
| 470 | 477 | 13×21 | 650 | 13×25 | 720 | 16×30 | 875 | 22×40 | 1000 | 22×50 | 1050 |
| 1000 | 108 | 16×26 | 1100 | 16×30 | 1200 | 18×40 | 1250 | 22×50 | 1350 | | |
| 2200 | 228 | 18×40 | 1600 | 18×40 | 1650 | 22×50 | 1750 | | | | |
| 3300 | 338 | 18×40 | 1760 | 22×40 | 1950 | 22×50 | 2070 | | | | |
| 4700 | 478 | 22×40 | 2100 | 22×50 | 2450 | | | | | | |
| 6800 | 688 | 22×50 | 2500 | 22×50 | 2800 | | | | | | |
| 10000 | 109 | 22×50 | 2850 | | | | | | | Case size | Allowable ripple |

Allowable Ripple（mA rms）at105℃ 120HZ

| WV(SV) / Cap.(uF) | Code | 250V(300) 2E | | 350V(400) 2V | | 400V(450) 2G | | 450V(500) 2W | |
|---|---|---|---|---|---|---|---|---|---|
| 0.47 | 474 | 6.3×11 | 22 | | | | | | |
| 1 | 105 | 6.3×11 | 26 | 6.3×11 | 28 | 8×12 | 30 | 8×12 | 33 |
| 2.2 | 225 | 8×12 | 35 | 8×12 | 48 | 8×12 | 52 | 8×12 | 58 |
| | | | | | | 10×12.5 | 56 | 10×12.5 | 62 |
| 3.3 | 335 | 8×12 | 51 | 10×12.5 | 62 | 8×12 | 60 | 8×14 | 75 |
| | | | | | | 10×12.5 | 68 | 10×15 | 85 |
| 4.7 | 475 | 8×12 | 68 | 10×12.5 | 84 | 8×12 | 85 | 10×15 | 103 |
| | | | | | | 10×15 | 90 | 10×20 | 112 |
| 10 | 106 | 10×15 | 116 | 10×20 | 146 | 10×17 | 145 | 10×20 | 175 |
| | | | | | | 10×20 | 160 | 13×21 | 189 |
| 22 | 226 | 13×21 | 230 | 13×25 | 268 | 13×21 | 250 | 13×25 | 320 |
| | | | | | | 13×25 | 276 | 16×26 | 342 |
| 33 | 336 | 13×25 | 280 | 16×26 | 385 | 16×26 | 390 | 16×26 | 436 |
| | | | | | | 16×30 | 412 | 16×30 | 466 |
| 47 | 476 | 13×25 | 369 | 16×35 | 512 | 16×26 | 490 | 16×30 | 550 |
| | | | | | | 16×35 | 526 | 18×30 | 587 |
| 68 | 686 | 16×26 | 445 | 16×30 | 550 | 16×35 | 570 | 18×30 | 706 |
| | | | | | | 18×30 | 589 | | |
| 82 | 826 | 16×26 | 515 | 18×26 | 585 | 18×26 | 660 | 18×26 | 745 |
| | | | | 18×30 | 635 | 18×30 | 685 | 18×30 | 745 |
| | | 16×30 | 575 | 18×35 | 685 | 18×35 | 742 | 18×40 | 881 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 100 | 107 | 16×30 | 654 | 18×30 | 936 | 18×30 | 740 | 18×36 | 862 |
| | | | | | | 22×40 | 973 | 22×40 | 1088 |
| 220 | 227 | 22×40 | 1455 | 22×50 | 1630 | 25×50 | 1803 | | |
| 330 | 337 | 22×50 | 1782 | | | | | | |
| 470 | 477 | 25×50 | 2283 | | | | | Case size | Allowable ripple |

Allowable Ripple（mA rms）at105℃ 120HZ