# FVG

C-CON MINIATURE ALUMINUM ELECTROLYTIC CAPACITORS

## 3000~5000 HOURS LONG LIFE ASSURANCE
## 3000~5000 小时长寿命品

- Wide temperature range –55~+105℃
  适用于 –55~+105℃的宽温范围
- Load life of 3000~5000 hours
  负荷寿命3000~5000 小时
- Comply with the RoHS directive
  符合 RoHS 指令

FVG | Chip Type 贴片式

### □SPECIFICATIONS 特性表

| Items 项目 | Characteristics 主要特性 |
|---|---|
| Operation Temperature Range 使用温度范围 | –55 ~ +105°C |
| Voltage Range 额定工作电压范围 | 6.3 ~ 100V |
| Capacitance Range 静电容量范围 | 0.1 ~ 3300 μ F |
| Capacitance Tolerance 静电容量允许偏差 | ± 20% at 120Hz, 20°C |
| Leakage Current 漏电流 | Leakage current (Ø4~Ø10 ) ≤0.01CV or 3 μ A, whichever isgreater (after 2 minutes application of rated voltage)<br>Leakage current (Ø12.5~Ø16 ) ≤0.03CV or 4 μ A, whichever is greater (after2minute application of rated voltage)<br>漏电流 (Ø4~Ø10) ≤ 0.01CV 或 3μ A，取较大值（施加额定工作电压 2 分钟后）<br>漏电流 ( Ø12.5~Ø16) ≤ 0.03CV 或 4 μ A，取较大值（施加额定工作电压 2 分钟后） |
| Dissipation Factor(tan δ ) 损耗角正切 | Measurement frequency 测试频率: 120Hz, Temperature 温度: 20°C |

| Rated Voltage (V) 额定工作电压 | | 6.3 | 10 | 16 | 25 | 35 | 50~100 |
|---|---|---|---|---|---|---|---|
| tan δ(max.) 最大损耗角正切 | Ø4~Ø10 | 0.30 | 0.24 | 0.20 | 0.18 | 0.16 | 0.14 |
| | Ø12.5~Ø16 | 0.38 | 0.34 | 0.30 | 0.28 | 0.22 | 0.18 |

Stability at LowTemperature 低温特性

Measurement frequency 测试频率: 120Hz

| Rated Voltage (V 额定工作电压 ) | | | 6.3 | 10 | 16 | 25 | 35 | 50~100 |
|---|---|---|---|---|---|---|---|---|
| Impedance Ratio 阻抗比 ZT/Z20 (max.) | Ø4~Ø10 | Z(–25° C) /Z(20° C) | 3 | 3 | 2 | 2 | 2 | 2 |
| | | Z(–55° C) /Z(20° C) | 8 | 5 | 4 | 3 | 3 | 3 |
| | Ø12.5~Ø16 | Z(–25° C)/Z(20° C) | 5 | 4 | 3 | 2 | 2 | 2 |
| | | Z(–55° C)/Z(20° C) | 12 | 10 | 8 | 5 | 4 | 3 |

Load Life 高温负荷特性

After 5000 hrs. (3000 hrs. for Ø 4~ Ø6.3 × 5.8) application of the rated voltage at 105°C, they meet the characteristics listed below.
在 105° C 环境中施加额定工作电压5000 小时 ( Ø 4~Ø6.3 × 5.8为3000 小时）后，电容器的特性符合下表的要求。

| | |
|---|---|
| Capacitance Change 静电容量变化率 | Within ±30% of initial value初始值的 ±30%以内 |
| Dissipation Factor 损耗角正切 | 300% or less of initial specified value 不大于规范值的300% |
| Leakage Current漏电流 | initial specified value or less 不大于规范值 |

Shelf Life 高温贮存特性

After leaving capacitors under no load at 105℃ for 1000 hours, they meet the specified value for load life characteristics listed above. 在105℃ 环境中无负荷放置1000小时后，电容器的特性符合高温负荷特性中所列的规定值。

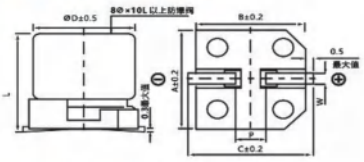
Resistance to Soldering Heat 耐焊接热特性

After reflow soldering and restored at room temperature, they meet the characteristics listed below.
经过回流焊并冷却至室温后，电容器的特性符合下表的要求。

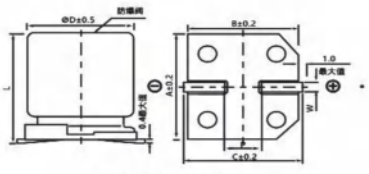
| | |
|---|---|
| Capacitance Change 静电容量变化率 | Within ± 10% of initial value 初始值的 ±10%以内 |
| Dissipation Factor 损耗角正切 | initial specified value or less 不大于规范值 |
| Leakage Current漏电流 | initial specified value or less 不大于规范值 |

Marking 标识: Black print on the case top. 铝壳顶部黑字印刷。

### □ Diagramof Dimensions 尺寸图



ΦD=4~10 适用



Φ12. 5 以上适用

### □ DIMENSIONS (Unit: mm) 尺寸表

| DXL | 4X5.8 | 5X5.8 | 6.3X5.8 | 6.3X7.7 | 8X10.5 | 10X10.5 | 10X13.5 | 12.5X13.5 | 12.5X16 | 16X16.5 |
|---|---|---|---|---|---|---|---|---|---|---|
| A | 4.3 | 5.3 | 6.6 | 6.6 | 8.3 | 10.3 | 10.3 | 13.0 | 13.0 | 17.0 |
| B | 4.3 | 5.3 | 6.6 | 6.6 | 8.3 | 10.3 | 10.3 | 13.0 | 13.0 | 17.0 |
| C | 5.1 | 5.9 | 7.2 | 7.2 | 9.2 | 11.2 | 11.2 | 13.7 | 13.7 | 18.0 |
| P±0.2 | 1.0 | 1.5 | 2.0 | 2.0 | 3.1 | 4.4 | 4.4 | 4.4 | 4.4 | 6.4 |
| L | 5.8 ±0.3 | 5.8 ±0.3 | 5.8 ±0.3 | 7.7 ±0.3 | 10.5±0.5 | 10.5±0.5 | 13.5±0.5 | 13.5±0.5 | 16±0.5 | 16.5±0.5 |

## □DRAWING (Unit: mm) 外形图


## □ DIMENSIONS & MAXIMUM PER MISSIBLE RIPPLE CURRENT 规格尺寸及最大允许纹波电流

| μF \ WV / Code 代码 | | 6.3 | | 10 | | 16 | | 25 | |
|---|---|---|---|---|---|---|---|---|---|
| | | 0J | | 1A | | 1C | | 1E | |
| 10 | 100 | | | | | 4 × 5.8 | 18 | 5 × 5.8 | 27 |
| 22 | 220 | 4 × 5.8 | 22 | 5 × 5.8 | 30 | 5 × 5.8 | 30 | 6.3 × 5.8 | 44 |
| 33 | 330 | 5 × 5.8 | 35 | 5 × 5.8 | 36 | 6.3 × 5.8 | 48 | 6.3 × 5.8 | 50 |
| 47 | 470 | 5 × 5.8 | 38 | 6.3 × 5.8 | 50 | 6.3 × 5.8 | 50 | 6.3 × 7.7 | 63 |
| 100 | 101 | 6.3 × 5.8 | 69 | 6.3 × 7.7 | 81 | 6.3 × 7.7 | 81 | 8 × 10.5 | 116 |
| 150 | 151 | 6.3 × 7.7 | 85 | 8 × 10.5 | 125 | 8 × 10.5 | 125 | 10 × 10.5 | 320 |
| 220 | 221 | 6.3 × 7.7 | 120 | 8 × 10.5 | 141 | 10 × 10.5 | 216 | 10 × 10.5 | 320 |
| 330 | 331 | 8 × 10.5 | 290 | 10 × 10.5 | 290 | 10 × 10.5 | 290 | 10 × 10.5 | 320 |
| 470 | 471 | 10 × 10.5 | 320 | 10 × 10.5 | 320 | 10 × 10.5 | 320 | 12.5 × 13.5 (10 × 13.5) | 400 (350) |
| 680 | 681 | 10 × 10.5 | 320 | 10 × 10.5 | 320 | 10 × 13.5 | 420 | 12.5 × 13.5 | 415 |
| 1000 | 102 | 10 × 10.5 | 410 | 10 × 13.5 | 390 | 12.5 × 13.5 | 550 | 12.5 × 13.5 | 460 |
| 1500 | 152 | 10 × 13.5 | 450 | 12.5 × 13.5 | 480 | 12.5 × 13.5 | 650 | 12.5 × 16 | 700 |
| 2200 | 222 | 12.5 × 13.5 | 680 | 12.5 × 16 (12.5 × 13.5) | 750 (510) | 16 × 16.5 | 800 | | |
| 3300 | 332 | 12.5 × 16 (12.5 × 13.5) | 850 (800) | 16 × 16.5 | 800 | | | Case size 尺寸 | Ripple current 纹波电流 |

| μF \ WV / Code 代码 | | 35 | | 50 | | 63 | | 100 | |
|---|---|---|---|---|---|---|---|---|---|
| | | 1V | | 1H | | 1J | | 2A | |
| 0.1 | 0R1 | | | 4 × 5.8 | 1.0 | | | | |
| 0.22 | R22 | | | 4 × 5.8 | 2.6 | | | | |
| 0.33 | R33 | | | 4 × 5.8 | 3.2 | | | | |
| 0.47 | R47 | | | 4 × 5.8 | 5 | | | | |
| 1 | 010 | | | 4 × 5.8 | 8 | | | | |
| 2.2 | 2R2 | | | 4 × 5.8 | 12 | | | | |
| 3.3 | 3R3 | | | 4 × 5.8 | 17 | | | 6.3 × 7.7 | 30 |
| 4.7 | 4R7 | 4 × 5.8 | 16 | 5 × 5.8 | 22 | | | 8 × 10.5 | 50 |
| 10 | 100 | 5 × 5.8 | 27 | 6.3 × 5.8 | 32 | 6.3 × 7.7 | 45 | 8 × 10.5 | 55 |
| 22 | 220 | 6.3 × 5.8 | 44 | 6.3 × 7.7 | 58 | 8 × 10.5 | 65 | 10 × 10.5 | 70 |
| 33 | 330 | 6.3 × 7.7 | 57 | 8 × 10.5 | 140 | 10 × 10.5 | 80 | 10 × 10.5 | 80 |
| 47 | 470 | 8 × 10.5 | 92 | 10 × 10.5 | 310 | 10 × 10.5 | 90 | 12.5 × 13.5 (10 × 13.5) | 250 (150) |
| 100 | 101 | 10 × 10.5 | 151 | 10 × 10.5 | 310 | 10 × 13.5 | 150 | 12.5 × 13.5 | 300 |
| 150 | 151 | 10 × 10.5 | 290 | 10 × 10.5 | 310 | | | 16 × 16.5 (12.5 × 16) (12.5 × 13.5) | 600 (420) (380) |
| 220 | 221 | 10 × 10.5 | 375 | 12.5 × 13.5 (10 × 13.5) | 340 (320) | 12.5 × 13.5 | 470 | | |
| 330 | 331 | 12.5 × 13.5 (10 × 13.5) | 380 (375) | 12.5 × 16 (12.5 × 13.5) | 600 (500) | 16 × 16.5 (12.5 × 16) | 650 (550) | | |
| 470 | 471 | 12.5 × 13.5 | 520 | 16 × 16.5 | 700 | | | | |
| 680 | 681 | 12.5 × 13.5 | 550 | | | | | | |
| 1000 | 102 | 16 × 16.5 (12.5 × 16) | 750 (600) | | | | | Case size 尺寸 | Ripple current 纹波电流 |

•Case size ØD×L(mm), ripple current (mA rms) at 105°C, 120Hz •尺寸ØD×L(mm), 纹波电流(mA rms) 于105°C, 120Hz

## ☐ FREQUENCY COEFFICIENT OF ALLOWABLE RIPPLE CURRENT 纹波电流频率补偿系数

| Frequency 频率 | | | 50Hz | 120Hz | 300Hz | 1KHz | 10KHz~ |
|---|---|---|---|---|---|---|---|
| Coefficient 系数 | ⌀4 ~ ⌀10 | | 0.70 | 1.00 | 1.17 | 1.36 | 1.50 |
| | ⌀12.5 ~ ⌀16 | ~ 68μF | 0.75 | 1.00 | 1.35 | 1.57 | 2.00 |
| | | 100~ 470μF | 0.80 | 1.00 | 1.23 | 1.34 | 1.50 |
| | | 680 ~ 3300μF | 0.85 | 1.00 | 1.10 | 1.13 | 1.15 |

- The endurance of capacitors is reduced with internal heating produced by ripple current at the rate of halving the lifetime wiht every 10 °C rise.When long life performance is required in actual use,the rms ripple current has to be reduced.
- 铝电解电容器由于在纹波电流叠加时自我发热，温度上升而老化，每升温10 °C寿命减少一半；要想保持长寿命请在使用过程中降低纹波电流。