

产 品 承 认 书  
APPROVAL SHEET

客户料号:

Part Number

客 户:

CUSTOMERS

品 名:

DESCRIPTION

铝电解电容

规 格:

SERIES

GF 1000UF35V 13X21

供应商料号

Supplier PN:

1000UF35VI210GF

日 期:

DATE

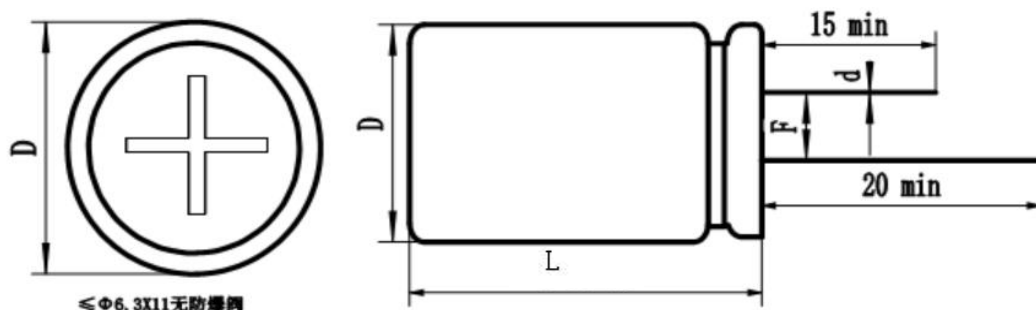
2025/3/17

| 发行单位<br>ISSUE DEPARTMENT                                                            |                   |
|-------------------------------------------------------------------------------------|-------------------|
|  |                   |
| 制作<br>PREPARED BY                                                                   | 侯业刚<br>HOU YEGANG |
| 批准<br>APPROVED                                                                      | 胡俊波<br>HU JUNBO   |

| 客户承认栏<br>APPROVED COLUMN     |  |
|------------------------------|--|
| 合格 <input type="checkbox"/>  |  |
| 不合格 <input type="checkbox"/> |  |
| 审核<br>CHECKED                |  |
| 批准<br>APPROVED               |  |

贵司确认后，敬请回签一份（After your confirmation, please sign back）

### 1. 外形尺寸图 (Dimensions) : 单位: mm



|          |      |            |
|----------|------|------------|
| $\Phi D$ | 13.0 | $\pm 0.5$  |
| L        | 21.0 | $\pm 1.5$  |
| F        | 5.0  | $\pm 0.5$  |
| $\phi d$ | 0.6  | $\pm 0.05$ |
|          |      |            |
|          |      |            |

### 2、部品规格特性表 (电容测试条件: 25 $\pm$ 5℃ 湿度65 $\pm$ 5%, 容量\损失测试频率120HZ)

| 客户料号        | 系列     | 标准容量     | 额定电压   | 尺寸          | 容差              | 损失角        | 漏电流         | 阻抗                  | 寿命         | 纹波电流                   | 浪涌电压             | 套管      | 加工形式 | 工作温度                          |
|-------------|--------|----------|--------|-------------|-----------------|------------|-------------|---------------------|------------|------------------------|------------------|---------|------|-------------------------------|
| Part Number | Series | CAP (uF) | WV (V) | SIZE        | Tolerance/120HZ | D. F/120HZ | LC (uA) 60s | 100KHz ( $\Omega$ ) | life (Hrs) | R. C. mA100K<br>HZ105℃ | surge<br>voltage | Sleeve  | B    | working<br>temperature<br>(℃) |
|             | GF     | 1000.0   | 35.0   | 13.0 X 21.0 | - 20 % ~ 20 %   | 9.0        | 350.0       | 0.035               | 4000       | 1850.0                 | 44.0             | 绿底白字PET | 长脚   | -40~+105                      |
| 备注          |        |          |        |             |                 |            |             |                     |            |                        |                  |         |      |                               |

#### 纹波电流系数 (Multiplier for ripple current) :

| Freq                | 50Hz/60Hz | 120Hz | 1KHz | 10KHz | 50~100KHz |
|---------------------|-----------|-------|------|-------|-----------|
| CAP $\leq$ 10       | 0.47      | 0.59  | 0.85 | 0.97  | 1.00      |
| 10<CAP $\leq$ 100   | 0.52      | 0.65  | 0.89 | 0.97  | 1.00      |
| 100<CAP $\leq$ 1000 | 0.58      | 0.72  | 0.9  | 0.98  | 1.00      |
| CAP>1000            | 0.63      | 0.78  | 0.91 | 0.98  | 1.00      |

#### 纹波温度系数 Multiplier for ripple current vs temperature

| Temperatrue(℃) | 45   | 60   | 70   | 85   | 105  |
|----------------|------|------|------|------|------|
| Multiplier     | 2.10 | 1.90 | 1.65 | 1.40 | 1.00 |

3. 胶管标识示意图 (Marking):

Econd

35V1000uF

Econd

1

2

3

GF

105℃ (M)

RoHS

2502

PET

4

5

6

7

8

NO. 代表内容 Item

1. 公司商标 (Logo)

2. 电容器规格 (额定电压和容量) Capacitance and Rated Vlotage

3. 负极表示带 Polarity bar

4. 产品系列 (Series)

5. 工作最高温度与容量范围 (Operating Temperature Range and Capacitance Tolerance )

6. 环保标识 (RoHS)

7. 生产周期:如“ 2502 ”其中 25 代表 2025年; 02 代表 02 月份生产.

8. 胶管材质

## 5.1 试验项目 Test item

| NO                        | 项 目<br>Items                                   | 条 件<br>Conditions                                                                                                                                                                                                                                                                                                                                              | 规 格<br>Specifications                                                                                                                                                            |                |                |                                   |      |     |      |                                  |      |     |      |                           |  |  |                                                                                                                                                                      |
|---------------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|-----------------------------------|------|-----|------|----------------------------------|------|-----|------|---------------------------|--|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                         | 最大允许纹波电流<br>Maximum permissible ripple current | Temperature:105±2℃<br>Voltage :DC.Voltage+peak ripple voltage≤<br>Rated voltage.<br>Ripple frequency:100KHz                                                                                                                                                                                                                                                    | Refer to table                                                                                                                                                                   |                |                |                                   |      |     |      |                                  |      |     |      |                           |  |  |                                                                                                                                                                      |
| 2                         | 浪涌<br>Surge                                    | Temperature:105±2℃<br>Applied voltage: see specification<br>"ON" position : 30 seconds<br>"OFF" position :5 minutes 30 seconds.<br>Duration : 1000 cycles                                                                                                                                                                                                      | 1.No electrical or mechanical damage.<br>2.Capacitance change within ±15%.<br>3.D.F.smaller than specification volue.<br><br>4.Leakage current smaller than specification volue. |                |                |                                   |      |     |      |                                  |      |     |      |                           |  |  |                                                                                                                                                                      |
| 3                         | 温度循环<br>Temperature Cycle                      | <table><tr><td rowspan="5">One Cycle</td><td>Temperature(℃)</td><td>Time (minutes)</td></tr><tr><td>Rated high category temperature±3</td><td>30±3</td></tr><tr><td>25℃</td><td>3MAX</td></tr><tr><td>Rated low category temperature±3</td><td>30±3</td></tr><tr><td>25℃</td><td>3MAX</td></tr><tr><td colspan="3">Total number of cycles: 5</td></tr></table> | One Cycle                                                                                                                                                                        | Temperature(℃) | Time (minutes) | Rated high category temperature±3 | 30±3 | 25℃ | 3MAX | Rated low category temperature±3 | 30±3 | 25℃ | 3MAX | Total number of cycles: 5 |  |  | 1.No appearance defect.<br><br>2.Capacitance change within ±5%<br><br>3.D.F.smaller than specification value.<br>4.Leakage current smaller than specification value. |
| One Cycle                 | Temperature(℃)                                 | Time (minutes)                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                  |                |                |                                   |      |     |      |                                  |      |     |      |                           |  |  |                                                                                                                                                                      |
|                           | Rated high category temperature±3              | 30±3                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                  |                |                |                                   |      |     |      |                                  |      |     |      |                           |  |  |                                                                                                                                                                      |
|                           | 25℃                                            | 3MAX                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                  |                |                |                                   |      |     |      |                                  |      |     |      |                           |  |  |                                                                                                                                                                      |
|                           | Rated low category temperature±3               | 30±3                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                  |                |                |                                   |      |     |      |                                  |      |     |      |                           |  |  |                                                                                                                                                                      |
|                           | 25℃                                            | 3MAX                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                  |                |                |                                   |      |     |      |                                  |      |     |      |                           |  |  |                                                                                                                                                                      |
| Total number of cycles: 5 |                                                |                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                  |                |                |                                   |      |     |      |                                  |      |     |      |                           |  |  |                                                                                                                                                                      |
| 4                         | 耐焊接热<br>Resistance to Soldering Heat           | Warm up time :120±2 seconds to reach 120±2℃<br>Solder bath temperature: 260±5℃.<br>Solder bath composition: Sn-96.5%.<br>Ag-3.0%<br>Cu-0.5%<br><br>Immersion depth: 1.5 to 2.0mm<br>Immersion duration: 10±1 seconds                                                                                                                                           | 1.No appearance defect.<br>2.Capacitance change within ±5%<br>3.D.F.smaller than specification value.<br>4.Leakage current smaller than specification                            |                |                |                                   |      |     |      |                                  |      |     |      |                           |  |  |                                                                                                                                                                      |
| 5                         | 可焊性<br>Solder Ability                          | Solder bath temperature: 235±5℃.<br>Solder bath composition: Sn-96.5%.<br>Ag-3.0%<br>Cu-0.5%<br><br>Immersion depth: 1.5 to 2.0mm<br>Immersion duration: 10±1 seconds                                                                                                                                                                                          | A minimum of 95% the immersed surface is to be coated with the new solder                                                                                                        |                |                |                                   |      |     |      |                                  |      |     |      |                           |  |  |                                                                                                                                                                      |

## 5. 2试验项目 Test item

| NO               | 项 目<br>Items                                                                                                 |                                      | 条 件<br>Conditions                                                                                                                                                                      |                        |                   | 规格<br>Specifications                                                                                                                                                         |    |    |    |    |    |     |
|------------------|--------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|----|----|-----|
| 6                | 低温特性（最大阻<br>抗比）<br>Low Temperature<br>Charcteristics<br>(Max.Impedance<br>Ratio)                             |                                      | working Voltage (v)                                                                                                                                                                    |                        | 6.3               | 10                                                                                                                                                                           | 16 | 25 | 35 | 50 | 63 | 100 |
|                  |                                                                                                              |                                      | Impedance Z-40℃/+20℃                                                                                                                                                                   |                        | 8                 | 6                                                                                                                                                                            | 4  | 3  | 3  | 3  | 3  | 3   |
|                  |                                                                                                              |                                      |                                                                                                                                                                                        |                        |                   |                                                                                                                                                                              |    |    |    |    |    |     |
| 7                | 高湿度储存<br>High Humidity<br>storage                                                                            |                                      | Temperature:40±2℃<br>Relative humidity :90 to 95%<br>Duration : 240±8 hours                                                                                                            |                        |                   | 1.No electrical or mechanical damage.<br>2.Capacitance change within ±15%.<br>3.D.F.smaller than specification volue.<br>4.Leakage current smaller than specification volue. |    |    |    |    |    |     |
| 8                | 防爆<br>Vent                                                                                                   |                                      | Conduct under normal lighting for lab work                                                                                                                                             |                        |                   | There shall be no explosion,flash,flame,spark or fire from<br>the capacitor during or after the test,nor shall there be<br>expulsion of any metal from the casing            |    |    |    |    |    |     |
|                  |                                                                                                              |                                      | Capacitor diameter                                                                                                                                                                     | Applied<br>current(A)  | Minutes           |                                                                                                                                                                              |    |    |    |    |    |     |
|                  |                                                                                                              |                                      | Less than 22.4mm                                                                                                                                                                       | 1                      | within 30         |                                                                                                                                                                              |    |    |    |    |    |     |
| More than 22.5mm | 10                                                                                                           |                                      |                                                                                                                                                                                        |                        |                   |                                                                                                                                                                              |    |    |    |    |    |     |
| 9                | 端子强<br>度：拉<br>伸度/弯<br>曲强度<br>Terminal<br>strength<br>: Tensile<br>testintens<br>ity/windi<br>ng<br>intensity | 拉伸度<br>Tensile<br>testintens<br>ity  | Diameter of<br>terminnal                                                                                                                                                               | Tensile<br>Strength(n) | continued<br>time | 1.No electrical or mechanical damage<br>2.No appearance damage                                                                                                               |    |    |    |    |    |     |
|                  |                                                                                                              |                                      | 0.5≧d≤0.8                                                                                                                                                                              | 10                     | 10±1sec           |                                                                                                                                                                              |    |    |    |    |    |     |
|                  |                                                                                                              |                                      | 0.8<d≤1.25                                                                                                                                                                             | 20                     |                   |                                                                                                                                                                              |    |    |    |    |    |     |
|                  |                                                                                                              | 弯曲强<br>度<br>winding<br>intensi<br>ty | 2bends（Bend 180 degrees for a round）                                                                                                                                                   |                        |                   |                                                                                                                                                                              |    |    |    |    |    |     |
|                  |                                                                                                              |                                      | Diameter of<br>terminnal                                                                                                                                                               | winding<br>Strength(n) | Awl quality       |                                                                                                                                                                              |    |    |    |    |    |     |
| 0.5≧d≤0.8        | 5                                                                                                            |                                      | 0.51kg                                                                                                                                                                                 |                        |                   |                                                                                                                                                                              |    |    |    |    |    |     |
| 0.8<d≤1.25       | 10                                                                                                           | 1.02kg                               |                                                                                                                                                                                        |                        |                   |                                                                                                                                                                              |    |    |    |    |    |     |
| 10               | 振动<br>Vibration                                                                                              |                                      | Frequency range : 10 Hz to 55 Hz<br>Amplitude :1.5 mm<br>Cycle definition:10Hz to 55 Hz and back to 10Hz<br>Cycle duration :1 minute.<br>Duration :2 hours per direction (3directions) |                        |                   | 1.No electrical or mechanical damage<br>2.No appearance damage                                                                                                               |    |    |    |    |    |     |
| 11               | 高温负荷<br>Endurance                                                                                            |                                      | Capacitors are placed in an oven and<br>applied voltage for 4000 hours at<br>105℃.After being restored to 25℃,<br>capacitors shall meet the specifications.                            |                        |                   | 1.Capacitance change within ±20% of the initial value.<br>2.D.F.change within ±200% of the specified value.<br>3.Leakage current smaller than specification value.           |    |    |    |    |    |     |
| 12               | 高温储存<br>Shelf Life                                                                                           |                                      | Capacitors are placed in an oven for<br>1000 hours at 105℃without applying<br>rated working voltage.After being restored<br>to 25℃,capacitors shall meet the<br>snecifications         |                        |                   | 1.Capacitance change within ±20% of the initial value.<br>2.D.F.change within ±200% of the specified value.<br>3.Leakage current within ±200% of the specification<br>value. |    |    |    |    |    |     |

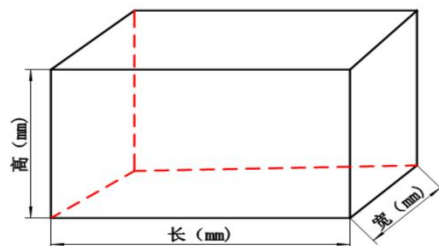
### 6. 包装方式 (Packing)

#### 6.1 散料包装: 散料包装包含长脚和短脚包装, 具体如下:

| 电容尺寸<br>DXL (mm) | 长脚                     |          | 短脚                     |          |
|------------------|------------------------|----------|------------------------|----------|
|                  | 包装袋尺寸 (长x宽): 220*200mm |          | 包装袋尺寸 (长x宽): 200*180mm |          |
|                  | 每袋数量 (pcs)             | 每箱数量 (K) | 每袋数量 (pcs)             | 每箱数量 (K) |
| 3X5-4X7          | 2000                   | 96       | 2000                   | 96       |
| 5X7              | 1000                   | 40       | 1000                   | 40       |
| 5X9-11           | 1000                   | 40       | 1000                   | 32       |
| 6. 3X7           | 1000                   | 40       | 1000                   | 40       |
| 6. 3X9-15        | 1000                   | 32       | 1000                   | 24       |
| 8X7-9            | 1000                   | 40       | 1000                   | 24       |
| 8X10-13          | 500                    | 20       | 500                    | 16       |
| 8X13.5-15        | 500                    | 16       | 500                    | 16       |
| 8X15.5-16.5      | 500                    | 16       | 500                    | 12       |
| 8X20-10X13       | 500                    | 12       | 500                    | 12       |
| 10X14-17         | 400                    | 9.6      | 400                    | 9.6      |
| 10X20-26         | 300                    | 7.2      | 300                    | 7.2      |
| 13X14-22         | 200                    | 4.8      | 200                    | 4.8      |
| 13X24-26         | 100                    | 3.2      | 100                    | 4        |
| 13X30-31         | 100                    | 2        | 100                    | 3.2      |
| 16X18-22         | 100                    | 2.4      | 100                    | 3.2      |
| 16X25-28         | 100                    | 3.2      | 100                    | 3.2      |
| 16X30-18X26      | 100                    | 2.4      | 100                    | 2.4      |
| 18X28-36         | 50                     | 1.6      | 50                     | 1.6      |
| 18X40            | 50                     | 1.2      | 50                     | 1.2      |
| 22X24-38         | 25                     | 0.8      | 25                     | 0.8      |



散料尺寸示意图 (上)

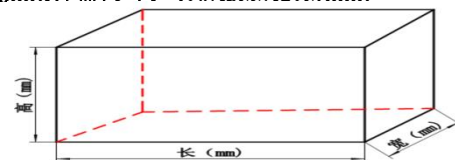


外箱尺寸示意图 (上)

散料包装外箱尺寸 (长X宽X高):  
420X327X270mm

#### 6.2 编带包装: 编带为统一包装方式: 每箱固定装10盒, 内盒尺寸345X235X55 (mm); 外盒尺寸: 490X355X295 (mm)

| 电容拍别 | 每盒数量<br>(pcs) | 每箱盒数 | 每箱数量<br>(K) | 备注   |
|------|---------------|------|-------------|------|
| 4    | 2500          | 10   | 25          |      |
| 5    | 2000          | 10   | 20          |      |
| 6. 3 | 1500          | 10   | 15          |      |
| 8    | 1000          | 10   | 10          |      |
| 10   | 600           | 10   | 6           | 每行空一 |
| 13   | 400           | 10   | 4           | 编一隔一 |



内盒尺寸 (长X宽X高): 345X235X55 外  
盒尺寸 (长X宽X高): 490X355X295

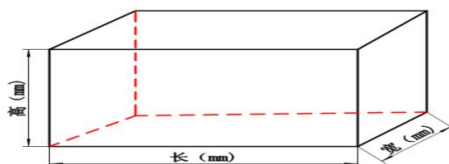
#### 6.3 排盒包装:

##### 1. 排盒包装标准:

| 拍别 (mm) | 内盒选择                  | 内盒品种 | 每排数量 | 每盒排数 | 每盒数量 | 每箱盒数 | 每箱数量 | 内盒隔板数 |
|---------|-----------------------|------|------|------|------|------|------|-------|
| 13Φ     | 内盒选择寸<br>依据产品尺<br>寸而定 | 高盒   | 22   | 14   | 308  | 6    | 1848 | 单条/2排 |
|         |                       | 中盒   |      |      |      | 8    | 2464 | 单条/2排 |
|         |                       | 低盒   |      |      |      | 12   | 3696 | 单条/2排 |
| 16Φ     | 内盒选择寸<br>依据产品尺<br>寸而定 | 高盒   | 18   | 12   | 216  | 6    | 1296 | 单条/2排 |
|         |                       | 中盒   |      |      |      | 8    | 1728 | 单条/2排 |
|         |                       | 低盒   |      |      |      | 12   | 2592 | 单条/2排 |
| 18Φ     | 内盒选择寸<br>依据产品尺<br>寸而定 | 高盒   | 16   | 10   | 160  | 6    | 960  | 单条/2排 |
|         |                       | 中盒   |      |      |      | 8    | 1280 | 单条/2排 |
|         |                       | 低盒   |      |      |      | 12   | 1920 | 单条/2排 |
| 22Φ     | 内盒选择寸<br>依据产品尺<br>寸而定 | 高盒   | 13   | 9    | 117  | 6    | 702  | 双条/3排 |
|         |                       | 中盒   |      |      |      | 8    | 936  | 双条/3排 |
|         |                       | 低盒   |      |      |      | 12   | 1404 | 双条/3排 |

##### 2. 内盒、隔条、外箱 {长X宽X高 (mm)}

| 内盒型号 | 内盒尺寸 (mm)  | 隔条尺寸 (mm) | 每大箱装盒数 (盒) | 外箱尺寸 (mm)   |
|------|------------|-----------|------------|-------------|
| 高盒   | 305*200*65 | 300*62    | 6          | 420*310*215 |
| 中盒   | 305*200*45 | 300*42    | 8          |             |
| 低盒   | 305*200*30 | 300*30    | 12         |             |



### 7. 铝电解电容器仓储条件:

- ① 仓储温度:  $\leq 35^{\circ}\text{C}$       ② 仓储湿度:  $\leq 75\text{RH}\%$       ③ 电容存储有效期: 一年 (超过一年需要重新充电)