

- OEM(客户设计)
- ODM(供应商设计)

产品证书编号:

# 产品承认书

客户名称: 永泰隆  
产品名称: 压敏电阻

客户物料编号: 01020103043

供方物料编号: COV-14D681K (高能芯片)

版本: A0

承认书生效日期:

| 制造商 |     | 客户确认 (品质)                    |  | 客户确认 (研发)                    |  |
|-----|-----|------------------------------|--|------------------------------|--|
| 拟制  | 方虹  | 合格 <input type="checkbox"/>  |  | 合格 <input type="checkbox"/>  |  |
|     |     | 不合格 <input type="checkbox"/> |  | 不合格 <input type="checkbox"/> |  |
| 审核  | 陈庆国 | 审核                           |  | 审核                           |  |
| 批准  | 冯伟  | 批准                           |  | 批准                           |  |

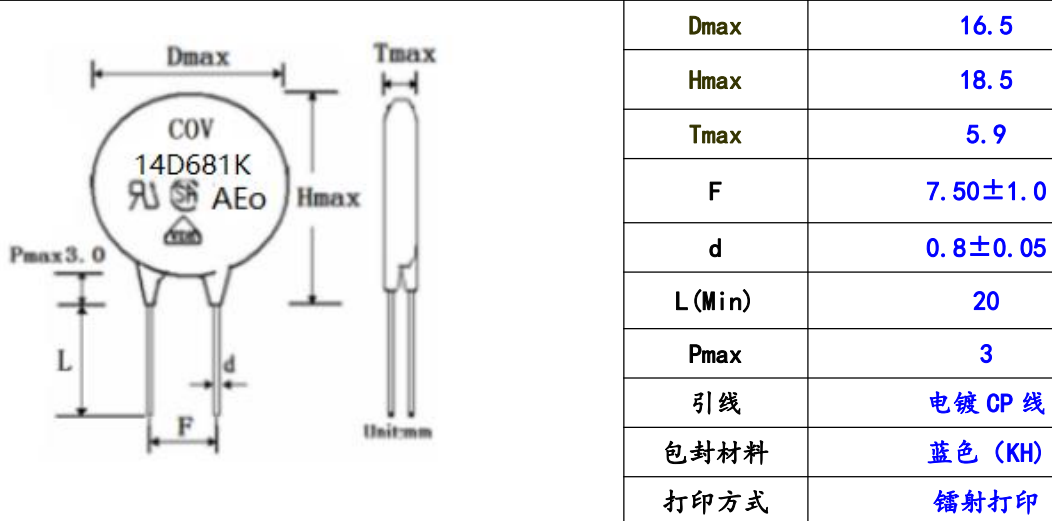
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| A0 |  |  |  |  |
| A1 |  |  |  |  |
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| A4 |  |  |  |  |
| A5 |  |  |  |  |
| A6 |  |  |  |  |

|      |                    |  |
|------|--------------------|--|
| 文件编号 |                    | NO: DX20190917003A                             |
| 规格型号 | COV-14D681K (高能芯片) | 安规: UL:E485395 体系: ISO9001/ISO14001/OHSAS18001 |

### 1.外观结构

|     |    |                |
|-----|----|----------------|
| 1.1 | 外观 | 外观完好, 无损伤, 无氧化 |
| 1.2 | 尺寸 | 尺寸 (mm)        |

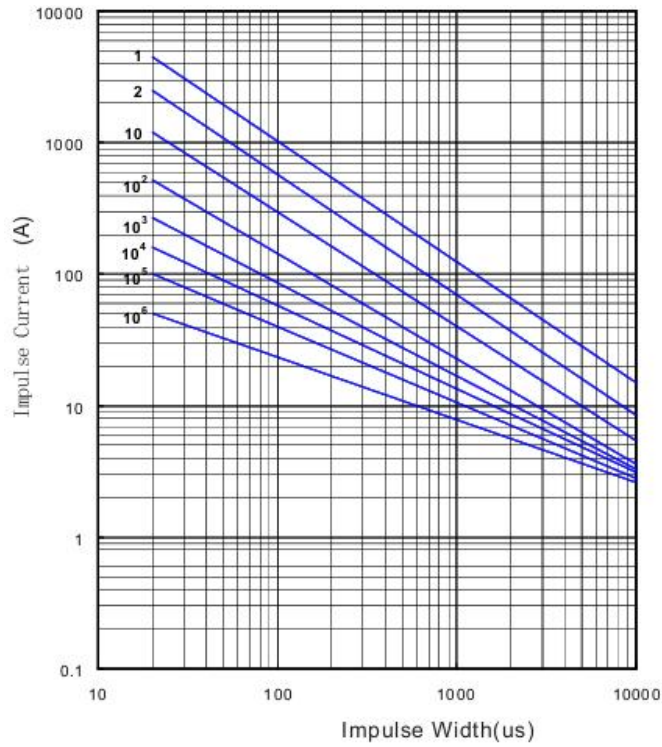


### 2.电性基本要求

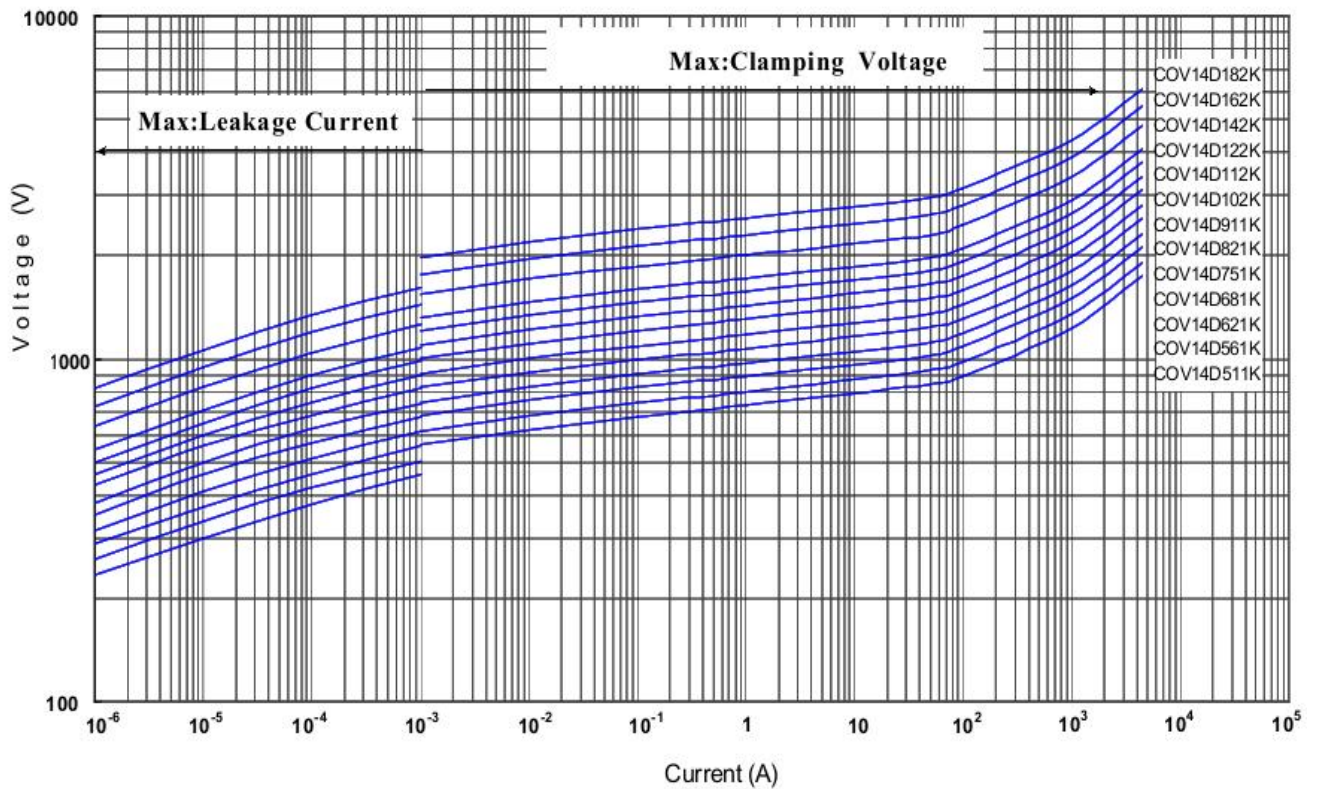
|      |           |                  |  |
|------|-----------|------------------|--|
| 2.1  | 最大允许使用电压  | AC: 460 (V)      |  |
|      |           | DC :615 (V)      |  |
| 2.2  | 压敏电压      | 675~825 (V)      | V1mA <input checked="" type="checkbox"/> V0.1mA <input type="checkbox"/> |
| 2.3  | 最大静态功率    | 0.60 (W)         |  |
| 2.4  | 最大限制电压    | IP: 50 (A)       | 测试条件<br>8/20 μs  |
|      |           | Vc:1240 (V)      |  |
| 2.5  | 最大通流容量    | 1 Time: 6000 (A) | 测试条件<br>8/20 μs  |
|      |           | 2 Time:4500 (A)  |  |
| 2.6  | 最大能量耐量    | 210 (J)          | 测试条件<br>10/1000 μs   |
| 2.7  | 静态参考电容量   | 270 (PF)         | @1KHz  |
| 2.8  | 漏电流       | ≤ 20 (μA)        | @80%*V1mA  |
| 2.9  | 冲击过后最大变化率 | ≤ ±10% (V1mA)    | 测试条件<br>8/20 μs  |
| 2.10 | 工作温度范围    | -40°C ~ +125°C   | -40°C ~ +125°C   |
| 2.11 | 储存温度范围    | -40°C ~ +125°C   | -40°C ~ +125°C   |

### 3、 Inpulse Life Time Rating Curves:

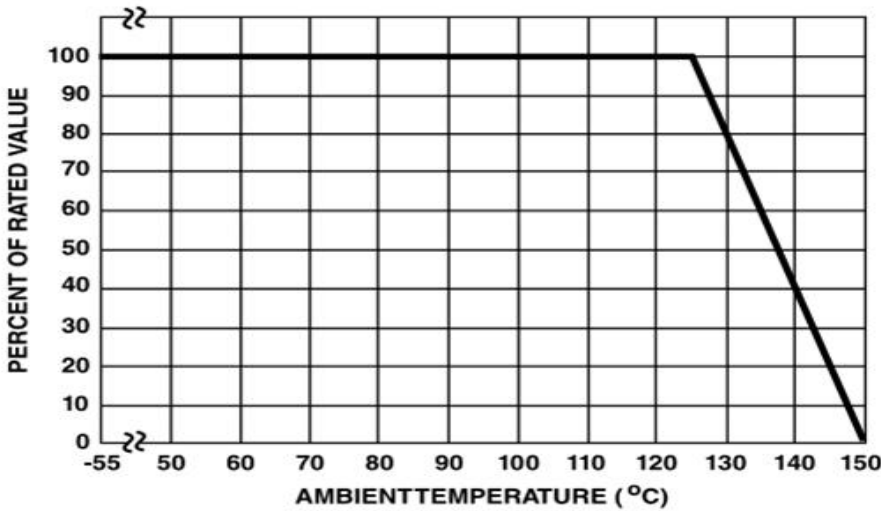
#### COV-14D681K



#### COV-14D681K V-I Curve

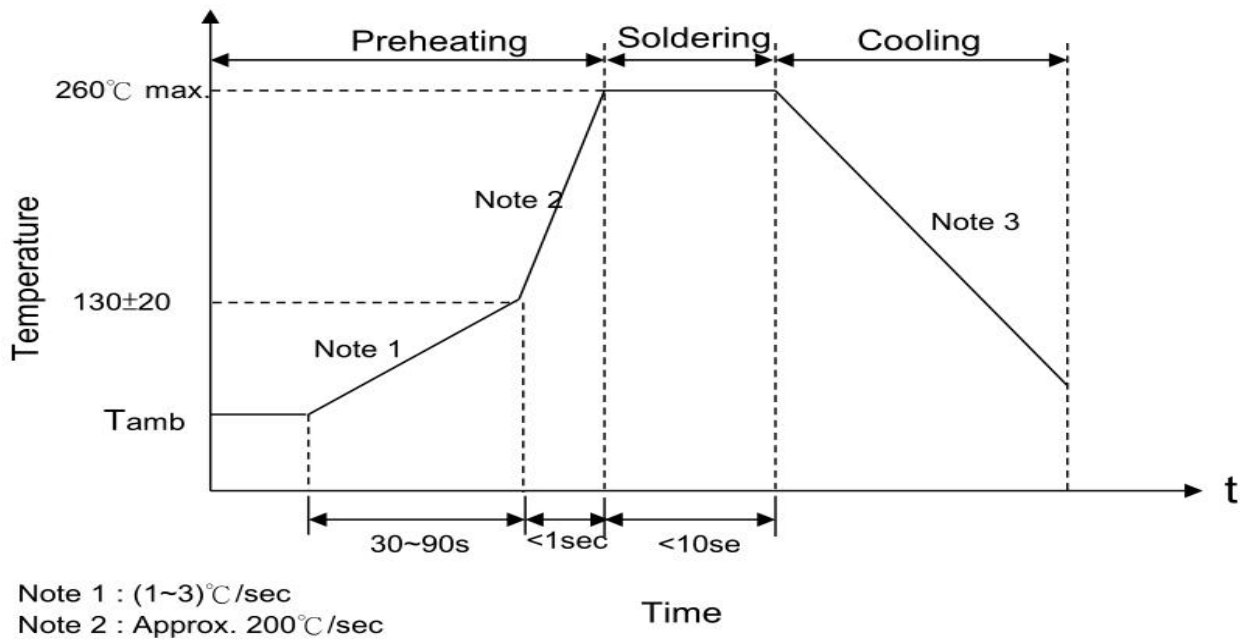


#### 4、Current Energy and Power Derating Curve 电流、能量、功率递减曲线



(图 1: 电流、能量、功率递减曲线)

#### 5、Soldering Recommendation Profile 推荐焊接条件

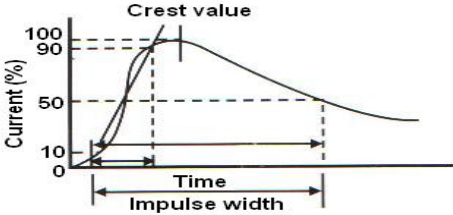


(图 2: 波峰焊曲线图)

#### Recommendation Reworking Conditions with Soldering Iron 烙铁重工焊接条件

| 项目         | 条件           |
|------------|--------------|
| 烙铁头部温度     | 360°C (max.) |
| 焊接时间       | 3 sec (max.) |
| 焊接位置与涂装层距离 | 2 mm (min.)  |

## 6、 Reliability-Performance Characteristics(Electrical) :

| Characteristics                              | Test Methods/Description   | Specifications  |                      |                    |          |                    |          |              |
|--|--|---|----------------------|--------------------|----------|--------------------|----------|--------------|
| Standard Test Condition                      | Environmental conditions under which every measuring is done without doubt on the measuring results. Unless specially specified, temperature, relative humidity are 5℃ to 35℃, 45% to 85%RH.   | —   |                      |                    |          |                    |          |              |
| Varistor Voltage                             | The voltage between two terminals with the specified measuring current C mA DC applied is called Vc or Vc mA. The measurement shall be made as fast as possible to avoid heat affection.   |   |                      |                    |          |                    |          |              |
| Maximum Allowable Voltage                    | The maximum sinusoidal RMS voltage or maximum DC voltage that can be applied continuously in the specified environmental temperature range.  |   |                      |                    |          |                    |          |              |
| Clamping Voltage                             | The maximum voltage between two terminals with the specified standard impulse current(8/20 μs) illustrated below applied.<br>   | To meet the specified value   |                      |                    |          |                    |          |              |
| Rated Power                                  | The power that can be applied in the specified ambient temperature.  |   |                      |                    |          |                    |          |              |
| Maximum Energy                               | The maximum energy within the varistor voltage change of ±10% when one impulse of 2 ms or 10/1000 μs is applied.   |   |                      |                    |          |                    |          |              |
| Maximum peak Current                         | 2 times  | The maximum current within the varistor voltage change of ±10% with the standard impulse current (8/20 μs) applied twice with an interval of 5 minutes.                           |                      |                    |          |                    |          |              |
| Withstanding Surge Current                   | 1 time   | The maximum current within the varistor voltage change of ±10% with the standard impulse current (8/20 μs) applied once.  |                      |                    |          |                    |          |              |
| Temperature Coefficient of Varistor Voltage  |  | $\frac{V_c \text{ at } 85^\circ\text{C} - V_c \text{ at } 25^\circ\text{C}}{V_c \text{ at } 25^\circ\text{C}} \times \frac{1}{60} \times 100 (\% / ^\circ\text{C})$ - 0.05%/℃ Max |                      |                    |          |                    |          |              |
| Capacitance                                  | Capacitance shall be measured at 1 KHz ±10%, 1 Vrms max. 0V bias and 20±2 ℃  | To meet the   |                      |                    |          |                    |          |              |
| Dissipation Factor                           | Dissipation Factor be measured at 1 KHz ±10%, 1 Vrms max. 0V bias and 20±2 ℃   | specified value   |                      |                    |          |                    |          |              |
| Withstanding Voltage (Body Insulation)       | <p>The specified voltage shall be applied both terminals of the specimen connected together and metal foil closely wrapped round its body for 1 minute. Electrical breakdown shall be examined.</p> <table border="1" data-bbox="466 1823 1311 2049"> <thead> <tr> <th>Classification<br/>(Nominal varistor voltage)</th> <th>Test Voltage<br/>(AC)</th> </tr> </thead> <tbody> <tr> <td>V0.1mA,V1mA ≦ 330V</td> <td>1500Vrms</td> </tr> <tr> <td>V0.1mA,V1mA &gt; 330V</td> <td>2500Vrms</td> </tr> </tbody> </table> | Classification<br>(Nominal varistor voltage)  | Test Voltage<br>(AC) | V0.1mA,V1mA ≦ 330V | 1500Vrms | V0.1mA,V1mA > 330V | 2500Vrms | No breakdown |
| Classification<br>(Nominal varistor voltage) | Test Voltage<br>(AC)   |   |                      |                    |          |                    |          |              |
| V0.1mA,V1mA ≦ 330V                           | 1500Vrms   |   |                      |                    |          |                    |          |              |
| V0.1mA,V1mA > 330V                           | 2500Vrms   |   |                      |                    |          |                    |          |              |

## 7、 Reliability-(Mechanical):

| Characteristics                  | Test Methods   | Specifications  |       |         |               |         |               |         |                |                   |
|----------------------------------|--|---|-------|---------|---------------|---------|---------------|---------|----------------|-------------------|
| Robustness of Terminal (Tensile) | <p><a href="#">IEC60068-2-21</a></p> <p>After gradually applying the force specified below and keeping the unit fixed for the seconds, the terminal shall be visually examined for any damage.</p> <table border="1"> <thead> <tr> <th>Terminal diameter</th> <th>Force</th> </tr> </thead> <tbody> <tr> <td>Φ0.6 mm</td> <td>9.8N (1.0Kgf)</td> </tr> <tr> <td>Φ0.8 mm</td> <td>9.8N (1.0Kgf)</td> </tr> <tr> <td>Φ1.0 mm</td> <td>19.6N( 2.0Kgf)</td> </tr> </tbody> </table>  | Terminal diameter   | Force | Φ0.6 mm | 9.8N (1.0Kgf) | Φ0.8 mm | 9.8N (1.0Kgf) | Φ1.0 mm | 19.6N( 2.0Kgf) |                   |
| Terminal diameter                | Force  |   |       |         |               |         |               |         |                |                   |
| Φ0.6 mm                          | 9.8N (1.0Kgf)  |   |       |         |               |         |               |         |                |                   |
| Φ0.8 mm                          | 9.8N (1.0Kgf)  |   |       |         |               |         |               |         |                |                   |
| Φ1.0 mm                          | 19.6N( 2.0Kgf)   |   |       |         |               |         |               |         |                |                   |
| Robustness of Terminal (Bending) | <p><a href="#">IEC60068-2-21</a></p> <p>The unit shall be secured with its terminal kept vertical and the force specified below be applied in the axial direction. The terminal shall gradually be bent by 90° in one direction, then 90° in the opposite direction, and again back to the original position.</p> <p>The terminal shall be visually examined for any damage.</p> <table border="1"> <thead> <tr> <th>Terminal diameter</th> <th>Force</th> </tr> </thead> <tbody> <tr> <td>Φ0.6 mm</td> <td>4.9N (0.5Kgf)</td> </tr> <tr> <td>Φ0.8 mm</td> <td>4.9N (0.5Kgf)</td> </tr> <tr> <td>Φ1.0 mm</td> <td>9.8N (1.0Kgf)</td> </tr> </tbody> </table> | Terminal diameter   | Force | Φ0.6 mm | 4.9N (0.5Kgf) | Φ0.8 mm | 4.9N (0.5Kgf) | Φ1.0 mm | 9.8N (1.0Kgf)  | No visible damage |
| Terminal diameter                | Force  |   |       |         |               |         |               |         |                |                   |
| Φ0.6 mm                          | 4.9N (0.5Kgf)  |   |       |         |               |         |               |         |                |                   |
| Φ0.8 mm                          | 4.9N (0.5Kgf)  |   |       |         |               |         |               |         |                |                   |
| Φ1.0 mm                          | 9.8N (1.0Kgf)  |   |       |         |               |         |               |         |                |                   |
| Vibration                        | <p><a href="#">IEC 60068-2-6</a></p> <p>After repeatedly applying a single harmonic vibration(amplitude0.75mm) double amplitude:1.5mm with 1 minute vibration frequency cycles(10 Hz to 55 Hz to 10Hz) to each of three perpendicular directions for 2 hours (Duration: 3*2h= 6 h). Thereafter, the unit shall be visually examined.</p>   |   |       |         |               |         |               |         |                |                   |
| Solderability                    | <p><a href="#">IEC 60068-2-20</a></p> <p>After dipping the terminals to a depth of approximately 3mm from the body in a soldering bath of 260±5℃ for 2±0.5 seconds, the terminal shall be visually examined.</p>   | Approximately 95% of the terminals shall be covered with solder uniformly |       |         |               |         |               |         |                |                   |
| Resistance to Soldering Heat     | <p><a href="#">IEC 60068-2-20</a></p> <p>After each lead shall be dipped into a solder bath having a temperature 260±5℃ to a point 2.0 to 2.5 mm from the body of the unit, using shielding board (t=1.5mm), be held there for specified time(3 series: 3±1 s, 5 series:5±1 s and others:10±1 s), and then be stored at room temperature and humidity for 1 to 2 hours. The change of Vc and mechanical damages are examined.</p>  | $\Delta V_{cmA}/V_{cmA} \leq \pm 5\%$<br>No visible damage                |       |         |               |         |               |         |                |                   |

## 8、Reliability-(Environmental):

| Characteristics                     | Test Methods   | Specifications                         |                |                 |   |       |      |   |                  |      |   |       |      |   |                  |      |                                       |
|-------------------------------------|--|--|----------------|-----------------|---|-------|------|---|------------------|------|---|-------|------|---|------------------|------|---------------------------------------|
| High Temperature Storage/Dry Heat   | <p><a href="#">IEC 60068-2-2</a></p> <p>The specimen shall be subjected to 125±2℃ for 1000 hours in a thermostatic bath without load and then stored at room temperature and humidity for 1 to 2 hours. Thereafter, the change of Vc shall be measured.</p>  |  |                |                 |   |       |      |   |                  |      |   |       |      |   |                  |      |                                       |
| Damp Heat/Humidity (Steady State)   | <p><a href="#">IEC 60068-2-78</a></p> <p>The specimen shall be subjected to 40±2℃,90 to 95% RH for 1000 hours without load and then stored at room temperature and humidity for one to two hours. Thereafter, the change of Vc shall be measured.</p>  |  |                |                 |   |       |      |   |                  |      |   |       |      |   |                  |      |                                       |
| Rapid Change of Temperature Cycle   | <p><a href="#">IEC 60068-2-14</a></p> <p>The temperature cycle shown below shall be repeated five times and then stored at room temperature and humidity for one to two hours.</p> <p>Then change of Vc and mechanical damage shall be examined.</p> <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature(℃)</th> <th>Period(minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±3</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>15±3</td> </tr> <tr> <td>3</td> <td>125±2</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>15±3</td> </tr> </tbody> </table> | Step                                   | Temperature(℃) | Period(minutes) | 1 | -40±3 | 30±3 | 2 | Room temperature | 15±3 | 3 | 125±2 | 30±3 | 4 | Room temperature | 15±3 | $\Delta V_{cmA}/V_{cmA} \leq \pm 5\%$ |
| Step                                | Temperature(℃)   | Period(minutes)                        |                |                 |   |       |      |   |                  |      |   |       |      |   |                  |      |                                       |
| 1                                   | -40±3  | 30±3                                   |                |                 |   |       |      |   |                  |      |   |       |      |   |                  |      |                                       |
| 2                                   | Room temperature   | 15±3                                   |                |                 |   |       |      |   |                  |      |   |       |      |   |                  |      |                                       |
| 3                                   | 125±2  | 30±3                                   |                |                 |   |       |      |   |                  |      |   |       |      |   |                  |      |                                       |
| 4                                   | Room temperature   | 15±3                                   |                |                 |   |       |      |   |                  |      |   |       |      |   |                  |      |                                       |
| High Temperature load/Dry Heat Load | <p><a href="#">IEC 61051-1</a></p> <p>After being continuously applied the Maximum Allowable Voltage at 125±2℃ for 1000 hours. The specimen shall be stored at room temperature and humidity for one to two hours .Thereafter, the change of Vc shall be measured.</p>   | $\Delta V_{cmA}/V_{cmA} \leq \pm 10\%$ |                |                 |   |       |      |   |                  |      |   |       |      |   |                  |      |                                       |
| Damp Heat load/ Humidity Load       | <p>The specimen shall be subjected to 40±2℃, 90 to 95% RH and the Maximum Allowable Voltage for 1000 hours and then stored at room temperature and humidity for one to two hours.</p> <p>Thereafter, the change of Vc shall be measured.</p>   | $\Delta V_{cmA}/V_{cmA} \leq \pm 10\%$ |                |                 |   |       |      |   |                  |      |   |       |      |   |                  |      |                                       |
| Low Temperature Storage/Cold        | <p>The specimen shall be subjected to -40±2℃, without load for 1000 hours and then stored at room temperature for one to two hours. Thereafter, the change of Vc shall be measured.</p>  | $\Delta V_{cmA}/V_{cmA} \leq \pm 5\%$  |                |                 |   |       |      |   |                  |      |   |       |      |   |                  |      |                                       |