

环保产品:

RoHS Compliance

无卤素



# 广东新成科技实业有限公司

GUANGDONG XINCHENG SCIENCE AND TECHNOLOGY INDUSTRIAL CO.,LTD

## 承认书

Specification for approval

客户:

Customs

抑制浪涌型负温度系数热敏电阻器

品名:

Partname

NTC Thermistor for Limiting Inrush Current

规格:

Model

3D-15

安规认证:

Approvals

公司料号:

Material Number

R15D030MUB4CGWB

客户料号:

Customer Material Number

| Manufacturer  |                |                | Customer    |                |                |
|---------------|----------------|----------------|-------------|----------------|----------------|
| 编制<br>Edition | 审核<br>Verified | 核准<br>Approved | 承认<br>Admit | 审核<br>Verified | 核准<br>Approved |
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|                |                 |       |               |     |   |
|----------------|-----------------|-------|---------------|-----|---|
| PART NO.<br>料号 | R15D030MUB4CGWB | 3D-15 | REV NO.<br>版本 | 0/A | 页次: 第 1 页, 共 7 页<br>Pages: No.1of 7 pages |
|----------------|-----------------|-------|---------------|-----|---|

### 料号编码规则

功率型 NTC 热敏电阻的产品编码由 19 位编码组成, 其编码规则如下:

|      |      |      |   |    |       |   |   |    |      |    |    |    |     |      |      |             |    |    |    |
|------|------|------|---|----|-------|---|---|----|------|----|----|----|-----|------|------|-------------|----|----|----|
| 示例   | R    | 1    | 3 | D  | 0     | 5 | 0 | M  | P    | 7  | 4  | C  | E   | N    | B    | 2           | 5  | 0  |    |
| 编码名称 | 环保标识 | 芯片直径 |   | 形状 | 零功率电阻 |   |   | 精度 | 导线材质 | 线径 | 脚型 | 脚距 | 涂装料 | 印字标识 | 包装形式 | 引脚长度 / 切脚长度 |    |    |    |
| 位置   | 1    | 2    | 3 | 4  | 5     | 6 | 7 | 8  | 9    | 10 | 11 | 12 | 13  | 14   | 15   | 16          | 17 | 18 | 19 |

### 料号编码说明

| 编码位置  | 编码名称          | 取值和含义   |
|-------|---------------|---|
| 1     | 环保标识          | R: 符合 RoHS 标准   |
| 2~3   | 芯片直径          | 用实际数值表示, 单位 mm。例如:<br>05: 5mm<br>15: 15mm   |
| 4     | 形状/类型         | D: 圆形      W: 大功率型<br>S: 方形   |
| 5~7   | 零功率电阻         | 采用科学表示法, 单位 $\Omega$ 。如果数值包含小数点, 则用符号“R”将整数部分和小数部分隔开。例如:<br>050: $5 \times 10^0 = 5$ 0R7: 0.7<br>102: $10 \times 10^2 = 1000$ 2R5: 2.5    |
| 8     | 精度            | F: $\pm 1\%$ J: $\pm 5\%$ M: $\pm 20\%$<br>G: $\pm 2\%$ K: $\pm 10\%$<br>H: $\pm 3\%$ L: $\pm 15\%$                                       |
| 9     | 导线材质          | U: 镀锡铜线      P: 镀锡铁线  |
| 10    | 线径            | 单位 mm<br>1: 1.0      4: 0.43      7: 0.75      A: 0.8<br>2: 0.6      5: 0.7      8: 0.38      B: 0.78<br>3: 0.35      6: 0.55      9: 0.5 |
| 11    | 脚型            | 1: 直脚型      6: 蛙形脚      8: 前后弯<br>4: 短内弯      7: 外弯   |
| 12    | 脚距            | 单位 mm<br>A: 2.5      C: 7.5      X: 定制<br>B: 5.0      D: 10   |
| 13    | 涂装料           | E: 黑色酚醛      G: 绿色硅树脂 H: 灰色硅树脂  |
| 14    | 印字标识          | N: 三角标      X: 认证标      D: 定制<br>C: 新成旧厂标      O: 中性标      W: 新成新厂标   |
| 15    | 包装形式          | B: 袋装散装      R: 绑带      A: 盒装编带   |
| 16~19 | 切脚长度<br>(可选项) | 采用实际数值表示, 单位 mm。用 3 位或者 4 位编码表示。例如: 3.5、10.0。<br>如果是非切脚产品, 此项编码可以省略。  |

|  |                                   |         |   |     |   |
|--|-----------------------------------|---------|---|-----|---|
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| 1. APPEARANCE 外观   |                                   |         |   |     |   |
| 1-1. Dimensions (mm)尺寸                                   |                                   |         | 1-2. Marking 标志   |     |   |
|  |                                   |         |   |     |   |
|  |                                   |         | 1-3. Coating 包封   |     |   |
|  |                                   |         | <input type="checkbox"/> No coating 无包封<br><input checked="" type="checkbox"/> Coating 包封   |     |   |
|  |                                   |         | Material 包封材料   |     | Color 颜色  |
|  |                                   |         | <input type="checkbox"/> PF resin 酚醛树脂<br><input checked="" type="checkbox"/> Silicon 硅树脂<br><input type="checkbox"/> Epoxy 环氧树脂<br><input type="checkbox"/> Others 其他  |     | <input checked="" type="checkbox"/> Green 绿色<br><input type="checkbox"/> Red 红色<br><input type="checkbox"/> Tan 黄色<br><input type="checkbox"/> Black 黑色<br><input type="checkbox"/> Blue 蓝色 |
|  |                                   |         | 1-4. Leads 引线   |     |   |
| D: $\leq 17.5$   |                                   |         | <input checked="" type="checkbox"/> Tin-plated copper wire 镀锡铜线<br><input type="checkbox"/> Tin-plated steel wire 镀锡钢线<br><input type="checkbox"/> Straight 直形 <input type="checkbox"/> Axis-formed 轴弯<br><input checked="" type="checkbox"/> In-Forming 内弯 <input type="checkbox"/> Out-Forming 外弯 |     |   |
| T: $\leq 7.0$  |                                   |         |   |     |   |
| F: $7.5 \pm 1.0$   |                                   |         |   |     |   |
| d: $0.78 \pm 0.06$                                       |                                   |         | L: $\geq 25$  |     |   |
| 2. Parameters of Technology 主要技术参数                       |                                   |         |   |     |   |
| Rated Zero-Power Resistance<br>额定零功率电阻值 R25 ( $\Omega$ ) | 3                                 | 详细见附录说明 |   |     |   |
| Material Constant<br>材料常数 B25/85 (K)                     | 2700                              | 详细见附录说明 |   |     |   |
| Max. Steady State Current<br>最大稳态电流 (A)                  | 7                                 | 详细见附录说明 |   |     |   |
| Thermal Dissipation Constant<br>耗散系数(mW/ $^{\circ}$ C)   | $\geq 16$                         | 详细见附录说明 |   |     |   |
| Thermal Time Constant<br>热时间常数 $\tau$ (s)                | $\leq 90$                         | 详细见附录说明 |   |     |   |
| Operating Temperature Range<br>工作温度范围 ( $^{\circ}$ C)    | $-40^{\circ}$ C— $+200^{\circ}$ C |         |   |     |   |

|                |                 |       |               |     |  |
|----------------|-----------------|-------|---------------|-----|--|
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### 3. INSPECTION 检验方法

#### 3-1. Lot Inspection 批量检验

Sampling with IEC410 / DIN ISO 2859-1 (GB/T2828.1-2012); Testing with SPEC.NO.: R15D030MUB4CGWB

抽样方法按 IEC410/ DIN ISO 2859-1 ( GB/T2828.1-2012); 试验方法按 SPEC.NO.: R15D030MUB4CGWB

| Item 指标项目             | IL  | AQL  | Item 指标项目                                    | IL  | AQL  |
|-----------------------|-----|------|--|-----|------|
| Appearance 外观         | II  | 0.65 | Rated Zero-Power Resistance<br>额定零功率电阻 $R_N$ | II  | 0.65 |
| Soldering-ability 可焊性 | S-2 | 2.5  | Max. Steady State Current<br>最大稳态电流 (A)      | S-2 | 2.5  |

### 4. STORAGE CONDITIONS 存储环境条件:

4-1. Temperature 温度:  $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$

4-2. Humidity 湿度:  $\leq 70\%RH$

4-3. Term 期限:  $\leq 6$  months (First-in/ First-out 先进先出)

4-4. Place 地点:

Do not exposing the components to the following conditions, otherwise, it may result in deterioration of characteristics.

不要暴露在下列环境条件下，否则将导致性能衰退或参数飘移：

- 1) Corrosive gas or deoxidizing gas. 腐蚀性或易氧化气体
- 2) Flammable and explosive gases. 易燃易爆气体
- 3) Oil, water and chemical liquid. 油、水和化学溶液
- 4) Under the sunlight. 太阳光下

4-5. Handling after seal open: After unpacking of the minimum package, reseal it promptly or store it inside a sealed container with a drying agent.

尽量保证开口最小化，立即重新封好，并贮存在密封、带有干燥剂的容器中。

### 5. WARNING 注意、警告

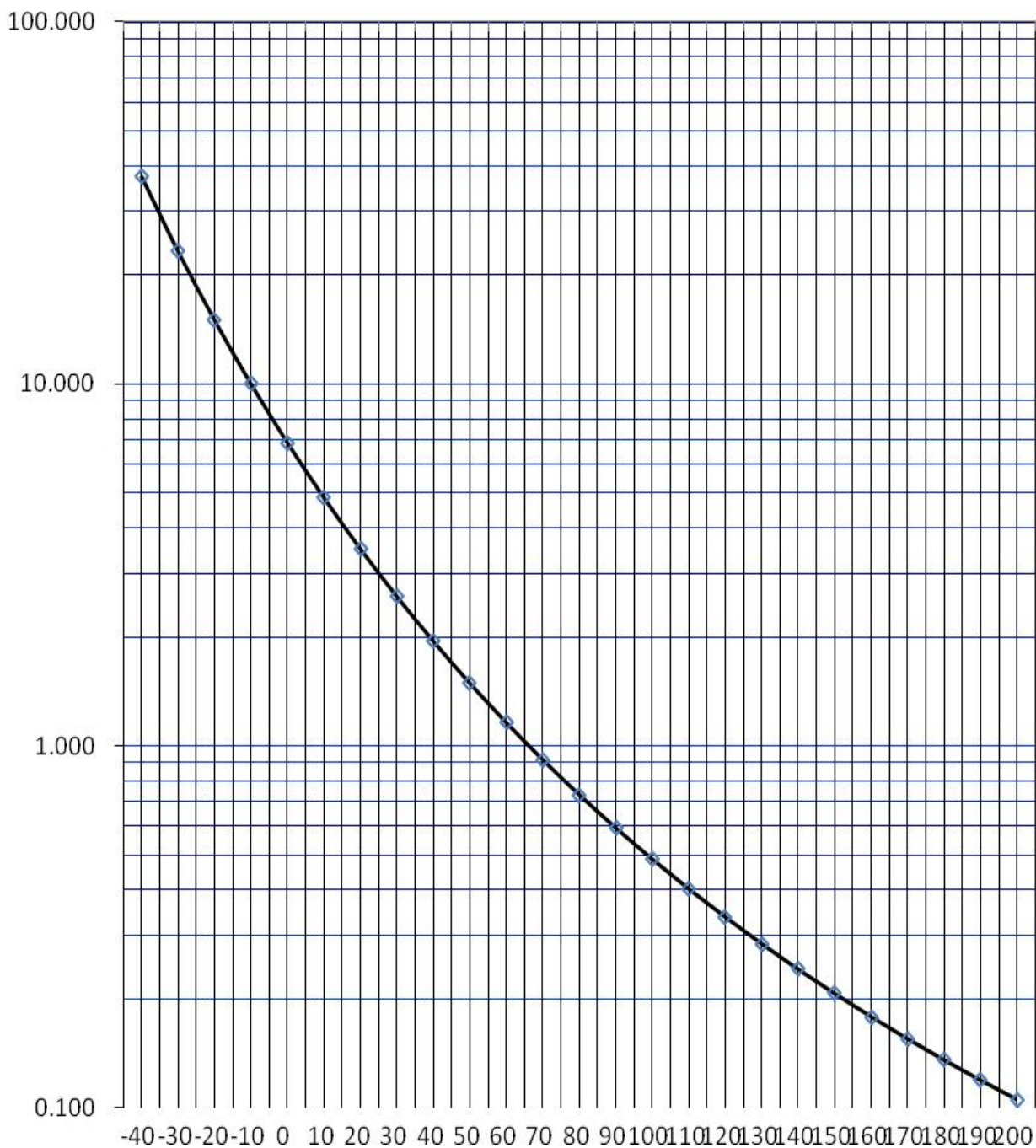
Do not apply the components under the following conditions, otherwise, it may result in deterioration of characteristics, destruction of components or in the worst case, to catching fire.

请不要在下列条件下使用本元件，否则将可能导致产品性能衰退或产品损毁，甚至引发火灾：

- 1) Exceeding  $I_{max}$ . 超过最大工作电流
- 2) Exceeding rated temperature range. 超过许可工作温度范围
- 3) Inferior thermal dissipation (Due to badly inferior thermal dissipation, some part of the components body will become overheated and then be damaged.)

散热不良（由于散热不良，本元件可能因部分过热而导致破坏）

6. R/T curve 阻温曲线



# Appendix 附录

| PART NO.<br>料号                            | R15D030MUB4CGWB   | 3D-15  | REV NO.<br>版本 | 0/A | 页次: 第 5 页, 共 7 页<br>Pages: No.5 of 7 pages |
|---|---|--|---------------|-----|--|
| 1. MECHANICAL CHARACTERISTICS 机械性能        |   |  |               |     |  |
| Item<br>指标项目                              | Specification<br>技术要求   | Test Conditions & Methods<br>测试条件/方法   |               |     |  |
| 1-1. Solder-ability<br>可焊性                | The terminals shall be uniformly tinned, and its area $\geq 95\%$<br>浸润部分上锡均匀, 上锡面积 $\geq 95\%$     | Dipping the NTC terminals to a depth of 15mm in a soldering bath of $235 \pm 5^\circ\text{C}$ and to the place of 6mm far from NTC body for 2-3s (See IEC68-2-20 /GB2423.28 Ta)<br>将引出端沾助焊剂后, 浸入到温度为 $235 \pm 5^\circ\text{C}$ 、深度为 15mm 的锡槽中锡面距 NTC 本体下端 6mm 处, 持续 2-3 秒。(参见 IEC68-2-20 /GB2423.28 试验 Ta)   |               |     |  |
| 1-2. Resistance To Soldering Heat<br>耐焊接热 | No visible mechanical damage.<br>无可见损伤<br>$\Delta R/R_N \leq 20\%$<br>( $\Delta R =  R_N - R_N' $ ) | Dipping the NTC terminals to a depth of 15mm in a soldering bath of $260 \pm 5^\circ\text{C}$ and to the place for 6mm below from NTC body for $10 \pm 1\text{s}$ . After recovering 4-5h under $25 \pm 2^\circ\text{C}$ . The rated zero power resistance value $R_N'$ shall be measured.<br>(See IEC68-2-20 /GB2423.28 Tb)<br>根据 IEC68-2-20 (GB2423.28) 试验 Tb 进行试验。<br>采用焊槽法, 将引出端沾助焊剂后, 浸入到温度为 $260 \pm 5^\circ\text{C}$ 、深度为 15mm 的锡槽中, 锡面距 NTC 本体下端 6mm 处, 维持 $10 \pm 1$ 秒. 在 $25 \pm 2^\circ\text{C}$ 条件下恢复 4-5h 后, 复测额定零功率电阻 $R_N'$ .   |               |     |  |
| 1-3. Strength of lead terminal<br>引出端强度   | No break out<br>无损坏<br>$\Delta R/R_N \leq 20\%$<br>( $\Delta R =  R_N - R_N' $ )                    | Fasten the body and apply a force gradually to each lead until 10N and then keep for 10sec, Hold body and apply a force to each lead until $90^\circ$ slowly at 5N in the direction of lead axis and then keep for 10sec, and do this in the opposite direction repeat for other terminal. After recovering 4-5h under $25 \pm 2^\circ\text{C}$ , the rated zero power resistance value $R_N'$ shall be measured.<br>(See IEC68-2-21/GB2423.29 Ua / Ub)<br>根据 IEC68-2-21 (GB2423.29) 试验 U 进行试验。<br>试验 Ua: 拉力 10N, 持续 10 S;<br>试验 Ub: 弯曲 $90^\circ$ , 拉力 5N, 持续 10 S;<br>扭转 $180^\circ$ , 拉力 5N, 持续 10 S。<br>在 $25 \pm 2^\circ\text{C}$ 条件下恢复 4~5 h 后, 复测额定零功率电阻 $R_N'$ |               |     |  |

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|---|---|---|---------------|-----|--|
| 2.ELECTRICAL CHARACTERISTICS 电气性能   |   |   |               |     |  |
| 2-1.Test Conditions & Method 测试条件/方法  |   |   |               |     |  |
| Items<br>指标项目   | Spec.<br>技术要求   | Test Conditions & Methods<br>测试条件/方法  |               |     |  |
| 2-1-1.Rated Zero-Power Resistance<br>额定零功率电阻<br>$R_N (\Omega)$                    | $3\pm 20\%$   | Ambient temp. Range: $25^{\circ}\text{C} \pm 2^{\circ}\text{C}(T_A)$ .<br>Testing voltage: 1.5Vdc<br>After placing for 1~2 hours under $T_A$ , the resistance value shall be measured.<br>环境温度 $T_A$ : $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$<br>测试电压: 1.5VDC<br>在常温 $T_A$ 条件下, 放置 1~2 小时 后测得阻值 $R_N$ 。                     |               |     |  |
| 2-1-2.Thermal Dissipation Constant<br>热耗散系数 $\delta$<br>(mW/ $^{\circ}\text{C}$ ) | $\geq 16$   | The thermal dissipation constant( $\delta$ ) could be calculated by the ratio of a change in power dissipation( $\Delta P$ ) of the thermistor to a change in temperature( $\Delta T$ ) of the thermistor at a specified ambient temperature<br>在特定的环境温度下, 热耗散系数( $\delta$ )为热敏电阻电功率消耗( $\Delta P$ )与本体温度变化量 ( $\Delta T$ )的比值. |               |     |  |
| 2-1-3.Thermal Time Constant<br>热时间常数<br>$\tau$ (s)                                | $\leq 90$   | The time( $\tau$ ) shall be measured within which the temperature change of NTC thermistor is reached at 63.2% of the ambient temperature change under zero power condition<br>热时间常数( $\tau$ )为在零功率条件下, 热敏电阻的温度下降到其最初温度与最终温度之差为 63.2% 时所需要的时间   |               |     |  |
| 2-1-4.Material Constant<br>材料常数<br>B (K)  | $2700\pm 10\%$<br>$B=T_1T_2/(T_2-T_1) \times L_n(R_1/R_2)$  | $R_1, R_2$ is zero-power resistance at $T_1, T_2$<br>$R_1, R_2$ 分别为 $T_1, T_2$ 温度下的零功率电阻<br>$T_1 = 298.15^{\circ}\text{K}(25^{\circ}\text{C})$ $T_2 = 358.15^{\circ}\text{K}(85^{\circ}\text{C})$   |               |     |  |
| 2-1-5.Max.Steady State Current<br>最大稳态电流(A)                                       | 7.0A<br><br>No visible mechanical damage.<br>无可见损伤<br>$\Delta R_N / R_N \leq 20\%$<br><br>( $\Delta R =   R_N - R_N'  $ ) | Ambient temp. Range 环境温度: $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$ .<br>Testing Current 测试电流:7.0A   |               |     |  |



| PART NO.<br>料号                                | R15D030MUB4CGWB   | 3D-15   | REV NO.<br>版本 | 0/A | 页次: 第 7 页, 共 7 页<br>Pages: No.7 of 7 pages |
|---|---|---|---------------|-----|--|
| 3. Reliability Test 可靠性试验 (周期性检测项目)           |   |   |               |     |  |
| Items<br>指标项目                                 | Spec.<br>技术要求   | Test Conditions & Methods<br>测试条件/方法  |               |     |  |
| *3-1. Temp. Cycling Testing<br>温度循环测试         | No visible mechanical damage.<br>无可见损伤<br>$\Delta R_N / R_N \leq 20\%$<br>$(\Delta R =  R_N - R_N' )$ | Ta: $-40 \pm 5^\circ\text{C} / 30\text{min} \rightarrow 25 \pm 2^\circ\text{C} / 5\text{min} \rightarrow$ Tb: $200 \pm 5^\circ\text{C} / 30\text{min} \rightarrow 25 \pm 2^\circ\text{C} / 5\text{min}$ Cycles: 5times<br>After recovering 4~5 h under $25 \pm 2^\circ\text{C}$ , the rated zero power resistance value $R_N'$ shall be measured.<br>在 Ta= $-40 \pm 5^\circ\text{C}$ 和 Tb= $200 \pm 5^\circ\text{C}$ 的环境温度中各存放 30 分钟, 循环 5 次.每次高低温循环都有在 $25 \pm 2^\circ\text{C}$ 的环境中过渡 5 分钟。<br>样品进行温度循环测试后, 取出放置室温 ( $25 \pm 2^\circ\text{C}$ ) 4~5 小时后测量零功率电阻 $R_N'$ . |               |     |  |
| *3-2. Electrical Cycling Testing<br>电循环测试     | No visible mechanical damage.<br>无可见损伤<br>$\Delta R_N / R_N \leq 20\%$<br>$(\Delta R =  R_N - R_N' )$ | Ambient temp. Range: $25^\circ\text{C} \pm 2^\circ\text{C}$ .<br>Cycles: 1,000times On / Off: 1m / 5m<br>Test Current 7.0A<br>After recovering 4~5h under $25 \pm 2^\circ\text{C}$ , the rated zero power resistance value $R_N'$ shall be measured.<br>环境温度: $25^\circ\text{C} \pm 2^\circ\text{C}$ .<br>循环次数: 1,000 次<br>通/断: 1m / 5m<br>测试电流: 7.0A<br>样品置于室温 ( $25 \pm 2^\circ\text{C}$ ) 4~5 小时后, 测量其零功率电阻 $R_N'$ .   |               |     |  |
| *3-3. LoadLife ( Endurance ) Testing<br>持久性测试 | No visible mechanical damage.<br>无可见损伤<br>$\Delta R_N / R_N \leq 20\%$<br>$(\Delta R =  R_N - R_N' )$ | Ambient temp. Range: $25^\circ\text{C} \pm 2^\circ\text{C}$ ; 7.0A / 1,000 $\pm 24\text{h}$<br>After recovering 4~5 h under $25 \pm 2^\circ\text{C}$ , the rated zero power resistance value $R_N'$ shall be measured.<br>环境温度: $25^\circ\text{C} \pm 2^\circ\text{C}$ .<br>样品通过最大工作电流 7.0A, 1,000 $\pm 24$ 小时后, 取出置于室温 ( $25 \pm 2^\circ\text{C}$ ) 4~5 小时后, 测量其零功率电阻 $R_N'$ .   |               |     |  |
| *4-3. Humidity Testing<br>耐湿性测试               | No visible mechanical damage.<br>无可见损伤<br>$\Delta R_N / R_N \leq 20\%$<br>$(\Delta R =  R_N - R_N' )$ | Ambient temp. range : $40^\circ\text{C} \pm 2^\circ\text{C}$<br>R.H.: $93 \pm 3\%$ , Energized time: $1000 \pm 24\text{h}$<br>After recovering 4~5 h under $25 \pm 2^\circ\text{C}$ , the rated zero power resistance value $R_N'$ shall be measured.<br>在温度 $40 \pm 2^\circ\text{C}$ , 相对湿度 $93 \pm 3\%$ 的环境中放置 1000 $\pm 24$ 小时后, 取出置于室温 ( $25 \pm 2^\circ\text{C}$ ) 4~5 小时后, 测量其零功率电阻 $R_N'$ .  |               |     |  |