



南京时恒电子科技有限公司

Nanjing Shiheng Electronics Co.,Ltd.

规格承认书

APPROVAL SHEET

客户名称 CUSTOMER :

MF72 功率型 NTC 热敏电阻器

产品名称 PART NAME :

MF72 Power NTC Thermistor

产品规格 PART NUMBER :

MF72 5D9

产品编号 PRODUCTCODE:

版次 REV.NO:

B0

日期 DATE:

2022/7/18

确认

CONFIRM

| 客户 CLIENT | | 供货商/制造商 MANUFACTOR | |
|-------------------------|--|---------------------------|-----|
| 品保部 Quality Dep. | | 规格书制作 Design | 姚明浩 |
| 制造部 Production Dep. | | 业务部审核 Checked by sales | |
| 工程部 Engineering Dep. | | 技术部审核 Checked by R&D | 程鹏 |
| | | 品质部审核 Checked by QA | 李少媛 |

南京时恒电子科技有限公司

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1、产品型号说明 Product model specification


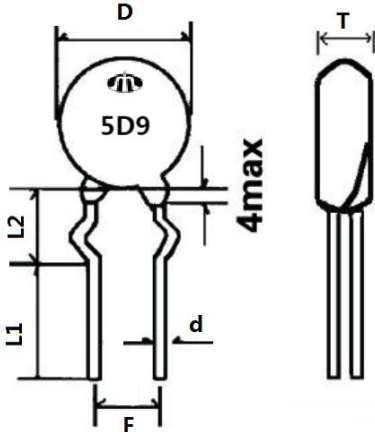
 **MF72** **5** **D** **9**
 ① ② ③ ④

- ①  : 时恒品牌
- ② MF72: 功率型 NTC 热敏电阻
- ③ 5:25℃的零功率电阻值 5 Ω
- ④ 9: 本体直径 D9

2、电气性能 Electrical Characteristics

| No. | 项目 Item | 符号 Symbol | 测试条件 Test conditions | 单位 Unit | 性能要求 Requirements |
|------|---|--------------|--|------------|---|
| 2.1 | 25℃的零功率电阻值 Zero Power Resistance at 25℃ | R_{25c} | $T_a=25\pm 0.5^{\circ}\text{C}$ (测试功率 $\leq 0.1\text{mW}$ 空气中测试) Test Power $\leq 0.1\text{mW}$, in air) | K Ω | $5\ \Omega \pm 20\%$ |
| 2.2 | B 值 B-value | $B_{25/50}$ | $B = [(T_a \times T_b) / (T_b - T_a)] \times \ln(R_a / R_b)$ $T_a=25\pm 0.01^{\circ}\text{C}$ $T_b=50^{\circ}\text{C} \pm 0.01^{\circ}\text{C}$ | K | $2600 \pm 10\%$ |
| 2.3 | 最大稳态电流 Max steady current | I max | / | A | 2.85 |
| 2.4 | 最大允许容值 Max allowable capacity value | C_T | 240Vac | μ F | 220 |
| 2.5 | 耗散系数 Thermal dissipation Coefficient | δ | 静止空气中 In still air | mW/℃ | ≥ 11 |
| 2.6 | 时间常数 Thermal time constant | τ | 静止空气中 In still air | sec | ≤ 34 |
| 2.7 | 耐电压 withstand voltage | | 700V/AC 1min | / | 无击穿或飞弧 No breakthrough and flash over |
| 2.8 | 绝缘电阻 Insulation resistance | / | 500V/DC 1min | M Ω | ≥ 500 |
| 2.9 | 工作温度范围 Operating temperature range | / | / | ℃ | -40 ~ 140 |
| 2.10 | 最大额定功率 Maximum rated power | Pmax | / | W | 2 |
| 2.11 | 阻温特性 R&T-table | / | / | / | 见附图 1 see attachment1 |
| 2.12 | 伏安曲线 curve of voltage and current | / | / | / | 见附图 2 see attachment2 |

3、产品图纸 Product drawing

| | | | | | | |
|--|-------------------|--|----------------|------------------|-----------------|--|
|  产品图纸 Product drawing | | 客户 确认 Customer confirm | 客户名称 Customer: | | | |
| | | | 确认 Confirm | | 日期 DATE | |
| 产品型号 MODEL NO. | MF72 5D9 | 审核 Approve: | | 日期 DATE | | |
| 尺寸 Dimensions: <div style="text-align: right;">(Unit: mm)</div>  | | | | | | |
| Dmax | L1 ±0.5 | L2 ±2 | F±0.5 | T max | d±0.05 | |
| Max10.0 | 3.5 | 5 | 5.0 | 5.5 | 0.8 | |
| 技术要求 Technical requirements: <ol style="list-style-type: none"> 1) 零功率阻值: R25: $5\Omega \pm 20\%$ (Zero Power Resistance: R25: $5\Omega \pm 20\%$); 2) B25/50 数值: $2600K \pm 10\%$ (B-value: B25/50: $2600K \pm 10\%$); 3) 线材: 镀锡铜包钢线 (Tinned copper clad steel wire); 4) 封装: 黑色酚醛树脂 (Black phenolic resin); 5) 符合 RoHS 环保要求 (Meet environmental protection requirements: RoHS)。 | | | | | | |
| 更新履历 Revised record sheet | | | | | | |
| 版本 REV. NO | 更新时间 REV. DATE | 更新内容 Change content | | 申请人 Applicant | 批准人 Approved | |
| A0 | 2015. 4. 10 | 版本制定。 Version formulation | | 王月婷 | 李少媛 | |
| B0 | 2022. 4. 1 | 更新规格书版本格式, 增加版次管控 Update for version form of datasheet, add to management and control for number of edition | | 王月婷 | 李少媛 | |
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4、可靠性 Reliability

| No. | 项目 Item | 试验标准 | 试验条件及方法 Test conditions and methods | 性能要求 Requirements |
|-----|--|---------------|---|--|
| 4.1 | 引出端强度 Terminal strength | IEC60068-2-21 | 线径 lead diameter(mm) 拉力 (N) <u>Pull strength(N)</u> $0.5 < d \leq 0.8$ 10 $0.8 < d \leq 1.25$ 20 时间: 10 ± 1 秒 time: 10 ± 1 sec | 无可见性损伤 No obvious damage $R_{25} \Delta R/R \leq \pm 25\%$ |
| 4.2 | 可焊性 Solderability | IEC60068-2-20 | 温度 $245 \pm 5^\circ\text{C}$ 时间 2-3 秒 temperature : $245 \pm 5^\circ\text{C}$ for 2-3sec | 着锡面积 $\geq 95\%$ Coverage area $\geq 95\%$. |
| 4.3 | 耐焊接热 Withstand weiling temp | IEC60068-2-20 | 锡锅温度: $260 \pm 5^\circ\text{C}$, 浸入深度距电阻体 6mm, 时间 10 ± 1 秒 Temperature of tin pot: $260 \pm 5^\circ\text{C}$, insert depth from body of resistance 6mm, time 10 ± 1 seconds | $R_{25} \Delta R/R \leq \pm 25\%$ |
| 4.4 | 稳态湿热 Steady humidity and heat | IEC60068-2-78 | 温度: $40^\circ\text{C} \pm 2^\circ\text{C}$, 湿度: $93 \pm 2\%$, 时间: 500 小时 Temp: $40^\circ\text{C} \pm 2^\circ\text{C}$, humidity: $93 \pm 2\%$, Time : 500hrs | $R_{25} \Delta R/R \leq \pm 25\%$ |
| 4.5 | 温度快速变化 Rapid changes in temperature | IEC60068-2-14 | $-40^\circ\text{C} 30\text{min} \rightarrow 25^\circ\text{C} 5\text{min} \rightarrow 140^\circ\text{C} 30\text{min} \rightarrow 25^\circ\text{C} 5\text{min}$, 5cycles | $R_{25} \Delta R/R \leq \pm 25\%$ |
| 4.6 | 高温储存 High temperature storage | IEC60068-2-2 | 温度: $140^\circ\text{C} \pm 5^\circ\text{C}$ 时间: 500 小时 Temp : $140^\circ\text{C} \pm 5^\circ\text{C}$, Time : 500hrs | $R_{25} \Delta R/R \leq \pm 25\%$ |
| 4.7 | 最大稳态电流 耐久性 durability for max steady current | IEC60539-1 | 在室温下热敏电阻器持续施加最大稳态电 $500 \pm 24\text{h}$ Impose sustained max steady current upon the thermistor at ambient temperature. | $R_{25} \Delta R/R \leq \pm 25\%$ |
| 4.8 | 最大电容量 Max capacity valume | IEC60539-1 | 施加最大允许电容量, 间歇地闭合 50ms、 断开 5 倍的热时间常数为一个循环, 对热敏电阻器施加 1000 次循环。Impose 1000 cycles to the thermistor. take Max capacity value, intermittent switch 50ms, cut 5 times thermal time constant as one cycle. | $R_{25} \Delta R/R \leq \pm 25\%$ |

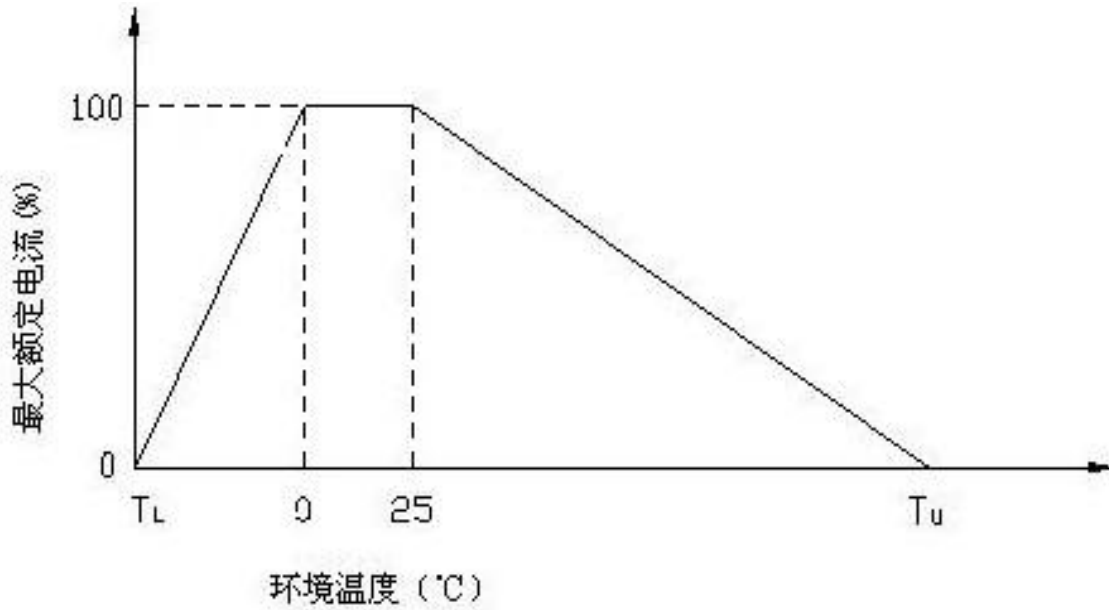
▲注: 1) 稳态湿热及温度快速变化试验结束后, 样品需在常温环境下静置 2 小时后再做性能测试;

▲Note: 1) After the test of steady-state humid heat and rapid temperature change, the sample should be kept for 2 hours at room temperature before performance test ;

2) 高温存储结束后, 需随测试环境自然恢复至常温, 再取出做性能测试。

2) After the test of high-temperature storage is complete, and then take it out for performance test when the test environment naturally regain to normal temperature.

5、降电流曲线



备注: T_L =最低温度 (°C)
 T_u =最高温度 (°C)

6、产品包装 Product packaging

6.1 包装方式 Packing Type

散装方式 Bulk Type 编带方式 Reel Type 托盘包装方式 pallet

6.2 包装规格 Packing specification

| No. | 包装规格 Packing specification | 包装材料、尺寸 Packing material, size | 产品数量 Quantity |
|-----|-------------------------------|---|------------------|
| 1 | 包装袋 Packing bag | 自封口袋(self sealing bag) W×H=11mm×12mm | |
| 2 | 编带包装盒 reel packing box | 包装盒 packing box W×G×H=335mm×240mm×50mm | |

7、安装&使用注意事项 Installation & Use precautions

7.1 本产品的用途：抑制浪涌电流；

purpose of product:current limitation;

7.2 烙铁焊接时，焊接处距包封头部距离至少 2mm，焊接温度应低于 360℃，焊接时间<3ses；

When welded by soldering iron,weld spot should be 2mm at least from head,weld temperature should be under 360℃,time<3ses

7.3 储存温度：-10℃ ~ 40℃；储存湿度：≤75% RH；

storage temp:-10℃ ~ 40℃；storage humidity:≤75% RH



7.4 避免存放在具有腐蚀性气体及光照的环境下；

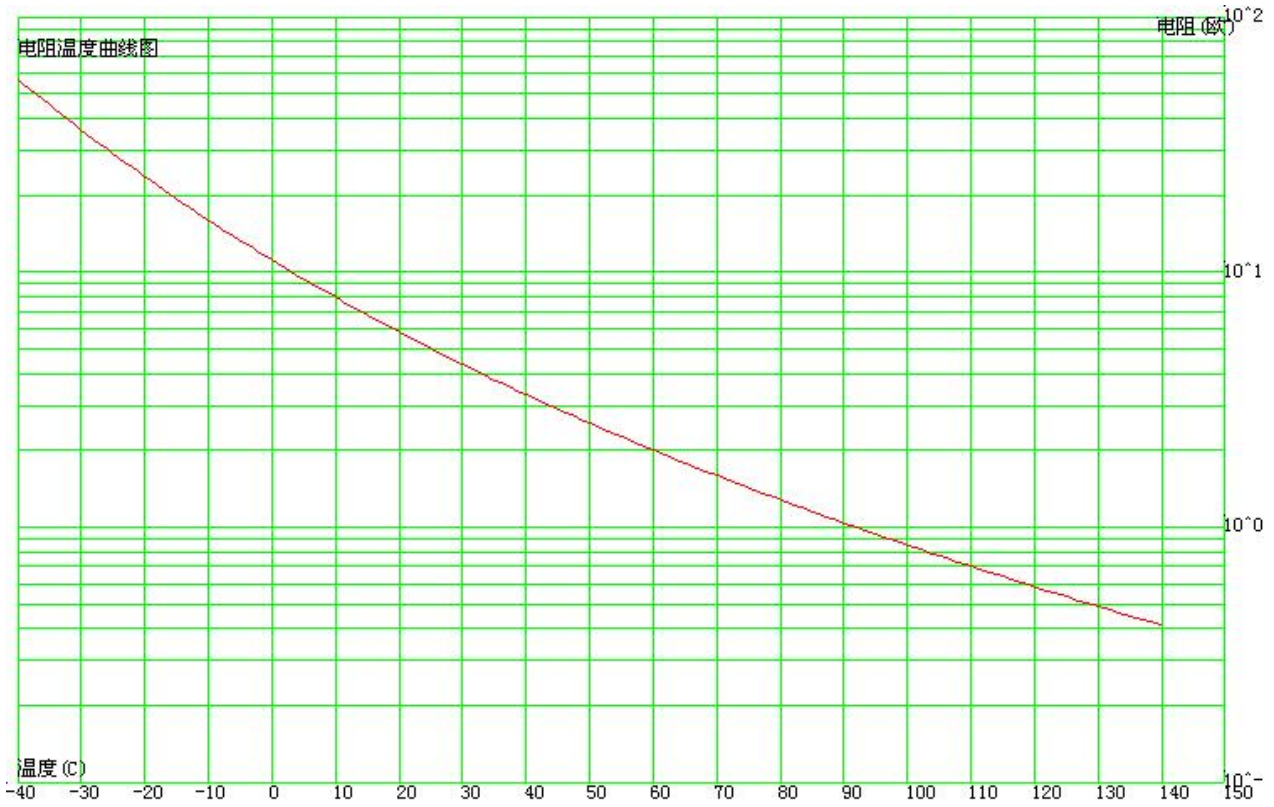
To avoid of leaving with such environment as corrosive gases and illumination

7.5 包装打开后需重新密封保存，贮存期 1 年，超过贮存期，可按本标准规定的项目重新检验，如符合要求仍可使用；

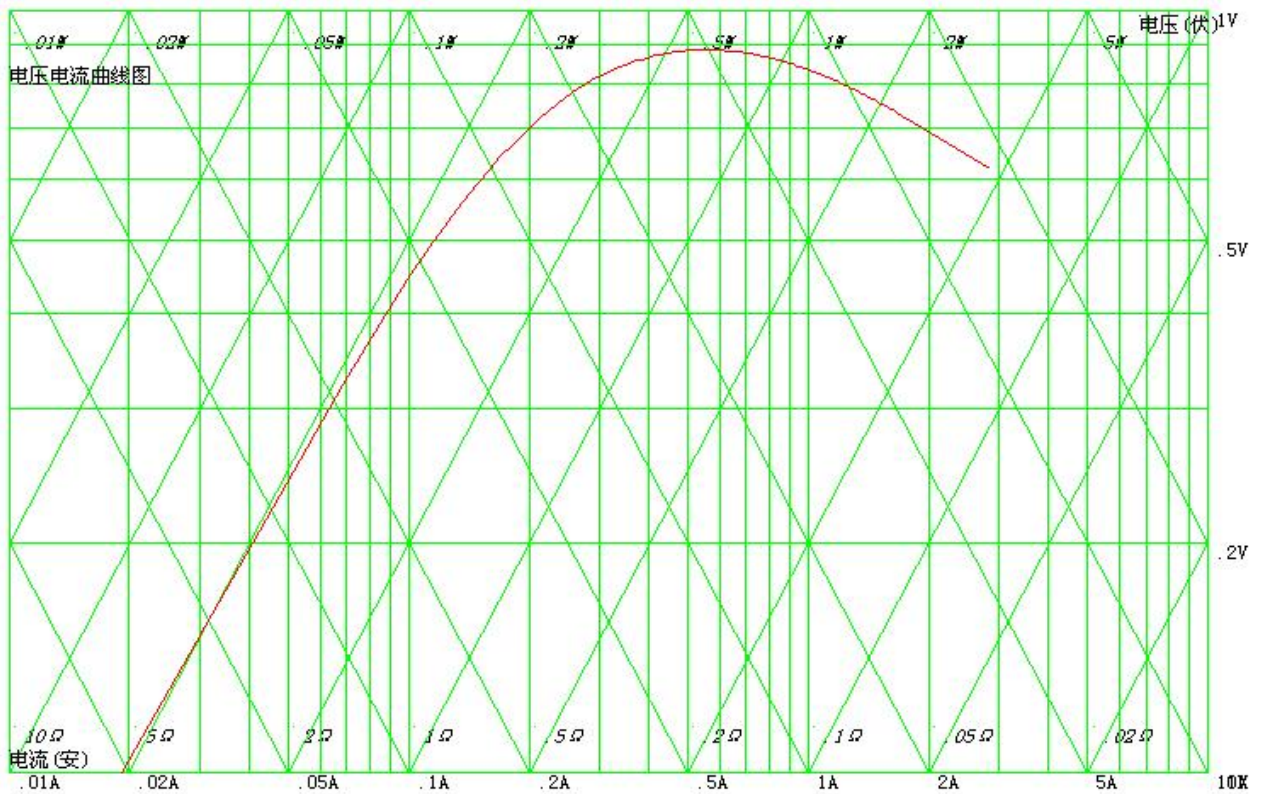
The packing need to be resealed since opened,storage period 1 year.once valid,it should be retest according to regulated of criterion and can be still used if meet the requirement.

8、产品认证 Product certification

| No. | 项目 Projects | 产品认证 Product certification |
|-----|--|---|
| 8.1 | 质量管理体系认证 Quality Management System Certification | ISO9001:2015 |
| | | IATF16949: 2016 |
| 8.2 | 环境管理体系认证 Environmental Management System Certification | ISO14001:2015 |
| 8.3 | 环保检测报告 Environmental test report | RoHS 2.0 |
| 8.4 | CQC 认证 CQC certificate |  |
| 8.5 | TUV 认证 TUV certificate | R50245892 |
| 8.6 | 江苏省高新技术产品认证 High-tech product certificate in Jiangsu Province |  |



附：图 1



附：图 2