



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 :

产品名称 PART NAME :

产品规格 PART NUMBER :

产品编号 PRODUCTCODE:

版次 REV.NO:

日期 DATE:

MF52 测温型 NTC 热敏电阻器

MF52 Series Temp Measurement NTC Thermistor

MF52A 503F3950(A1)

B0

2023-9-11

确认

CONFIRM

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

南京时恒电子科技有限公司

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## 变 更 记 录 表

### REVISED RECORD SHEET

[illegible]

## 1、产品型号说明 Product model specification

MF52    A    503    F    3950    (A1)

①                  ②                  ③                  ④                  ⑤                  ⑥

- ① MF52: 测温型 NTC 热敏电阻器系列 (Series Temp Measurement NTC Thermistor)
- ② A: 指引线为镀锡线 (Refers to tinned lead)
- ③ 503: 25℃ 的零功率电阻值 50KΩ (Zero Power Resistance at 25℃ is 50KΩ)
- ④ F: 阻值精度代码 F-±1% G-±2% H-±3% J-±5% (Resistance precision code F-±1% G-±2% H-±3% J-±5%)
- ⑤ 3950: B25/50 值 3950K (B25/50:3950K)
- ⑥ (A1): 线材规格: 引线外径 Φ0.3mm (Wire dimension: The outer diameter of lead wire is Φ0.3mm)

## 2、电气性能 Electrical Characteristics

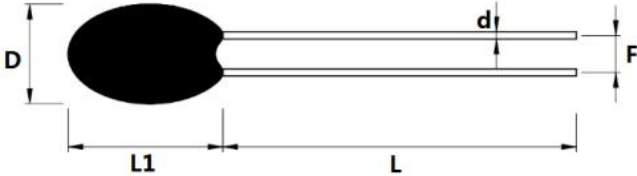
| No. | 项目<br>Item                                            | 符号<br>Symbol       | 测试条件<br>Test conditions                                                                                            | 单位<br>Unit | 性能要求<br>Requirements            |
|-----|-------------------------------------------------------|--------------------|--------------------------------------------------------------------------------------------------------------------|------------|---------------------------------|
| 2.1 | 25℃ 的零功率电阻值<br>Zero Power Resistance at 25℃           | R <sub>25℃</sub>   | T <sub>a</sub> =25±0.01℃<br>Test Power≤0.1mW                                                                       | KΩ         | 50KΩ±1%                         |
| 2.2 | B 值<br>B-value                                        | B <sub>25/50</sub> | $B = [(T_a \times T_b) / (T_b - T_a)] \times \ln(R_a / R_b)$<br>T <sub>a</sub> =25±0.01℃ T <sub>b</sub> =50℃±0.01℃ | K          | 3950±1%                         |
| 2.3 | 耗散系数<br>Thermal dissipation Coefficient               | δ                  | 静止空气中<br>In still air                                                                                              | mW/℃       | 约 2                             |
| 2.4 | 时间常数<br>Thermal time constant                         | τ                  | 静止空气中<br>In still air                                                                                              | sec        | 约 7                             |
| 2.5 | 绝缘电阻<br>Insulation resistance                         | /                  | 100V/DC 1min                                                                                                       | MΩ         | ≥100                            |
| 2.6 | 工作温度范围<br>Operating temperature range                 | /                  | /                                                                                                                  | ℃          | -55℃ ~ 125℃                     |
| 2.7 | 最大额定功率<br>Maximum rated power                         | P <sub>max</sub>   | /                                                                                                                  | mW         | 100                             |
| 2.8 | 阻温特性<br>R&T-table                                     | /                  | /                                                                                                                  | /          | 见附表 I<br>See attached table I   |
| 2.9 | 阻值误差&B 值误差<br>Resistance tolerance& B-value tolerance | /                  | /                                                                                                                  | /          | 见附表 II<br>See attached table II |

3、产品图纸 Product drawing

|                                                                                                                                                                    |  |                                                          |                                   |  |                               |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|----------------------------------------------------------|-----------------------------------|--|-------------------------------|--|
| <div> <div>  <div> <div>产品图纸</div> <div>Product drawing</div> </div> </div> </div> |  | <div> <div>客户确认</div> <div>Customer confirm</div> </div> | <div>客户名称 Customer:</div>         |  |                               |  |
| <div> <div>产品型号</div> <div>MODEL NO.</div> </div> <div>MF52A 503F3950(A1)</div>                                                                                    |  |                                                          | <div>确认</div> <div>Confirm</div>  |  | <div>日期</div> <div>DATE</div> |  |
|                                                                                                                                                                    |  |                                                          | <div>审核</div> <div>Approve:</div> |  | <div>日期</div> <div>DATE</div> |  |

尺寸 Dimensions:

(Unit: mm)



|        |      |       |          |         |
|--------|------|-------|----------|---------|
| D      | L1   | L     | d        | F       |
| Max2.5 | Max4 | Min25 | 0.3±0.05 | 1.7±0.5 |

技术要求 Technical requirements:

1) 零功率阻值: R25: 50K Ω ±1% (Zero Power Resistance: R25: 50KΩ±1%);

2) B25/50 数值: 3950K ±1% (B-value:B25/50: 3950K±1%);

3) 线材: Φ0.3 镀锡铜包钢线 ( Φ0.3 tinned copper-weld steel wire);

4) 封装: 黑色改性环氧树脂包封 (Black function improvement Epoxy resin);

5) 符合 RoHS 环保要求 (Meet environmental protection requirements:RoHS)。

更新履历 Revised record sheet

|               |                  |                        |                  |                 |
|---------------|------------------|------------------------|------------------|-----------------|
| 版本<br>REV. NO | 更新时间<br>REV.DATE | 更新内容<br>Change content | 申请人<br>Applicant | 批准人<br>Approved |
| B0            |                  | 版本发行                   | 王月婷              | 李少媛             |
|               |                  |                        |                  |                 |
|               |                  |                        |                  |                 |
|               |                  |                        |                  |                 |
|               |                  |                        |                  |                 |
|               |                  |                        |                  |                 |
|               |                  |                        |                  |                 |
|               |                  |                        |                  |                 |
|               |                  |                        |                  |                 |

## 4、可靠性 Reliability

| No. | 项目<br>Item                             | 试验标准          | 试验条件及方法<br>Test conditions and methods                                                                                                                                                 | 性能要求<br>Requirements                                             |
|-----|----------------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| 4.1 | 引出端强度<br>Terminal strength             | IEC60068-2-21 | 固定电阻端, 拉力: $5 \pm 1$ N, 时间: $10 \pm 1$ 秒<br>Fixed resistor end, Pull strength: $5 \pm 1$ N, time: $10 \pm 1$ sec                                                                       | 无可见性损伤<br>No obvious damage<br>$ \Delta R_{25}/R_{25}  \leq 2\%$ |
| 4.2 | 可焊性<br>Solderability                   | IEC60068-2-20 | 温度 $245 \pm 5^\circ\text{C}$ 时间 2-3 秒<br>temperature : $245 \pm 5^\circ\text{C}$ for 2-3sec                                                                                            | 着锡面积 $\geq 95\%$<br>Coverage area $\geq 95\%$ .                  |
| 4.3 | 耐焊接热<br>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 $5 \pm 1$ 秒<br>Temperature of tin pot: $260 \pm 5^\circ\text{C}$ , insert depth from body of resistance 6mm, time $5 \pm 1$ seconds | 无可见性损伤<br>No obvious damage<br>$ \Delta R_{25}/R_{25}  \leq 2\%$ |
| 4.3 | 稳态湿热<br>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<br>Temp: $40^\circ\text{C} \pm 2^\circ\text{C}$ , humidity: $93 \pm 2\%$ , Time : 500hrs                    | 无可见性损伤<br>No obvious damage<br>$ \Delta R_{25}/R_{25}  \leq 2\%$ |
| 4.4 | 温度快速变化<br>Rapid changes in temperature | IEC60068-2-14 | $-55^\circ\text{C}$ 30min $\rightarrow$ $25^\circ\text{C}$ 5min $\rightarrow$ $125^\circ\text{C}$ 30min $\rightarrow$ $25^\circ\text{C}$ 5min, 5cycles                                 | 无可见性损伤<br>No obvious damage<br>$ \Delta R_{25}/R_{25}  \leq 2\%$ |
| 4.5 | 高温储存<br>High temperature storage       | IEC60068-2-2  | 温度: $125^\circ\text{C} \pm 5^\circ\text{C}$<br>时间: 1000 小时<br>Temp : $125^\circ\text{C} \pm 5^\circ\text{C}$ , Time : 1000hrs                                                          | 无可见性损伤<br>No obvious damage<br>$ \Delta R_{25}/R_{25}  \leq 2\%$ |
| 4.6 | 低温储存<br>Low temperature storage        | IEC60068-2-1  | 温度: $-55^\circ\text{C}$ 时间: 1000 小时<br>Temp : $-55^\circ\text{C}$ , Time : 1000hrs                                                                                                     | 无可见性损伤<br>No obvious damage<br>$ \Delta R_{25}/R_{25}  \leq 2\%$ |

▲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) 高温存储及低温存储结束后, 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 - and low-temperature storage is complete, and then take it out for performance test when the test environment naturally regain to normal temperature.

## 5、产品包装 Product packaging

## 5.1 包装方式 Packing Type

■ 散装方式 Bulk Type      □ 编带方式 Reel Type

## 5.2 包装规格 Packing specification

| No. | 包装规格<br>Packing specification | 包装材料、尺寸<br>Packing material, size                                       | 产品数量<br>Quantity |
|-----|-------------------------------|-------------------------------------------------------------------------|------------------|
| 1   | 包装袋 Packing bag               | 自封口袋(self sealing bag)<br>$W \times H = 11\text{mm} \times 12\text{mm}$ |                  |

## 6、安装&使用注意事项 Installation & Use precautions

6.1 本产品的用途：温度测量与控制；application:test and control for temperature

6.2 避免过大的电流引起元件自身发热而产生测量误差；To avoid of testing tolerance caused by huge current upon the self-heat of component.

6.3 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

6.4 储存温度：-10℃ ~ 40℃；储存湿度：≤75% RH；storage temp:-10℃ ~ 40℃；storage humidity:≤75% RH

6.5 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

6.6 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.

6.7 如在加工过程中需使用热缩管，热缩管热缩时不可使用电吹风进行吹制，建议热缩工艺，将套好热缩管后的产品放入恒温烘箱中，按 110℃/10-12min 进行热缩；

In case of useing heat-shrink tube,hair drier is prohibited.we suggest that put the product with heat shrink into constant-temperature box and heat shrink under 110℃/10-12min

6.8 对于 MF52A、B、C、D 等型号的测温型 NTC 热敏电阻器，其均为径向引出线结构，不得将其两引线拉成 180° 轴向使用。

For the MF52A, B, C, D Type NTC thermistors, they are all radial lead-out structure, shall not be used to pull its two leads into 180° axial

## 7、产品认证 Product certification

| No. | 项目<br>Projects                                                   | 产品认证<br>Product certification                                                         |
|-----|------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 8.1 | 质量管理体系认证<br>Quality Management System Certification              | ISO9001:2015                                                                          |
|     |                                                                  | IATF16949: 2016                                                                       |
| 8.2 | 环境管理体系认证<br>Environmental Management System Certification        | ISO14001:2015                                                                         |
| 8.3 | 环保检测报告<br>Environmental test report                              | RoHS 2.0                                                                              |
| 8.4 | CQC 认证 (CQC07001019009)<br>CQC certificate (CQC07001019009)      |  |
| 8.5 | 江苏省高新技术产品认证<br>High-tech product certificate in Jiangsu Province |  |
| 8.6 | UL 认证 (E240991)<br>UL certificate (E240991)                      |  |

|     |                                                   |                                                                                     |
|-----|---------------------------------------------------|-------------------------------------------------------------------------------------|
| 8.7 | TUV 认证 (R50245892)<br>TUV certificate (R50245892) |  |
| 8.8 | 产品通过 AEC-Q200 测试<br>Passed by AECQ-200            | 20172050557G                                                                        |

附表 I (Attachment I)

## 南京时恒电子科技有限公司

R25=50K  $\Omega$  精度:  $\pm 1\%$  B25/50=3950K B25/85=4091K 精度:  $\pm 1\%$  (P182-6B)

| 温度( $^{\circ}\text{C}$ ) | 电阻(K $\Omega$ ) |         |         | 电阻精度(%)    |             | 温度精度( $^{\circ}\text{C}$ ) |             |
|--------------------------|-----------------|---------|---------|------------|-------------|----------------------------|-------------|
|                          | 最小值             | 中心值     | 最大值     | $\Delta R$ | $-\Delta R$ | $\Delta T$                 | $-\Delta T$ |
| -55                      | 3868.86         | 4090    | 4311.13 | 5.406      | -5.406      | 0.718                      | -0.718      |
| -54                      | 3557.59         | 3757.56 | 3957.53 | 5.321      | -5.321      | 0.715                      | -0.715      |
| -53                      | 3286.45         | 3468.24 | 3650.03 | 5.241      | -5.241      | 0.712                      | -0.712      |
| -52                      | 3047.61         | 3213.59 | 3379.58 | 5.165      | -5.165      | 0.708                      | -0.708      |
| -51                      | 2835.06         | 2987.17 | 3139.28 | 5.092      | -5.092      | 0.704                      | -0.704      |
| -50                      | 2644.19         | 2783.99 | 2923.79 | 5.021      | -5.021      | 0.701                      | -0.701      |
| -49                      | 2471.4          | 2600.19 | 2728.98 | 4.953      | -4.953      | 0.697                      | -0.697      |
| -48                      | 2313.87         | 2432.74 | 2551.62 | 4.886      | -4.886      | 0.693                      | -0.693      |
| -47                      | 2169.37         | 2279.26 | 2389.15 | 4.821      | -4.821      | 0.689                      | -0.689      |
| -46                      | 2036.15         | 2137.85 | 2239.55 | 4.757      | -4.757      | 0.685                      | -0.685      |



|     |         |         |         |       |        |       |        |
|-----|---------|---------|---------|-------|--------|-------|--------|
| -45 | 1912.78 | 2006.98 | 2101.19 | 4.693 | -4.693 | 0.68  | -0.68  |
| -44 | 1798.12 | 1885.44 | 1972.76 | 4.631 | -4.631 | 0.676 | -0.676 |
| -43 | 1691.25 | 1772.23 | 1853.21 | 4.569 | -4.569 | 0.672 | -0.672 |
| -42 | 1591.39 | 1666.52 | 1741.64 | 4.507 | -4.507 | 0.667 | -0.667 |
| -41 | 1497.92 | 1567.63 | 1637.34 | 4.446 | -4.446 | 0.663 | -0.663 |
| -40 | 1410.31 | 1475    | 1539.68 | 4.385 | -4.385 | 0.658 | -0.658 |
| -39 | 1328.09 | 1388.12 | 1448.15 | 4.324 | -4.324 | 0.654 | -0.654 |
| -38 | 1250.87 | 1306.58 | 1362.3  | 4.264 | -4.264 | 0.649 | -0.649 |
| -37 | 1178.31 | 1230.02 | 1281.73 | 4.203 | -4.203 | 0.644 | -0.644 |
| -36 | 1110.1  | 1158.09 | 1206.08 | 4.143 | -4.143 | 0.639 | -0.639 |
| -35 | 1045.98 | 1090.51 | 1135.04 | 4.083 | -4.083 | 0.634 | -0.634 |
| -34 | 985.69  | 1027    | 1068.32 | 4.023 | -4.023 | 0.629 | -0.629 |
| -33 | 928.997 | 967.336 | 1005.67 | 3.963 | -3.963 | 0.625 | -0.625 |
| -32 | 875.693 | 911.266 | 946.838 | 3.903 | -3.903 | 0.619 | -0.619 |
| -31 | 825.581 | 858.586 | 891.59  | 3.844 | -3.844 | 0.614 | -0.614 |
| -30 | 778.476 | 809.097 | 839.718 | 3.784 | -3.784 | 0.609 | -0.609 |
| -29 | 734.201 | 762.611 | 791.022 | 3.725 | -3.725 | 0.604 | -0.604 |
| -28 | 692.592 | 718.952 | 745.312 | 3.666 | -3.666 | 0.599 | -0.599 |
| -27 | 653.493 | 677.951 | 702.41  | 3.607 | -3.607 | 0.594 | -0.594 |
| -26 | 616.755 | 639.45  | 662.146 | 3.549 | -3.549 | 0.588 | -0.588 |
| -25 | 582.239 | 603.3   | 624.36  | 3.49  | -3.49  | 0.583 | -0.583 |
| -24 | 549.81  | 569.356 | 588.902 | 3.433 | -3.433 | 0.577 | -0.577 |
| -23 | 519.343 | 537.485 | 555.627 | 3.375 | -3.375 | 0.572 | -0.572 |
| -22 | 490.719 | 507.56  | 524.401 | 3.318 | -3.318 | 0.566 | -0.566 |
| -21 | 463.823 | 479.459 | 495.094 | 3.261 | -3.261 | 0.561 | -0.561 |
| -20 | 438.55  | 453.069 | 467.587 | 3.204 | -3.204 | 0.555 | -0.555 |
| -19 | 414.799 | 428.282 | 441.765 | 3.148 | -3.148 | 0.549 | -0.549 |
| -18 | 392.474 | 404.998 | 417.521 | 3.092 | -3.092 | 0.543 | -0.543 |
| -17 | 371.486 | 383.12  | 394.754 | 3.036 | -3.036 | 0.538 | -0.538 |







|     |         |         |         |       |        |       |        |
|-----|---------|---------|---------|-------|--------|-------|--------|
| -16 | 351.75  | 362.56  | 373.37  | 2.981 | -2.981 | 0.532 | -0.532 |
| -15 | 333.188 | 343.233 | 353.278 | 2.926 | -2.926 | 0.526 | -0.526 |
| -14 | 315.724 | 325.06  | 334.397 | 2.872 | -2.872 | 0.52  | -0.52  |
| -13 | 299.289 | 307.968 | 316.647 | 2.818 | -2.818 | 0.513 | -0.513 |
| -12 | 283.817 | 291.886 | 299.956 | 2.764 | -2.764 | 0.507 | -0.507 |
| -11 | 269.247 | 276.75  | 284.254 | 2.711 | -2.711 | 0.501 | -0.501 |
| -10 | 255.521 | 262.5   | 269.478 | 2.658 | -2.658 | 0.495 | -0.495 |
| -9  | 242.586 | 249.077 | 255.568 | 2.605 | -2.605 | 0.488 | -0.488 |
| -8  | 230.392 | 236.43  | 242.468 | 2.553 | -2.553 | 0.482 | -0.482 |
| -7  | 218.891 | 224.509 | 230.126 | 2.502 | -2.502 | 0.475 | -0.475 |
| -6  | 208.04  | 213.267 | 218.493 | 2.45  | -2.45  | 0.469 | -0.469 |
| -5  | 197.798 | 202.661 | 207.525 | 2.399 | -2.399 | 0.462 | -0.462 |
| -4  | 188.127 | 192.652 | 197.177 | 2.348 | -2.348 | 0.455 | -0.455 |
| -3  | 178.99  | 183.201 | 187.413 | 2.298 | -2.298 | 0.449 | -0.449 |
| -2  | 170.355 | 174.274 | 178.193 | 2.248 | -2.248 | 0.442 | -0.442 |
| -1  | 162.191 | 165.838 | 169.485 | 2.199 | -2.199 | 0.435 | -0.435 |
| 0   | 154.514 | 157.91  | 161.305 | 2.15  | -2.15  | 0.428 | -0.428 |
| 1   | 147.16  | 150.318 | 153.476 | 2.1   | -2.1   | 0.421 | -0.421 |
| 2   | 140.241 | 143.179 | 146.118 | 2.052 | -2.052 | 0.414 | -0.414 |
| 3   | 133.688 | 136.422 | 139.156 | 2.003 | -2.003 | 0.406 | -0.406 |
| 4   | 127.48  | 130.023 | 132.566 | 1.955 | -1.955 | 0.399 | -0.399 |
| 5   | 121.594 | 123.959 | 126.325 | 1.907 | -1.907 | 0.392 | -0.392 |
| 6   | 116.013 | 118.213 | 120.412 | 1.86  | -1.86  | 0.384 | -0.384 |
| 7   | 110.719 | 112.764 | 114.808 | 1.813 | -1.813 | 0.377 | -0.377 |
| 8   | 105.694 | 107.595 | 109.495 | 1.766 | -1.766 | 0.369 | -0.369 |
| 9   | 100.924 | 102.69  | 104.456 | 1.719 | -1.719 | 0.361 | -0.361 |
| 10  | 96.393  | 98.034  | 99.674  | 1.673 | -1.673 | 0.354 | -0.354 |
| 11  | 92.088  | 93.612  | 95.135  | 1.627 | -1.627 | 0.346 | -0.346 |
| 12  | 87.997  | 89.411  | 90.825  | 1.581 | -1.581 | 0.338 | -0.338 |





|    |        |        |        |       |        |       |        |
|----|--------|--------|--------|-------|--------|-------|--------|
| 13 | 84.107 | 85.419 | 86.73  | 1.535 | -1.535 | 0.33  | -0.33  |
| 14 | 80.407 | 81.623 | 82.84  | 1.49  | -1.49  | 0.322 | -0.322 |
| 15 | 76.887 | 78.014 | 79.141 | 1.444 | -1.444 | 0.313 | -0.313 |
| 16 | 73.537 | 74.581 | 75.625 | 1.399 | -1.399 | 0.305 | -0.305 |
| 17 | 70.347 | 71.314 | 72.28  | 1.355 | -1.355 | 0.297 | -0.297 |
| 18 | 67.31  | 68.204 | 69.098 | 1.31  | -1.31  | 0.288 | -0.288 |
| 19 | 64.417 | 65.243 | 66.069 | 1.266 | -1.266 | 0.279 | -0.279 |
| 20 | 61.66  | 62.422 | 63.185 | 1.221 | -1.221 | 0.27  | -0.27  |
| 21 | 59.032 | 59.736 | 60.439 | 1.177 | -1.177 | 0.261 | -0.261 |
| 22 | 56.527 | 57.175 | 57.824 | 1.134 | -1.134 | 0.251 | -0.251 |
| 23 | 54.138 | 54.735 | 55.332 | 1.09  | -1.09  | 0.239 | -0.239 |
| 24 | 51.86  | 52.408 | 52.957 | 1.047 | -1.047 | 0.221 | -0.221 |
| 25 | 49.5   | 50     | 50.5   | 1     | -1     | 0.213 | -0.213 |
| 26 | 47.573 | 48.073 | 48.573 | 1.039 | -1.039 | 0.265 | -0.265 |
| 27 | 45.555 | 46.054 | 46.552 | 1.082 | -1.082 | 0.265 | -0.265 |
| 28 | 43.63  | 44.127 | 44.623 | 1.124 | -1.124 | 0.272 | -0.272 |
| 29 | 41.794 | 42.288 | 42.781 | 1.167 | -1.167 | 0.282 | -0.282 |
| 30 | 40.041 | 40.532 | 41.022 | 1.209 | -1.209 | 0.293 | -0.293 |
| 31 | 38.369 | 38.855 | 39.342 | 1.252 | -1.252 | 0.303 | -0.303 |
| 32 | 36.772 | 37.254 | 37.736 | 1.294 | -1.294 | 0.315 | -0.315 |
| 33 | 35.247 | 35.724 | 36.202 | 1.336 | -1.336 | 0.326 | -0.326 |
| 34 | 33.791 | 34.263 | 34.735 | 1.377 | -1.377 | 0.338 | -0.338 |
| 35 | 32.4   | 32.867 | 33.333 | 1.419 | -1.419 | 0.349 | -0.349 |
| 36 | 31.072 | 31.532 | 31.993 | 1.461 | -1.461 | 0.361 | -0.361 |
| 37 | 29.802 | 30.257 | 30.711 | 1.502 | -1.502 | 0.373 | -0.373 |
| 38 | 28.589 | 29.037 | 29.486 | 1.543 | -1.543 | 0.385 | -0.385 |
| 39 | 27.43  | 27.872 | 28.313 | 1.584 | -1.584 | 0.397 | -0.397 |
| 40 | 26.322 | 26.757 | 27.191 | 1.625 | -1.625 | 0.409 | -0.409 |
| 41 | 25.262 | 25.69  | 26.118 | 1.665 | -1.665 | 0.421 | -0.421 |





|    |        |        |        |       |        |       |        |
|----|--------|--------|--------|-------|--------|-------|--------|
| 42 | 24.249 | 24.67  | 25.091 | 1.706 | -1.706 | 0.434 | -0.434 |
| 43 | 23.28  | 23.694 | 24.108 | 1.746 | -1.746 | 0.446 | -0.446 |
| 44 | 22.354 | 22.76  | 23.167 | 1.787 | -1.787 | 0.458 | -0.458 |
| 45 | 21.467 | 21.867 | 22.266 | 1.827 | -1.827 | 0.471 | -0.471 |
| 46 | 20.619 | 21.011 | 21.404 | 1.866 | -1.866 | 0.484 | -0.484 |
| 47 | 19.808 | 20.193 | 20.578 | 1.906 | -1.906 | 0.496 | -0.496 |
| 48 | 19.031 | 19.409 | 19.786 | 1.946 | -1.946 | 0.509 | -0.509 |
| 49 | 18.288 | 18.658 | 19.029 | 1.985 | -1.985 | 0.522 | -0.522 |
| 50 | 17.576 | 17.94  | 18.303 | 2.025 | -2.025 | 0.535 | -0.535 |
| 51 | 16.895 | 17.251 | 17.607 | 2.064 | -2.064 | 0.548 | -0.548 |
| 52 | 16.243 | 16.592 | 16.941 | 2.103 | -2.103 | 0.561 | -0.561 |
| 53 | 15.618 | 15.96  | 16.302 | 2.141 | -2.141 | 0.574 | -0.574 |
| 54 | 15.02  | 15.355 | 15.69  | 2.18  | -2.18  | 0.587 | -0.587 |
| 55 | 14.447 | 14.775 | 15.103 | 2.219 | -2.219 | 0.601 | -0.601 |
| 56 | 13.898 | 14.219 | 14.54  | 2.257 | -2.257 | 0.614 | -0.614 |
| 57 | 13.373 | 13.687 | 14.001 | 2.295 | -2.295 | 0.627 | -0.627 |
| 58 | 12.869 | 13.176 | 13.484 | 2.333 | -2.333 | 0.641 | -0.641 |
| 59 | 12.386 | 12.687 | 12.988 | 2.371 | -2.371 | 0.654 | -0.654 |
| 60 | 11.923 | 12.217 | 12.512 | 2.409 | -2.409 | 0.668 | -0.668 |
| 61 | 11.479 | 11.767 | 12.055 | 2.446 | -2.446 | 0.682 | -0.682 |
| 62 | 11.054 | 11.336 | 11.617 | 2.484 | -2.484 | 0.696 | -0.696 |
| 63 | 10.646 | 10.921 | 11.197 | 2.521 | -2.521 | 0.71  | -0.71  |
| 64 | 10.255 | 10.524 | 10.793 | 2.558 | -2.558 | 0.724 | -0.724 |
| 65 | 9.88   | 10.143 | 10.406 | 2.595 | -2.595 | 0.738 | -0.738 |
| 66 | 9.52   | 9.777  | 10.035 | 2.632 | -2.632 | 0.752 | -0.752 |
| 67 | 9.175  | 9.426  | 9.678  | 2.668 | -2.668 | 0.766 | -0.766 |
| 68 | 8.843  | 9.089  | 9.335  | 2.705 | -2.705 | 0.78  | -0.78  |
| 69 | 8.525  | 8.766  | 9.006  | 2.741 | -2.741 | 0.795 | -0.795 |
| 70 | 8.22   | 8.455  | 8.69   | 2.777 | -2.777 | 0.809 | -0.809 |





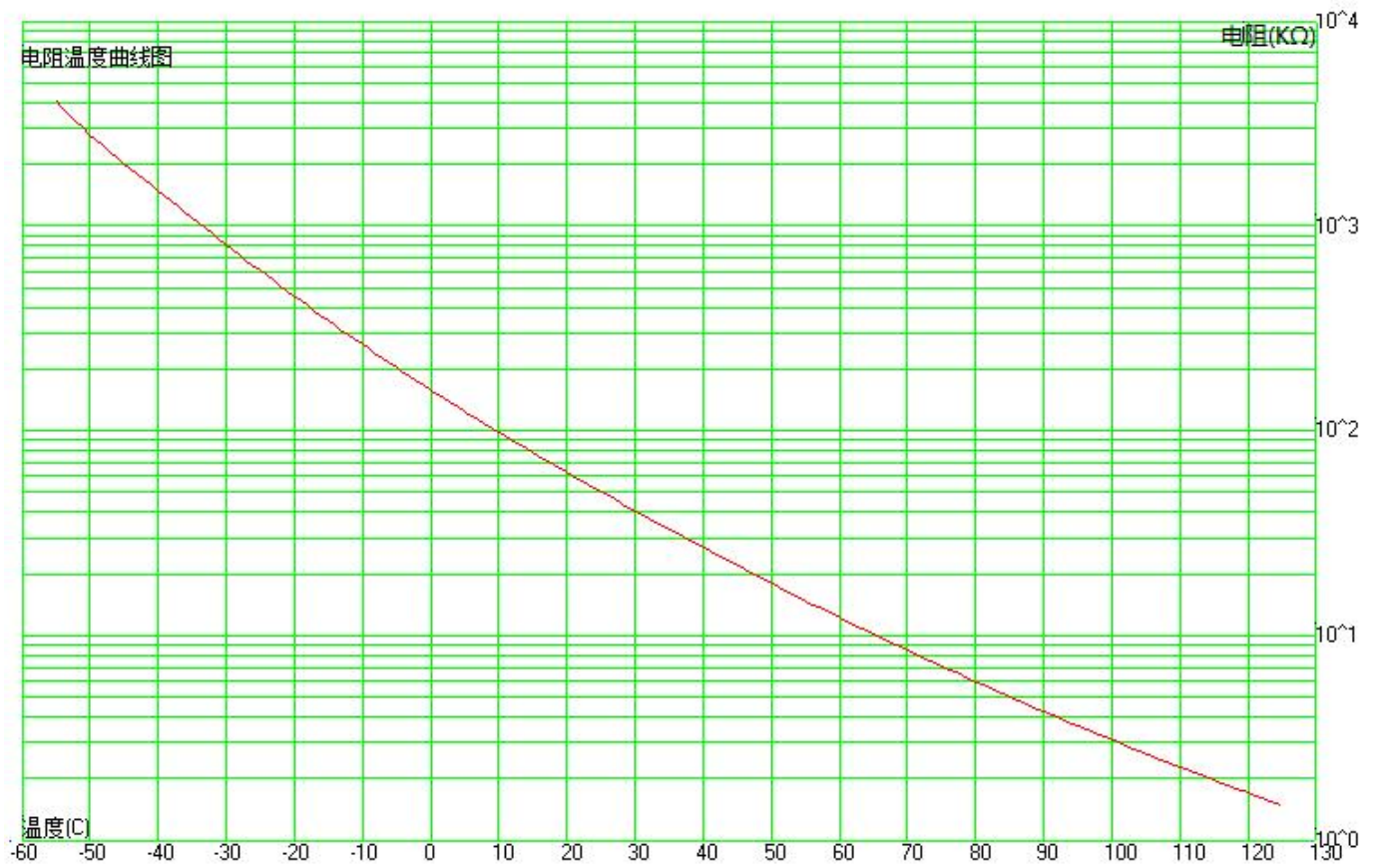
|    |       |       |       |       |        |       |        |
|----|-------|-------|-------|-------|--------|-------|--------|
| 71 | 7.927 | 8.157 | 8.386 | 2.813 | -2.813 | 0.823 | -0.823 |
| 72 | 7.646 | 7.871 | 8.095 | 2.849 | -2.849 | 0.838 | -0.838 |
| 73 | 7.376 | 7.595 | 7.815 | 2.884 | -2.884 | 0.853 | -0.853 |
| 74 | 7.117 | 7.331 | 7.545 | 2.92  | -2.92  | 0.867 | -0.867 |
| 75 | 6.868 | 7.077 | 7.286 | 2.955 | -2.955 | 0.882 | -0.882 |
| 76 | 6.629 | 6.833 | 7.037 | 2.99  | -2.99  | 0.897 | -0.897 |
| 77 | 6.399 | 6.599 | 6.798 | 3.025 | -3.025 | 0.912 | -0.912 |
| 78 | 6.178 | 6.373 | 6.568 | 3.06  | -3.06  | 0.927 | -0.927 |
| 79 | 5.966 | 6.156 | 6.347 | 3.094 | -3.094 | 0.942 | -0.942 |
| 80 | 5.762 | 5.948 | 6.134 | 3.129 | -3.129 | 0.957 | -0.957 |
| 81 | 5.566 | 5.748 | 5.929 | 3.163 | -3.163 | 0.972 | -0.972 |
| 82 | 5.377 | 5.555 | 5.733 | 3.197 | -3.197 | 0.988 | -0.988 |
| 83 | 5.196 | 5.37  | 5.543 | 3.231 | -3.231 | 1.003 | -1.003 |
| 84 | 5.022 | 5.191 | 5.361 | 3.265 | -3.265 | 1.018 | -1.018 |
| 85 | 4.854 | 5.02  | 5.185 | 3.299 | -3.299 | 1.034 | -1.034 |
| 86 | 4.693 | 4.854 | 5.016 | 3.332 | -3.332 | 1.05  | -1.05  |
| 87 | 4.537 | 4.695 | 4.853 | 3.365 | -3.365 | 1.065 | -1.065 |
| 88 | 4.388 | 4.542 | 4.697 | 3.399 | -3.399 | 1.081 | -1.081 |
| 89 | 4.244 | 4.395 | 4.546 | 3.431 | -3.431 | 1.097 | -1.097 |
| 90 | 4.106 | 4.253 | 4.4   | 3.464 | -3.464 | 1.113 | -1.113 |
| 91 | 3.972 | 4.116 | 4.26  | 3.497 | -3.497 | 1.129 | -1.129 |
| 92 | 3.844 | 3.985 | 4.125 | 3.53  | -3.53  | 1.145 | -1.145 |
| 93 | 3.72  | 3.858 | 3.995 | 3.562 | -3.562 | 1.161 | -1.161 |
| 94 | 3.601 | 3.736 | 3.87  | 3.594 | -3.594 | 1.177 | -1.177 |
| 95 | 3.487 | 3.618 | 3.749 | 3.626 | -3.626 | 1.193 | -1.193 |
| 96 | 3.376 | 3.504 | 3.633 | 3.658 | -3.658 | 1.21  | -1.21  |
| 97 | 3.27  | 3.395 | 3.52  | 3.69  | -3.69  | 1.226 | -1.226 |
| 98 | 3.167 | 3.289 | 3.412 | 3.721 | -3.721 | 1.242 | -1.242 |
| 99 | 3.068 | 3.188 | 3.307 | 3.753 | -3.753 | 1.259 | -1.259 |





|     |       |       |       |       |        |       |        |
|-----|-------|-------|-------|-------|--------|-------|--------|
| 100 | 2.973 | 3.09  | 3.206 | 3.784 | -3.784 | 1.276 | -1.276 |
| 101 | 2.881 | 2.995 | 3.109 | 3.815 | -3.815 | 1.292 | -1.292 |
| 102 | 2.792 | 2.904 | 3.015 | 3.846 | -3.846 | 1.309 | -1.309 |
| 103 | 2.706 | 2.815 | 2.925 | 3.877 | -3.877 | 1.326 | -1.326 |
| 104 | 2.624 | 2.73  | 2.837 | 3.908 | -3.908 | 1.343 | -1.343 |
| 105 | 2.544 | 2.648 | 2.753 | 3.938 | -3.938 | 1.36  | -1.36  |
| 106 | 2.467 | 2.569 | 2.671 | 3.969 | -3.969 | 1.377 | -1.377 |
| 107 | 2.393 | 2.493 | 2.592 | 3.999 | -3.999 | 1.394 | -1.394 |
| 108 | 2.321 | 2.419 | 2.516 | 4.029 | -4.029 | 1.411 | -1.411 |
| 109 | 2.252 | 2.347 | 2.443 | 4.059 | -4.059 | 1.429 | -1.429 |
| 110 | 2.185 | 2.278 | 2.372 | 4.089 | -4.089 | 1.446 | -1.446 |
| 111 | 2.121 | 2.212 | 2.303 | 4.118 | -4.118 | 1.463 | -1.463 |
| 112 | 2.058 | 2.147 | 2.237 | 4.148 | -4.148 | 1.481 | -1.481 |
| 113 | 1.998 | 2.085 | 2.172 | 4.177 | -4.177 | 1.498 | -1.498 |
| 114 | 1.94  | 2.025 | 2.11  | 4.207 | -4.207 | 1.516 | -1.516 |
| 115 | 1.884 | 1.967 | 2.05  | 4.236 | -4.236 | 1.534 | -1.534 |
| 116 | 1.829 | 1.911 | 1.993 | 4.265 | -4.265 | 1.552 | -1.552 |
| 117 | 1.777 | 1.857 | 1.936 | 4.294 | -4.294 | 1.569 | -1.569 |
| 118 | 1.726 | 1.804 | 1.882 | 4.322 | -4.322 | 1.587 | -1.587 |
| 119 | 1.677 | 1.753 | 1.83  | 4.351 | -4.351 | 1.605 | -1.605 |
| 120 | 1.63  | 1.704 | 1.779 | 4.379 | -4.379 | 1.623 | -1.623 |
| 121 | 1.584 | 1.657 | 1.73  | 4.408 | -4.408 | 1.642 | -1.642 |
| 122 | 1.539 | 1.611 | 1.682 | 4.436 | -4.436 | 1.66  | -1.66  |
| 123 | 1.496 | 1.566 | 1.636 | 4.464 | -4.464 | 1.678 | -1.678 |
| 124 | 1.455 | 1.523 | 1.592 | 4.492 | -4.492 | 1.696 | -1.696 |
| 125 | 1.415 | 1.482 | 1.548 | 4.519 | -4.519 | 1.715 | -1.715 |





附表 II (Attachment II)

