# 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：MF52 测温型 NTC 热敏电阻器 / MF52 Series Temp Measurement NTC Thermistor

产品规格 PART NUMBER：MF52C 103F343530L0050

产品编号 PRODUCTCODE：

版次 REV.NO：

日期 DATE：

确认

CONFIRM

| 客户 CLIENT | | | 供货商/制造商 MANUFACTOR | |
|---|---|---|---|---|
| 品保部 Quality Dep. | | | 规格书制作 Design | 吴仪 |
| 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 |

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# 变 更 记 录 表

## REVISED RECORD SHEET

| 版次<br>REV. NO | 变更日期<br>REV.DATE | 变更内容<br>CHANGE CONTENT | 申请人<br>APPLICANT | 批准人<br>APPROVED |
|---|---|---|---|---|
| A0 | 2015/10/11 | 版本制定。 | 鞠晓丽 | 李少媛 |
| B0 | 2021/9/24 | 更新规格书版本格式，增加版次管控，细化规格图纸。 | 王月婷 | 李少媛 |
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## 1、产品型号说明 Product model specification

| MF52 | C | 103 | F | 3435 | 30 | L | 0050 |
|---|---|---|---|---|---|---|---|
| ① | ② | ③ | ④ | ⑤ | ⑥ | ⑦ | ⑧ |

① MF52：测温型 NTC 热敏电阻器系列 (Series Temp Measurement NTC Thermistor)

② C：指引线为高温导线 (The lead wire is high temperature wire)

③ 103： 25℃的零功率电阻值 10KΩ(Zero Power Resistance at 25℃is10KΩ)

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 3435：B25/85 值 3435K（B25/85:3435K）

⑥ 30：线材规格：30#电子线（Wire type: 30# electronic wire）

⑦ L：测量线材长度方式：L 指线长 Z 指总长（Method of measuring Wire length：L=Line length Z=Total length）

⑧ 0050：线材长度 0050=50mm。（Wire length 0050=50mm）

## 2、电气性能 Electrical Characteristics

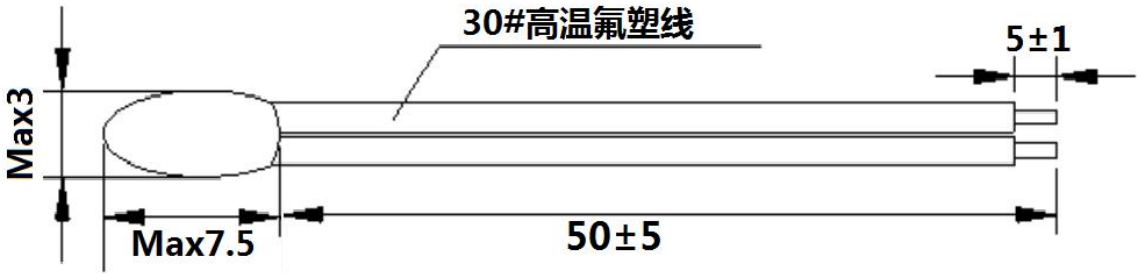
| No. | 项目 Item | 符号 Symbol | 测试条件 Test conditions | 单位 Unit | 性能要求 Requirements |
|---|---|---|---|---|---|
| 2.1 | 25℃的零功率电阻值 Zero Power Resistance at 25℃ | $R_{25℃}$ | Ta=25±0.01℃ Test Power≤0.1mW | KΩ | 10KΩ±1% |
| 2.2 | B 值 B-value | $B_{25/85}$ | $B=[(T_a\times T_b)/(T_b-T_a)]\times\ln(R_a/R_b)$ Ta=25±0.01℃ $T_b$=50℃±0.01℃ | K | 3435±1% |
| 2.3 | 耗散系数 Thermal dissipation Coefficient | δ | 静止空气中 In still air | mW/℃ | ≥2 |
| 2.4 | 时间常数 Thermal time constant | τ | 静止空气中 In still air | sec | ≤7 |
| 2.6 | 绝缘电阻 Insulation resistance | / | 100V/DC 1min | MΩ | ≥100 |
| 2.7 | NTC 核心元件工作温度范围 NTC core element temperature | / | / | ℃ | -40℃～200℃ |
| 2.8 | 工作温度范围 Operating temperature range | / | / | ℃ | -20℃～200℃ |
| 2.9 | 最大额定功率 Maximum rated power | Pmax | / | mW | 50 |
| 2.10 | 阻温特性 R&T-table | / | / | / | 见附表 I See attached table I |
| 2.11 | 阻值误差&B 值误差 Resistance tolerance& B-value tolerance | / | / | / | 见附表 II See attached table II |

## 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. | MF52C 103F343530L0050 | | 审核 Approve: | | 日期 DATE | |

**尺寸 Dimensions：**

（Unit：mm）




**技术要求 Technical requirements：**

1）零功率阻值：R25：10KΩ±1%(Zero Power Resistance: R25：10KΩ±1%)；
2）B25/50 数值：3435K±1%(B-value:B25/85:3950K±1%)；
3）绝缘电阻：100V/DC ≥100MΩ（Insulation resistance：100V/DC ≥100MΩ）；
4）符合 RoHS 环保要求（Meet environmental protection requirements:RoHS）。

材料规格 Material specifications

| No. | 名称 Name | 材料规格 Material specifications | 数量 Quantity | 备注 note |
|---|---|---|---|---|
| 1 | 核心元件 Core element | 热敏电阻芯片 10KΩ | 1 | |
| 2 | 包封类 Coating material | 高温环氧树脂 | / | 黑色 Black |
| 3 | 电子线 Electronic wire | 30#高温氟塑线 | 2 | 黑色 Black |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |

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 |
|---|---|---|---|---|
| B0 | | 版本发行 | | |
| | | | | |
| | | | | |

## 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 | 固定电阻端，拉力：5±1 N，时间：10±1 秒 Fixed resistor end, Pull strength：20±1 N， time：10±1 sec | 无可见性损伤 No obvious damage $R_{25}$ ΔR/R≤±2% |
| 4.2 | 可焊性 Solderability | IEC60068-2-20 | 温度 245±5℃时间 2-3 秒 temperature : 245±5℃ for 2-3sec | 着锡面积≥95% Coverage area ≥ 95%. |
| 4.3 | 稳态湿热 Steady humidity and heat | IEC60068-2-78 | 温度：40℃±2℃，湿度：93±2%，时间：500 小时 Temp：40℃±2℃，humidity：93±2%， Time ： 500hrs | 无可见性损伤 No obvious damage $R_{25}$ ΔR/R≤±2% |
| 4.4 | 温度快速变化 Rapid changes in temperature | IEC60068-2-14 | -40℃30min→25℃5min→200℃ 30min→25℃5min，5cycles | 无可见性损伤 No obvious damage $R_{25}$ ΔR/R≤±2% |
| 4.5 | 高温储存 High temperature storage | IEC60068-2-2 | 温度: 200℃±5℃ 时间:1000 小时 Temp : 200℃±5℃, Time :1000hrs | 无可见性损伤 No obvious damage $R_{25}$ ΔR/R≤±2% |
| 4.6 | 低温储存 Low temperature storage | IEC60068-2-1 | 温度:-40℃时间:1000 小时 Temp : -40℃, Time :1000hrs | 无可见性损伤 No obvious damage $R_{25}$ ΔR/R≤±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□ 盒装方式 BoxedType□ 盘装方式 Reel Type

### 5.2 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 | 热封口袋(Heat sealing bag) W×H＝XXXmm×XXXmm | |
| 2 | 内包装盒 Inner box | 纸箱(Carton)， L×W×H=XXXmm×XXXmm×XXXmm | |
| 3 | 外包装箱 Outer carton | 纸箱(Carton)， L×W×H=XXXmm×XXXmm×XXXmm | |

## 6、存储&运输要求 STORAGE & Transportation Requirements

6.1 存储环境要求 Storage environment requirements

6.1.1 储存温度：-10℃～40℃；储存湿度：≤75% RH

(Storage temperature: -10℃～40℃;storage humidity: ≤75% RH)；

6.1.2 避免存放在具有腐蚀性物质及气体的环境中、光照及辐射源的环境下

(Avoid storage in the environment of corrosive substances and gas, light and radiation source)；

6.1.3 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

(After the package is opened, it should be re-sealed and stored for one year. If the storage period exceeds, it can be retested according to the items specified in this sheet. If it meets the requirements, it can still be used)。

6.2 运输要求 Transportation requirements

6.2.1 存储或运输过程中，产品叠放高度不超过 4 箱产品

(During storage or transportation, the height of stacked products should not exceed tje height of 4 boxes)；

6.2.2 避免产品在运输过程中强烈碰撞和跌落

(Avoid strong collision and fall during transportation)；

6.2.3 产品运输方式不限，但需要避免雨水、雪、冰雹、海水的直接或间接淋袭

(The transportation method is not limited, but the direct or indirect attack of rain, snow, hail and sea water should be avoided)。

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

7.1 本产品的用途：温度测量与控制

(Usage of this product: Temperature measurement and control)；

7.2 本产品适用于常规家用、工业产品上，如果用于特殊设备/装置如：航空航天、深海探测、医疗、军用、新能源电源、铁道交通、消防、交通信号等设备上，请联系我司人员对相应的要求进行确认

(This product is used for conventional household and industrial products. If used in special equipment/device such as: aerospace, deep sea exploration, medical, military, new energy power supply, railway traffic,fire control, traffic signals and other equipment, please contact our staff to confirm the corresponding requirements)。

7.3 产品使用的最大工作温度，最大功率等，依照规格书要求作业，不可超出规格书范围

(The maximum working temperature, maximum power, etc. of the product shall be operated in accordance with the requirements of the specification, and shall not exceed the scope of the specification)。

7.4 设计使用时，避免过大的电流引起元件自身发热而产生测量误差

(When designing and using, avoid measuring error caused by excessive current)；

7.5 产品外观发现变形、破损时，不建议使用，可能会影响产品电气性能

(If the product is deformed or damaged, do not use it. Otherwise, the electrical performance may be affected)；

7.6 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 soldering by soldering iron, the distance between the welding place and the coating head should be at least 2mm, the welding temperature should be lower than 360℃, and the welding time should be less than 3sec)；

7.7 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

（If the heat shrinkable tube is used in the manufacturing process, do not use a hair dryer to shrink the tube. This is a recommended heat shrinkable process that puts the product coveredshrinkable tube into a constant temperature oven, and shrink them at 110℃/10 ~ 12min）；

7.8 一般不建议做注塑加工，因为注塑工艺的高温和高压会直接影响产品性能，本产品如果采用注塑工艺加工，需与我司确认具体的注塑工艺参数

（Generally, injection molding is not recommended, because the high temperature and high pressure of injection molding process will directly affect the product performance. If the product is processed by injection molding process, it is necessary to confirm the specific injection molding process parameters with our company）；

7.9 产品核心芯片为陶瓷半导体，在使用过程中避免挤压或对环氧端头物理撞击，以免造成产品损伤

（The core chip of the product is a ceramic semiconductor. Avoid extrusion or physical impact on the epoxy end in the process of use, so as not to cause product damage）；

7.10 产品引线需剪短加工时，裁剪处距环氧端头距离应不小于 10mm，且裁切时夹紧端头处

（When the product leads need to be cut short, the cutting distance from the epoxy end should be no less than 10mm, and the end should be clamped when cutting）。

7.11 如产品需要引线折弯时，折弯半径应不小于 1mm，折弯角度为 90°，折弯次数依引线直径大小存在差异，需与我司确认

（If the product needs lead bending, bending radius should not be less than 1mm, bending angle is 90°. Bending times vary according to the lead diameter and need to be confirmed with our company）；

7.12 本产品采用环氧树脂封装，具有一般的防水性，若使用环境湿度＞80%RH 或长期浸泡水中会导致封装端头渗水，造成绝缘和阻值性能偏低，如有相关的要求需与我司联系，产品增加防水层保护

（This product is encapsulated with epoxy resin, which is generally waterproof. If the ambient humidity is more than 80%RH or the product has long-term immersion in water, water seepage will occur at the end of the epoxy head, resulting in low insulation and resistance performance. If you have relevant requirements, please contact our company and add waterproof layer to the product）。

## 8、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 | 苏省高新技术产品认证<br>High-tech product certificate in Jiangsu Province | |
| 8.5 | 产品 CQC 认证<br>CQC certificate | |
| 8.6 | 核心元件 UL 认证(E240991)<br>ULcertificate(E240991) | |
| 8.7 | TUV 认证（R50245892）<br>TUV certificate（R50245892） | |

附表Ⅰ（Attachment I）

# 南京时恒电子科技有限公司

| R25=10KΩ 精度:±1% B25/85=3435K 精度:±1%(P174-9A) | | | | | | | |
|---|---|---|---|---|---|---|---|
| 温度(℃) | 电阻(KΩ) | | | 电阻精度(%) | | 温度精度(℃) | |
| | 最小值 | 中心值 | 最大值 | △R | -△R | △T | -△T |
| -40 | 195.722 | 203.750 | 212.085 | 4.090 | -3.939 | 0.689 | -0.664 |
| -39 | 184.755 | 192.220 | 199.967 | 4.030 | -3.883 | 0.685 | -0.660 |
| -38 | 174.482 | 181.427 | 188.630 | 3.970 | -3.828 | 0.680 | -0.656 |
| -37 | 164.856 | 171.320 | 178.020 | 3.910 | -3.772 | 0.675 | -0.652 |
| -36 | 155.836 | 161.854 | 168.087 | 3.851 | -3.718 | 0.671 | -0.647 |
| -35 | 147.379 | 152.984 | 158.787 | 3.792 | -3.663 | 0.666 | -0.643 |
| -34 | 139.447 | 144.670 | 150.073 | 3.734 | -3.610 | 0.661 | -0.639 |
| -33 | 132.005 | 136.874 | 141.907 | 3.677 | -3.556 | 0.656 | -0.635 |
| -32 | 125.020 | 129.559 | 134.250 | 3.620 | -3.503 | 0.651 | -0.630 |
| -31 | 118.460 | 122.694 | 127.067 | 3.564 | -3.451 | 0.646 | -0.626 |
| -30 | 112.296 | 116.247 | 120.325 | 3.508 | -3.399 | 0.641 | -0.621 |
| -29 | 106.501 | 110.189 | 113.994 | 3.452 | -3.347 | 0.636 | -0.616 |
| -28 | 101.050 | 104.494 | 108.045 | 3.398 | -3.296 | 0.631 | -0.612 |
| -27 | 95.920 | 99.137 | 102.452 | 3.343 | -3.245 | 0.625 | -0.607 |
| -26 | 91.090 | 94.096 | 97.192 | 3.289 | -3.194 | 0.620 | -0.602 |
| -25 | 86.540 | 89.350 | 92.241 | 3.236 | -3.144 | 0.614 | -0.597 |
| -24 | 82.251 | 84.877 | 87.579 | 3.183 | -3.094 | 0.609 | -0.592 |
| -23 | 78.206 | 80.662 | 83.187 | 3.130 | -3.045 | 0.603 | -0.587 |
| -22 | 74.389 | 76.687 | 79.047 | 3.078 | -2.996 | 0.598 | -0.582 |
| -21 | 70.785 | 72.935 | 75.143 | 3.026 | -2.947 | 0.592 | -0.577 |
| -20 | 67.382 | 69.394 | 71.459 | 2.975 | -2.899 | 0.586 | -0.571 |
| -19 | 64.166 | 66.049 | 67.981 | 2.924 | -2.851 | 0.581 | -0.566 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| -18 | 61.125 | 62.888 | 64.696 | 2.874 | -2.803 | 0.575 | -0.561 |
| -17 | 58.249 | 59.900 | 61.591 | 2.824 | -2.756 | 0.569 | -0.555 |
| -16 | 55.527 | 57.073 | 58.657 | 2.774 | -2.709 | 0.563 | -0.550 |
| -15 | 52.950 | 54.398 | 55.881 | 2.725 | -2.662 | 0.557 | -0.544 |
| -14 | 50.509 | 51.866 | 53.254 | 2.676 | -2.616 | 0.551 | -0.538 |
| -13 | 48.196 | 49.468 | 50.768 | 2.627 | -2.570 | 0.544 | -0.533 |
| -12 | 46.004 | 47.196 | 48.413 | 2.579 | -2.524 | 0.538 | -0.527 |
| -11 | 43.925 | 45.042 | 46.182 | 2.531 | -2.478 | 0.532 | -0.521 |
| -10 | 41.953 | 43.000 | 44.068 | 2.483 | -2.433 | 0.526 | -0.515 |
| -9 | 40.081 | 41.062 | 42.063 | 2.436 | -2.388 | 0.519 | -0.509 |
| -8 | 38.304 | 39.224 | 40.161 | 2.389 | -2.343 | 0.513 | -0.503 |
| -7 | 36.617 | 37.479 | 38.357 | 2.343 | -2.299 | 0.506 | -0.497 |
| -6 | 35.014 | 35.822 | 36.644 | 2.296 | -2.255 | 0.500 | -0.490 |
| -5 | 33.490 | 34.247 | 35.018 | 2.251 | -2.211 | 0.493 | -0.484 |
| -4 | 32.041 | 32.751 | 33.474 | 2.205 | -2.167 | 0.486 | -0.478 |
| -3 | 30.664 | 31.329 | 32.006 | 2.160 | -2.124 | 0.479 | -0.471 |
| -2 | 29.354 | 29.977 | 30.611 | 2.114 | -2.080 | 0.473 | -0.465 |
| -1 | 28.107 | 28.691 | 29.285 | 2.070 | -2.038 | 0.466 | -0.458 |
| 0 | 26.963 | 27.513 | 28.070 | 2.027 | -1.996 | 0.458 | -0.451 |
| 1 | 25.790 | 26.303 | 26.825 | 1.981 | -1.952 | 0.452 | -0.445 |
| 2 | 24.714 | 25.195 | 25.683 | 1.937 | -1.910 | 0.445 | -0.438 |
| 3 | 23.688 | 24.139 | 24.597 | 1.894 | -1.868 | 0.437 | -0.432 |
| 4 | 22.711 | 23.134 | 23.562 | 1.850 | -1.826 | 0.430 | -0.425 |
| 5 | 21.780 | 22.176 | 22.577 | 1.807 | -1.785 | 0.423 | -0.418 |
| 6 | 20.892 | 21.263 | 21.638 | 1.764 | -1.744 | 0.416 | -0.411 |
| 7 | 20.045 | 20.392 | 20.744 | 1.722 | -1.702 | 0.408 | -0.404 |
| 8 | 19.237 | 19.562 | 19.891 | 1.680 | -1.662 | 0.401 | -0.397 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 9 | 18.466 | 18.771 | 19.078 | 1.638 | -1.621 | 0.393 | -0.389 |
| 10 | 17.731 | 18.016 | 18.303 | 1.596 | -1.581 | 0.386 | -0.382 |
| 11 | 17.028 | 17.295 | 17.564 | 1.554 | -1.540 | 0.378 | -0.375 |
| 12 | 16.358 | 16.607 | 16.858 | 1.513 | -1.500 | 0.370 | -0.367 |
| 13 | 15.717 | 15.950 | 16.185 | 1.472 | -1.461 | 0.363 | -0.360 |
| 14 | 15.105 | 15.323 | 15.542 | 1.431 | -1.421 | 0.355 | -0.352 |
| 15 | 14.520 | 14.724 | 14.929 | 1.391 | -1.382 | 0.347 | -0.345 |
| 16 | 13.961 | 14.151 | 14.343 | 1.351 | -1.343 | 0.339 | -0.337 |
| 17 | 13.427 | 13.604 | 13.783 | 1.311 | -1.304 | 0.331 | -0.329 |
| 18 | 12.916 | 13.081 | 13.248 | 1.271 | -1.265 | 0.323 | -0.322 |
| 19 | 12.427 | 12.581 | 12.736 | 1.232 | -1.227 | 0.315 | -0.314 |
| 20 | 11.959 | 12.103 | 12.248 | 1.193 | -1.188 | 0.307 | -0.306 |
| 21 | 11.512 | 11.646 | 11.780 | 1.154 | -1.150 | 0.298 | -0.297 |
| 22 | 11.084 | 11.208 | 11.333 | 1.115 | -1.112 | 0.290 | -0.289 |
| 23 | 10.673 | 10.789 | 10.906 | 1.076 | -1.075 | 0.281 | -0.280 |
| 24 | 10.281 | 10.389 | 10.496 | 1.038 | -1.037 | 0.271 | -0.270 |
| 25 | 9.900 | 10.000 | 10.100 | 1.000 | -1.000 | 0.262 | -0.262 |
| 26 | 9.537 | 9.637 | 9.737 | 1.037 | -1.036 | 0.281 | -0.281 |
| 27 | 9.185 | 9.285 | 9.385 | 1.074 | -1.073 | 0.291 | -0.291 |
| 28 | 8.848 | 8.948 | 9.047 | 1.112 | -1.109 | 0.303 | -0.302 |
| 29 | 8.526 | 8.624 | 8.724 | 1.149 | -1.146 | 0.315 | -0.314 |
| 30 | 8.216 | 8.315 | 8.413 | 1.186 | -1.182 | 0.326 | -0.325 |
| 31 | 7.920 | 8.018 | 8.116 | 1.223 | -1.218 | 0.338 | -0.337 |
| 32 | 7.636 | 7.733 | 7.830 | 1.259 | -1.254 | 0.351 | -0.349 |
| 33 | 7.363 | 7.459 | 7.556 | 1.296 | -1.289 | 0.363 | -0.361 |
| 34 | 7.102 | 7.197 | 7.293 | 1.332 | -1.324 | 0.375 | -0.373 |
| 35 | 6.851 | 6.946 | 7.041 | 1.368 | -1.360 | 0.388 | -0.385 |

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|---|---|---|---|---|---|---|---|
| 36 | 6.611 | 6.704 | 6.798 | 1.404 | -1.394 | 0.400 | -0.398 |
| 37 | 6.380 | 6.473 | 6.566 | 1.440 | -1.429 | 0.413 | -0.410 |
| 38 | 6.159 | 6.250 | 6.342 | 1.475 | -1.464 | 0.426 | -0.422 |
| 39 | 5.946 | 6.036 | 6.128 | 1.511 | -1.498 | 0.438 | -0.435 |
| 40 | 5.742 | 5.831 | 5.921 | 1.546 | -1.532 | 0.451 | -0.447 |
| 41 | 5.546 | 5.634 | 5.723 | 1.581 | -1.566 | 0.464 | -0.460 |
| 42 | 5.357 | 5.444 | 5.532 | 1.615 | -1.600 | 0.477 | -0.472 |
| 43 | 5.176 | 5.262 | 5.349 | 1.650 | -1.633 | 0.490 | -0.485 |
| 44 | 5.002 | 5.087 | 5.173 | 1.684 | -1.666 | 0.503 | -0.498 |
| 45 | 4.835 | 4.918 | 5.003 | 1.719 | -1.699 | 0.517 | -0.511 |
| 46 | 4.674 | 4.756 | 4.840 | 1.753 | -1.732 | 0.530 | -0.524 |
| 47 | 4.519 | 4.601 | 4.683 | 1.787 | -1.765 | 0.543 | -0.537 |
| 48 | 4.371 | 4.451 | 4.532 | 1.820 | -1.798 | 0.557 | -0.550 |
| 49 | 4.228 | 4.306 | 4.386 | 1.854 | -1.830 | 0.570 | -0.563 |
| 50 | 4.090 | 4.168 | 4.246 | 1.887 | -1.862 | 0.584 | -0.576 |
| 51 | 3.957 | 4.034 | 4.111 | 1.921 | -1.894 | 0.598 | -0.589 |
| 52 | 3.830 | 3.905 | 3.981 | 1.954 | -1.926 | 0.611 | -0.603 |
| 53 | 3.707 | 3.781 | 3.856 | 1.986 | -1.958 | 0.625 | -0.616 |
| 54 | 3.589 | 3.662 | 3.736 | 2.019 | -1.989 | 0.639 | -0.630 |
| 55 | 3.475 | 3.546 | 3.619 | 2.052 | -2.020 | 0.653 | -0.643 |
| 56 | 3.365 | 3.436 | 3.507 | 2.084 | -2.051 | 0.667 | -0.657 |
| 57 | 3.259 | 3.329 | 3.399 | 2.116 | -2.082 | 0.682 | -0.671 |
| 58 | 3.157 | 3.226 | 3.295 | 2.149 | -2.113 | 0.696 | -0.684 |
| 59 | 3.059 | 3.126 | 3.194 | 2.181 | -2.144 | 0.710 | -0.698 |
| 60 | 2.965 | 3.030 | 3.098 | 2.212 | -2.174 | 0.724 | -0.712 |
| 61 | 2.873 | 2.938 | 3.004 | 2.244 | -2.205 | 0.739 | -0.726 |
| 62 | 2.785 | 2.849 | 2.914 | 2.276 | -2.235 | 0.754 | -0.740 |

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|---|---|---|---|---|---|---|---|
| 63 | 2.700 | 2.763 | 2.827 | 2.307 | -2.265 | 0.768 | -0.754 |
| 64 | 2.618 | 2.680 | 2.743 | 2.338 | -2.294 | 0.783 | -0.768 |
| 65 | 2.539 | 2.600 | 2.661 | 2.369 | -2.324 | 0.798 | -0.782 |
| 66 | 2.463 | 2.522 | 2.583 | 2.400 | -2.354 | 0.812 | -0.797 |
| 67 | 2.389 | 2.448 | 2.507 | 2.431 | -2.383 | 0.827 | -0.811 |
| 68 | 2.318 | 2.376 | 2.434 | 2.461 | -2.412 | 0.842 | -0.825 |
| 69 | 2.250 | 2.306 | 2.363 | 2.492 | -2.441 | 0.857 | -0.840 |
| 70 | 2.183 | 2.239 | 2.295 | 2.522 | -2.470 | 0.873 | -0.855 |
| 71 | 2.119 | 2.174 | 2.229 | 2.553 | -2.499 | 0.888 | -0.869 |
| 72 | 2.058 | 2.111 | 2.165 | 2.583 | -2.527 | 0.903 | -0.884 |
| 73 | 1.998 | 2.050 | 2.104 | 2.612 | -2.556 | 0.919 | -0.899 |
| 74 | 1.940 | 1.992 | 2.044 | 2.642 | -2.584 | 0.934 | -0.913 |
| 75 | 1.884 | 1.935 | 1.987 | 2.672 | -2.612 | 0.950 | -0.928 |
| 76 | 1.830 | 1.880 | 1.931 | 2.701 | -2.640 | 0.965 | -0.943 |
| 77 | 1.778 | 1.827 | 1.877 | 2.731 | -2.668 | 0.981 | -0.958 |
| 78 | 1.728 | 1.776 | 1.825 | 2.760 | -2.696 | 0.997 | -0.973 |
| 79 | 1.679 | 1.726 | 1.774 | 2.789 | -2.723 | 1.012 | -0.989 |
| 80 | 1.632 | 1.678 | 1.725 | 2.818 | -2.751 | 1.028 | -1.004 |
| 81 | 1.586 | 1.632 | 1.678 | 2.847 | -2.778 | 1.044 | -1.019 |
| 82 | 1.542 | 1.587 | 1.632 | 2.876 | -2.805 | 1.061 | -1.034 |
| 83 | 1.500 | 1.543 | 1.588 | 2.904 | -2.832 | 1.077 | -1.050 |
| 84 | 1.458 | 1.501 | 1.545 | 2.933 | -2.859 | 1.093 | -1.065 |
| 85 | 1.418 | 1.461 | 1.504 | 2.961 | -2.886 | 1.109 | -1.081 |
| 86 | 1.380 | 1.421 | 1.464 | 2.989 | -2.912 | 1.126 | -1.097 |
| 87 | 1.342 | 1.383 | 1.425 | 3.017 | -2.939 | 1.142 | -1.112 |
| 88 | 1.306 | 1.346 | 1.387 | 3.045 | -2.965 | 1.159 | -1.128 |
| 89 | 1.271 | 1.310 | 1.350 | 3.073 | -2.991 | 1.175 | -1.144 |

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|---|---|---|---|---|---|---|---|
| 90 | 1.237 | 1.275 | 1.315 | 3.101 | -3.017 | 1.192 | -1.160 |
| 91 | 1.204 | 1.242 | 1.281 | 3.128 | -3.043 | 1.209 | -1.176 |
| 92 | 1.172 | 1.209 | 1.247 | 3.155 | -3.069 | 1.226 | -1.192 |
| 93 | 1.141 | 1.178 | 1.215 | 3.183 | -3.094 | 1.243 | -1.208 |
| 94 | 1.111 | 1.147 | 1.184 | 3.210 | -3.120 | 1.260 | -1.224 |
| 95 | 1.082 | 1.118 | 1.154 | 3.237 | -3.145 | 1.277 | -1.240 |
| 96 | 1.054 | 1.089 | 1.124 | 3.264 | -3.170 | 1.294 | -1.257 |
| 97 | 1.027 | 1.061 | 1.096 | 3.290 | -3.195 | 1.311 | -1.273 |
| 98 | 1.001 | 1.034 | 1.068 | 3.317 | -3.220 | 1.328 | -1.290 |
| 99 | 0.975 | 1.008 | 1.042 | 3.343 | -3.245 | 1.346 | -1.306 |
| 100 | 0.950 | 0.983 | 1.016 | 3.370 | -3.270 | 1.363 | -1.323 |
| 101 | 0.926 | 0.958 | 0.990 | 3.396 | -3.294 | 1.381 | -1.339 |
| 102 | 0.903 | 0.934 | 0.966 | 3.422 | -3.318 | 1.398 | -1.356 |
| 103 | 0.880 | 0.911 | 0.942 | 3.448 | -3.343 | 1.416 | -1.373 |
| 104 | 0.859 | 0.888 | 0.919 | 3.474 | -3.367 | 1.434 | -1.390 |
| 105 | 0.837 | 0.867 | 0.897 | 3.499 | -3.391 | 1.452 | -1.407 |
| 106 | 0.817 | 0.846 | 0.875 | 3.525 | -3.415 | 1.470 | -1.424 |
| 107 | 0.797 | 0.825 | 0.854 | 3.550 | -3.438 | 1.488 | -1.441 |
| 108 | 0.777 | 0.805 | 0.834 | 3.576 | -3.462 | 1.506 | -1.458 |
| 109 | 0.758 | 0.786 | 0.814 | 3.601 | -3.485 | 1.524 | -1.475 |
| 110 | 0.740 | 0.767 | 0.795 | 3.626 | -3.508 | 1.543 | -1.493 |
| 111 | 0.723 | 0.749 | 0.776 | 3.651 | -3.532 | 1.561 | -1.510 |
| 112 | 0.705 | 0.731 | 0.758 | 3.675 | -3.555 | 1.579 | -1.528 |
| 113 | 0.689 | 0.714 | 0.741 | 3.700 | -3.577 | 1.598 | -1.545 |
| 114 | 0.672 | 0.698 | 0.724 | 3.724 | -3.600 | 1.617 | -1.563 |
| 115 | 0.657 | 0.681 | 0.707 | 3.749 | -3.623 | 1.635 | -1.580 |
| 116 | 0.641 | 0.666 | 0.691 | 3.773 | -3.645 | 1.654 | -1.598 |

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|---|---|---|---|---|---|---|---|
| 117 | 0.627 | 0.651 | 0.675 | 3.797 | -3.667 | 1.673 | -1.616 |
| 118 | 0.612 | 0.636 | 0.660 | 3.820 | -3.689 | 1.692 | -1.634 |
| 119 | 0.598 | 0.621 | 0.645 | 3.844 | -3.711 | 1.711 | -1.652 |
| 120 | 0.585 | 0.607 | 0.631 | 3.868 | -3.733 | 1.730 | -1.670 |
| 121 | 0.572 | 0.594 | 0.617 | 3.891 | -3.755 | 1.749 | -1.688 |
| 122 | 0.559 | 0.581 | 0.604 | 3.914 | -3.777 | 1.768 | -1.706 |
| 123 | 0.546 | 0.568 | 0.590 | 3.937 | -3.798 | 1.788 | -1.724 |
| 124 | 0.534 | 0.556 | 0.578 | 3.960 | -3.819 | 1.807 | -1.743 |
| 125 | 0.523 | 0.544 | 0.565 | 3.983 | -3.840 | 1.827 | -1.761 |
| 126 | 0.511 | 0.532 | 0.553 | 4.006 | -3.861 | 1.846 | -1.780 |
| 127 | 0.500 | 0.520 | 0.541 | 4.028 | -3.882 | 1.866 | -1.798 |
| 128 | 0.489 | 0.509 | 0.530 | 4.051 | -3.903 | 1.886 | -1.817 |
| 129 | 0.479 | 0.499 | 0.519 | 4.073 | -3.923 | 1.906 | -1.836 |
| 130 | 0.469 | 0.488 | 0.508 | 4.095 | -3.943 | 1.926 | -1.854 |
| 131 | 0.459 | 0.478 | 0.498 | 4.117 | -3.964 | 1.946 | -1.873 |
| 132 | 0.449 | 0.468 | 0.488 | 4.138 | -3.984 | 1.966 | -1.892 |
| 133 | 0.440 | 0.459 | 0.478 | 4.160 | -4.003 | 1.986 | -1.911 |
| 134 | 0.431 | 0.449 | 0.468 | 4.181 | -4.023 | 2.006 | -1.930 |
| 135 | 0.422 | 0.440 | 0.459 | 4.203 | -4.043 | 2.027 | -1.950 |
| 136 | 0.414 | 0.431 | 0.450 | 4.224 | -4.062 | 2.047 | -1.969 |
| 137 | 0.405 | 0.423 | 0.441 | 4.245 | -4.081 | 2.068 | -1.988 |
| 138 | 0.397 | 0.414 | 0.432 | 4.265 | -4.100 | 2.088 | -2.008 |
| 139 | 0.390 | 0.406 | 0.424 | 4.286 | -4.119 | 2.109 | -2.027 |
| 140 | 0.382 | 0.398 | 0.416 | 4.306 | -4.138 | 2.130 | -2.047 |
| 141 | 0.375 | 0.391 | 0.408 | 4.326 | -4.156 | 2.151 | -2.066 |
| 142 | 0.367 | 0.383 | 0.400 | 4.346 | -4.175 | 2.172 | -2.086 |
| 143 | 0.360 | 0.376 | 0.393 | 4.366 | -4.193 | 2.193 | -2.106 |

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|---|---|---|---|---|---|---|---|
| 144 | 0.354 | 0.369 | 0.385 | 4.386 | -4.211 | 2.214 | -2.126 |
| 145 | 0.347 | 0.362 | 0.378 | 4.405 | -4.229 | 2.235 | -2.146 |
| 146 | 0.341 | 0.356 | 0.371 | 4.425 | -4.247 | 2.257 | -2.166 |
| 147 | 0.334 | 0.349 | 0.365 | 4.444 | -4.264 | 2.278 | -2.186 |
| 148 | 0.328 | 0.343 | 0.358 | 4.463 | -4.282 | 2.300 | -2.206 |
| 149 | 0.322 | 0.337 | 0.352 | 4.482 | -4.299 | 2.321 | -2.227 |
| 150 | 0.317 | 0.331 | 0.346 | 4.500 | -4.316 | 2.343 | -2.247 |
| 151 | 0.311 | 0.325 | 0.340 | 4.518 | -4.333 | 2.365 | -2.267 |
| 152 | 0.306 | 0.319 | 0.334 | 4.537 | -4.349 | 2.387 | -2.288 |
| 153 | 0.300 | 0.314 | 0.328 | 4.555 | -4.366 | 2.408 | -2.309 |
| 154 | 0.295 | 0.309 | 0.323 | 4.573 | -4.382 | 2.431 | -2.329 |
| 155 | 0.290 | 0.303 | 0.317 | 4.590 | -4.398 | 2.453 | -2.350 |
| 156 | 0.285 | 0.298 | 0.312 | 4.608 | -4.414 | 2.475 | -2.371 |
| 157 | 0.281 | 0.294 | 0.307 | 4.625 | -4.430 | 2.497 | -2.392 |
| 158 | 0.276 | 0.289 | 0.302 | 4.642 | -4.445 | 2.520 | -2.413 |
| 159 | 0.272 | 0.284 | 0.297 | 4.659 | -4.461 | 2.542 | -2.434 |
| 160 | 0.267 | 0.280 | 0.293 | 4.675 | -4.476 | 2.565 | -2.456 |
| 161 | 0.263 | 0.275 | 0.288 | 4.692 | -4.491 | 2.588 | -2.477 |
| 162 | 0.259 | 0.271 | 0.284 | 4.708 | -4.506 | 2.610 | -2.498 |
| 163 | 0.255 | 0.267 | 0.280 | 4.724 | -4.520 | 2.633 | -2.520 |
| 164 | 0.251 | 0.263 | 0.275 | 4.740 | -4.535 | 2.656 | -2.541 |
| 165 | 0.247 | 0.259 | 0.271 | 4.755 | -4.549 | 2.679 | -2.563 |
| 166 | 0.244 | 0.255 | 0.267 | 4.771 | -4.563 | 2.703 | -2.585 |
| 167 | 0.240 | 0.252 | 0.264 | 4.786 | -4.577 | 2.726 | -2.607 |
| 168 | 0.237 | 0.248 | 0.260 | 4.801 | -4.591 | 2.749 | -2.629 |
| 169 | 0.233 | 0.245 | 0.256 | 4.816 | -4.604 | 2.773 | -2.651 |
| 170 | 0.230 | 0.241 | 0.253 | 4.830 | -4.617 | 2.796 | -2.673 |

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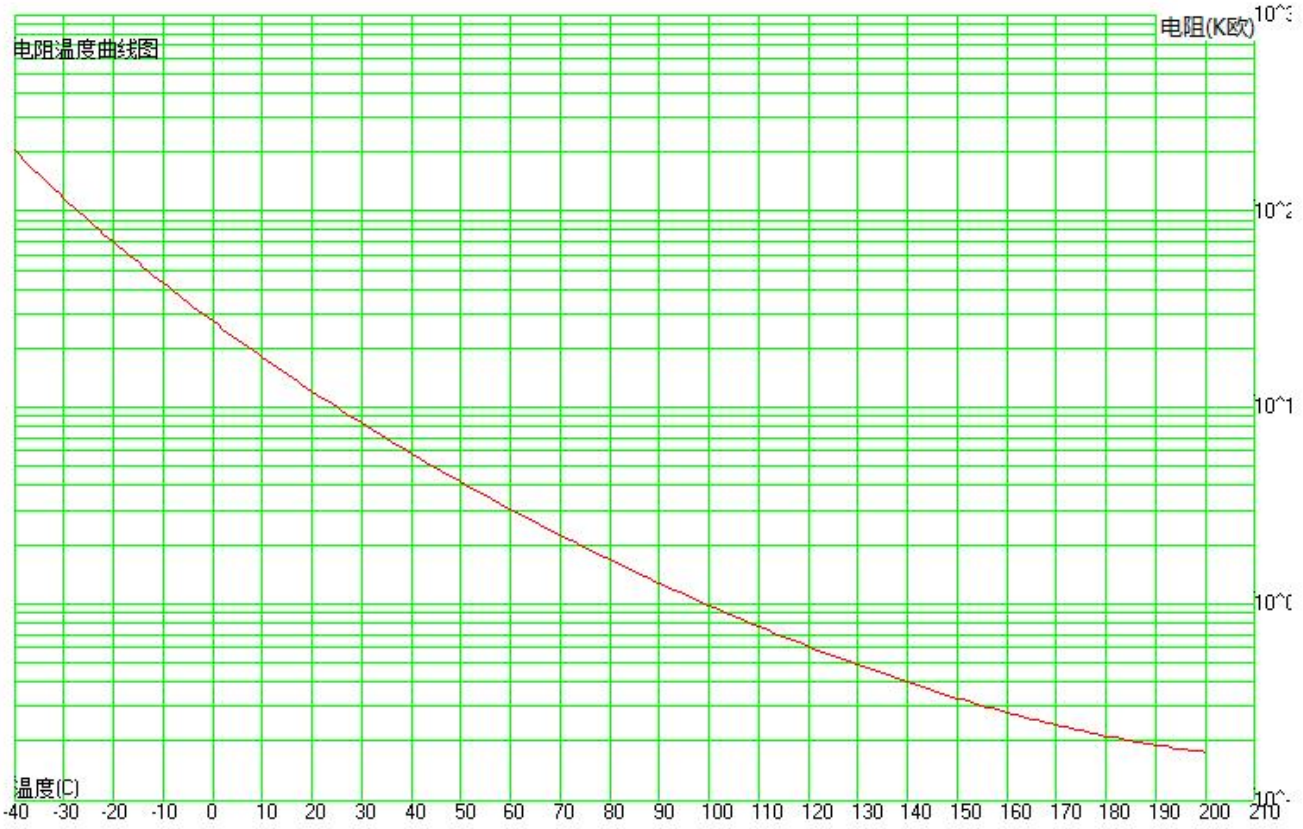
|---|---|---|---|---|---|---|---|
| 171 | 0.227 | 0.238 | 0.249 | 4.845 | -4.630 | 2.820 | -2.695 |
| 172 | 0.224 | 0.235 | 0.246 | 4.859 | -4.643 | 2.844 | -2.717 |
| 173 | 0.221 | 0.232 | 0.243 | 4.873 | -4.656 | 2.867 | -2.740 |
| 174 | 0.218 | 0.229 | 0.240 | 4.886 | -4.668 | 2.891 | -2.762 |
| 175 | 0.215 | 0.226 | 0.237 | 4.900 | -4.680 | 2.915 | -2.785 |
| 176 | 0.212 | 0.223 | 0.234 | 4.913 | -4.692 | 2.940 | -2.808 |
| 177 | 0.210 | 0.220 | 0.231 | 4.926 | -4.704 | 2.964 | -2.830 |
| 178 | 0.207 | 0.217 | 0.228 | 4.939 | -4.716 | 2.988 | -2.853 |
| 179 | 0.205 | 0.215 | 0.226 | 4.951 | -4.727 | 3.013 | -2.876 |
| 180 | 0.202 | 0.212 | 0.223 | 4.964 | -4.738 | 3.037 | -2.899 |
| 181 | 0.200 | 0.210 | 0.220 | 4.976 | -4.749 | 3.062 | -2.923 |
| 182 | 0.198 | 0.208 | 0.218 | 4.987 | -4.760 | 3.087 | -2.946 |
| 183 | 0.195 | 0.205 | 0.216 | 4.999 | -4.771 | 3.111 | -2.969 |
| 184 | 0.193 | 0.203 | 0.213 | 5.010 | -4.781 | 3.136 | -2.993 |
| 185 | 0.191 | 0.201 | 0.211 | 5.022 | -4.791 | 3.161 | -3.016 |
| 186 | 0.189 | 0.199 | 0.209 | 5.032 | -4.801 | 3.187 | -3.040 |
| 187 | 0.187 | 0.197 | 0.207 | 5.043 | -4.810 | 3.212 | -3.064 |
| 188 | 0.185 | 0.195 | 0.205 | 5.054 | -4.820 | 3.237 | -3.088 |
| 189 | 0.184 | 0.193 | 0.203 | 5.064 | -4.829 | 3.263 | -3.112 |
| 190 | 0.182 | 0.191 | 0.201 | 5.074 | -4.838 | 3.288 | -3.136 |
| 191 | 0.180 | 0.189 | 0.199 | 5.083 | -4.847 | 3.314 | -3.160 |
| 192 | 0.179 | 0.188 | 0.197 | 5.093 | -4.855 | 3.340 | -3.184 |
| 193 | 0.177 | 0.186 | 0.196 | 5.102 | -4.864 | 3.366 | -3.208 |
| 194 | 0.175 | 0.184 | 0.194 | 5.111 | -4.872 | 3.392 | -3.233 |
| 195 | 0.174 | 0.183 | 0.192 | 5.120 | -4.880 | 3.418 | -3.258 |
| 196 | 0.173 | 0.182 | 0.191 | 5.128 | -4.887 | 3.444 | -3.282 |
| 197 | 0.171 | 0.180 | 0.189 | 5.136 | -4.895 | 3.470 | -3.307 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 198 | 0.170 | 0.179 | 0.188 | 5.144 | -4.902 | 3.497 | -3.332 |
| 199 | 0.169 | 0.177 | 0.187 | 5.152 | -4.909 | 3.523 | -3.357 |
| 200 | 0.167 | 0.176 | 0.185 | 5.159 | -4.916 | 3.550 | -3.382 |



## 附表Ⅱ（Attachment Ⅱ）