



深圳市晶创和立科技有限公司

MF52 珠状测温型 NTC 热敏电阻器

MF52D103F3435L30

本规格书提供了 MF52 系列 NTC 热敏电阻的结构尺寸、产品性能、试验条件、使用要求的描述，敬请贵司确认。
对本规格书产生疑问时，请速与我们联系，若无疑义请确认回传，若无回传，我司将视为默认。
贵公司改变使用用途，作用方法时，请与我们联系。

| | | |
|---------|-----|-----|
| 客户名称: | | |
| 客 户 确 认 | 确认: | 时间: |
| | 审核: | 时间: |

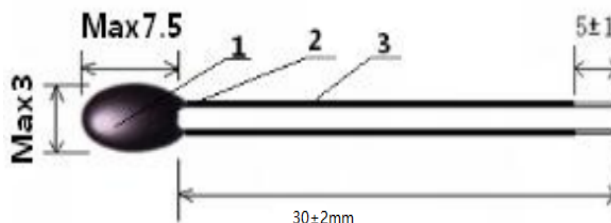
1. 电气性能

| 项目 | 符号 | 测试条件 | 单位 | 性能要求 |
|----------------|-------------|---|------------|---------------------|
| 1.1 25℃的零功率电阻值 | $R_{25℃}$ | $T_a=25\pm0.05℃$ 测试功率 $\leq 0.1mw$ | K Ω | $10K\Omega \pm 1\%$ |
| 1.2 B 值 | $B_{25/85}$ | $B=[(T_a \times T_b)/(T_b - T_a)] \times \ln(R_a/R_b)$ $T_b=85℃ \pm 0.05℃$ | K | $3435 \pm 1\%$ |
| 1.3 耗散系数 | δ | 静止空气中 | mW/℃ | ≥ 2 |
| 1.4 时间常数 | τ | 静止空气中 | sec | ≤ 7 |
| 1.5 绝缘电阻 | / | 100V/DC 1min | M Ω | ≥ 100 |
| 1.6 工作温度范围 | / | / | / | $-40℃ \sim 105℃$ |
| 1.7 最大额定功率 | Pmax | / | mW | 50 |
| 1.8 阻温特性 | / | / | / | 见附表 1 |
| 1.9 阻值误差 | / | / | / | 见附表 2 |

2. 可靠性

| 项目 | 测试条件及方法 | 技术要求 |
|------------|--|---|
| 2.1 引出端强度 | 固定电阻端，拉力：5±1 N，时间：10±1 秒 | 无可见性损伤 $R_{25} \Delta R/R \leq \pm 2\%$ |
| 2.2 可焊性 | 温度 245±5℃ 时间 2-3 秒 | 着锡面积 $\geq 95\%$ |
| 2.3 耐焊接热 | 锡锅温度：260±5℃，浸入深度距电阻体 6mm，时间 5±1 秒 | $R_{25} \Delta R/R \leq \pm 2\%$ |
| 2.4 稳态湿热 | 温度：40℃±2℃，湿度：93±2%，时间：500 小时 | $R_{25} \Delta R/R \leq \pm 2\%$ |
| 2.5 温度快速变化 | -40℃30min→25℃5min→105℃30min→25℃5min，反复 5 次 | $R_{25} \Delta R/R \leq \pm 2\%$ |
| 2.6 高温储存 | 温度：105℃±5℃ 时间：1000 小时 | $R_{25} \Delta R/R \leq \pm 2\%$ |
| 2.7 低温储存 | 温度：-40℃ 时间：1000 小时 | $R_{25} \Delta R/R \leq \pm 2\%$ |

4. 外形尺寸：(单位：mm)



| 序号 | 名称 | 材料规格 | 数量 | 备注 |
|----|------|---------------|----|----|
| 1 | 元件 | NTC 热敏电阻 (芯片) | 1 | |
| 2 | 环氧树脂 | 包封类环氧树脂 | 1 | 黑色 |
| 3 | 导线 | 28#PVC并线 | 2 | 黑色 |

3. 使用注意事项

- 本产品的用途：温度测量与控制；
- 避免流过热敏电阻芯片的电流引起元件自身发热而产生测量误差；
- 烙铁焊接时，焊接温度应低于 300℃，焊接时间 $\leq 3s$ ；
- 储存温度：-10℃ ~ 40℃；储存湿度： $\leq 75\% RH$ ；
- 避免存放在具有腐蚀性气体及光照的环境下；
- 包装打开后需重新密封保存。



MF52D测温型NTC热敏电阻

5. 产品型号说明

MF52 D 103 F 3435

① ② ③ ④ ⑤

- MF52：珠状精密性 NTC 热敏电阻
- D：引线为28#PVC并线
- 103：25℃的零功率电阻值 10K Ω
- F：阻值精度代码 F- $\pm 1\%$ G- $\pm 2\%$ H- $\pm 3\%$ J- $\pm 5\%$
- 3435： $B_{25/85}$ 值 3435K

附表

阻 温 特 性 表

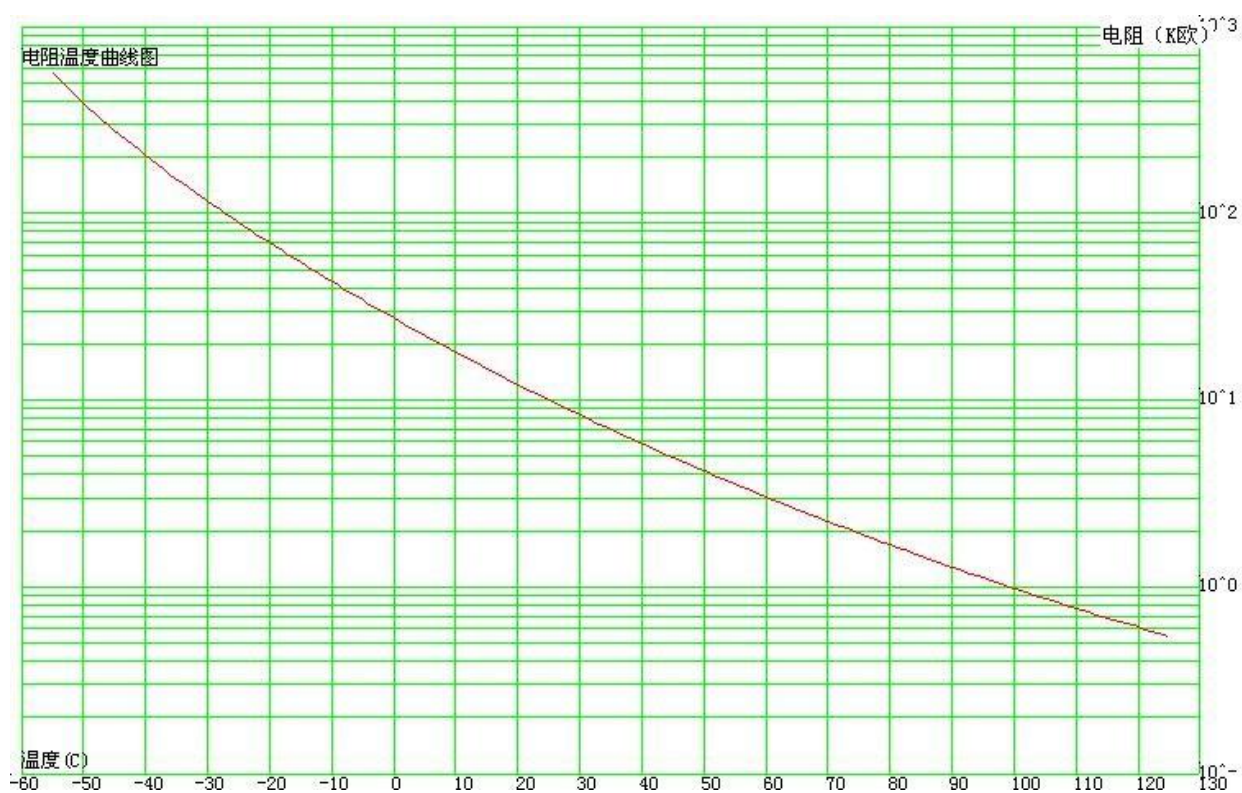
R25=10K Ω 精度:±1% B25/50=3380K B25/85=3435K 精度:±1%(P174-9A)

| 温度(℃) | 电阻(K Ω) | | | 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 | 184.592 | 192.049 | 199.787 | 4.029 | -3.882 | 0.685 | -0.660 |
| -38 | 174.223 | 181.156 | 188.345 | 3.968 | -3.826 | 0.680 | -0.656 |
| -37 | 164.552 | 171.001 | 177.684 | 3.908 | -3.771 | 0.676 | -0.652 |
| -36 | 155.519 | 161.522 | 167.739 | 3.849 | -3.716 | 0.671 | -0.648 |
| -35 | 147.074 | 152.664 | 158.451 | 3.790 | -3.661 | 0.666 | -0.643 |
| -34 | 139.168 | 144.377 | 149.767 | 3.732 | -3.608 | 0.661 | -0.639 |
| -33 | 131.760 | 136.617 | 141.638 | 3.675 | -3.554 | 0.656 | -0.635 |
| -32 | 124.813 | 129.343 | 134.023 | 3.618 | -3.502 | 0.651 | -0.630 |
| -31 | 118.291 | 122.518 | 126.883 | 3.562 | -3.449 | 0.646 | -0.626 |
| -30 | 112.164 | 116.110 | 120.182 | 3.507 | -3.397 | 0.641 | -0.621 |
| -29 | 106.404 | 110.088 | 113.888 | 3.451 | -3.346 | 0.636 | -0.616 |
| -28 | 100.983 | 104.425 | 107.972 | 3.397 | -3.295 | 0.631 | -0.612 |
| -27 | 95.880 | 99.096 | 102.409 | 3.343 | -3.244 | 0.625 | -0.607 |
| -26 | 91.072 | 94.078 | 97.172 | 3.289 | -3.194 | 0.620 | -0.602 |
| -25 | 86.540 | 89.350 | 92.241 | 3.236 | -3.144 | 0.614 | -0.597 |
| -24 | 82.265 | 84.892 | 87.595 | 3.183 | -3.094 | 0.609 | -0.592 |
| -23 | 78.230 | 80.688 | 83.214 | 3.131 | -3.045 | 0.603 | -0.587 |
| -22 | 74.420 | 76.720 | 79.082 | 3.079 | -2.996 | 0.598 | -0.582 |
| -21 | 70.822 | 72.973 | 75.182 | 3.027 | -2.948 | 0.592 | -0.577 |
| -20 | 67.420 | 69.434 | 71.500 | 2.976 | -2.899 | 0.586 | -0.571 |
| -19 | 64.204 | 66.089 | 68.022 | 2.925 | -2.851 | 0.581 | -0.566 |
| -18 | 61.162 | 62.926 | 64.735 | 2.874 | -2.804 | 0.575 | -0.561 |
| -17 | 58.283 | 59.935 | 61.628 | 2.824 | -2.756 | 0.569 | -0.555 |
| -16 | 55.557 | 57.104 | 58.689 | 2.775 | -2.709 | 0.563 | -0.550 |
| -15 | 52.976 | 54.425 | 55.909 | 2.725 | -2.663 | 0.557 | -0.544 |
| -14 | 50.530 | 51.888 | 53.277 | 2.676 | -2.616 | 0.551 | -0.538 |
| -13 | 48.212 | 49.484 | 50.785 | 2.628 | -2.570 | 0.544 | -0.532 |
| -12 | 46.015 | 47.206 | 48.424 | 2.579 | -2.524 | 0.538 | -0.527 |
| -11 | 43.930 | 45.047 | 46.188 | 2.531 | -2.478 | 0.532 | -0.521 |
| -10 | 41.953 | 43.000 | 44.068 | 2.483 | -2.433 | 0.526 | -0.515 |
| -9 | 40.077 | 41.057 | 42.058 | 2.436 | -2.388 | 0.519 | -0.509 |
| -8 | 38.295 | 39.214 | 40.151 | 2.389 | -2.343 | 0.513 | -0.503 |
| -7 | 36.603 | 37.465 | 38.343 | 2.342 | -2.299 | 0.506 | -0.497 |
| -6 | 34.997 | 35.804 | 36.626 | 2.296 | -2.254 | 0.500 | -0.491 |
| -5 | 33.470 | 34.226 | 34.996 | 2.250 | -2.210 | 0.493 | -0.484 |
| -4 | 32.018 | 32.727 | 33.449 | 2.204 | -2.166 | 0.486 | -0.478 |
| -3 | 30.638 | 31.303 | 31.979 | 2.159 | -2.123 | 0.480 | -0.472 |
| -2 | 29.326 | 29.949 | 30.582 | 2.113 | -2.080 | 0.473 | -0.465 |
| -1 | 28.078 | 28.661 | 29.254 | 2.069 | -2.036 | 0.466 | -0.459 |

| | | | | | | | |
|----|--------|--------|--------|-------|--------|-------|--------|
| 0 | 26.963 | 27.513 | 28.070 | 2.027 | -1.996 | 0.458 | -0.451 |
| 1 | 25.759 | 26.271 | 26.792 | 1.980 | -1.951 | 0.452 | -0.445 |
| 2 | 24.682 | 25.162 | 25.650 | 1.936 | -1.909 | 0.445 | -0.439 |
| 3 | 23.656 | 24.107 | 24.563 | 1.892 | -1.867 | 0.438 | -0.432 |
| 4 | 22.680 | 23.101 | 23.529 | 1.849 | -1.825 | 0.431 | -0.425 |
| 5 | 21.749 | 22.144 | 22.544 | 1.806 | -1.783 | 0.423 | -0.418 |
| 6 | 20.861 | 21.231 | 21.606 | 1.763 | -1.742 | 0.416 | -0.411 |
| 7 | 20.015 | 20.362 | 20.712 | 1.720 | -1.701 | 0.409 | -0.404 |
| 8 | 19.208 | 19.533 | 19.861 | 1.678 | -1.660 | 0.401 | -0.397 |
| 9 | 18.439 | 18.742 | 19.049 | 1.636 | -1.619 | 0.394 | -0.390 |
| 10 | 17.731 | 18.016 | 18.303 | 1.596 | -1.581 | 0.386 | -0.382 |
| 11 | 17.003 | 17.269 | 17.537 | 1.553 | -1.539 | 0.379 | -0.375 |
| 12 | 16.334 | 16.583 | 16.834 | 1.512 | -1.499 | 0.371 | -0.368 |
| 13 | 15.695 | 15.928 | 16.162 | 1.471 | -1.459 | 0.364 | -0.361 |
| 14 | 15.085 | 15.302 | 15.521 | 1.430 | -1.420 | 0.356 | -0.353 |
| 15 | 14.501 | 14.704 | 14.909 | 1.390 | -1.381 | 0.348 | -0.346 |
| 16 | 13.944 | 14.134 | 14.324 | 1.350 | -1.341 | 0.340 | -0.338 |
| 17 | 13.411 | 13.588 | 13.766 | 1.310 | -1.303 | 0.332 | -0.330 |
| 18 | 12.901 | 13.067 | 13.233 | 1.270 | -1.264 | 0.324 | -0.323 |
| 19 | 12.414 | 12.568 | 12.723 | 1.231 | -1.226 | 0.316 | -0.315 |
| 20 | 11.948 | 12.092 | 12.236 | 1.192 | -1.187 | 0.308 | -0.307 |
| 21 | 11.502 | 11.636 | 11.770 | 1.153 | -1.149 | 0.300 | -0.299 |
| 22 | 11.075 | 11.199 | 11.324 | 1.114 | -1.112 | 0.292 | -0.291 |
| 23 | 10.666 | 10.782 | 10.898 | 1.076 | -1.074 | 0.283 | -0.283 |
| 24 | 10.274 | 10.382 | 10.490 | 1.037 | -1.037 | 0.275 | -0.275 |
| 25 | 9.900 | 10.000 | 10.100 | 1.000 | -1.000 | 0.267 | -0.267 |
| 26 | 9.533 | 9.633 | 9.733 | 1.037 | -1.036 | 0.278 | -0.278 |
| 27 | 9.182 | 9.282 | 9.382 | 1.075 | -1.073 | 0.290 | -0.290 |
| 28 | 8.846 | 8.946 | 9.045 | 1.112 | -1.110 | 0.302 | -0.302 |
| 29 | 8.524 | 8.623 | 8.722 | 1.149 | -1.146 | 0.314 | -0.313 |
| 30 | 8.216 | 8.314 | 8.413 | 1.186 | -1.182 | 0.326 | -0.325 |
| 31 | 7.920 | 8.018 | 8.116 | 1.223 | -1.218 | 0.339 | -0.337 |
| 32 | 7.637 | 7.734 | 7.831 | 1.259 | -1.254 | 0.351 | -0.349 |
| 33 | 7.365 | 7.461 | 7.558 | 1.296 | -1.289 | 0.363 | -0.361 |
| 34 | 7.104 | 7.199 | 7.295 | 1.332 | -1.324 | 0.376 | -0.373 |
| 35 | 6.854 | 6.948 | 7.043 | 1.368 | -1.359 | 0.388 | -0.386 |
| 36 | 6.614 | 6.707 | 6.801 | 1.404 | -1.394 | 0.401 | -0.398 |
| 37 | 6.383 | 6.476 | 6.569 | 1.439 | -1.429 | 0.413 | -0.410 |
| 38 | 6.162 | 6.254 | 6.346 | 1.475 | -1.463 | 0.426 | -0.423 |
| 39 | 5.950 | 6.040 | 6.131 | 1.510 | -1.497 | 0.439 | -0.435 |
| 40 | 5.746 | 5.835 | 5.925 | 1.545 | -1.531 | 0.452 | -0.448 |
| 41 | 5.550 | 5.638 | 5.727 | 1.580 | -1.565 | 0.464 | -0.460 |
| 42 | 5.361 | 5.449 | 5.537 | 1.615 | -1.599 | 0.478 | -0.473 |
| 43 | 5.181 | 5.267 | 5.353 | 1.649 | -1.632 | 0.491 | -0.486 |
| 44 | 5.007 | 5.091 | 5.177 | 1.683 | -1.665 | 0.504 | -0.498 |

| | | | | | | | |
|----|-------|-------|-------|-------|--------|-------|--------|
| 45 | 4.839 | 4.923 | 5.008 | 1.718 | -1.698 | 0.517 | -0.511 |
| 46 | 4.679 | 4.761 | 4.844 | 1.752 | -1.731 | 0.530 | -0.524 |
| 47 | 4.524 | 4.605 | 4.687 | 1.786 | -1.764 | 0.544 | -0.537 |
| 48 | 4.375 | 4.455 | 4.536 | 1.819 | -1.797 | 0.557 | -0.550 |
| 49 | 4.232 | 4.311 | 4.391 | 1.853 | -1.829 | 0.571 | -0.563 |
| 50 | 4.090 | 4.168 | 4.246 | 1.887 | -1.862 | 0.584 | -0.576 |
| 51 | 3.961 | 4.038 | 4.115 | 1.919 | -1.893 | 0.598 | -0.590 |
| 52 | 3.834 | 3.909 | 3.985 | 1.953 | -1.925 | 0.612 | -0.603 |
| 53 | 3.711 | 3.785 | 3.860 | 1.985 | -1.957 | 0.626 | -0.617 |
| 54 | 3.592 | 3.665 | 3.739 | 2.018 | -1.988 | 0.640 | -0.630 |
| 55 | 3.478 | 3.550 | 3.623 | 2.051 | -2.019 | 0.654 | -0.644 |
| 56 | 3.368 | 3.439 | 3.511 | 2.083 | -2.050 | 0.668 | -0.657 |
| 57 | 3.263 | 3.332 | 3.402 | 2.115 | -2.081 | 0.682 | -0.671 |
| 58 | 3.160 | 3.229 | 3.298 | 2.148 | -2.112 | 0.696 | -0.685 |
| 59 | 3.062 | 3.129 | 3.197 | 2.180 | -2.143 | 0.710 | -0.698 |
| 60 | 2.967 | 3.033 | 3.100 | 2.211 | -2.173 | 0.725 | -0.712 |
| 61 | 2.876 | 2.941 | 3.007 | 2.243 | -2.204 | 0.739 | -0.726 |
| 62 | 2.788 | 2.851 | 2.916 | 2.275 | -2.234 | 0.754 | -0.740 |
| 63 | 2.702 | 2.765 | 2.829 | 2.306 | -2.264 | 0.768 | -0.754 |
| 64 | 2.620 | 2.682 | 2.745 | 2.337 | -2.294 | 0.783 | -0.768 |
| 65 | 2.541 | 2.602 | 2.663 | 2.368 | -2.323 | 0.798 | -0.783 |
| 66 | 2.465 | 2.524 | 2.585 | 2.399 | -2.353 | 0.813 | -0.797 |
| 67 | 2.391 | 2.449 | 2.509 | 2.430 | -2.382 | 0.828 | -0.811 |
| 68 | 2.320 | 2.377 | 2.436 | 2.461 | -2.411 | 0.843 | -0.826 |
| 69 | 2.251 | 2.307 | 2.365 | 2.491 | -2.441 | 0.858 | -0.840 |
| 70 | 2.185 | 2.240 | 2.296 | 2.522 | -2.469 | 0.873 | -0.855 |
| 71 | 2.120 | 2.175 | 2.230 | 2.552 | -2.498 | 0.888 | -0.869 |
| 72 | 2.058 | 2.112 | 2.166 | 2.582 | -2.527 | 0.903 | -0.884 |
| 73 | 1.999 | 2.051 | 2.105 | 2.612 | -2.555 | 0.919 | -0.899 |
| 74 | 1.941 | 1.992 | 2.045 | 2.642 | -2.584 | 0.934 | -0.913 |
| 75 | 1.885 | 1.935 | 1.987 | 2.672 | -2.612 | 0.950 | -0.928 |
| 76 | 1.831 | 1.880 | 1.931 | 2.701 | -2.640 | 0.965 | -0.943 |
| 77 | 1.779 | 1.827 | 1.877 | 2.731 | -2.668 | 0.981 | -0.958 |
| 78 | 1.728 | 1.776 | 1.825 | 2.760 | -2.695 | 0.997 | -0.973 |
| 79 | 1.679 | 1.726 | 1.775 | 2.789 | -2.723 | 1.013 | -0.989 |
| 80 | 1.632 | 1.678 | 1.726 | 2.818 | -2.750 | 1.028 | -1.004 |
| 81 | 1.587 | 1.632 | 1.678 | 2.847 | -2.778 | 1.044 | -1.019 |
| 82 | 1.542 | 1.587 | 1.633 | 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 |

| | | | | | | | |
|-----|-------|-------|-------|-------|--------|-------|--------|
| 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 | 3.156 | -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 | 1.117 | 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 | 3.344 | -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 | 0.889 | 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 |



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附表 2

阻值误差曲线图

