

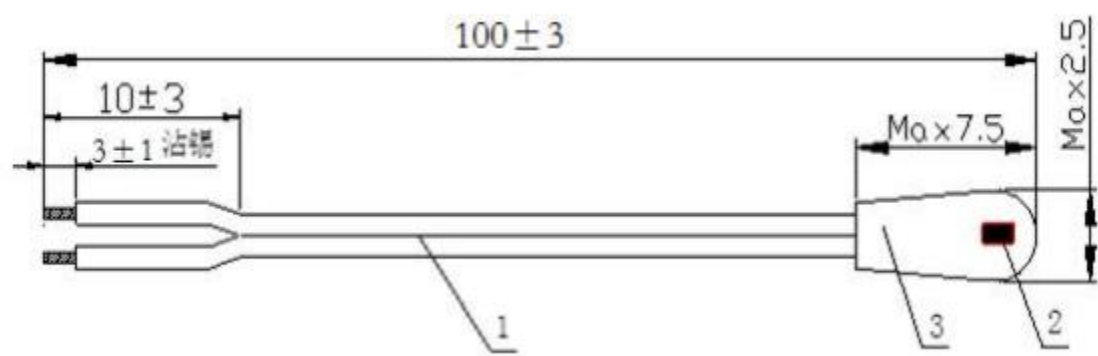
深圳市绍鑫电子有限公司

Shenzhen Shaoxin Electronic Co. , Ltd.

|                        |                                  |                   |           |
|------------------------|----------------------------------|-------------------|-----------|
| 产品名称<br>Product Name   | NTC 温度传感器组件<br>NTC Sensor Module | RoHS              |           |
| 产品系列<br>Product series | MF52D                            | 版 次<br>REV. NO    | A/0       |
| 产品型号<br>Product model  | MF52D104F3950L100                | 修定日期<br>REV. DATE | 2023/2/21 |

1. 产品外形图(Product Drawing)

单位(Unit):mm



2. 材料清单(Material List)

| NO. | 材料名称<br>Material name | 规格/型号<br>Type/ model           | 数 量<br>Quantity |
|-----|-----------------------|--------------------------------|-----------------|
| 2-1 | 电线                    | 2651 28AWG TS 2P黑色线 OD:0.9*1.9 | 1PCS            |
| 2-2 | NTC                   | R25=100KΩ±1% B25/50=3950K±1%   | 1PCS            |
| 2-3 | 环氧树脂                  | JB-04:JB-04X:590A 黑色           | /               |

|                                                       |                                  |  |                             |
|-------------------------------------------------------|----------------------------------|--|-----------------------------|
| 深圳市绍鑫电子有限公司<br>Shenzhen Shaoxin Electronic Co. , Ltd. |                                  |  |                             |
| 产品名称<br>Product Name                                  | NTC 温度传感器组件<br>NTC Sensor Module |  | RoHS                        |
| 产品系列<br>Product series                                | MF52D                            |  | 版 次<br>REV. NO A/0          |
| 产品型号<br>Product model                                 | MF52D104F3950L100                |  | 修定日期<br>REV. DATE 2023/2/21 |

3. 电气性能 (Electrical Characteristic)

| NO. | 项目<br>Item                          | 代号<br>Symbol       | 测试条件<br>Test Conditions                  | 最小值<br>Min. | 中心值<br>Nor. | 最大值<br>Max. | 单位<br>Unit |
|-----|-------------------------------------|--------------------|------------------------------------------|-------------|-------------|-------------|------------|
| 3-1 | 25℃ 电阻值<br>Resistance At 25℃        | R25                | Ta=25℃ ± 0.05℃<br>P <sub>T</sub> ≤ 0.1mW | 99.00       | 100.00      | 101.00      | K Ω        |
| 3-2 | 50℃ 电阻值<br>Resistance At 50℃        | R50                | Ta=50℃ ± 0.05℃<br>P <sub>T</sub> ≤ 0.1mW | /           | 35.884      | /           | K Ω        |
| 3-3 | B值<br>B Value                       | B <sub>25/50</sub> | (3853.887* LnK)                          | 3910.5      | 3950.0      | 3989.5      | K          |
| 3-4 | 耗散系数<br>dissipative coefficient     | δ                  | Ta=25℃ (in air)                          | /           | 8.0         | /           | mW/℃       |
| 3-5 | 响应时间-液体中<br>Response Time-In liquid | τ                  | 25℃ → 85℃<br>T1=25+ (85-25)*63.2%=62.92℃ | /           | /           | 10.0        | Sec        |
| 3-6 | 绝缘测试<br>Insulation test             | /                  | DC500V 1Sec                              | 100         | /           | /           | M Ω        |

4. 最大使用等级 (Maximum use grade)

| NO. | 项目<br>Item                            | 规格<br>Specification | 单位<br>Unit |
|-----|---------------------------------------|---------------------|------------|
| 4-1 | 工作温度范围<br>Operation Temperature Range | -30 ~ +105          | ℃          |

5. 机械性试验 (Mechanical Tests)

| NO. | 项目<br>Item          | 技术要求<br>Pass Criteria              | 测试条件<br>Test Conditions                                                                     |
|-----|---------------------|------------------------------------|---------------------------------------------------------------------------------------------|
| 5-1 | 拉力测试<br>pull test   | 不松脱、不变形<br>Not loose, not deformed | 加载1.0kg 1分钟 (Fasten body with a Load Applied to each lead 1.0kg for 1min)                   |
| 5-2 | 自由落体测试<br>Drop Test | 无明显损伤<br>No visible damage         | 1米的高度，让产品做自由落体运动，下落到10mm厚的橡木板上，5次 (After 5 time natural fall to a maple board from 1M high) |

深圳市绍鑫电子有限公司

Shenzhen Shaoxin Electronic Co. , Ltd.

|                        |                                  |      |           |
|------------------------|----------------------------------|------|-----------|
| 产品名称<br>Product Name   | NTC 温度传感器组件<br>NTC Sensor Module | RoHS |           |
| 产品系列<br>Product series | MF52D                            | 版 次  | A/0       |
| 产品型号<br>Product model  | MF52D104F3950L100                | 修定日期 | 2023/2/21 |

6. 可靠性测试(Reliability Tests)

| NO. | 项目<br>Item                                 | 技术要求<br>Pass Criteria                               | 测试条件<br>Test Conditions                                 |
|-----|--------------------------------------------|-----------------------------------------------------|---------------------------------------------------------|
| 6-1 | 高温储存<br>High Temperature Storage Life Test | $\Delta R/R_{25} \leq \pm 3\%$<br>No visible damage | 105±5℃ ， 1000±24 hrs                                    |
| 6-2 | 低温储存<br>low temperature storage            |                                                     | -30±5℃ ， 1000±24 hrs                                    |
| 6-3 | 恒温恒湿测试<br>Humidity test                    |                                                     | 40±2℃， 90%~95% RH, 1000H±24 hrs                         |
| 6-4 | 温度冲击试验<br>Temp. cycle test                 |                                                     | - 30℃×30min→25℃×5min→ 105℃×30min<br>→25℃×5min, 10Cycles |

7. 烙铁焊接条件(Soldering Iron setting)

| NO. | 项目<br>Item                                | 测试条件<br>settings/ parameters |
|-----|-------------------------------------------|------------------------------|
| 7-1 | 烙铁温度<br>Temperature of Soldering Iron-tip | T≤360℃                       |
| 7-2 | 焊接时间<br>Soldering Time                    | S≤3Sec                       |
| 7-3 | 距电阻的距离<br>Distance From Thermistor        | L≥10mm                       |

深圳市绍鑫电子有限公司

Shenzhen Shaoxin Electronic Co. , Ltd.

|                        |                                  |      |           |
|------------------------|----------------------------------|------|-----------|
| 产品名称<br>Product Name   | NTC 温度传感器组件<br>NTC Sensor Module | RoHS |           |
| 产品系列<br>Product series | MF52D                            | 版 次  | A/0       |
| 产品型号<br>Product model  | MF52D104F3950L100                | 修定日期 | 2023/2/21 |

8.安装使用(Install and use)

1. 请在规定的温度范围内使用本产品  
Use this product within the specified temperature range.
2. 温度过高时会导致产品特性或材料品质的恶化  
Higher temperature may cause deterioration of the characteristics or the material quality of this product.
3. 安装本产品时，在焊接此产品时，不应在树脂头部溶化焊料，否则，可能造成引线断裂、短路、引线绝缘损坏  
Do not melt the solder in resin head, when you solder this product. If you melt the solder in resin head, it has possibility that the break of wire, short and insulation damage.
4. 不要用烙铁碰触树脂头，否则会造成焊料在树脂头部溶化  
Do not touch the resin head directly by solder iron. It may cause the melt of solder in resin head.
5. 在分开平行线时，至少要从树脂头部分开10mm以上  
At least away from resin head 10mm above when lead dividing.
6. 如果从树脂头部切断长度小于10mm的引线，引线边缘的溶化焊料很容易通过引线传至树脂头部  
In case you cut the lead wire of this product less than 10mm from resin head, the heat of melted solder at lead wire edge is propagated easily to the resin head along the lead wire.
7. 在弯曲引线时，引线弯曲半径大于1mm，当弯曲或切断引线时，建议固定组件引线  
Radius of lead bending should be more than 1mm when lead bending.  
Holding element by side lead wire is recommended when lead wire is bent or cut.
8. 不要对引线加过大的力，否则，可能会造成引线与元件之间的接合部断开或裂开  
Do not apply an excessive force to the lead. Otherwise, it may cause junction between lead and element to break or crack.
9. 本产品在陶瓷元件属于易碎材料，使用时务必小心不要施加过大压力或冲击此类强力可能会造成产品破裂或破碎  
The ceramic element of this product is fragile, and care must be taken not to load an excessive press-force or not to give a shock at handling. Such forces may cause cracking or chipping.
10. 对本产品进行树脂封膜时，请在使用前评估本产品的品质  
If you mold by resin this product, please evaluate the quality of this product before you use it.

深圳市绍鑫电子有限公司

Shenzhen Shaoxin Electronic Co. , Ltd.

|                        |                                  |      |           |
|------------------------|----------------------------------|------|-----------|
| 产品名称<br>Product Name   | NTC 温度传感器组件<br>NTC Sensor Module | RoHS |           |
| 产品系列<br>Product series | MF52D                            | 版 次  | A/0       |
| 产品型号<br>Product model  | MF52D104F3950L100                | 修定日期 | 2023/2/21 |

9. 产品储存条件(Storage Conditions)

储存条件(Storage Conditions)：

1. 储存温度(Ambicnt Temperature)：-10℃~+40℃
2. 相对湿度(Relative Humidity)：≦75%RH
3. 远离腐蚀和阳光照射(Keep away from corrosive atmosphere and sunlight)
4. 储存时间(Period of Storage)：1 year

深圳市绍鑫电子有限公司  
 Shenzhen Shaoxin Electronic Co. , Ltd.

|                        |                                  |      |           |
|------------------------|----------------------------------|------|-----------|
| 产品名称<br>Product Name   | NTC 温度传感器组件<br>NTC Sensor Module | RoHS |           |
| 产品系列<br>Product series | MF52D                            | 版 次  | A/0       |
| 产品型号<br>Product model  | MF52D104F3950L100                | 修定日期 | 2023/2/21 |

10. 注意事项(Matters needing attention)

1. 腐蚀性气体或去氧气体(氯气、氢化硫气体、氨气、硫酸气体、一氧化氮等)  
 Corrosive gas or deoxidizing gas (Chlorine gas, Hydrogen sulfide gas, Ammonia gas, Sulfuric acid gas, Nitric oxide gas, etc.)
2. 挥发性或易燃性气体  
 Volatile or flammable gas
3. 在尘土飞扬的条件  
 Dusty conditions
4. 真空、高压或低压条件下  
 Under vacuum, or under high or low pressure
5. 潮湿场所，不要直接浸泡在液体里面或者 使用液体清洗  
 Wet or humid locations ; soak in the liquid or wash with liquid
6. 存放在盐水、油、化学液体或有机溶剂的场所，不可直接与速干胶搭配使用  
 Places with salt water, oils, chemical liquids or organic solvents and do not use directly with quick-drying glue.
7. 强烈振动  
 Strong vibrations
8. 存在类似有害条件的其它场所  
 Other places where similar hazardous conditions exist
9. 请务必在您的产品上配备话当的自动保险功能，以防止由我们产品的异常操作或者失效可能引起的继发损坏  
 Be sure to provide an appropriate fail-safe function on your product to prevent secondary damages that may be caused by the abnormal function or the failure of our product.

深圳市绍鑫电子有限公司

Shenzhen Shaoxin Electronic Co. , Ltd.

|                        |                                  |      |           |
|------------------------|----------------------------------|------|-----------|
| 产品名称<br>Product Name   | NTC 温度传感器组件<br>NTC Sensor Module | RoHS |           |
| 产品系列<br>Product series | MF52D                            | 版 次  | A/0       |
| 产品型号<br>Product model  | MF52D104F3950L100                | 修定日期 | 2023/2/21 |

R -T Table

| R25=100KΩ±1% B25/50=3950K±1% |          |          |          |      |          |          |          |
|------------------------------|----------|----------|----------|------|----------|----------|----------|
| T(℃)                         | Rmin(KΩ) | Rnom(KΩ) | Rmax(KΩ) | T(℃) | Rmin(KΩ) | Rnom(KΩ) | Rmax(KΩ) |
| -30                          | 1719.78  | 1787.98  | 1858.69  | 6    | 237.46   | 241.99   | 246.58   |
| -29                          | 1616.55  | 1679.60  | 1744.94  | 7    | 226.19   | 230.39   | 234.65   |
| -28                          | 1520.19  | 1578.51  | 1638.89  | 8    | 215.53   | 219.42   | 223.37   |
| -27                          | 1430.21  | 1484.16  | 1539.98  | 9    | 205.43   | 209.04   | 212.69   |
| -26                          | 1346.15  | 1396.07  | 1447.69  | 10   | 195.85   | 199.20   | 202.58   |
| -25                          | 1267.57  | 1313.78  | 1361.53  | 11   | 186.78   | 189.88   | 193.02   |
| -24                          | 1194.09  | 1236.87  | 1281.06  | 12   | 178.18   | 181.06   | 183.96   |
| -23                          | 1125.34  | 1164.96  | 1205.86  | 13   | 170.03   | 172.69   | 175.37   |
| -22                          | 1060.99  | 1097.69  | 1135.55  | 14   | 162.29   | 164.75   | 167.23   |
| -21                          | 1000.74  | 1034.74  | 1069.80  | 15   | 154.95   | 157.23   | 159.52   |
| -20                          | 944.29   | 975.80   | 1008.27  | 16   | 147.99   | 150.09   | 152.21   |
| -19                          | 891.38   | 920.60   | 950.67   | 17   | 141.37   | 143.31   | 145.27   |
| -18                          | 841.78   | 868.86   | 896.73   | 18   | 135.09   | 136.88   | 138.69   |
| -17                          | 795.24   | 820.36   | 846.19   | 19   | 129.12   | 130.77   | 132.44   |
| -16                          | 751.58   | 774.87   | 798.81   | 20   | 123.45   | 124.97   | 126.50   |
| -15                          | 710.58   | 732.19   | 754.38   | 21   | 118.06   | 119.46   | 120.87   |
| -14                          | 672.07   | 692.12   | 712.70   | 22   | 112.93   | 114.22   | 115.52   |
| -13                          | 635.90   | 654.50   | 673.58   | 23   | 108.05   | 109.24   | 110.43   |
| -12                          | 601.89   | 619.15   | 636.85   | 24   | 103.41   | 104.51   | 105.60   |
| -11                          | 569.91   | 585.93   | 602.35   | 25   | 99.00    | 100.00   | 101.00   |
| -10                          | 539.83   | 554.70   | 569.93   | 26   | 94.71    | 95.71    | 96.71    |
| -9                           | 511.52   | 525.32   | 539.45   | 27   | 90.64    | 91.63    | 92.63    |
| -8                           | 484.86   | 497.68   | 510.79   | 28   | 86.76    | 87.75    | 88.74    |
| -7                           | 459.76   | 471.66   | 483.83   | 29   | 83.07    | 84.05    | 85.04    |
| -6                           | 436.11   | 447.16   | 458.45   | 30   | 79.55    | 80.53    | 81.51    |
| -5                           | 413.82   | 424.08   | 434.55   | 31   | 76.20    | 77.17    | 78.14    |
| -4                           | 392.80   | 402.33   | 412.05   | 32   | 73.01    | 73.97    | 74.94    |
| -3                           | 372.97   | 381.82   | 390.84   | 33   | 69.97    | 70.92    | 71.88    |
| -2                           | 354.27   | 362.48   | 370.85   | 34   | 67.08    | 68.01    | 68.96    |
| -1                           | 336.61   | 344.24   | 352.00   | 35   | 64.31    | 65.24    | 66.18    |
| 0                            | 319.94   | 327.02   | 334.23   | 36   | 61.68    | 62.60    | 63.52    |
| 1                            | 304.19   | 310.76   | 317.45   | 37   | 59.17    | 60.07    | 60.98    |
| 2                            | 289.31   | 295.41   | 301.62   | 38   | 56.77    | 57.66    | 58.56    |
| 3                            | 275.24   | 280.91   | 286.66   | 39   | 54.48    | 55.36    | 56.25    |
| 4                            | 261.94   | 267.20   | 272.54   | 40   | 52.30    | 53.16    | 54.04    |
| 5                            | 249.36   | 254.24   | 259.19   | 41   | 50.22    | 51.07    | 51.92    |

深圳市绍鑫电子有限公司  
Shenzhen Shaoxin Electronic Co. , Ltd.

|                        |                                  |      |           |
|------------------------|----------------------------------|------|-----------|
| 产品名称<br>Product Name   | NTC 温度传感器组件<br>NTC Sensor Module | RoHS |           |
| 产品系列<br>Product series | MF52D                            | 版 次  | A/0       |
| 产品型号<br>Product model  | MF52D104F3950L100                | 修定日期 | 2023/2/21 |

R -T Table

| R25=100K $\Omega$ $\pm$ 1% B25/50=3950K $\pm$ 1% |                    |                    |                    |        |                    |                    |                    |
|--------------------------------------------------|--------------------|--------------------|--------------------|--------|--------------------|--------------------|--------------------|
| T (°C)                                           | Rmin (K $\Omega$ ) | Rnom (K $\Omega$ ) | Rmax (K $\Omega$ ) | T (°C) | Rmin (K $\Omega$ ) | Rnom (K $\Omega$ ) | Rmax (K $\Omega$ ) |
| 42                                               | 48.23              | 49.06              | 49.90              | 78     | 12.83              | 13.23              | 13.63              |
| 43                                               | 46.32              | 47.14              | 47.98              | 79     | 12.41              | 12.80              | 13.19              |
| 44                                               | 44.51              | 45.31              | 46.13              | 80     | 12.01              | 12.38              | 12.77              |
| 45                                               | 42.77              | 43.56              | 44.36              | 81     | 11.61              | 11.98              | 12.36              |
| 46                                               | 41.11              | 41.89              | 42.68              | 82     | 11.24              | 11.60              | 11.97              |
| 47                                               | 39.52              | 40.29              | 41.06              | 83     | 10.87              | 11.23              | 11.59              |
| 48                                               | 38.00              | 38.75              | 39.51              | 84     | 10.52              | 10.87              | 11.22              |
| 49                                               | 36.55              | 37.29              | 38.03              | 85     | 10.19              | 10.53              | 10.87              |
| 50                                               | 35.16              | 35.88              | 36.62              | 86     | 9.86               | 10.19              | 10.53              |
| 51                                               | 33.83              | 34.54              | 35.26              | 87     | 9.55               | 9.87               | 10.21              |
| 52                                               | 32.56              | 33.25              | 33.96              | 88     | 9.25               | 9.57               | 9.89               |
| 53                                               | 31.34              | 32.02              | 32.71              | 89     | 8.96               | 9.27               | 9.59               |
| 54                                               | 30.18              | 30.84              | 31.52              | 90     | 8.68               | 8.98               | 9.29               |
| 55                                               | 29.06              | 29.71              | 30.37              | 91     | 8.41               | 8.70               | 9.01               |
| 56                                               | 27.99              | 28.63              | 29.28              | 92     | 8.15               | 8.44               | 8.74               |
| 57                                               | 26.96              | 27.59              | 28.22              | 93     | 7.90               | 8.18               | 8.47               |
| 58                                               | 25.98              | 26.59              | 27.21              | 94     | 7.66               | 7.93               | 8.22               |
| 59                                               | 25.03              | 25.63              | 26.25              | 95     | 7.42               | 7.69               | 7.97               |
| 60                                               | 24.13              | 24.72              | 25.32              | 96     | 7.20               | 7.46               | 7.73               |
| 61                                               | 23.26              | 23.84              | 24.42              | 97     | 6.98               | 7.24               | 7.50               |
| 62                                               | 22.43              | 22.99              | 23.57              | 98     | 6.77               | 7.02               | 7.28               |
| 63                                               | 21.63              | 22.18              | 22.75              | 99     | 6.56               | 6.81               | 7.07               |
| 64                                               | 20.87              | 21.41              | 21.96              | 100    | 6.37               | 6.61               | 6.86               |
| 65                                               | 20.13              | 20.66              | 21.20              | 101    | 6.18               | 6.42               | 6.66               |
| 66                                               | 19.43              | 19.94              | 20.47              | 102    | 6.00               | 6.23               | 6.47               |
| 67                                               | 18.75              | 19.25              | 19.77              | 103    | 5.82               | 6.05               | 6.28               |
| 68                                               | 18.10              | 18.59              | 19.10              | 104    | 5.65               | 5.87               | 6.10               |
| 69                                               | 17.47              | 17.96              | 18.45              | 105    | 5.48               | 5.70               | 5.92               |
| 70                                               | 16.87              | 17.35              | 17.83              |        |                    |                    |                    |
| 71                                               | 16.30              | 16.76              | 17.23              |        |                    |                    |                    |
| 72                                               | 15.74              | 16.19              | 16.66              |        |                    |                    |                    |
| 73                                               | 15.21              | 15.65              | 16.10              |        |                    |                    |                    |
| 74                                               | 14.70              | 15.13              | 15.57              |        |                    |                    |                    |
| 75                                               | 14.20              | 14.63              | 15.06              |        |                    |                    |                    |
| 76                                               | 13.73              | 14.14              | 14.57              |        |                    |                    |                    |
| 77                                               | 13.27              | 13.68              | 14.09              |        |                    |                    |                    |