

车用温度传感器 Temperature Sensors for Vehicles



产品介绍Product Description

该系列温度传感器是热敏电阻的封装集成产品。

This series of temperature sensors are thermistor based modular products.

因为热敏电阻具有较高的灵敏度、精度和可靠性的特性，使得该系列传感器成为检测气体，液体或固体温度的有效方案。

Thermistors can be very effective in sensing temperatures of gases, liquids or solids because of their enhanced sensitivity, accuracy and reliability.

全密封的铜质壳体可以直接浸入被测介质。

Fully enclosed brass body makes it often ideal for applications of immersion temperature measurements.

坚固耐用、安装简便、在恶劣的应用环境中可靠运行。

Robust and easy to install threaded packaging usually provides reliable operation in harsh application environments.

宽温度范围，响应快速。

Fast response in a wide operating temperature range.

40°C~150°C的温度范围适用绝大多数的应用场合。

40°C to 150°C allows application flexibility.

参数可订制。

Custom configuration is available.

产品特点Features

- 浸入式温度感应
Immersion sensing
- NTC或KTY形式输出
NTC(Negative Temperature Coefficient) or KTY (silicon based positive temperature coefficient) type outputs
- 更高的灵敏度、精度和可靠性
Enhanced sensitivity, accuracy, reliability
- 坚固的外壳
Robust packaging
- 快速反应
Fast response
- 宽温度范围
Wide operating temperature range
- 安装简单
Easy installation
- 可定制
Customizable

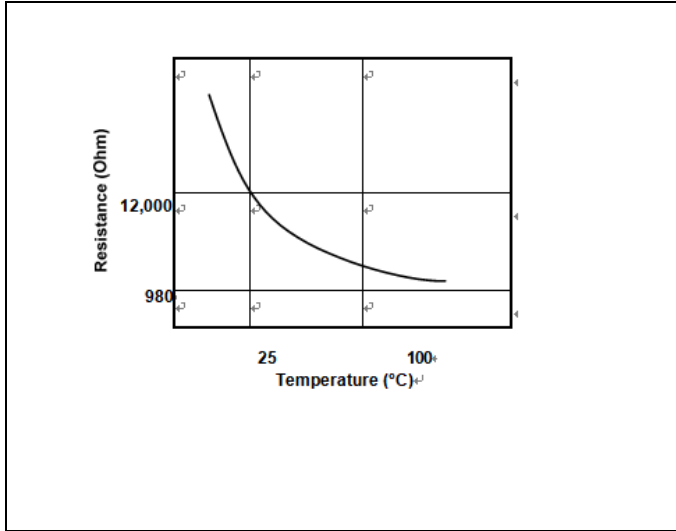
产品应用Potential Applications

- 工程机械/商用车：柴油机水温、变速箱油温等。
Heavy duty/commercial vehicles: engine coolant, transmission gearbox oil temperature sensing etc.
- 工业：空压机等需要检测冷却水、润滑油、液压油温度的场合。
Industrial: coolant, lubricants, hydraulic oil temperature sensing for compressors etc.

表1 通用参数 Table 1. General Specifications

| | | | |
|-----------|-------------------------------------|--------------|------------------------------------|
| 感应形式 | Temperature sensing type | 浸入式 | Immersion |
| 热敏电阻类型 | Thermistor type | NTC或KTY | NTC or KTY |
| R25 | Nominal resistance at 25 °C [77 °F] | 2000Ω | 2000 Ohm |
| 工作电压 | Operational voltage | 6~24V | 6 to 24V |
| 工作温度范围 | Operating temperature range | 40 °C~150 °C | 40 °C to 150 °C [40 °F to 302 °F] |
| 外壳材质 | Housing material | 黄铜 | brass |
| 机械安装/电气连接 | Type of connection | 详见表3 | See Table 3 |

**图1. 典型NTC曲线 (12 kOhm@25 °C)
Figure 1. Typical NTC Curve (12 kOhm at 25 °C)**



**图2. 典型KTY曲线 (R25 = 2,000 Ohm)
Figure 2. Typical KTY Curve (R25 = 2,000 Ohm)**

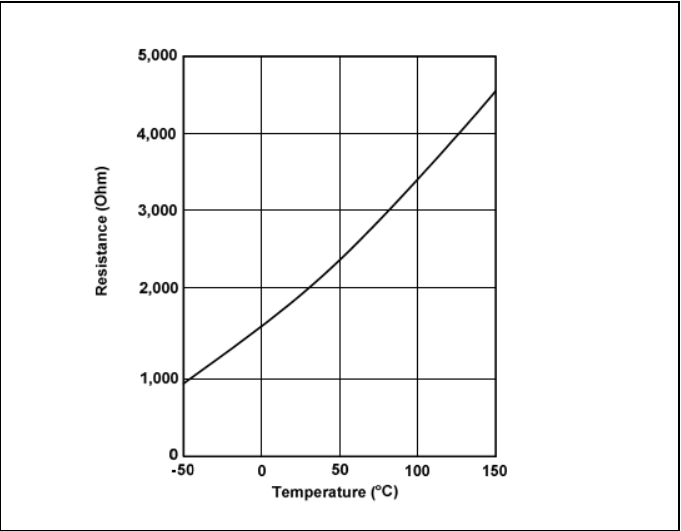


表2 机械安装/电气连接形式 Table 2. Type of connection

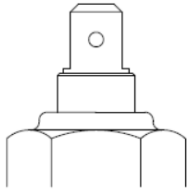
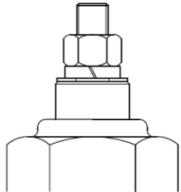
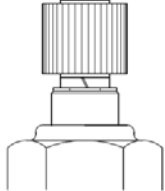
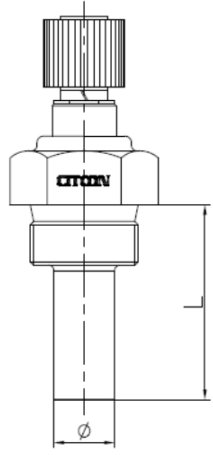
| | | | |
|--|--|--|---|
| <p>A</p> <p>单引脚-6,3 x 0,8mm插片, 外壳接地</p> <p>1 pole common GND, 6,3 x 0,8mm</p>  | <p>D</p> <p>单引脚-M4六角螺母, 外壳接地</p> <p>1 pole common GND, M4 Hex nut</p>  | <p>E</p> <p>单引脚-M4注塑滚花螺母, 外壳接地</p> <p>1 pole common GND, M4 mold knurled nut</p>  |  |
|--|--|--|---|

表3 型号一览表 Table 3. Order Guide

| + °C | 螺纹 Thread | 特征曲线表 Characteristic curve table | 机械安装/ 电气连接 形式 Type of connection | L | ∅ | Operational Value | 件号 Order No. |
|------|----------------|--|--|----|----|----------------------|------------------------|
| max. | | | | mm | mm | + °C Ω | |
| 120 | M14 x 1,5 | 1 | A | 29 | 9 | 90 = 51,2 ± 5,3 | 323 801 001 006 |
| 120 | M14 x 1,5 | 1 | D | 29 | 9 | 90 = 51,2 ± 4,3 | 323 801 001 054 |
| 120 | M14 x 1,5 | 1 | E | 29 | 9 | 90 = 51,2 ± 4,3 | 323 801 001 026 |
| 120 | M16 x 1,5 | 1 | A | 29 | 9 | 90 = 51,2 ± 4,3 | 323 801 001 040 |
| 120 | M16 x 1,5 | 1 | E | 29 | 9 | 90 = 51,2 ± 4,3 | 323 801 001 029 |
| 120 | M18 x 1,5 | 1 | A | 29 | 9 | 90 = 51,2 ± 4,3 | 323 801 001 022 |
| 120 | M20 x 1,5 | 1 | A | 22 | 9 | 90 = 51,2 ± 4,3 | 323 801 001 057 |
| 120 | 1/2 14 NPTF | 1 | A | 29 | 9 | 90 = 51,2 ± 4,3 | 323 801 001 010 |
| 120 | 1/4 18 NPTF | 1 | A | 29 | 9 | 90 = 51,2 ± 4,3 | 323 801 001 009 |
| 120 | 3/8 18 NPTF | 1 | A | 29 | 9 | 90 = 51,2 ± 4,3 | 323 801 001 007 |
| 120 | 5/8 18 UNF 3A | 1 | A | 29 | 9 | 90 = 51,2 ± 4,3 | 323 801 001 008 |
| 120 | 9/16 18 UNF 2A | 1 | A | 29 | 9 | 90 = 51,2 ± 4,3 | 323 801 001 053 |
| 120 | R 1/2 | 1 | A | 29 | 9 | 90 = 51,2 ± 4,3 | 323 801 001 041 |
| 120 | R 3/8 | 1 | A | 29 | 9 | 90 = 51,2 ± 4,3 | 323 801 001 043 |
| 120 | R 3/8 | 1 | E | 29 | 9 | 90 = 51,2 ± 4,3 | 323 801 001 030 |
| 150 | M14 x 1,5 | 2 | A | 29 | 9 | 120 = 36,5 ± 2,7 | 323 801 004 002 |
| 150 | M14 x 1,5 | 2 | D | 29 | 9 | 120 = 36,5 ± 2,7 | 323 801 004 040 |
| 150 | M14 x 1,5 | 2 | E | 29 | 9 | 120 = 36,5 ± 2,7 | 323 801 004 014 |
| 150 | M16 x 1,5 | 2 | E | 29 | 9 | 120 = 36,5 ± 2,7 | 323 801 004 012 |
| 150 | 1/2 14 NPTF | 2 | A | 29 | 9 | 120 = 36,5 ± 2,7 | 323 801 004 007 |
| 150 | 1/2 14 NPTF | 2 | D | 29 | 9 | 120 = 36,5 ± 2,7 | 323 801 004 006 |
| 150 | 1/2 20 UNF 2A | 2 | D | 29 | 9 | 120 = 36,5 ± 2,7 | 323 801 004 042 |
| 150 | 1/4 18 NPTF | 2 | D | 29 | 9 | 120 = 36,5 ± 2,7 | 323 801 004 017 |
| 150 | 5/8 18 UNF 3A | 2 | A | 29 | 9 | 120 = 36,5 ± 2,7 | 323 801 004 013 |
| 150 | 5/8 18 UNF 3A | 2 | E | 29 | 9 | 120 = 36,5 ± 2,7 | 323 801 004 009 |

表4 特征曲线表 Table 4. Characteristic curve table

特征曲线表1 Characteristic Curve Table 1
 热敏电阻 Thermistor
 测试介质 Test fluid: 导热油 Heat transfer oil

| 温度 Temp. | 传感器 Sensor | | |
|-------------|------------|----------------|--------------|
| | 阻值 R | 偏差百分比 ± Tol | 偏差值 ± Tol |
| °C | (Ohm) | (%) | (Ohm) |
| 40 | 17162.35 | 16.93% | 2906 |
| 35 | 12439.5 | 16.32% | 2029.83 |
| 30 | 9134.53 | 15.72% | 1435.77 |
| 25 | 6764.48 | 15.13% | 1023.58 |
| 20 | 5067.6 | 14.56% | 737.59 |
| 15 | 3833.89 | 14.14% | 542.02 |
| 10 | 2929.9 | 13.75% | 402.82 |
| 5 | 2249.44 | 13.37% | 300.8 |
| 0 | 1743.15 | 13.00% | 226.69 |
| 5 | 1364.07 | 12.65% | 172.56 |
| 10 | 1075.63 | 12.34% | 132.75 |
| 15 | 850.09 | 12.18% | 103.51 |
| 20 | 676.95 | 12.02% | 81.36 |
| 25 | 543.54 | 11.74% | 63.83 |
| 30 | 439.29 | 11.50% | 50.52 |
| 35 | 356.64 | 11.38% | 40.59 |
| 40 | 291.46 | 11.25% | 32.79 |
| 45 | 239.56 | 11.11% | 26.62 |
| 50 | 197.29 | 11.20% | 22.1 |
| 55 | 161.46 | 10.86% | 17.54 |
| 60 | 134.03 | 10.04% | 13.46 |
| 65 | 113.96 | 9.85% | 11.23 |
| 70 | 97.05 | 9.87% | 9.58 |
| 75 | 82.36 | 9.49% | 7.82 |
| 80 | 70.12 | 9.21% | 6.46 |
| 85 | 59.73 | 8.91% | 5.32 |
| 90 | 51.21 | 8.47% | 4.34 |
| 95 | 44.32 | 8.08% | 3.58 |
| 100 | 38.47 | 7.75% | 2.98 |
| 105 | 33.4 | 8.17% | 2.73 |
| 110 | 29.12 | 8.59% | 2.5 |
| 115 | 25.53 | 9.20% | 2.35 |
| 120 | 22.44 | 9.89% | 2.22 |
| 125 | 19.75 | 10.53% | 2.08 |
| 130 | 17.44 | 11.18% | 1.95 |
| 135 | 15.46 | 11.84% | 1.83 |
| 140 | 13.75 | 12.51% | 1.72 |
| 145 | 12.26 | 13.13% | 1.61 |
| 150 | 10.96 | 13.87% | 1.52 |

特征曲线表2 Characteristic Curve Table 2
 热敏电阻Thermistor
 测试介质Test fluid:导热油Heat transfer oil

| 温度 Temp. °C | 传感器 Sensor | | |
|-------------------|---------------|-----------------------|-----------------------|
| | 阻值 R (Ohm) | 偏差百分比 ± Tol (%) | 偏差值 ± Tol (Ohm) |
| 40 | 36563.56 | 14.26% | 5212.38 |
| 35 | 26284.63 | 13.87% | 3645.02 |
| 30 | 19149.2 | 13.48% | 2581.56 |
| 25 | 14127.68 | 13.11% | 1851.71 |
| 20 | 10540.68 | 12.77% | 1346.27 |
| 15 | 7721.35 | 12.60% | 972.85 |
| 10 | 5720.88 | 12.45% | 712.14 |
| 5 | 4284.03 | 12.32% | 527.68 |
| 0 | 3240.18 | 12.21% | 395.75 |
| 5 | 2473.6 | 12.13% | 300.01 |
| 10 | 1905.87 | 12.05% | 229.7 |
| 15 | 1486.65 | 12.10% | 179.88 |
| 20 | 1168.64 | 12.17% | 142.19 |
| 25 | 926.71 | 12.25% | 113.52 |
| 30 | 739.98 | 12.34% | 91.32 |
| 35 | 594.9 | 12.43% | 73.97 |
| 40 | 481.53 | 12.51% | 60.26 |
| 45 | 392.57 | 12.36% | 48.51 |
| 50 | 322.17 | 12.17% | 39.2 |
| 55 | 266.19 | 11.97% | 31.87 |
| 60 | 221.17 | 11.76% | 26.02 |
| 65 | 184.72 | 11.60% | 21.42 |
| 70 | 155.29 | 11.36% | 17.64 |
| 75 | 131.38 | 11.00% | 14.45 |
| 80 | 112.08 | 10.48% | 11.75 |
| 85 | 96.4 | 10.00% | 9.64 |
| 90 | 82.96 | 9.68% | 8.03 |
| 95 | 71.44 | 9.32% | 6.66 |
| 100 | 61.92 | 8.87% | 5.49 |
| 105 | 54.01 | 8.44% | 4.56 |
| 110 | 47.24 | 8.07% | 3.81 |
| 115 | 41.42 | 7.73% | 3.2 |
| 120 | 36.51 | 7.31% | 2.67 |
| 125 | 32.38 | 7.35% | 2.38 |
| 130 | 28.81 | 7.39% | 2.13 |
| 135 | 25.7 | 7.74% | 1.99 |
| 140 | 23 | 8.09% | 1.86 |
| 145 | 20.66 | 8.37% | 1.73 |
| 150 | 18.59 | 8.66% | 1.61 |
| 155 | 16.74 | 8.84% | 1.48 |
| 160 | 15.11 | 9.07% | 1.37 |
| 165 | 13.66 | 9.22% | 1.26 |
| 170 | 12.38 | 9.45% | 1.17 |
| 175 | 11.25 | 9.69% | 1.09 |
| 180 | 10.24 | 9.86% | 1.01 |