ASIA AKITA

文件編號：251016

大亞秋田電子科技（深圳）有限公司

负温度系数热敏电阻器

規格：CN**　Series

产品規格書

製造廠商：

大亞秋田電子科技（深圳）有限公司

使用廠商：

立创

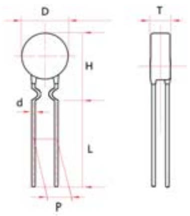
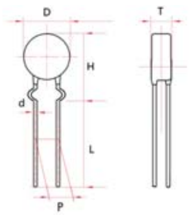
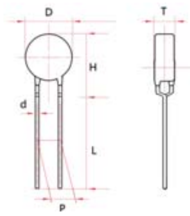
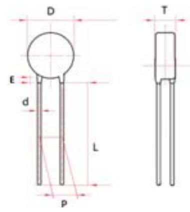
認可	審核	製作
唐立纶	胡桃红	肖明艳

認可	審核	製作

公司章
大亞秋田電子科技（深圳）有限公司 2025.10.16 發行 文件管制

公司章

1.外观尺寸 Material and dimensions(mm)

<table>
<tr><th colspan="7">尺寸图示 Dimensional diagram</th></tr>
<tr><td colspan="7">   
内 K 引线   外 K 引线   轴弯引线   直引线</td></tr>
<tr><th colspan="7">产品尺寸 Dimension</th></tr>
<tr><th>Series</th><th>D_{MAX}</th><th>T_{MAX}</th><th>d±0.05</th><th>P±0.5</th><th>Hmax</th><th>L</th></tr>
<tr><td>CN05**</td><td>6.5</td><td>5.0</td><td>0.6</td><td>5.0</td><td>12.5</td><td rowspan="7">Cutting leads
Or
long leads
长脚（>18mm）
或短脚</td></tr>
<tr><td>CN07**</td><td>8.5</td><td>5.0</td><td>0.6</td><td>5.0</td><td>14.5</td></tr>
<tr><td>CN09**</td><td>10.5</td><td>5.5</td><td>0.6/0.8</td><td>5.0/7.5</td><td>16.5</td></tr>
<tr><td>CN10**</td><td>12.5</td><td>5.5</td><td>0.6/0.8</td><td>5.0/7.5</td><td>18.5</td></tr>
<tr><td>CN13**</td><td>14.5</td><td>6.0</td><td>0.8</td><td>7.5</td><td>20.5</td></tr>
<tr><td>CN15**</td><td>16.5</td><td>6.5</td><td>0.8/1.0</td><td>7.5</td><td>22.5</td></tr>
<tr><td>CN20**</td><td>22.5</td><td>7.0</td><td>0.8/1.0</td><td>7.5/10.0</td><td>28.5</td></tr>
</table>

2.主要电器性能参数 Main electrical performance parameters

Series	R25(Ω)	阻值允差 Resistance tolerance	热耗散系数 Coefficient of heat dissipation δ(mW/°C)	热时间常数 thermal time constant τ (s)	最大稳态电流 Maximum steady-state current Imax(A)	最大冲击电容 Maximum capacitance Cmax(μF)	材料常数 B(°K)±10%	工作温度范围 Operating temperature T (℃)
CN0515M	15.0	±20%	~6	<22	0.6	47	3000	-40~150
CN0705M	5.0	±20%	~10	<30	2.0	100	2600	-40~150
CN0708M	8.0	±20%	~10	<30	1.0	100	2600	-40~150
CN0710M	10.0	±20%	~10	<30	1.0	100	2800	-40~150
CN0903M	3.0	±20%	~11	<38	4.0	220	2600	-40~170
CN0905M	5.0	±20%	~11	<38	3.0	220	2600	-40~170
CN0908M	8.0	±20%	~11	<38	2.0	220	2800	-40~170
CN0910M	10.0	±20%	~11	<38	2.0	220	2800	-40~170
CN1005M	5.0	±20%	~13	<50	4.0	330	2800	-40~170
CN1008M	8.0	±20%	~13	<50	3.0	330	2800	-40~170
CN1010M	10.0	±20%	~13	<50	3.0	330	2800	-40~170
CN1016M	16.0	±20%	~13	<50	2.0	330	2900	-40~170
CN1020M	20.0	±20%	~13	<50	2.0	330	3000	-40~170
CN134R7M	4.7	±20%	~16	<70	5.0	470	2800	-40~170
CN1305M	5.0	±20%	~16	<70	5.0	470	2800	-40~170
CN1308M	8.0	±20%	~16	<70	4.0	470	3000	-40~170
CN1310M	10.0	±20%	~16	<70	4.0	470	3000	-40~170
CN152R5M	2.5	±20%	~20	<85	7.0	680	2800	-40~200
CN1503M	3.0	±20%	~20	<85	7.0	680	2800	-40~200
CN153R3M	3.3	±20%	~20	<85	7.0	680	2900	-40~200
CN1505M	5.0	±20%	~20	<85	6.0	680	3000	-40~200
CN1510M	10.0	±20%	~20	<85	5.0	680	3200	-40~200
CN1515M	15.0	±20%	~20	<85	4.0	680	3200	-40~200
CN1520M	20.0	±20%	~20	<85	4.0	680	3200	-40~200
CN2005M	5.0	±20%	~26	<110	7.0	1000	3000	-40~200
CN2010M	10.0	±20%	~26	<110	6.0	1000	3200	-40~200

***各参数定义详见 9.参数定义**
Please refer to section 10 for detailed definitions of each parameter

3.可靠性 Reliability

指标项目 Items	技术要求 Requirement	测试条件/方法 Test methods
可焊性 Solder-ability	浸润部分上锡均匀，上锡面积≥95%	将引出端沾助焊剂后，浸入到温度为245±5℃、深度为15mm的锡槽中锡面距NTC本体下端6mm处，持续3±0.5秒。（参见IEC68-2-20 /GB2423.28试验Ta） After dipping the lead out end with flux, immerse it in a tin bath at a temperature of 245 ± 5 ℃ and a depth of 15mm, with the tin surface 6mm away from the lower end of the NTC body, for 3 ± 0.5 seconds.
耐焊接热 Resistance To Soldering Heat	无可见损伤 No visible damage $\Delta R/R_N \leq 20\%$ ($\Delta R = \lvert R_N - R_N' \rvert$)	根据IEC68-2-20（GB2423 .28）试验Tb进行试验。采用焊槽法，将引出端沾助焊剂后，浸入到温度为260±5℃、深度为15mm的锡槽中,锡面距NTC本体下端6mm 处，维持10±1秒. 在25±1℃条件下恢复4 - 5h后，复测额定零功率电阻RN'. Conduct the test according to IEC68-2-20 (GB2423. 28) test Tb.Using the welding groove method, the lead out end is dipped in flux and immersed in a tin groove with a temperature of 260 ± 5 ℃ and a depth of 15mm. The tin surface is 6mm away from the lower end of the NTC body and maintained for 10 ± 1 second After recovering for 4-5 hours under the condition of 25 ± 1 ℃, retest the rated zero power resistance RN '

3.可靠性 Reliability

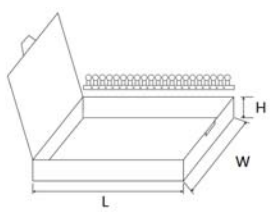
指标项目 Items	技术要求 Requirement	测试条件/方法 Test methods
引出端强度 Strength of lead terminal	无可见损伤 No visible damage ΔR/RN ≤20% (ΔR =∣RN-RN'∣)	根据 IEC68-2-21（GB2423 .29）试验 U 进行试验。 试验 Ua：拉力 10N，持续 10 S； 试验 Ub：弯曲 90°，拉力 10N，持续 10 S； 扭转 180°，拉力 5N，持续 10 S。 在 25±1℃条件下恢复 4～5 h 后，复测额定零功率电阻 Conduct the test according to IEC68-2-21 (GB2423. 29) test U. Test Ua: tensile force of 10N for 10 seconds; Test Ub: Bend 90 °, pull 10N, and continue for 10 seconds; Twist 180 °, pull 5N, and continue for 10 seconds. After recovering for 4-5 hours under the condition of 25 ± 1 ℃, retest the rated zero power resistance RN '
温度循环测试 Temp. Cycling Testing	无可见损伤 No visible damage ΔR/RN ≤20% (ΔR =∣RN-RN'∣)	在Ta=-40±2℃和Tb=150±2℃的环境温度中各存放30分钟，循环 5 次.每次高低温循环都有在 25±1℃的环境中过渡 5 分钟。样品进行温度循环测试后，取出放置室温（25±1℃）4~5 小时后测量零功率电阻 R_N'. Store for 30 mins each in environment temperature of Ta=-40±2℃ and Tb=150±2℃, and cycle 5 times. Each high and low temperature cycle has a transition time of 5minutes in an environment of 25±1℃.After conducting temperature cycling tests on the sample, take it out and place it at room temperature (25 ±1℃) for 4-5 hours before measuring the zero power resistance RN '
电循环测试 Electrical Cycling Testing	无可见损伤 No visible damage ΔR/RN ≤20% (ΔR =∣RN-RN'∣)	环境温度:25℃±1℃.循环次数: 1,000 次,通/断: 5 s / 55 s ,测试电流 5.0A 样品置于室温（25±1℃）4~5 小时后,测量其零功率电阻 R_N'. Environmental temperature: 25 ℃± 1 ℃. Cycle count: 1000 times, on/off: 5 s/55 s, test current: 5.0A. After placing the sample at room temperature (25 ± 1 ℃) for 4-5 hours, measure its zero power resistance RN '

3.可靠性 Reliability

指标项目 Items	技术要求 Requirement	测试条件/方法 Test methods
持久性测试 LoadLife (Endurance) Testing	无可见损伤 No visible damage ΔR/RN ≤20% (ΔR =∣RN-RN'∣)	环境温度:25℃±1℃.样品通过最大工作电流 5.0A，1,000±24 小时后，取出置于室温（25±1℃）4~5 小时后,测量其零功率电阻 R_N'Environmental temperature: 25 ℃± 1 ℃. The sample passes through a maximum working current of 5.0A. After 1000 ± 24 hours, it is taken out and placed at room temperature (25 ± 1 ℃) for 4-5 hours. The zero power resistance RN 'is measured
耐湿测试 Humidity Testing	无可见损伤 No visible damage ΔR/RN ≤20% (ΔR =∣RN-RN'∣)	在温度 40±2℃,相对湿度 93±3%的环境中放置 200±24 小时后，取出置于室温（25±1℃）1~2 小时后, 测量其零功率电阻 R_N'. After being placed in an environment with a temperature of 40 ± 2 ℃ and a relative humidity of 93 ± 3% for 200 ± 24 hours, take it out and place it at room temperature (25 ± 1 ℃) for 1-2 hours to measure its zero power resistance RN '
绝缘耐压 Insulation Withstand voltage	700V_{DC} 试验无击穿或飞弧 No breakdown or arcing during the test	将热敏电阻的引线端作为一个电极，另一极用金属箔缠绕在热敏电阻体上 ,在两极施加电压 700V_{DC} ,时间 60S. Take the lead end of the thermistor as one electrode, and wrap the other electrode around the thermistor body with metal foil. Apply a voltage of 700V_{DC} to both electrodes for 60 seconds

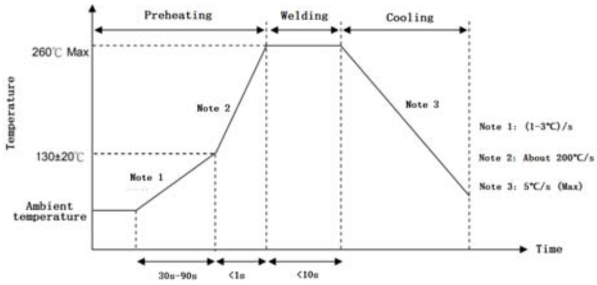
4.包装方式 Packaging

□散装 Bulk

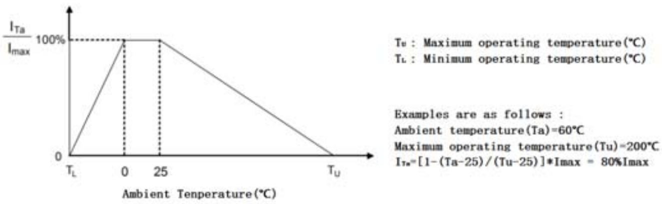


□ 折叠编带 Foldable Tape

5.参考焊接曲线 Reference welding curve



6.最大电流降额曲线 Maximum current derating curve



7.阻温曲线 R-T curve 详情请咨询产品工程师

8.存储环境 Storage conditions

温度 Temperature: -10℃ ~ +40℃

湿度 Humidity: ≤70%RH

期限 Term: ≤6 months (先进先出 First-in/ First-out)

地点 Place:

不要暴露在下列环境条件下，否则将导致性能衰退或参数飘移

Do not exposing the components to the following conditions, otherwise, it may result in deterioration of characteristics：

1) 腐蚀性或易氧化气体 Corrosive gas or deoxidizing gas
2) 易燃易爆气体 Flammable and explosive gases
3) 油、水和化学溶液 Oil, water and chemical liquid
4) 太阳光下 Under the sunlight

尽量保证开口最小化，立即重新封好，并贮存在密封、带有干燥剂的容器中

Handling after seal open: After unpacking of the minimum package, reseal it promptly or store it inside a sealed container with a drying agent

9.参数定义 Parameter Definition

项目 Items	单位 units	定义 Definition
零功率电阻 R_{25} Zero power resistor R_{25} （25℃±1℃）	Ω	在规定温度下测得的热敏电阻器的直流电阻值； 测量应在下述条件下进行：由于自热导致的电阻值变化相对于总的测量误差可忽略不计 The DC resistance value of the thermistor measured at the specified temperature; The measurement should be carried out under the following conditions: the change in resistance value caused by self heating can be negligible relative to the total measurement error
阻值允差 Resistance tolerance	%	电阻器的实际阻值对于标称值的最大允许偏差范围 The maximum allowable deviation range of the actual resistance value of the resistor from the nominal value

9.参数定义 Parameter Definition

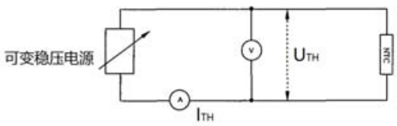
项目 Items	单位 Units	定义 Definition
*①热耗散系数δ Thermal dissipation coefficient	mW/°C	使热敏电阻器的温度升高 1℃所消耗的功率，通常为规定的温度下，功耗变化与热敏电阻器体温变化之比 The power consumed to raise the temperature of the thermistor by 1 ℃,Usually the ratio of power consumption change to temperature change in thermistors at a specified temperature
*②热时间常数τ Thermal time constant	s	在零功率条件下，热敏电阻的温度下降到其最初温度与最终温度之差为 63.2% 时所需要的时间 The time required for the temperature of a thermistor to drop to 63.2% of its initial and final temperature under zero power conditions
最大稳态电流 Imax Maximum steady-state current	A	在 25℃环境温度条件下，可以连续施加在热敏电阻器上的电流最大值 The maximum current that can be continuously applied to a thermistor under ambient temperature conditions of 25 ℃
*③最大冲击电容 Cmax Maximum impulse capacitance	μF	在负载状态下，与一个热敏电阻器连接的电容器的最大允许电容量值 The maximum allowable capacitance value of a capacitor connected to a thermistor under load conditions
材料常数 B Material Constant	°K	用以下公式表示负温度系数热敏电阻材料常数： Use the following formula to represent the material constant of negative temperature coefficient thermistors: $B=T1\times T2/(T2-T1)\times \ln(R1/R2)$ or $B=2.303\times[T1\times T2/(T2-T1)]\times \log(R1/R2)$ T1=298.15°K(25°C)，T2 = 323.15°K(50°C)
工作温度范围 Working temperature range	℃	热敏电阻器设计在零功率状态下可连续的工作温度范围 Thermistor design allows for continuous operating temperature range in zero power state

*①*②*③测试方法详见下页附录说明 The testing method is detailed in the appendix on the next page

附录说明 Appendix Description

*①热耗散系数δ:测试方法参照 GB/T 6663.1 中规定，测量并且记录热敏电阻器在温度 Tb 下的零功率电阻值，除非详细规范中另有规定，其温度为 85℃士 0.1℃，除非详细规范另有规定，有引线的热敏电阻器应用夹具在距离热敏电阻器本体 25 mm±1.5mm 处夹紧，夹具夹住的热敏电阻器放人一个试验箱内测试，这个试验箱的容积至少要比热敏电阻器体积大 1000 倍，线路应这样安装以使热敏电阻器与箱壁之间或热敏电阻器与箱之间的距离不少于 75 mm，试验箱内的空气应是静止的，温度应为 25℃士 5℃,热敏电阻器的测试电路连接如下图所示，高阻抗电压表和安培表准确度应优于 1%。

Thermal dissipation coefficient δ: The testing method shall refer to the provisions of GB/T 6663.1. The zero power resistance value of the thermistor at temperature Tb shall be measured and recorded. Unless otherwise specified in the detailed specifications, the temperature shall be 85 ℃± 0.1 ℃. Unless otherwise specified in the detailed specifications, the thermistor with leads shall be clamped with a fixture at a distance of 25mm ± 1.5mm from the thermistor body. The thermistor clamped with the fixture shall be placed in a test box for testing, The volume of this test box should be at least 1000 times larger than the volume of the thermistor. The wiring should be installed in such a way that the distance between the thermistor and the box wall or between the thermistor and the box is not less than 75 mm. The air inside the test box should be static and the temperature should be 25 ℃± 5 ℃. The test circuit connection of the thermistor is shown in the following figure. The accuracy of the high impedance voltmeter and ammeter should be better than 1%.



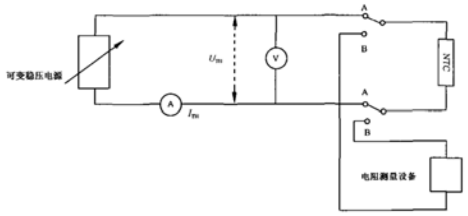
调整电流 ITH 直到 UTH/ITH 在温度 Tb 时的零功率电阻值的±5%以内。记录 UTH 和 ITH 达到稳定时的读数,耗散系数(δ)应使用以下公式进行计算:δ=(UTH ×ITH)/(Tb-25)mW/℃。

注 :热耗散系数受测试设备测试环境与测试方法影响，易存在较大的测试结果区别。Adjust the current ITH until the zero power resistance value of UTH/ITH is within ± 5% of the temperature Tb. Record the readings and dissipation coefficients of UTH and ITH when they reach stability (δ) The following formula should be used for calculation: δ= (UTH x ETH)/(Tb-25) mW/℃.

Note: The thermal dissipation coefficient is influenced by the testing environment and methods of the testing equipment, and there may be significant differences in the test results.

*②热时间常数τ:测试方法参照 GB/T 6663.1 中规定,测量热敏电阻器在 Tb=(358.15±2)K,Ta=(298.15±2)K 和 Ti 温度下零功率电阻值。Ti 按以下公式进行计算:Ti:=Tb-(Tb-Ta)X0.632。热敏电阻器安装方法与热耗散系数δ测试方法相同，高阻抗电压表和安培表准确度应优于 1%，电阻测量仪精度不高于 1%。测量方法参照下图，闭合接点 AA,调整电流 ITH 直到比率 UTH/ITH 在 Tb 温度零率电阻值的 60%到 80%以内，并且达到稳定的读数。投掷开关闭合接点 BB 并且当热敏电阻器达到温度 Tb 下的零功率电阻值时计时，直到 Ti 温度零功率电阻值时停止计时。开始和停止计时之间的时间就是热时间常数。

*② Thermal time constant: The testing method shall refer to the provisions of GB/T 6663.1, and measure the zero power resistance value of the thermistor at temperatures Tb=(358.15 ± 2) K, Ta=(298.15 ± 2) K, and Ti. Ti is calculated using the following formula: Ti:=Tb - (Tb Ta) X0.632. Installation method and thermal dissipation coefficient of thermistors δ The testing method is the same, and the accuracy of high impedance voltmeter and ammeter should be better than 1%, while the accuracy of resistance measuring instrument should not be higher than 1%. The measurement method refers to the following figure. Close contact AA and adjust the current ETH until the ratio UTH/ITH is within 60% to 80% of the zero rate resistance value at Tb temperature, and a stable reading is achieved. Throw the switch to close contact BB and count when the thermistor reaches the zero power resistance value at temperature Tb, until the timing stops at the zero power resistance value at Ti temperature. The time between starting and stopping the timer is the thermal time constant



*③最大冲击电容 Cmax:电容 CT 是通过一个串联的固定电阻和热敏电阻放电，选择的充电电压是在放电开始时加到热敏电阻器上的电压，为 180/375 V,相应于(110/230+ΔU)×√2，电容应进行 1000 次放电，试验环境温度在 15℃和 35℃之间。温度应保持在试验开始温度的±2℃以内。

*③ Maximum impulse capacitance Cmax: The capacitor CT is discharged through a series connected fixed resistor and thermistor. The selected charging voltage is the voltage applied to the thermistor at the beginning of discharge, which is 180/375 V, corresponding to (110/230+ Δ U) √ 2, the capacitor should be discharged 1000 times, and the test environment temperature should be between 15 ℃ and 35 ℃. The temperature should be maintained within ± 2 ℃ of the starting temperature of the test.