帝科微 DIKEWEI

深圳市帝科微电子有限公司

DIKEWEI ELECTRONICS TECHNOLOGY., TLD. SHENZHEN

NTC热敏电阻

NTC THERMISTOR

优良品质 · 诚信经营

一 起 携 手 · 共 创 辉 煌

www.dikewei.cn

负温度系数（NTC）热敏电阻器

Negative temperature coefficient (NTC) thermistor

MF11 补偿型 NTC 热敏电阻系列

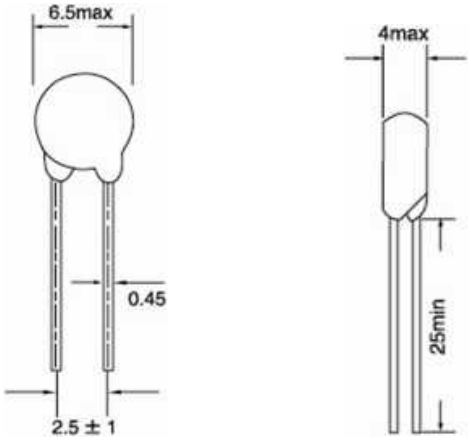
MF11 Compensation NTC Thermistor series

应用范围 Applications

用于一般精度的温度测量和在计量设备、电子电路中的温度补偿。

Common-precision temperature measurement, temperature compensation in measuring equipments and electronic circuit.

外形尺寸 Dimensions (mm)



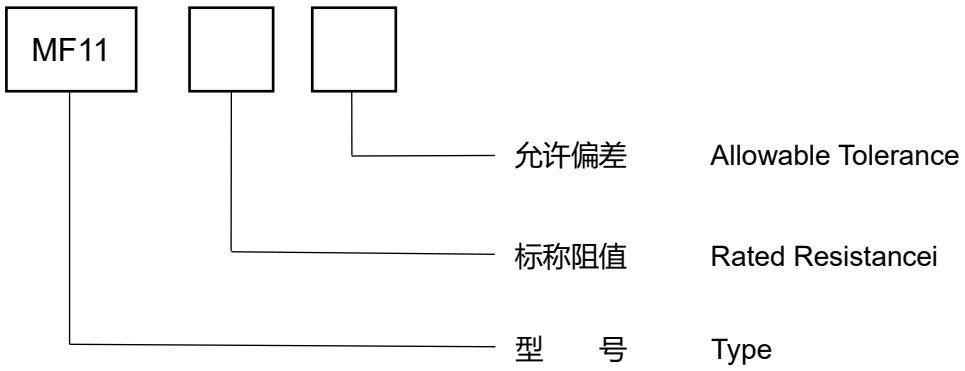
主要技术参数 Main Techno-Parameter

参数 Parameter		数值 Value
标称阻值及允差	Rated resistance and tolerance	见下表 See following table
B 值及允差	B value and tolerance	见下表 See following table
时间常数	Time constant	约 30S
耗散系数	Thermal dissipation coefficient	约 4.5mW/℃
额定功率	Rated Power	450mW
使用温度范围	Temperature Range	-30~+125℃

阻值、B 值一览表 The table of resistance and B Value

型 号 Part No	25℃时额定零功率电阻值 Rated zero-power resistance at 25*C		B 值 (25/50℃) B value (25/50℃)	
	阻值范围(Ω) Resistance range(Ω)	允许偏差(%) Allowable Tolerance(%)	标称值(K) Rated Value(K)	允许偏差(%) Allowable Tolerance(%)
MF11	5-7 8-24 25-119 120-359 360-1400 1500-5900 6000-12000 13000-17000 18000-44000 45000-79000 80000-144000 145000-199000 200000-299000 300000-500000	±5 ±10 ±15 ±20	2600 2800 3000 3200 3600 3950 4050 4150 4250 4300 4400 4500 4600 4750	±10

产品标志说明 Specification



NTC热敏电阻注意事项

请遵循以下事项，否则可能会造成 NTC 热敏电阻损坏，使用设备损伤或引起误动作等后果。

1、请勿在使用温度范围以外使用，请勿施加超出使用温度范围上下限的急剧温度变化。

2、请在额定功率条件下使用 NTC 热敏电阻。各规格最大额定功率为中 ϕ5—0.7W ϕ7－1.2W ϕ9－1.9W ϕ11—2.3W ϕ13—3W ϕ15—3.5W ϕ20—4W。

3、在高湿高温环境下使用护套型 NTC 热敏电阻时应采取仅使护套封闭部分暴露于环境（水中、湿气）中，而护套开口部分不会直接接触到水及蒸汽的设计。

4、配线时应确保导线端部（含连接器）不会深入水、蒸汽、电解质液等否则会造成接触不良。

5、请勿在腐蚀性气体的环境（C12、NH3、SOx、NOx）以及会接触到电解质液、盐水、酸、碱、有机溶剂的场所中使用。

6、请勿过度拉伸及弯曲导线，请勿施加过度的振动、冲击及压力。

7、金属腐蚀可能会造成设备功能故障，故在选择材质时应确保金属护套型及螺钉紧固型 NTC 热敏电阻与安装的金属件之间不会产生接触的电位差。

8、功率型 NTC 周围应避免安装发热和易燃元件，建议选用弯脚上部引线较高的产品，使 NTC 热敏电阻在线路板上高出其它元件，以免发热影响其它元件正常工作。

9、NTC 热敏电阻是按不同的功能用途分别进行设计的，如有疑问可与我司联络。

MATTERS NEEDING ATTENTION FOR NTC THERMISTORS

Please follow the rules listed below when using NTC thermistors. Otherwise, you may cause damage to the NTC thermistor and relevant equipment or hurt yourself.

Do not use the thermistor under temperature beyond the operating temperature range. Do not apply rapid temperature changes which exceed the upper and lower limits of the operating temperature range.

Please use the NTC thermistor under the standard power. The maximum standard powers of each specification are: ϕ5—0.7W ϕ7 — 1.2W ϕ9 — 1.9W ϕ11—2.3W ϕ13—3W ϕ15—3.5W ϕ20—4W.

When using the sheath type NTC thermistors in the high humidity and high temperature environment, the sealing part of the sheath should be exposed to the environment (moisture or water) while the opening part of the sheath is not directly exposed to the water or steam.

When wiring, the ends of the wire (including connectors) should not be posited deeply inside water, steam. electrolyte solution, etc. Otherwise, it will result in poor contact.

Please do not expose the thermistor to corrosive gas (NH3, SOx, NOx, Cl2) or any saline solution, acid solution, alkaline solution and electrolyte solution.

Do not over stretch or bend the wire. Please do not apply excessive vibration, pressure and impact on the thermistor. To avoid equipment faults caused by metal corrosion, please choose the right material to make sure there is no potential difference at the contact point between metal sheath type or screw fastening type NTC thermistor and the metal components.

Do not install any flammable component or component generating heat surrounding the power type NTC Our recommendation is to avoid the negative effect brought by the heat from the NTC, please use products with higher lead wire on the bending feet to make the NTC thermistor on the circuit board higher than the other components. NTC thermistors have specific designs for different functions. Feel free to contact us if you have any question.

附录

参数定义

热敏电阻器

其首要特性是随着阻体温度的变化，电阻值呈现显著变化的热敏感半导体电阻器。

负温度系数热敏电阻器(NTC)

温度升高时，电阻值下降的热敏电阻器。

最大允许电容量

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。

剩余电阻值

当热敏电阻器上流过最大电流并达到热平衡时的直流电阻值。以欧姆(Ω)表示。

冲击电流

比如已放电的电容器，已冷却的灯丝或者一个静止的马达等等，有极低的起始阻抗，当负载的初期有较高的初始电流称为冲击电流。

零功率电阻

在规定温度下测得的热敏电阻器的直流电阻值。

25℃环境温度下的最大电流

在 25℃环境温度下，可以连续施加在热敏电阻器上的电流（直流或正弦波交流有效值）最大值。

耗散系数

使热敏电阻器的温度升高 K 所需消耗的功率。通常为规定的环境温度下功耗变化与热敏电阻器阻体温度变化之比。通常以(mW/℃)表示。

热时间常数

在规定的介质中，热敏电阻器自热后冷却其温升的 63.2%所需要的时间（单位为 S)。

B 值

NTC 热敏电阻在某一温度之电阻与另一温度之电阻的比较值，可由下面的公式计算得到。材料常数是 R1,R2 分别为 T1,T2 温度下的零功率电阻 T1=298.15K(25℃)
T2=323.15K(50℃)
B=Ln(R1/R2)/(1/T1-1/T2)

冲击能量

热敏电阻能承受最少 6000 次而电阻值变化率在±20%以内之冲击能量。此能量与所加之电压及电容值有关。

APPENDIX

PARAMETER DEFINITION

Thermistor
The primary characteristic of a thermally sensitive semiconductor resistor is with a significant change in resistance as the resistance body temperature changes.

Negative temperature coefficient
A thermistor exhibits a decrease in resistance when temperature rises.

Maximum allowable capacitance
The maximum allowable capacitance of a capacitor connected to a thermistor in a load state.

Residual resistance
The DC resistance when the maximum current is passed through the thermistor and the thermal balance is reached. Expressed in ohms(Ω).

Impact current
For example, a capacitor that has been discharged, a cooled filament, or a stationary motor, etc., has a very low initial impedance, and when the initial stage of the load has a higher initial current, it is called an impact current.

Zero-power resistance
The DC resistance of a thermistor measured at specified temperature.

Max. current at25℃ambient temperature
At25 ℃ ambient temperature, the maximum value of current(DC or sinusoidal AC RMS)that can be applied continuously on a thermistor.

Dissipation factor
The power required to increase the temperature of a thermistor by 1K.it is the ratio of the change in power consumption to the temperature of the thermistor body at the specified ambient temperature. Expressed in mW/℃.

Thermal time constant
In a specified medium, the time required for the thermistor to cool its temperature rise by 63.2%after heating itself (the unit is S)

B constant
B=Ln(R1/R2)/(1/T1-1/T2)
A comparison of the resistance of a NTC thermistor at a temperature to that of another, which can be calculated by the below formula. The material constants R1,R2 are zero-power resistances at T1 and T2 respectively.T1=298.15K(25℃)　T2=323.15K(50℃)
B=Ln(R1/R2)/(1/T1-1/T2)

Impact energy
Thermistors can withstand impact energy at least 6000 times, while resistance rates change within ±2%.This energy is related to the added voltage and capacitance.