

规格承认书

Specification for approval

产品名称: NTC热敏电阻 30D-15-L070

Product Type: NTCthermistor 30D-15-L070

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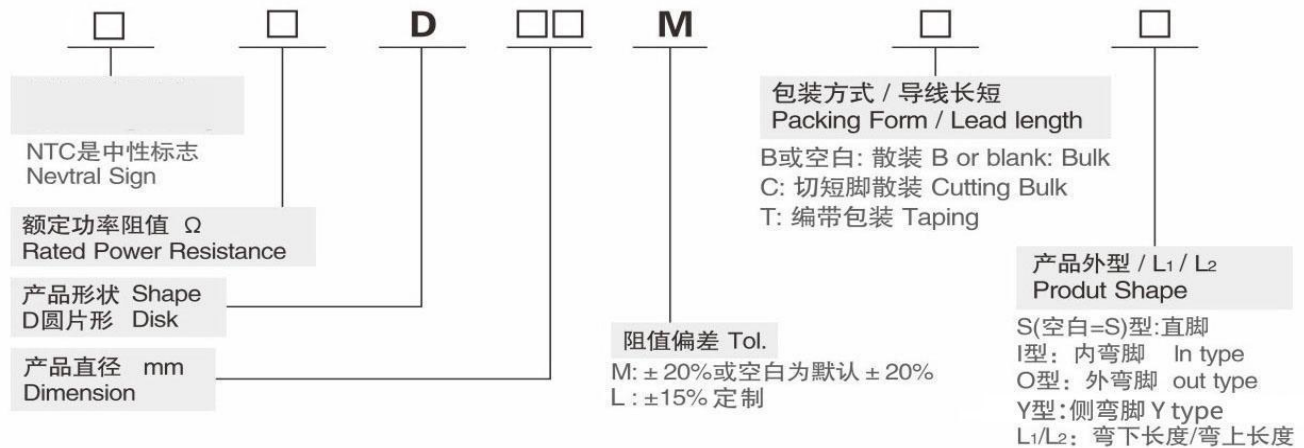
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产品规格代码和应用范围及特点

PartNumber and Application Range and Characteristics

一、产品规格代码 PARTNUMBER



二、应用范围及特点 Application Range and Characteristics

1、产品特点 Feature of Power Thermistor

1.1 应用范围 Application

- 转换电源, 开关电源, UPS 电源
- 镇流器及各类加热器
- 各类显像管, 显示器
- 电子节能灯, 其他照明灯具
- Switching power supply, switch power, up power
- Electronic energy saving lamp, electronic ballast and all kinds of electric heater
- All kinds of RT, display
- Bulb and other lighting lamps

1.2 特点 Characteristic

- 体积小, 功率大, 抑制浪涌电流能力强
- 反应速度快
- 材料常数 (B 值) 大, 残余电阻小
- 寿命长, 可靠性高
- 系列全, 应用范围宽
- Small size, large power, strong capacity of suppression of inrush current
- Fast response
- Big material constant (B value), small residual resistance
- Long life and high reliability
- Complete series, wide applications

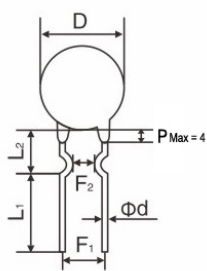
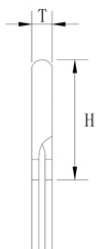
外型尺寸及材料和电性能

External dimensions and material and electrical properties

三、外型尺寸及相关标准External dimensions and relevant standards

1 引线形状 Lead the shape

2 产品标识 Product identification

内弯脚 (I Type)	厚度 (T)	NTC 30D-15	NTC	负温度系数热敏电阻器 NTC thermistor
		30	额定零功率电阻值 30 Ω	
		D	圆片型Disk-Type	
		15	直径 14±1 (mm)	

3 产品尺寸 Product size （单位：Unit:mm）

型号 Part No	D max	T max	d ±0.05	F1 ±1	F2 ±1.5	P max	H max	弯引线 Bend straight wirelead	
								L1 ± 0.5	L2 ± 2
30D-15	17.5	6	0.75	7.5	5	4	21	7.0	7or4

4 材料 Materials

(1)封装材料 (Wrapper) ： 酚醛树脂 (Modified phenolic resin)

(2)引线 (Down-lead) ： CP线 (CP Wire)

(3)颜色 (Coating color) ： 黑色 (Black)

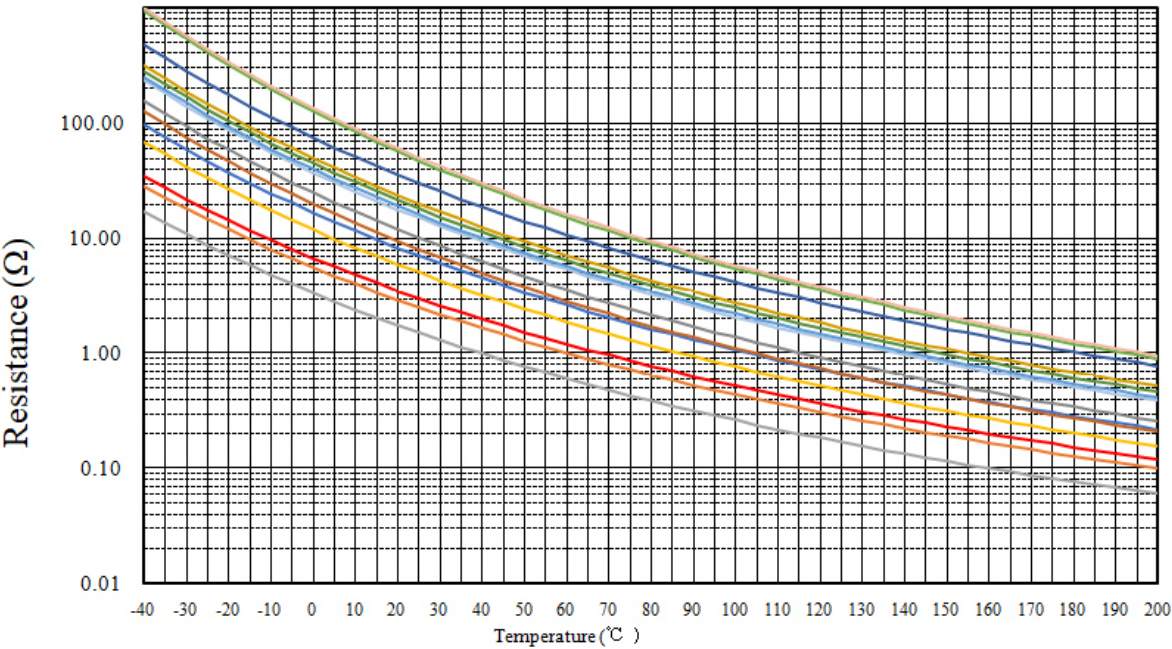
四、电性能Electrical performance

型号	R25 (Ω)	最大稳 态电流 (A)	残余 电阻 (Ω)	耗散 系数 (mw/℃)	热时间 常数 (s)	最大允许 使用容量值 240V/120V(μ F)	B值 (K)	工作 温度 (℃)	认证		
									UL/CUL	CQC	TUV
30D-15	30	3.5	0.438	约18	约86	220/820	2950	-40~ +200	pass	pass	pass

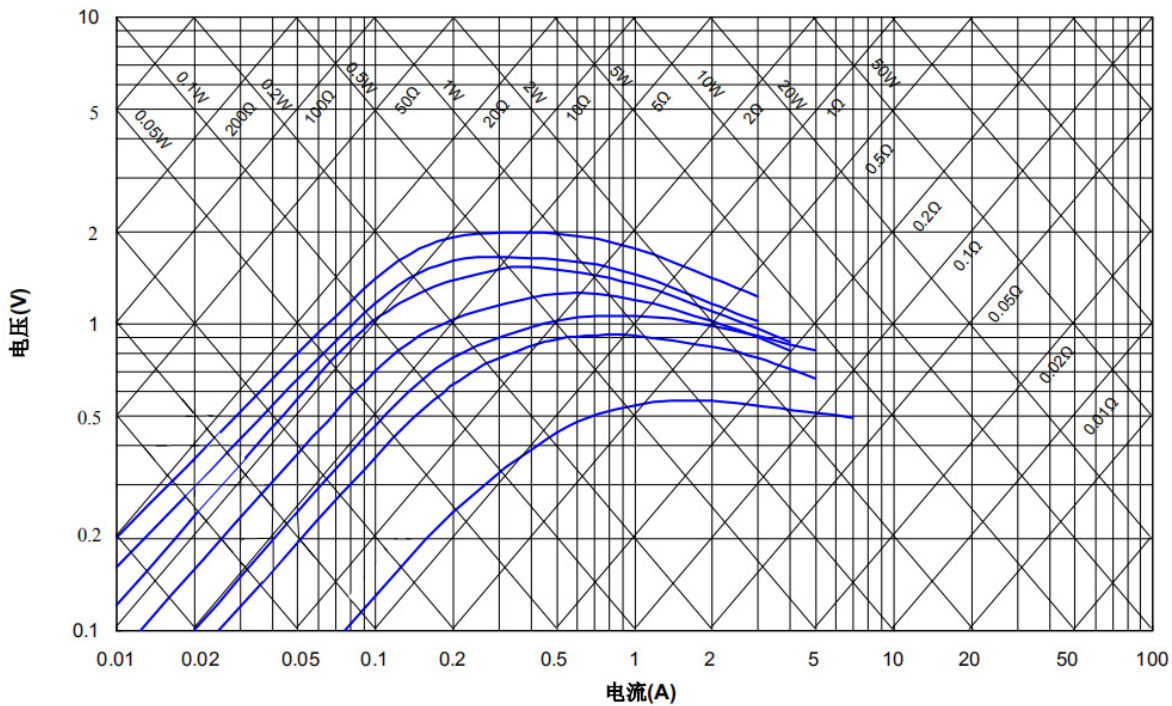
产品阻温特性及静态伏安特性

Resistance-Temperature Characteristic and Staracteristic

五、产品阻温特性Resistance-Temperature Characteristic



六、静态伏安特性Staracteristic

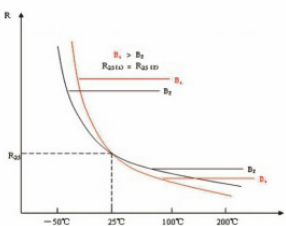
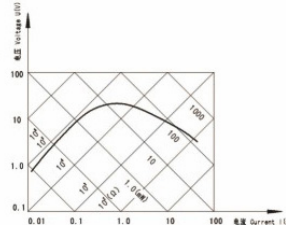


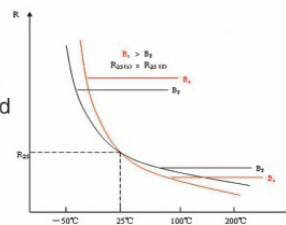
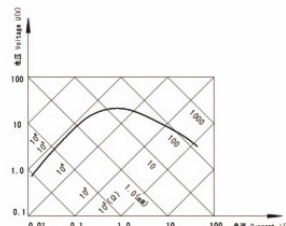
热敏电阻技术术语及安全可靠性

properties of products

七、热敏电阻技术术语

项目	标准术语	测试设备	要求
额定零功率电阻值	在基准25℃下测得的零功率电阻值，也称为NTC热敏电阻的标称电阻值。零功率电阻值 R_T 是在规定温度下，采用引起电阻值变化相对于总的测量误差来说可以忽略不计的测量功率测得的电阻值。	HG-2515型热敏电阻测试仪	电阻测量值在偏差允许范围内： M: $\pm 20\%$ L: $\pm 15\%$ 定制
热敏指数B值(K)	B 值是负温度系数热敏电阻器的热敏指数，它被定义为两个温度下零功率电阻值的自然对数之差与这两个温度倒数之差的比值。 $B = \frac{\ln(R_{T1}) - \ln(R_{T2})}{(1/T_1 - 1/T_2)}$ R_{T1} : 温度为 T_1 时的零功率电阻值 R_{T2} : 温度为 T_2 时的零功率电阻值 $T_1 = 273.15 + 25$ (℃) $T_2 = 273.15 + 50 / 85$ (℃)	HG-2515型热敏电阻测试仪 恒温油槽	符合规格书要求
耗散系数(δ)	在规定环境温度下，NTC 热敏电阻耗散系数是电阻体耗散的功率变化与电阻体相应的温度变化之比，即： $\delta = \frac{\Delta P}{\Delta T}$ 在工作温度范围内， δ 随环境温度变化而有所变化。 δ : NTC 热敏电阻耗散系数, (mW/K) ΔP : NTC 热敏电阻消耗的功率(mW) ΔT : NTC 热敏电阻消耗功率 ΔP 时，电阻体相应的温度变化(K)	耗散系数测试仪	见主要技术参数表
热时间常数(τ)	在零功率条件下，当温度突变时，热敏电阻本体的温度变化到始末两个温度差的 63.2% 温度时所需的时间，热时间常数 τ 与 NTC 热敏电阻的热容量C成正比，与其耗散系数 δ 成反比，即： $\tau = C / \delta$ τ : 热时间常数(S) C: NTC 热敏电阻的热容量 δ : NTC 热敏电阻的耗散系数	热时间常数测试仪	见主要技术参数表
ITEM	STANDARD TERMINOLOGY	TEST EQUIPMENT	REQUIREMENT
Rated zero power resistance	In the standard 25 °C ambient conditions measured resistance values, namely NTC thermistor standard resistance values. Under the specified temperature induced resistance changes relative to the total measurement error is negligible in the measurement of the power measured resistance values.	HG2515 thermistor tester	The measured resistance within the allowable tolerance: M: $\pm 20\%$ L: $\pm 15\%$ (Customized)
B value (K)	B value stands for the thermal exponent at a negative temperature coefficient. It's defined as a ratio of the balance between the natural logarithms of resistance values at zero-power to the balance between the reciprocals of the two temperatures. The Formula is as below: $B = \frac{\ln(R_{T1}) - \ln(R_{T2})}{(1/T_1 - 1/T_2)}$ R_{T1} : the zero power resistance at temperature T_1 (K) R_{T2} : the zero power resistance at temperature T_2 (K) $T_1 = 273.15 + 25$ (℃) $T_2 = 273.15 + 50$ or 85 (℃)	HG2515 thermistor tester Thermostatic oil bath	Comply with the specifications
Dissipation Factor	The dissipation factor is the ratio of the rate of change of the power consumption of a thermistor to the change of it's Corresponding temperature, namely: $\delta = \frac{\Delta P}{\Delta T}$ The value of δ will change for different ambient temperatures δ : NTC Thermistor dissipation factor, (mW/K) P: NTC Thermistor consumption power (mW) T: When the NTC thermistor consumption power is P, the corresponding change at resistor temperature (K).	Dissipation coefficient tester	See table of main technical parameters
Thermal time constant	The thermal time constant is a 63.2% change of thermistor's body temperature from its initial temperature to end temperature under zero power conditions. Thermal time constant is directly proportional to C, the heat capacity of thermistor, and is inversely proportional to δ , the dissipation constant. That is: $\tau = C / \delta$ T: Thermal time constant (S) C: The heat capacity of NTC thermistor δ : The dissipation factor of NTC thermistor	Thermal time constant test	See table of main technical parameters

项目	标准术语	测试设备	要求
电阻-温度特性示意图	热敏电阻器的零功率电阻值与其电阻体温度之间的依赖关系。 	/	/
静态伏安特性示意图	静态伏安特性是指NTC热敏电阻器在建立了热平衡后电压与电流的关系，由于热敏电阻器的端电压与电流关系的变化幅度很大，其伏安特性曲线常用双对数坐标来表示。 	/	/
残余电阻	在标准测试条件下，通过热敏电阻器最大直流电流并达到热平衡时的电阻值。	稳态电流试验机	详见各规格产品技术参数表
最大允许容量	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。	最大允许容量试验机	零功率阻值变化率 $\leq \pm 25\%$
最大稳态电流	在环境温度为25℃时允许施加在热敏电阻器上的最大连续直流电流。	最大稳态电流试验机	外观无损伤，阻值变化率 $\leq \pm 25\%$

ITEM	STANDARD TERMINOLOGY	TEST EQUIPMENT	REQUIREMENT
Resistance-temperature Characteristic Sketch map	RT characteristic is the relationship between zero-power resistance and body temperature of the thermistor. R-T curve of NTC thermistor 	/	/
Static characteristics Sketch map	Static volt-ampere characteristic refers to the NTC thermistor in the establishment of the heat balance in the relationship between voltage and current, the thermistor voltage and current relationship changes greatly, the volt-ampere characteristic curve is often double logarithmic coordinates. 	/	/
Residual resistance	At standard test conditions, the AC resistance when the current flow through a thermistor and reach thermal equilibrium.	Steady-state current testing equipment	Details see technical parameter table
Maximum allowable capacitance	Under load conditions, the maximum allowable capacitance is the value of capacitor, which connect with a thermistor.	The maximum allowed capacity equipment	Rated zero power resistance's change rate $\leq \pm 25\%$
Max.steady state current	The maximum allowable continuous current allowed to pass through the thermistor at 25℃.	Maximum steady state current test machine	Appearance no damage, resistance change rate $\leq \pm 25\%$

八、电气性能 Electrical Characteristics

电气性能		
指标项目	技术要求	测试条件/方法
额定零功率电阻 (Ω)	30±20%	环境温度TA: 25℃±1℃ 测试电压:1.5VDC 在恒温TA 条件下，放置1~2 小时后测得阻值RN。
热耗散系数 δ (mW/℃)	约18	在特定的环境温度下，热耗散系数(δ)为热敏电阻电功率消耗(ΔP)与本体温度变化量(ΔT)的比值.
热时间常数 τ (s)	约86	热时间常数(τ)为在零功率条件下，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
材料常数(K)	2950±10%	R1 , R2 分别为T1 , T2 温度下的零功率电阻 T1 = 298.15 K(25℃) T2 = 323.15 K(50℃) $B=T1T2/(T2-T1) \times \ln(R1/R2)$
最大稳态电流(A)	无可见损伤 $\Delta RN / RN \leq 20\%$ ($\Delta R = RN-RN' $)	环境温度:25℃±2℃ 测试电流: 3.5A
ELECTRICAL CHARACTERISTICS		
Item	Specification	Test Conditions & Methods
Rated Zero-Power Resistance RN (Ω)	30±20%	Ambient temp. Range:25℃±1℃ (TA). Testing voltage: 1.5VDC After placing for 1~2 hours under TA, the resistance value shall be measured
Thermal Dissipation Constant δ (mW/℃)	约18	The thermal dissipation constant(δ) could becalculated by the ratio of a change in powerdissipation(ΔP) of the thermistor to a changein temperature(ΔT) of the thermistor at aspecified ambient temperature
Thermal Time Constant τ (s)	约86	The time(τ shall be measured within whichthe temperature change of NTC thermistor isreached at 63.2% of the ambient temperaturechange under zero power condition
Material Constant (K)	2950±10%	R1 , R2 is zero-power resistance at T1 , T2 T1 = 298.15 K(25℃) T2 = 323.15 K(50℃) $B=T1T2/(T2-T1) \times \ln(R1/R2)$
Max. SteadyState Current(A)	visible mechanical damage. $\Delta RN / RN \leq 20\%$ ($\Delta R = RN-RN' $)	Ambient temp. Range.:25℃±2℃ Testing Current: 3.5A Testing Current

九、机械性能Mechanical Characteristics

机械性能		
指标项目	技术要求	测试条件/方法
可焊性	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240~245℃、深度为15mm的锡槽中锡面距NTC本体下端6mm处，持续2~3秒。（参见IEC68-2-20 /GB2423.28 试验Ta）
耐焊接热	无可见损伤 $\Delta R/RN \leq 20\%$ ($\Delta R = RN - RN' $)	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 $265 \pm 5^\circ\text{C}$ 、深度为15mm的锡槽中，锡面距NTC本体下端6mm处，维持 10 ± 1 秒。在 $25 \pm 2^\circ\text{C}$ 条件下恢复4~5h后，复测额定零功率电阻RN'。
引出端强度	无损坏 $\Delta R/RN \leq 20\%$ ($\Delta R = RN - RN' $)	根据IEC68-2-21（GB2423.29）试验U进行试验。试验Ua：拉力10N，持续10S；试验Ub：弯曲 90° ，拉力5N，持续10S；扭转 180° ，拉力5N，持续10S。在 $25 \pm 2^\circ\text{C}$ 条件下恢复4~5h后，复测额定零功率电阻RN'
MECHANICAL CHARACTERISTICS		
Item	Specification	Test Conditions & Methods
Solderability	The terminals shall be uniformly tinned, and its area $\geq 95\%$	Dipping the NTC terminals to a depth of 15mm in a soldering bath of $240\sim 245^\circ\text{C}$ and to the place of 6mm far from NTC body for 2~3s (See IEC68-2-20/GB2423.28 Ta)
Resistance To Soldering Heat	No visible mechanical damage. $\Delta R/RN \leq 20\%$ ($\Delta R = RN - RN' $)	Dipping the NTC terminals to a depth of 15mm in a soldering bath of $265 \pm 5^\circ\text{C}$ and to the place for 6mm below from NTC body for $10 \pm 1\text{s}$. After recovering 4~5h under $25 \pm 2^\circ\text{C}$, the rated zero power resistance value RN' shall be measured. (See IEC68-2-20 /GB2423.28 Tb)
Strength of lead terminal	No break out $\Delta R/RN \leq 20\%$ ($\Delta R = RN - RN' $)	Fasten the body and apply a force gradually to each lead until 10N and then keep for 10sec, Hold body and apply a force to each lead until 90° slowly at 5N in the direction of lead axis and then keep for 10sec, and do this in the opposite direction repeat for other terminal. After recovering 4~5h under $25 \pm 2^\circ\text{C}$, the rated zero power resistance value RN' shall be measured. (See IEC68-2-21/GB2423.29 Ua/ Ub)

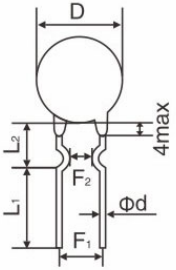
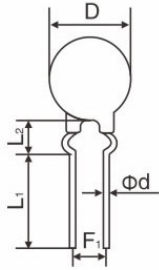
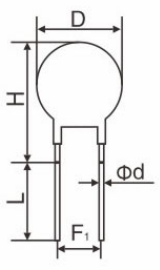
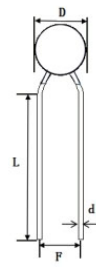
十、可靠性试验Reliability Test

可靠性试验（周期性检测项目）		
指标项目	技术要求	测试条件/方法
温度循环测试	无可见损伤 $\Delta R_N / R_N \leq 20\%$ $(\Delta R = R_N - R_N')$	在Ta=-40±3℃和Tb=200±3℃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±2℃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±2℃）4~5小时后测量零功率电阻RN'.
电循环测试	无可见损伤 $\Delta R_N / R_N \leq 20\%$ $(\Delta R = R_N - R_N')$	环境温度:25℃±2℃. 循环次数: 1,000 次 通/断: 1 分钟/ 5 分钟 测试电流: 3.5A 样品置于室温（25±2℃）4~5 小时后, 测量其零功率电阻RN'.
持久性测试	无可见损伤 $\Delta R_N / R_N \leq 20\%$ $(\Delta R = R_N - R_N')$	环境温度:25℃±2℃. 样品通过最大工作电流 3.5A , 1,000±24小时后，取出置于室温（25±2℃）4~5 小时后, 测量其零功率电阻RN'.
耐湿性测试	无可见损伤 $\Delta R_N / R_N \leq 20\%$ $(\Delta R = R_N - R_N')$	在温度40±2℃, 相对湿度93±3%的环境中放置1000±24 小时后，取出置于室温（25±2℃）4~5小时后，测量其零功率电阻RN'.
Reliability Test (Periodic test items)		
Item	Specification	Test Conditions & Methods
Temp. Cycling Testing	No visible mechanical damage. $\Delta R_N / R_N \leq 20\%$ $(\Delta R = R_N - R_N')$	Ta:-40±3℃/30min→25±2℃/ 5min→Tb:200±3℃/30min→25±2℃/ 5min Cycles: 5times After recovering 4~5h under 25±2℃, the rated zero power resistance value RN' shall be measured.
Electrical Cycling Testing	No visible mechanical damage. $\Delta R_N / R_N \leq 20\%$ $(\Delta R = R_N - R_N')$	Ambient temp. Range:25℃±2℃. Cycles: 1,000times On / Off: 1m / 5m Test Current: 3.5A After recovering 4~5h under 25±2℃, the rated zero power resistance value RN' shall be measured.
LoadLife (Endurance) Testing	No visible mechanical damage. $\Delta R_N / R_N \leq 20\%$ $(\Delta R = R_N - R_N')$	Ambient temp. Range:25℃±2℃; 3.5 A/ 1,000 ±24 hAfter recovering 4~5 h under 25±2℃, the rated zero power resistance value RN' shall be measured.
Humidity Testing	No visible mechanical damage. $\Delta R_N / R_N \leq 20\%$ $(\Delta R = R_N - R_N')$	Ambient temp. range : 40℃±2℃ R.H. :93±3%, Energized time:1000±24 h After recovering 4~5 h under25±2℃, the rated zero power resistance valueRN' shall be measured

十一、包装方式

Packing methods

一、散装式样 BULK STYLE

内弯脚 (I Type)	外弯脚 (O Type)	侧弯脚 (Y Type)	直线脚 (S Type)	厚度 (T)
				

说明：若非特别指出，常用外形为内弯型长引线。
Note: if the particular shape, commonly used for bending type, namely the inner-bended forming for long lead

散装包装数量 Bulk/Packing Style

(1) 常规产品包装 Normal product packaging

规格Dimension	一袋Bag	内盒Insidethe box	外箱carton
NTC□D-5	1000 pcs	3000 pcs	18000 pcs
NTC□D-7	1000 pcs	3000 pcs	18000 pcs
NTC□D-9	500 pcs	2000 pcs	12000 pcs
NTC□D-11	500 pcs	1500 pcs	9000 pcs
NTC□D-13	250 pcs	1000 pcs	6000 pcs
NTC□D-15	250 pcs	1000 pcs	6000 pcs
NTC□D-20	100 pcs	300 pcs	1800 pcs

(2) 切脚产品包装 Cut the feet product packaging

规格Dimension	一袋Bag	内盒Insidethe box	外箱carton
NTC□D-5	1000 pcs	8000 pcs	48000 pcs
NTC□D-7	1000 pcs	5000 pcs	30000 pcs
NTC□D-9	1000 pcs	4000 pcs	24000 pcs
NTC□D-11	1000 pcs	3000 pcs	18000 pcs
NTC□D-13	500 pcs	2000 pcs	12000 pcs
NTC□D-15	500 pcs	1000 pcs	6000 pcs
NTC□D-20	100 pcs	400 pcs	2400 pcs