

## MF72 POWER NTC THERMISTOR

MF72功率型热敏电阻可以抑制敏感设备的浪涌电流。在电源端串接一个NTC热敏电阻可以抑制开机浪涌电流，而当电路正常工作后，NTC的电阻将会降到很低的水平，功耗可以忽略不计，不会影响正常工作的电流。使用MF72系列的NTC是抑制浪涌电流保护敏感设备的高性价比的方案。MF72NTC热敏电阻符合CQC UL 和 CUL认证。

The MF72 Power NTC Thermistor suppresses surge current for sensitive electronic devices. Connecting an NTC on the power side can suppress the surge current when start-up, and when the circuit works normally, the resistance of the NTC will drop to a very low level, the power consumption can be ignored, and the normal operating current will not be affected. Using the series of MF72 Power NTC Thermistor is a cost-effective solution for suppressing surge current and protecting sensitive equipment. The MF72 Power NTC Thermistor is certified by CQC, UL and CUL.

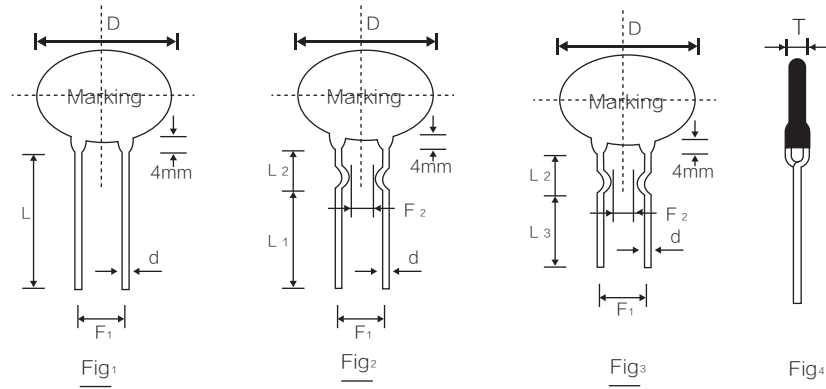


## 应用 Applications

- ▲ 开关电源, UPS电源  
Switching power-supply ,switch power ,ups power .
- ▲ 电子节能灯, 电子镇流器和电热器  
Electronic energy saving lamps , electronic ballast and all kinds of electric heater
- ▲ 各类RT,显示器  
All kinds of RT ,display
- ▲ 各类灯具  
Bulb and other lighting lamps

## 特点 Characteristic

- ▲ 小尺寸, 大能量, 很高的浪涌抑制能力  
Small size ,large power ,strong capacity of suppression of inrush current
- ▲ 材料常数 (B值) 大, 残余电阻小  
Big material constant (B value) , small residual resistance
- ▲ 系列完整, 应用广泛  
Complete series , wide applications
- ▲ 响应速度快  
Fast response time
- ▲ 寿命长, 可靠性高  
Long life cycle, high reliability



Part number	D/+2 D/-1	Tmax	d±0.05	F <sub>1</sub> ±1	F <sub>2</sub> ±1.5	L min	L <sub>1</sub> min(b)	L <sub>2</sub> ±2
NTC□D-5	6.5	5	0.6/0.45	5/2.5	3	25	17/5	8
NTC□D-7	8.5	5	0.6	5	3	25	17/5	8
NTC□D-9	10.5	5.5	0.8/0.6	7.5/5	5/3	25	17/5	8
NTC□D-11	12.5	5.5	0.8/0.6	7.5/5	5/3	25	17/5	8
NTC□D-13	14.5	6	0.8	7.5	5	25	17/5	8
NTC□D-15	16.5	6	0.8	10/7.5	5	25	17/5	8
NTC□D-20	21.5	7	1.0	10/7.5	/	25	/	/
NTC□D-25	26.5	8	1.0	10	/	25	/	/

备注：Zero Power Resistance at 25°C

17/5:17 -long , 5 : short

If no special instructions, used Fig2.

## Specification



Part number	Zero Power Resistance at 25°C	Max Steady State Current	Resistance @max current	Thermal Dissipation Constant	Thermal Time Constant	Package
	R25 Ω	A	Ω	MW/°C	S	Type
NTC5D-5	5	1.0	0.353	6	20	Fig1 or Fig2
NTC10D-5	10	0.7	0.771	6	20	Fig1 or Fig2
NTC60D-5	60	0.5	1.878	6	18	Fig1 or Fig2
NTC5D-7	5	2.0	0.283	10	30	Fig1 or Fig2
NTC8D-7	8	1.0	0.539	9	28	Fig1 or Fig2
NTC10D-7	10	1.0	0.616	9	27	Fig1 or Fig2
NTC12D-7	12	1.0	0.816	9	27	Fig1 or Fig2
NTC16D-7	16	0.7	1.003	9	27	Fig1 or Fig2
NTC22D-7	22	0.6	1.108	9	27	Fig1 or Fig2
NTC33D-7	33	0.5	1.485	10	28	Fig1 or Fig2
NTC3D-9	3	4.0	0.120	11	35	Fig1 or Fig2
NTC4D-9	4	3.0	0.190	11	35	Fig1 or Fig2
NTC5D-9	5	3.0	0.210	11	34	Fig1 or Fig2
NTC6D-9	6	2.0	0.315	11	34	Fig1 or Fig2
NTC8D-9	8	2.0	0.400	11	32	Fig1 or Fig2
NTC10D-9	10	2.0	0.458	11	32	Fig1 or Fig2
NTC12D-9	12	1.0	0.652	11	32	Fig1 or Fig2
NTC16D-9	16	1.0	0.802	11	31	Fig1 or Fig2
NTC20D-9	20	1.0	0.864	11	30	Fig1 or Fig2
NTC22D-9	22	1.0	0.950	11	30	Fig1 or Fig2
NTC30D-9	30	1.0	1.022	11	30	Fig1 or Fig2
NTC33D-9	33	1.0	1.124	11	30	Fig1 or Fig2
NTC50D-9	50	1.0	1.252	11	30	Fig1 or Fig2
NTC60D-9	60	0.8	1.502	11	30	Fig1 or Fig2
NTC2.5D-11	2.5	5.0	0.095	13	43	Fig1 or Fig2
NTC3D-11	3	5.0	0.100	13	43	Fig1 or Fig2
NTC4D-11	4	4.0	0.150	13	44	Fig1 or Fig2
NTC5D-11	5	4.0	0.156	13	45	Fig1 or Fig2
NTC6D-11	6	3.0	0.240	13	45	Fig1 or Fig2
NTC8D-11	8	3.0	0.255	14	47	Fig1 or Fig2
NTC10D-11	10	3.0	0.275	14	47	Fig1 or Fig2
NTC12D-11	12	2.0	0.462	14	48	Fig1 or Fig2
NTC16D-11	16	2.0	0.470	14	50	Fig1 or Fig2
NTC20D-11	20	2.0	0.512	15	52	Fig1 or Fig2
NTC22D-11	22	2.0	0.563	15	52	Fig1 or Fig2
NTC30D-11	30	1.5	0.667	15	52	Fig1 or Fig2
NTC33D-11	33	1.5	0.734	15	52	Fig1 or Fig2
NTC50D-11	50	1.5	1.021	15	52	Fig1 or Fig2
NTC60D-11	60	1.5	1.215	15	52	Fig1 or Fig2
NTC1.5D-13	1.5	7.0	0.073	13	60	Fig1 or Fig2
NTC2.5D-13	2.5	6.0	0.088	13	60	Fig1 or Fig2

## Specification

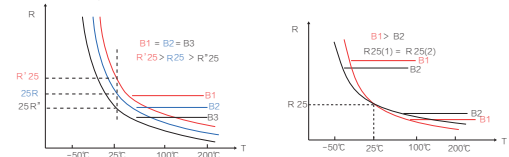


Part number	Zero Power Resistance at 25°C	Max Steady State Current	Resistance @max current	Thermal Dissipation Constant	Thermal Time Constant	Package
	R25 Ω	A	Ω	MW/°C	S	Type
NTC3D-13	3	6.0	0.092	14	60	Fig1 or Fig2
NTC4D-13	4	5.0	0.120	15	67	Fig1 or Fig2
NTC5D-13	5	5.0	0.125	15	68	Fig1 or Fig2
NTC6D-13	6	4.0	0.170	15	65	Fig1 or Fig2
NTC7D-13	7	4.0	0.188	15	65	Fig1 or Fig2
NTC8D-13	8	4.0	0.194	15	60	Fig1 or Fig2
NTC10D-13	10	4.0	0.206	15	65	Fig1 or Fig2
NTC12D-13	12	3.0	0.316	16	65	Fig1 or Fig2
NTC15D-13	15	3.0	0.335	16	60	Fig1 or Fig2
NTC16D-13	16	3.0	0.338	16	60	Fig1 or Fig2
NTC20D-13	20	3.0	0.372	16	65	Fig1 or Fig2
NTC30D-13	30	2.5	0.517	16	65	Fig1 or Fig2
NTC47D-13	47	2.0	0.810	17	65	Fig1 or Fig2
NTC1.5D-15	1.5	8.0	0.052	19	69	Fig1 or Fig2
NTC3D-15	3	7.0	0.075	18	76	Fig1 or Fig2
NTC5D-15	5	6.0	0.112	20	76	Fig1 or Fig2
NTC6D-15	6	5.0	0.155	20	80	Fig1 or Fig2
NTC7D-15	7	5.0	0.173	20	80	Fig1 or Fig2
NTC8D-15	8	5.0	0.178	20	80	Fig1 or Fig2
NTC10D-15	10	5.0	0.180	20	75	Fig1 or Fig2
NTC12D-15	12	4.0	0.250	20	75	Fig1 or Fig2
NTC15D-15	15	4.0	0.268	21	85	Fig1 or Fig2
NTC16D-15	16	4.0	0.276	21	70	Fig1 or Fig2
NTC20D-15	20	4.0	0.288	17	86	Fig1 or Fig2
NTC30D-15	30	3.5	0.438	18	75	Fig1 or Fig2
NTC47D-15	47	3.0	0.680	21	86	Fig1 or Fig2
NTC0.7D-20	0.7	12.0	0.018	25	89	Fig1 or Fig2
NTC3D-20	3	8.0	0.055	24	88	Fig1 or Fig2
NTC5D-20	5	7.0	0.087	23	87	Fig1 or Fig2
NTC6D-20	6	6.0	0.113	25	103	Fig1 or Fig2
NTC8D-20	8	6.0	0.142	25	105	Fig1 or Fig2
NTC10D-20	10	6.0	0.162	24	102	Fig1 or Fig2
NTC12D-20	12	5.0	0.195	24	100	Fig1 or Fig2
NTC16D-20	16	5.0	0.212	25	100	Fig1 or Fig2
NTC0.7D-25	0.7	13.0	0.014	30	120	Fig1 or Fig2
NTC1.5D-25	1.5	10.0	0.027	30	121	Fig1 or Fig2
NTC3D-25	3.0	9.0	0.044	32	124	Fig1 or Fig2
NTC5D-25	5.0	8.0	0.070	32	151	Fig1 or Fig2
NTC8D-25	8	7.0	0.114	33	125	Fig1 or Fig2
NTC10D-25	10	7.0	0.13	32	125	Fig1 or Fig2
NTC12D-25	12	6.0	0.156	32	126	Fig1 or Fig2

## NTC Thermistor General Performance

Item	Specification	Test equipment	Result
Resistance value at Rated Zero-power R25 (Ω)	The design resistance of the thermistor usually refers to the resistance value got at Zero-power at 25 °C, which is usually indicated on the thermistor.	Low Constant Temperature Water Baths、ND - 33B NTC Thermistor resistance test equipment	Allowable range of the Rated zero-power: K: ± 10%; L: ± 15%. M: ± 20%
The zero-power resistance	<p>The zero-power resistance of a thermistor (RT) at a specified temperature (T) is the DC resistance measured when the power dissipation is negligible.</p> <p>The relation of the resistance and the changing of the temperature within the specified rang may be expressed as:</p> $RT = R_{T0} \exp[b(T_0 - T)/TT_0] \quad (1)$ <p>R<sub>T</sub> : is the resistance at an absolute temperature (T) expressed in Kelvins. R<sub>T0</sub> : is the resistance at a specified reference temperature, T<sub>0</sub>, that is also expressed in Kelvins. T : expressed in Kelvins. b: is the "beta" or "material constant" .</p> <p>The expression is in operation within the limited range of T<sub>0</sub> or R<sub>T0</sub>. For the Thermistor manufacturers will provide "beta" information for each of the material systems they offer.</p>	Low Constant Temperature Water Baths、ND - 33B NTC Thermistor resistance test equipment	Allowable range of the Rated zero-power: K: ± 10%; L: ± 15%.
B: is the "beta" or "material constant" expressed in kelvins	<p>The terms equation (1) can be rearranged to solve for beta (b):</p> $b = \frac{T_0}{T_0 - T} \ln \left[ \frac{R_T}{R_{T0}} \right]$ <p>The range of the beta of common specification is from 2000K to 6000K.</p>	Low Constant Temperature Water Baths、ND - 33B NTC Thermistor resistance test equipment	Regulate the value of beta can't exceed ± 10%

## 1.2 NTC Thermistor General Performance

Item	Specification	Test equipment	Result
Temperature coefficient of resistance (α T)	<p>The temperature coefficient of resistance or "alpha" (α) of an NTC thermistor is defined as :</p> $\alpha = \left[ \frac{1}{R_T} \right] \frac{dR_T}{dT} - \frac{b}{T^2}$	Low Constant Temperature Water Baths、ND - 33B NTC Thermistor resistance test equipment	
Dissipation factor (δ)	<p>The dissipation factor (δ) is defined as the ratio of the change in power dissipation and the resultant change in the thermistor' s body temperature.</p> $\delta = \frac{\Delta P}{\Delta T}$ <p>δ : Dissipation factor of the NTC thermistor, it is expressed in mW/ K. ΔP : Dissipative power of the NTC thermistor, it expressed in mW. ΔT : The resultant change in the thermistor' s body temperature at a specify Δ P.</p>	Dissipation factor test equipment	Testing range:85°C ± 0.1°C
Thermal time constant (τ)	<p>The thermal time constant refers to the necessary for an unloaded thermistor to vary its temperature by 63.2% of the difference between its mean temperature and the ambient temperature.</p> $t = \frac{C}{\delta}$	Thermal time constant test equipment	Thermal time constant of the NTC Thermistor is measured between the 47.1°C ± 0. 1°C and 85°C ± 0. 1°C.
B: is the "beta" or "material constant" expressed in kelvins	<p>The relation between the Zero-power resistance and the temperature of the NTC thermistor body.</p> 	Low Constant Temperature Water Baths、ND - 33B NTC Thermistor resistance test equipment	

## MF52 Pearl-Shape Temp Measurement NTC Thermistor

### 应用 Applications

- ▲ 空调设备  
Air-Conditioner
- ▲ 暖气设备  
Heating Apparatus
- ▲ 汽车电子  
Automotive electronic
- ▲ 电子体温计  
Electric Thermometer
- ▲ 液位传感器  
Liquid level sensor
- ▲ 电子台历  
Electric table-board
- ▲ 手机电池  
Battery of mobile phone



### 特点 Characteristic

- ▲ 测试精度高  
High testing precision
- ▲ 能长时间稳定工作  
Steady Operating For Long time
- ▲ 规模化生产，性价比高  
Scale production, highly cost effective
- ▲ 体积小,反应速度快  
Small size, Fast Response
- ▲ 互换性，一致性好  
Good interchangeability and consistency

### 产品标识说明 Specification

#### MF52 A 103 G 3380 E

B值允许偏差代号 ( 根据需要标注 ) E: ±0.5%, F: ±1%	The allowable tolerance of (label by requirement) E: ±0.5%, F: ±1%
B值: 为3380K	B value; namely 3380K
阻值允许偏差代号: F: ±1%, G: ±2% H: ±3%, J: ±5%, K: ±10%	Resistance Tolerance Code: Namely F: ±1%, G: ±2% H: ±3%, J: ±5%, K: ±10%
标称电阻值: 103为10KΩ	Rated Resistance:103 namely 10KΩ
不同外形结构和尺寸代号: A型引线为镀锡铜线或者镀锡铜包钢线	Different Configuration and Code: Model A is Cu or Cp wire
型号: 珠状精密型NTC热敏电阻器	Type: Temp-measurement chip in glass NTC thermistor

主要技术参数 Main Techno-Parameter

Part No.	Rated Resistance R25 (KΩ)	B Value(25/50 °C) (K)	Rated Power (mW)	Dissi.Coef. (mW/°C)	Thermal time Constant(S)	Operating Temp.(°C)
MF52□□□3100	0.1~20	3100	≤50	≥2.0 静止空气中 In still air	≤12 静止空气中 In still air	-40~+125°C
MF52□□□3270	0.2~20	3270				
MF52□□□3380	0.5~50	3380				
MF52□□□3470	0.5~50	3470				
MF52□□□3600	1~100	3600				
MF52□□□3950	5~100	3950				
MF52□□□4000	5~100	4000				
MF52□□□4050	5~200	4050				
MF52□□□4150	10~250	4150				
MF52□□□4300	20~1000	4300				
MF52□□□4500	20~1000	4500				

外形结构和尺寸 Dimensions(mm)

A型: (引线为镀锡铜线或镀锡铜包钢线)  
(Tin,nickle Cu or Cp wire)



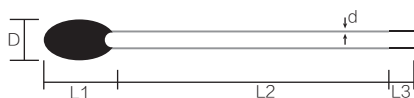
Code	Dmax	L1max	L2min	d ±0.05	F ±0.5
A1	2.5	4.0	25	0.3	1.7
A2	3	4.5	25	0.45	2.2

B型: (引线为锡包线)  
(Enamelled cu wire)



Code	Dmax	L1max	L2min	L3 ±1	d ±0.05
B1	2	3.5	用户定制	3	0.2
B2	3	4	用户定制	3	0.3

C型: (引线为高温氟塑线)  
(High temp fluorin-plastic wire)



Code	Dmax	L1max	L2min	L3 ±1	d ±0.05
C1	3	7.5	用户定制	5	30#
C2	4	7.5	用户定制	5	28#

D型: (引线为PVC导线)  
(PVC Wire)



Code	Dmax	L1max	L2min	L3 ±1	d ±0.05
D1	3	7.5	用户定制	5	30#
D2	4	7.5	用户定制	5	28#

## MF58 Glass shell Temp Measurement NTC Thermistor Series

## 应用 Applications

- ▲ 家用电器（如空调机，微波炉，电磁炉，多士炉，电风扇，电取暖炉等）的温度控制与温度检测  
Temperature control and examination of household electrical appliance (such as air-conditioner, microwave oven, induction cooker, toaster fanner, electric heater and so on)
- ▲ 办公自动化设备（如复印机，打印机等）的温度检测或温度补偿  
Temperature examination and compensation of the OA equipment (such as copycat, printer and so on)
- ▲ 手机电池，电池组  
Battery of mobile telephone, battery pile
- ▲ 仪表线圈，集成电路，石英晶体振荡器和热电偶的温度补偿  
Temperature compensation of loops of instrument, integrate circuit, quartz crystal oscillator and thermocouple.



## 特点 Characteristic

- ▲ 稳定性好，可靠性高 Good stability and security
- ▲ 阻值范围宽，精度高 Broad range of resistance
- ▲ 可在高温和高湿等恶劣环境下使用  
Capability of operating in the bad environment of high temperature and high humidity because of glass encapsulation framework.
- ▲ 体积小，重量轻，结构坚固，便于自动化安装  
Small size, light weight, strong frame, easy automatic installation (on the printed-circuit board)
- ▲ 热感应快，灵敏度高 Fast response to the temperature, high sensitivity.

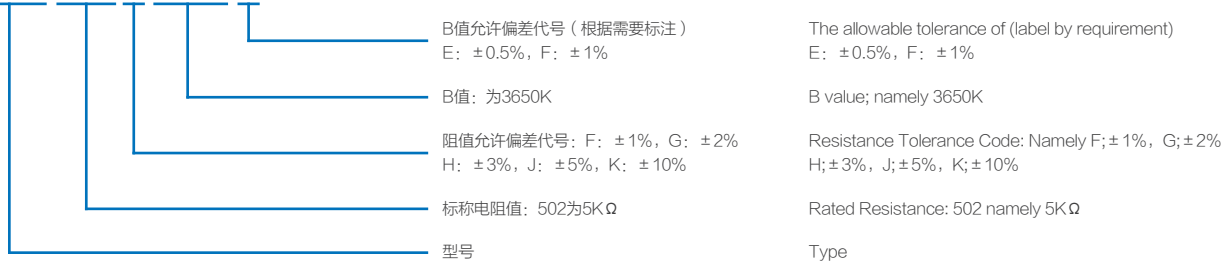


## 主要技术参数 Main techno-parameter

额定零功率电阻值范围 (R25)	R25允许偏差	B值范围 (B25/50℃)	B值允许偏差 (根据需要标注)	耗散系数	热时间常数	工作温度范围	额定功率
0.1~3780KΩ	±1%, ±2% ±3%, ±5% ±10%	3100~4500K	±0.5%, ±1%	≥2mW/℃ (在静止空气中)	≤20S (在静止空气中)	-55℃~+250℃	≤50mW
The range of resistance under the rated zero power(R25)	The allowable tolerance of R25	The range of B value	The allowable tolerance of (label by requirement)B value	Dissipation factor	Thermal time constant	The range of operating temperature	Rated power
0.1~3780KΩ	±1%, ±2% ±3%, ±5% ±10%	3100~4500K	±0.5%, ±1%	≥2mW/℃ (in still air)	≤20S (in still air)	-55℃~+250℃	≤50mW

## 产品标识说明 Specification

MF58 502 F 3650 E



## 外形结构和尺寸 Dimensions(mm)

