Shenzhen DXM Technology Co., Ltd

NTC thermistor

NTC Inrush Current Limiters-MF72 series

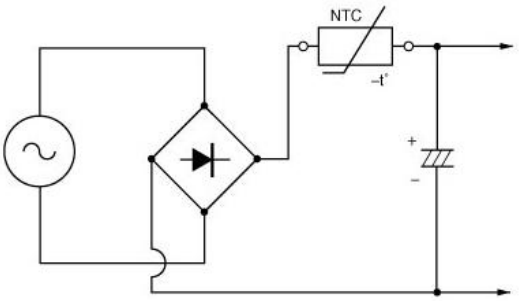
Data sheet

Brief Introduction :

MF72 series Power Type Inrush Current Limiters are made of a specially formulated metal oxide ceramic material and in the form of radial resin coated that is capable of limiting high surge current. Applying power NTC thermistor in the power supply loop is the most simple, convenient and effective measure to restrain switch-on surge current and protect electronic equipment.

Application :

1. Conversion power supply, switch power supply, UPS power.
2. Power supply circuit, electronic circuit of electric equipments.
3. Electric heater.
4. Electronic ballast.
5. Oscillight,display.
6. Filament protection of bulb,electronic energy-saving lamps and other lighting lamps.



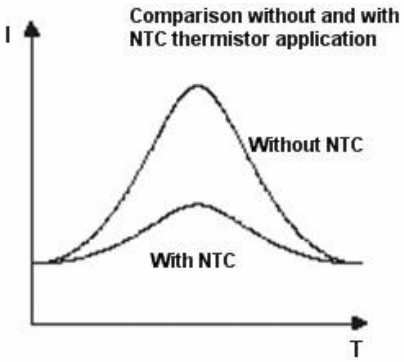
Application example of power NTC thermistor for surge suppression

Main parameter:

Zero Power Resistance Value R25（Ω）
Maximum stable current I（A）
Approximate resistance in maximum current（Ω）
Thermal time constant（S）
Dissipation factor （mW/℃）
Operating temperature range -55~+200 ℃

Advantages:

1.long service life,high reliability,wide operation range
2.small dimension,large power,strong in surge protection
3.fast response to surge current
4.large material constant,low resistance residue
5.can limit inrush current effectively
6.minimum power loss in stationary state(Normally just 1W or less than 50W power)
7.high thermal and electrical reliability
8.wide selection of electrical characteristics
9.Wide operating temperature -55~+200 ℃
10,RoHS compliant



Comparison without and with NTC thermistor application

Selection Guide of NTC Thermistor for surge suppression :

1. Maximum operating current > Actual operating current in the power loop.
2. Rated zero power resistance at 25C $R \geq \frac{\sqrt{2}E}{Im}$

of which, E: loop voltage, Im: Surge current.
For conversion power, reversion power, switch power, UPS power, Im=100 times operating current.
For filament, heater, Im =30 times operating current.
3. The larger Beta value, the smaller residual resistance, the smaller operating temperature rising.
4. Generally, the larger product of time constant and dissipation coefficient, the larger NTC thermal capacity, the more powerful NTC thermistor surge current restraining capacity.

Application Precautions of NTC Thermistor for surge suppression:

1.For inrush current limiting, the NTC thermistor must be connected in series with the load circuit. Several inrush current limiters can also be connected in series for higher damping. Inrush current limiters must not be connected in parallel.
2.In general inrush current limiters require time to get back to cold state, in which they can provide adequate inrush current limiting due to their high resistance. The cooling down time depends on ambient conditions.
3. It should be considered that the surrounding area of NTC Thermistor may become quite hot.Ensure the adjacent components are placed at sufficient distance from a thermistor to allow for proper cooling time of the thermistor.
4. Make sure that adjacent materials are designed for operation at temperatures comparable to the surface temperature of the thermistor. Make sure that surrounding parts and materials can withstand this temperature.
5. Make sure that thermistors are adequately ventilated to avoid overheating.
6. Avoid comtamination of the thermistor surface.
7. Avoid contact of NTC thermistors with any liquids and solvents. Ensure that no water enters an NTC thermistor.

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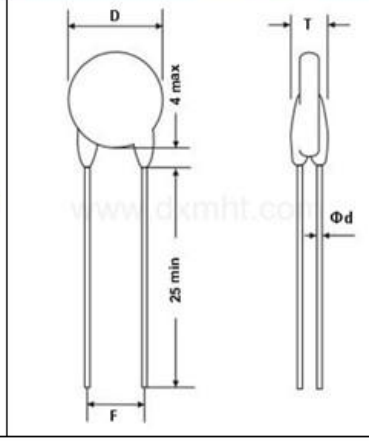
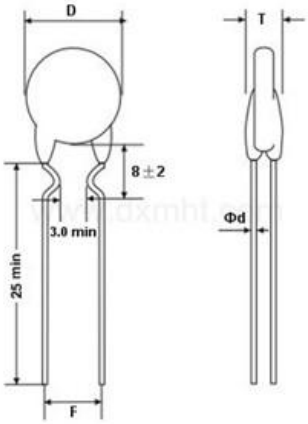
Dimension (In:mm)

Dimension

Lead shape	Straight	In-formed
Dimension (in:mm)		

Marking of Part Number:

MF72	10	D	7
1	2	3	4

1.Series:MF72- NTC Inrush Current Limiters
2.R25 resistance:10-10Ω
3.Dimension:D-Diameter
4.Chip diameter:7 - Φ7mm

Specification&part no.:

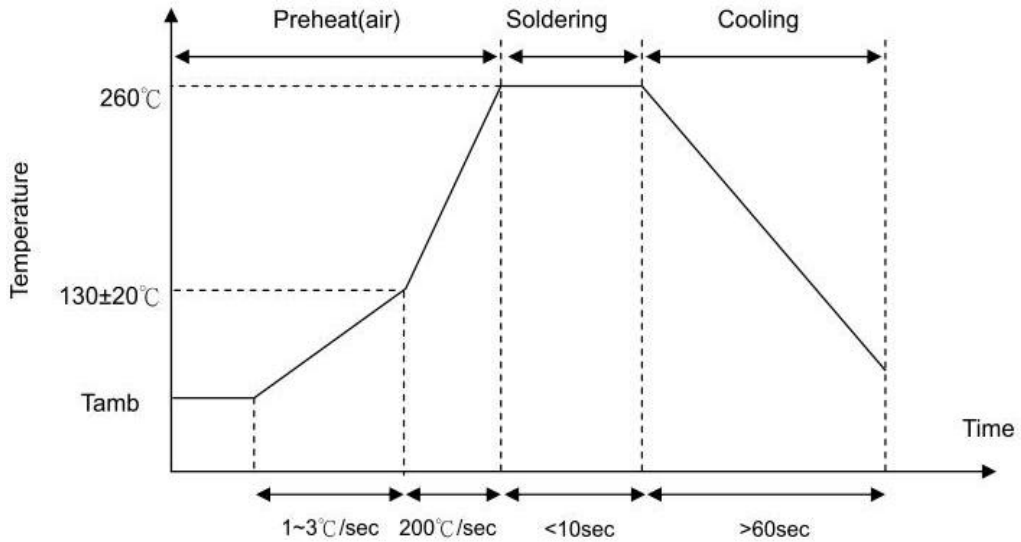
Item	Part No.	Resistance R 25（Ω）	Max Steady State Current (A)	Approx. Resistance Value at Maximum Current (Ω)	Dissipation Factor (mW/oC)	Thermal Time Constant (sec)	Dimensions (mm)		
							Dmax	Tmax	F±1
1	MF72-10D7	10	1	0.616	9	27	8.5	4.5	5
2	MF72-10D9	10	2	0.458	11	32	9.8	5	5

Power NTC thermistor for limmiting surge current with increasing max. operating current:

Note： 1.Unless particular indication,the allowable tolerance of the R25 Resistance is ±20%
2.Encapsulation mode can be made per customer's requirement.
3.Wire shape kinked form can be selected.
4.Can be custom-made per customer's requirement.

Recommend Soldering Condition:

Soldering Profile Wave Flow



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Recommend Reworking Condition With Soldering Iron

Item	Description	Condition
1	Soldering Iron-tip Temperature	360℃ (max.)
2	Soldering Time	2 sec (max.)
3	Distance from coating	6 mm (min.)

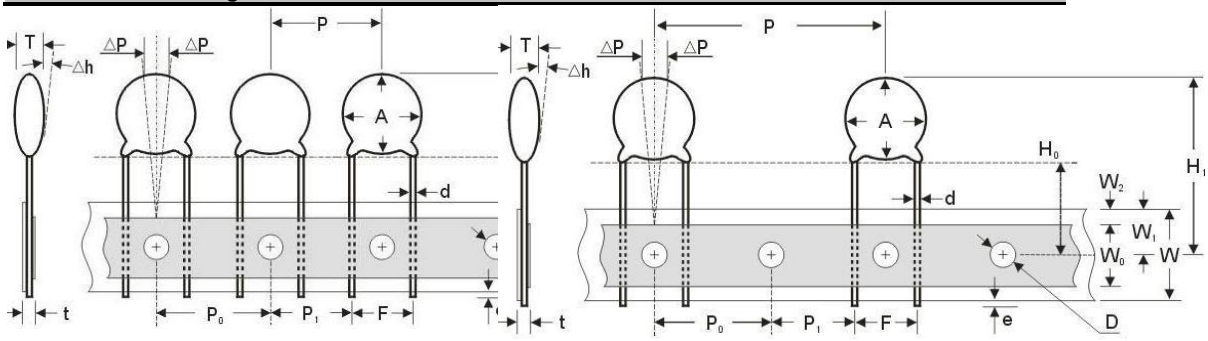
Reliability Test

Item	Test items	Standards	Test Condition Description	Δ R25/R25 (typical)	Requirement
1	Rapid temperature cycling	IEC 60068-2-14	Lower test temperature: -55℃ Upper test temperature: 125℃ Number of cycles: 10	<10%	No visible damage
2	Storage in dry heat	IEC 60068-2-2	Storage at upper category temperature Temperature: 125℃ Time: 1000h	<10%	No visible damage
3	Storage in damp heat,	IEC 60068-2-3	Air temperature: 40℃ Relative humidity of	<5%	No visible damage
4	Endurance	\	I=Imax t: 1000h	<10%	No visible damage
5	Cyclic endurance	\	I=Imax, 1000 cycles On-time=1 min Cooling time=6 min	<10%	\
6	Transient load	\	Capacitance=CT Number of cycles: 1000	<5%	No visible damage

Packing method

Packing Specifications

Ammo & Reel Packing Dimension



Unit: mm

Item	Description	Symbol	Dimension
1	Body dimension	A	15.0×15.0 Max
2	Body thickness		8.0 Max
3	Lead dia	d	0.60±0.05
4	Taping pitch	P	25.4 Ref
		P	12.7 Ref
5	Feed hole pitch (Note:1)	Po	12.7±0.3
6	Plane deviation	△P	0±1.3
7	Feed hole off alignment	P1	7.62±0.7
		P1	8.95±0.7
8	Lead pitch	F	10.0±1.0
		F	7.50±1.0
9	Body inclination	△h	0±3.0
10	Carrier tape width	W	18.0+1.0/-0.
11	Adhesive tape width	Wo	13.0 Max
12	Feed hole ht off alignment	W1	9.0+0.75/-0.5
13	Adhesive tape margin	W2	3.0 Ref
14	Lead crimp height(Note:2)	Ho	16.0±0.5
15	Top of component height	H1	40.0 Max

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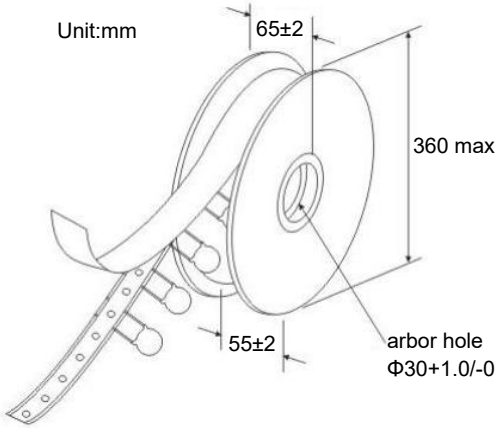
16	Lead end protrusion	e	1.0 Max
17	Feed hole diameter	D	4.0±0.3
18	Overall tape thickness	t	1.5 Max

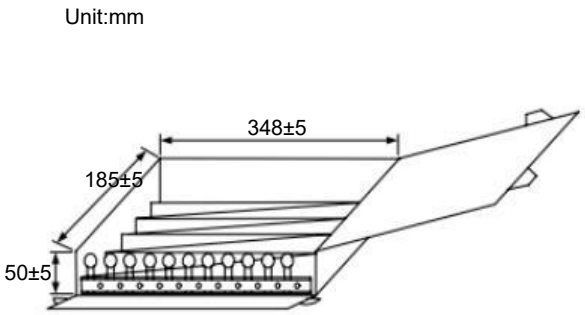
REMARKS:1.CUMULATIVE PITCH TOLERANCE OVER 20 CONSECUTIVE UNITS TO EXCEED ±1.0mm.

2.Ho=16.0±0.5 FOR LEAD STYLE "L" .

Reel Packing :



Ammo Packing :



Packing Quantity

Type	Body diameter	Packaging Quantities
Reel	≧9.0mm	1000PCS
	＜9.0mm	1500PCS
Ammo	≧12mm	500PCS
	＜12mm	1250PCS
Bulk	≧12mm	500PCS
	＜12mm	1000PCS

Storage Conditions of thermistor :

1. Storage Temperature : -10 ~+40 ℃ 2. Relative humidity : ≦75%RH

3. Thermistors must be kept away from sunlight and stored in a non-corrosive atmosphere.

Thermistor Period of Storage : 1 year

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