MF52 Pearl-Shaped Precision NTC Thermistor for Temperature Measurement

1. General

✧ Description

Pearl-Shaped Precision NTC Thermistor for Temperature Measurement The MF52 series of Pearl-Shaped NTC Thermistors is ethoxyline resin coated. The small size is made possible by new materials and manufacturing methods which provide the benefit of close tolerances and fast response. MF52 thermistors are available with 5 lead styles in standard or custom lengths.

✧ Type designation (example)

MF52	A	103	F	3950	F
①	②	③	④	⑤	⑥

①Type : Peal-Shaped Precision temperature measurement NTC Thermistor
② Different configuration and code, model A is CU or CP wire
③ Nominal resistance : 103 is 10K Ohm
④ Allowable Resistance tolerance code: F ±1%, G ±2%, H ±3%, J ±5%, K - ±10%
⑤ Beta value : 3950K
⑥ Beta value tolerance code: F ±1%, G ±2%, H ±3%, J ±5%, K - ±10%

✧ Features

- Small Size and fast response
- Long-term stability and reliability
- Excellent tolerance and interchangeability

✧ Characteristics

- Small Size and fast response
- Available tolerances: ±1%, ±2%, ±3%, ±5% and ±10%
- Long-term Stability and Reliability
- Excellent Tolerance and Interchangeability
- Available in all popular resistance values
- Dissipation Constant ≥2.0mW/°C
- Time Constant of ≤7 seconds in still air
- Available in custom probes
- Operating Temperature Range: -55 ~ + 125℃

MF52 Pearl-Shaped Precision NTC Thermistor for Temperature Measurement

✧ Application

- Heating, ventilation and air conditioning
- Temperature regulation and measurement
- Electronic thermometers
- Liquid level sensing
- Automotive electronics
- Medical equipment and apparatus
- Battery packs and portable electronics

✧ Specifications

- B25/50:3380K ~ 4150K
- Mounting Type:Through Hole
- Operating Temperature:-55°C ~ 125°C
- Package / Case:Bead
- Packaging:Bulk
- Power - Max:50mW
- Resistance in Ohms @ 25°C:1.5k ~ 220k

Part No.	Rated Resistance R_{25} (KΩ)	B Value (25/50℃) (K)	Rated Power(mw)	Dissi. Coef. (mW/℃)	Thermal time Constant(S)	Operating Temp.(℃)
MF52 3100	0.1-20	3100	≤ 50	≥ 2.0 In Still Air	≤ 7 In Still Air	-55℃ - +125℃
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				

Remark:

* B Value (25/50C) error is ±1% for components with rated resistance tolerance of ±1% and ±2% for all others.

Notice:* The two ends of the lead wire cannot endure too big pull because of the small size and soldered spot in series of MF52.* Solder at least 5mm from the bottom of wire.

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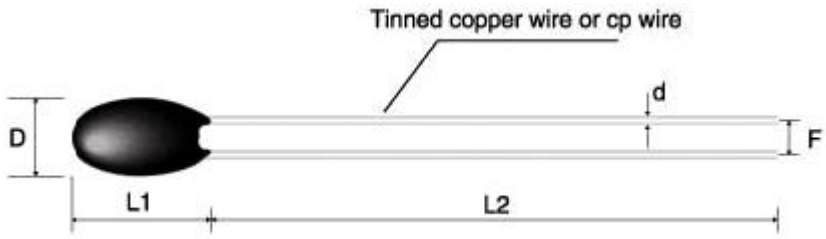
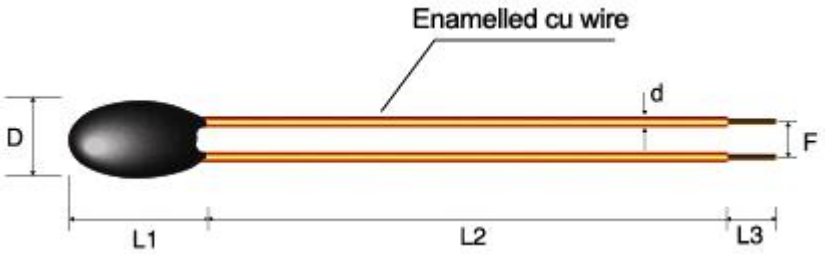
*** Customization is available according to customer's requirements**

➢ Dimension(Unit:mm)



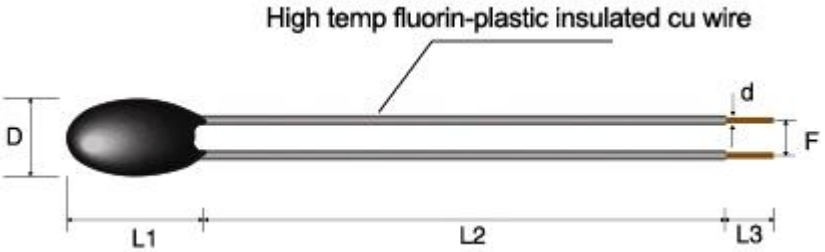
A: Tin. Ag. nickel plated cu wire

Code	D max	L_1 max	L_2 min	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



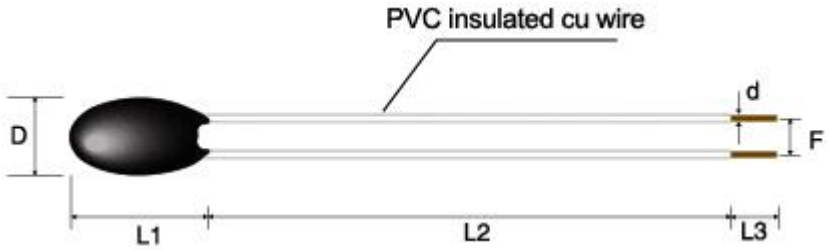
B: Enamelled cu wire

Code	D max	L_1 max	L_2 min	L_3+/- 1	d +/- 0.05
B1	2	3.5	Customer Specified	3	0.2
B2	3	4	Customer Specified	3	0.3



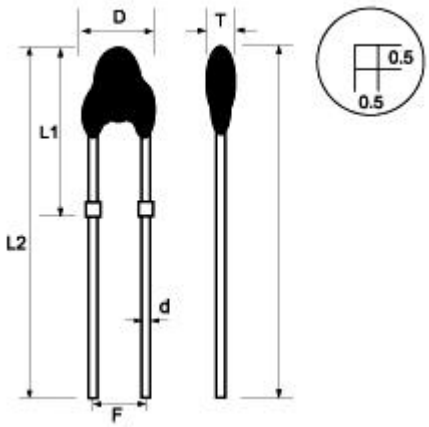
C: High temp fluorin-plastic wire

Code	D max	L_1 max	L_2 min	L_3+/- 1	d +/- 0.05
C1	3	7.5	Customer Specified	5	0.26
C2	4	7.5	Customer Specified	5	0.32



E: Lead and head according to specification

Code	D max	L_1 max	L_2 min	L_3+/- 1	d +/- 0.05
E1	Customer Specified	Customer Specified	Customer Specified	5	Customer Specified
E2	Customer Specified	Customer Specified	Customer Specified	5	Customer Specified



F: Tinned Lead-Frame Style

Code	D max	L_1 max	L2 +/- 1.5	d max	F +/- 0.5	Tmax
F	3.8	9.5	17	0.5	2.5	3.5

✧ Mechanical Requirements

Item	Requirements	Test Method
1.Solder-ability	The terminals shall be uniformly tinned, and its area≥95%	Dipping theNTC terminals to a depth of 15mm in a soldering bath of 245±5℃ and to the place of 6mm far from NTC body for 3±0.5s (See IEC68-2-20 /GB2423.28 Ta)
2.Resistance To Soldering Heat	No visible mechanical damage. ΔR/RN ≤20% (ΔR = ｜RN-RN'｜)	Dipping the NTC terminals to a depth of 15mm in a soldering bath of 260±5℃ and to the place for 6mm below from NTC body for 3±0.5s.After recovering4-5h under 25±2℃. The rated zero power resistance value RN' shall be measured. (See IEC68-2-20 /GB2423.28 Tb)
3.Strength of lead terminal	No break out ΔR/RN ≤20% (ΔR = ｜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±2℃, the rated zero power resistance value RN' shall be measured. (See IEC68-2-21/GB2423.29 Ua / Ub)

✧ Reliability Test

Item	Requirements	Test Method
1.Temp. Cycling Testing	No visible mechanical damage. ΔRN / RN ≤20% (ΔR = | RN-RN' |)	Ta:-40±3℃/ 30min→25±2℃/ 5min→ Tb:160±3℃/ 30min→25±2℃/ 5min Cycles: 5times After recovering 4~5 h under 25±2℃, the rated zero power resistance value RN' shall be measured.
2.Electrical Cycling Testing		Ambient temp. Range:25℃±2℃. Cycles: 2,000times On / Off: 5 s / 55 s Test Current: 7A After recovering 4~5h under 25±2℃, the rated zero power resistance value RN' shall be measured.
3.LoadLife (Endurance) Testing		Ambient temp. Range:25℃±2℃; 7A/ 1,000±24h After recovering 4~5 h under 25±2℃, the rated zero power resistance value RN' shall be measured.
4. Humidity Testing	No visible mechanical damage. ΔRN / RN ≤20% (ΔR = | RN-RN' |)	Ambient temp. range : 40℃±2℃ R.H.:93±3% , Energized time:1000±24 h After recovering 4~5 h under 25±2℃, the rated zero power resistance value RN' shall be measured.

✧ Package

➢ Bulk Packaging:

Packing	Packing method
Bulk	500pcs/polybag

✧ STORAGE CONDITIONS:

- Temperature: -10℃～+40℃
- Humidity: ≤70%RH
- Term: ≤6 months (First-in/ First-out)
- Place:

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

1) Corrosive gas or deoxidizing gas.
2) Flammable and explosive gases.
3) Oil, water and chemical liquid.
4) Under the sunlight.

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

✧ WARNING ⚠

Do not apply the components under the following conditions, otherwise, it may result in deterioration of characteristics, destruction of components or in the worst case, to catching fire.

- Exceeding Imax.
- Exceeding rated temperature range.
- Inferior thermal dissipation (Due to badly inferior thermal dissipation, some part of the components body will become overheated and then be damaged.)