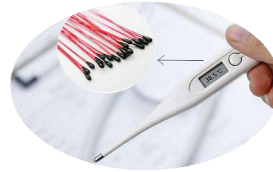


MF51E High Precision NTC Thermistors for Extremely Accurate Temperature Measurement

1. General

✧ Description



High Precision NTC Thermistors for Extremely Accurate Temperature Measurement The MF51E NTC Thermistors were specially designed for use in electronic thermometers which require better than average accuracy. The extremely small size allows the thermistor to respond very quickly to tiny changes in temperature. The MF51E can be supplied un-calibrated with standard tolerances or calibrated and grouped according to R at $37^{\circ}\text{C} \pm 0.01\%$ for extreme interchangeability so as to eliminate the need for other calibrations.

✧ Type designation (example)



① Type : Peel-Shaped Precision temperature measurement NTC Thermistor

② Nominal resistance : 103 is 10K Ohm

③ Allowable Resistance tolerance code: E $\pm 0.5\%$, F $\pm 1\%$, G $\pm 2\%$, H $\pm 3\%$, J $\pm 5\%$

④ Beta value : 3950K

⑤ Beta value tolerance code: E $\pm 0.5\%$, F $\pm 1\%$,

✧ Application

- Electronic Thermometers
- Medical Equipment and Patient Monitoring

✧ Characteristics

- Small Size and fast response and light weight
- Available tolerances: $\pm 0.5\%$, $\pm 1\%$, $\pm 2\%$, $\pm 3\%$ and $\pm 5\%$
- B Value tolerances: $\pm 0.5\%$, $\pm 1.0\%$ and $\pm 2.0\%$
- Resistance calibration available at $37^{\circ}\text{C} \pm 0.01\%$ (see table for details of grouping)
- Long-term Stability and Reliability
- Excellent Tolerance and Interchangeability
- Available in all popular resistance values
- Dissipation Constant $\geq 0.7\text{mW}/^{\circ}\text{C}$
- Time Constant of ≤ 3.2 seconds
- Rated Power: 3.5mW
- Operating Temperature Range -40°C to 100°C

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

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✧ Specifications

Part No.	Nominal resistance R 25°C		B Value (R25/50°C)		Rate d pow er (mw)	Dissipati on (mW/°C)	Therm al time consta nt (S)	Operating temp. (°C)
	Range (KΩ)	Tolera nce (%)	Nomin al value (K)	Toleran ce (%)				
MF51E 3270								
MF51E 3380								
MF51E 3470	0.2-20		3270					
MF51E 3600	0.5-50		3380					
MF51E 3950	0.5-50		3470					
MF51E 4000	1-100	E+/-0.5	3600					
MF51E 4050	5-100	F+/-1	3950	E+/-0.5	3.5	≥ 0.7	≤ 3.2	-40°C - +100°C
MF51E 4150	5-100	G+/-2	4000	F+/-1				
MF51E 4300	5-200	H+/-3	4050	G+/-2				
MF51E 4500	10-250	J+/-5	4150					
	20-1000		4300					
			4500					

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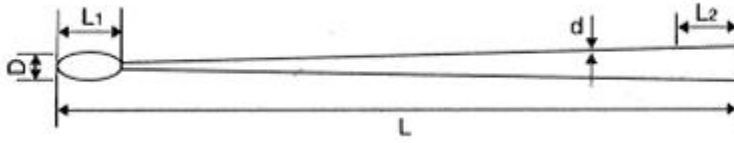
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➤ **Dimension(Unit:mm)**



Dimension	D max	L 1 max	L 1 +/- 3	L 2 +/- 1	d +/- 0.05
Normal size	1.6	4.0	100	3	0.2
	1.6	Customer Specified			

➤ **Resistance Calibration at 37°C +/- 0.005°C of MF51E303E3950**

$R_{37^{\circ}\text{C}} = 30.025\text{K}\Omega \pm 2.664\%$ $B_{30/45} = 3950\text{K} \pm 0.5\%$

Category	(KΩ)	Category	(KΩ)	Category	(KΩ)	Category	(KΩ)
1	29.275KΩ	9	29.675 KΩ	17	30.075 KΩ	25	30.475 KΩ
2	29.325 KΩ	10	29.725 KΩ	18	30.125 KΩ	26	30.525 KΩ
3	29.375 KΩ	11	29.775 KΩ	19	30.175 KΩ	27	30.575 KΩ
4	29.425 KΩ	12	29.825 KΩ	20	30.225 KΩ	28	30.625 KΩ
5	29.475 KΩ	13	29.875 KΩ	21	30.275 KΩ	29	30.675 KΩ
6	29.525 KΩ	14	29.925 KΩ	22	30.325 KΩ	30	30.725 KΩ
7	29.575 KΩ	15	29.975 KΩ	23	30.375 KΩ	31	30.775 KΩ
8	29.625 KΩ	16	30.025 KΩ	24	30.425 KΩ	32	30.825 KΩ

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✧ Mechanical Requirements

Item	Requirements	Test Method
1.Solder-ability	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 $245\pm 5^{\circ}\text{C}$ and to the place of 6mm far from NTC body for $3\pm 0.5\text{s}$ (See IEC68-2-20 /GB2423.28 Ta)
2.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 $260\pm 5^{\circ}\text{C}$ and to the place for 6mm below from NTC body for $3\pm 0.5\text{s}$. 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)
3.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)

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✧ Reliability Test

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

✧ Package

➤ Bulk Packaging:

Packing	Packing method
Bulk	500pcs/polybag

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✧ STORAGE CONDITIONS:

- Temperature: $-10^{\circ}\text{C} \sim +40^{\circ}\text{C}$
- Humidity: $\leq 70\% \text{RH}$
- 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 I_{max} .
- 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.)

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