

T H E R M I S T O R S P E C I F I C A T I O N S

1. Scope

This specification defines only at the following conditions for thermistor used for an clinical thermometer.

2. Part No. 5 0 3 E T - 3 H 8 7 U - 3 0 1 8 7

3. Electrical Requierments

3.1 Zero-Power Resistance at 37 (R_{37}):29.614k - 30.264k

3.1.1 Tolerance Class ; $\pm 0.05\%$ /group

Group	Resistance(k Ω) Min. / Center / Max	Group	Resistance(k Ω) Min. / Center / Max
A	29.614 / 29.629 / 29.644	L	29.955 / 29.970 / 29.985
B	29.645 / 29.660 / 29.675	M	29.986 / 30.001 / 30.016
C	29.676 / 29.691 / 29.706	N	30.017 / 30.032 / 30.047
D	29.707 / 29.722 / 29.737	O	30.048 / 30.063 / 30.078
E	29.738 / 29.753 / 29.768	P	30.079 / 30.094 / 30.109
F	29.769 / 29.784 / 29.799	Q	30.110 / 30.125 / 30.140
G	29.800 / 29.815 / 29.830	R	30.141 / 30.156 / 30.171
H	29.831 / 29.846 / 29.861	S	30.172 / 30.187 / 30.202
I	29.862 / 29.877 / 29.892	T	30.203 / 30.218 / 30.233
J	29.893 / 29.908 / 29.923	U	30.234 / 30.249 / 30.264
K	29.924 / 29.939 / 29.954		

3.2.B Value($B_{32/41}$) : 3 943K \pm 0.5% (B value is determined by R_{32} and R_{41})

3.3.Resistance ratio to temperature

	Ratio(Rst.)	Temp.	Ratio(Rst.)
34	1.132	39	0.9220
35	1.086	40	0.8855
36	1.042	41	0.8503
37	1.000	42	0.8167
38	0.960		

The above table is shown a resistance ratio of thermistor at each temperature.

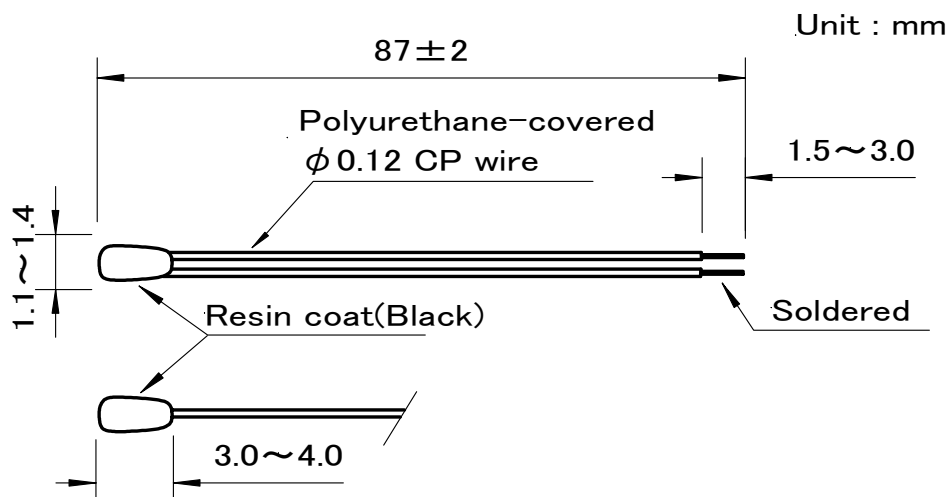
Remark : the resistance values may vary slightly as the testing temperature is ± 0.03 in accuracy.

Spec.No : S03-0187		Note Clinical Thermometer		REVISION		Reviewed By
Date : SEP. 25, 2003				A		
Approved H.Ishida	Checked M.Fukumoto	Drawn M.Miyake	B			
			C			

4. Rating

4.1. Category temperature range	-40 ~ +100
4.2. Dissipation factor	Approx. 0.7 mW/ (in air)
4.3. Thermal time constant	Approx. 0.8 s (in oil)

5. Dimension



6. Insulation resistance

Insulation resistance of test sample should be over 100 M when it is measured by DC 100V Megohmmeter between coated point area of thermistor element and lead wires.

7. Climatic properties

7.1. Dry heat

Test sample shall be exposed in air at 100 ± 3 for 1 000 hours. After being stored within normal room ambient temperature and humidity for 1 hour, the change ratio of R_{25} and $B_{25/85}$ shall be within ± 1% of the initial value.

7.2. Damp heat

Test sample shall be exposed in air of 90%RH ~ 95%RH at 40 ± 3 for 1 000 hours, After being stored within normal room ambient temperature and humidity for 1 hour, the change ratio of R_{25} and $B_{25/85}$ shall be within ± 1% of the initial value.

7.3. Load test at high temperature

After DC 0.1mA was flowed to test sample in air at 100 ± 3 for 1 000 hours, After being stored within normal room ambient temperature and humidity for 1 hour, the change ratio of R_{25} and $B_{25/85}$ shall be within ± 1% of the initial value.

7.4. Change of temperature

Temperature cycling shall be proceeded in the following order and conditions.

At room ambient temperature. (Initial value)

At -20 for 5 minutes.

At room ambient temperature for 3 minutes.

At +100 for 5 minutes.

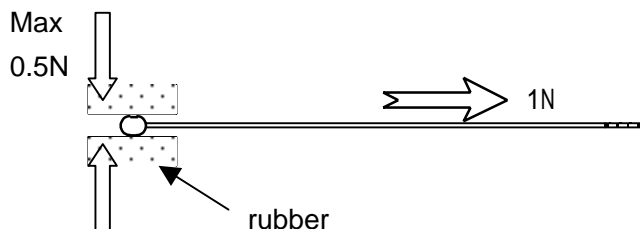
At room ambient temperature for 3 minutes.

100 cycles shall be repeated. After being stored within normal room ambient temperature and humidity for 1 hour, the change ratio of R_{25} and $B_{25/85}$ shall be within $\pm 1\%$ of the initial value.

8. Mechanical Performance Test

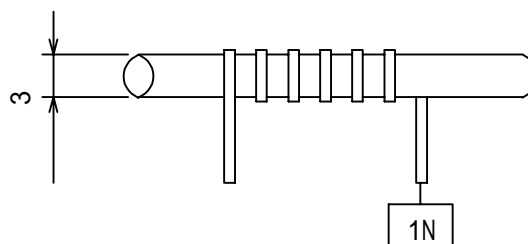
8.1. Terminal strength

After pull 1N static weight for 10 second in the direction of lead axis, the change ratio of R_{25} and $B_{25/85}$ shall be within $\pm 1\%$ of the initial value.



8.2. Resin coating strength

The lead-wire shall be firmly wrapped on the cylinder with the diameter of 3mm. A down word tension shall be applied to the lead wire and increased to 1N. After the foregoing, there shall be no visible damage on the coating of the lead-wire.



8.3. Free fall

After 3 time free fall to a maple board from 1m height, the change ratio of R_{25} and $B_{25/85}$ shall be within $\pm 1\%$ of the initial value.

9. Soldering

9.1 Resistance to soldering heat

After lead wire of test sample was one time dipped within 2.0 mm from end of lead wire in solder bath at 260 ± 5 for $10s \pm 1s$, After being stored within normal room ambient temperature and humidity for 1 hour, the change ratio of R_{25} and $B_{25/85}$ shall be within $\pm 1\%$ of the initial value.

9.2 Solderability

The terminals of the lead wires shall be immersed in the soldering bath (rosin : ethanol = 25% : 75%) at 235 ± 5 for $2s \pm 0.5s$. Over 90% of the terminal surface shall be soldered, and less than 5% of non-soldered parts shall be at one place.

10. Quantity balance

A Quantity balance of the tolerance class per shipment shall not be specified in purchase order. Quantity of each class may depend on production result.

11.Data

Following data shall be enclosed with the item shipped.

11.1.Zero-power resistance: R_{37} (Resistance value measured at 37 °C)

The measured value of each groups for every classification lot. (n=3)

11.2. B value : $B_{32/41}$

B value calculated by R_{32} and R_{41} , and the data of $B_{32/41}$ for every classification lot. (n= 20)

11.3. Shipment lot and quantity chart of classified by group

Every shipping lot, quantity according to group for every classification lot number.

12. Packaging

Packaging shall be made with the product of same group.

Minimum packing quantity shall be 200 pieces.

Labels shall be enclosed in a plastic bag.

Part No., Type No., Group, Quantity and Lot No. shall be stated on labels.