SEMITEC® Ishizuka Electronics Corporation

THERMISTOR SPECIFICATIONS

1. Scope

These specifications define ratings, dimensions, electrical properties, mechanical properties and climatic properties for AT-4 type thermistor.

2. Part No. **103AT-4-70378**

3. Ratings

3.1 Rated zero-power resistance. R_{25} 10.0 kΩ ± 1 % (at 25 ℃)

3.2 Rated B-value. $B_{25/85}$ 3 435 K ± 1 %

* The rated B-value is calculated using the rated zero-power resistance values measured at 25℃ and 85℃.

3.3 Dissipation factor. Approx. 2 mW/℃ (in air)

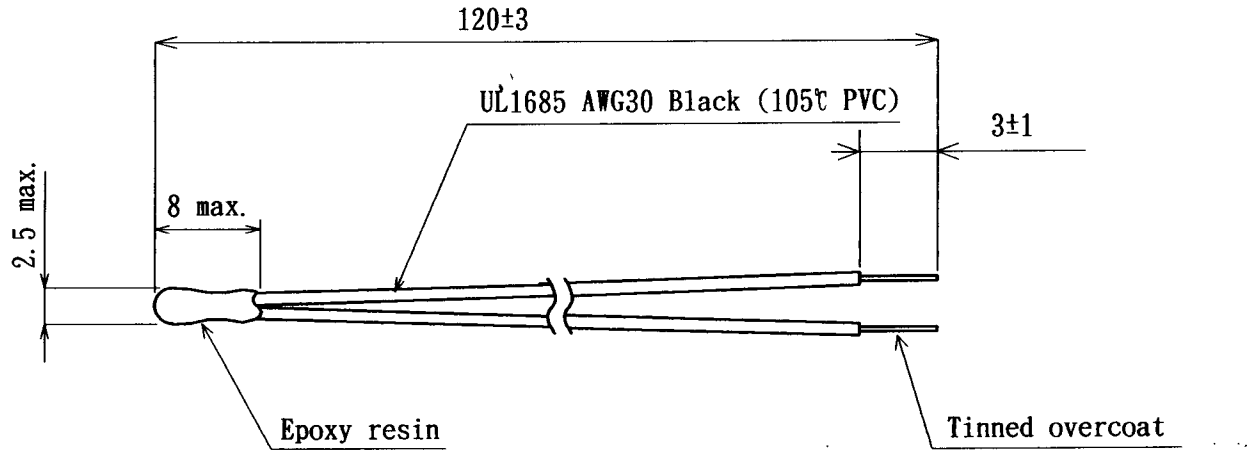
3.4 Thermal time constant. Approx. 10 s (in air)

3.5 Maximum power dissipation. 10 mW (in air at 25℃)

4. Category temperature range -30℃ ~ 90 ℃
(= Operating temperature range)

5. Dimensions

Unit(mm)



Spec. No. : S97-0378	Note		Revision	
Date: April 22, 1998			A	
Approved	Checked	Drawn WATANABE, K	B	
			C	

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6. Electrical properties (between thermistor body and soldered terminals)

6.1 Insulation resistance Above 100 MΩ at DC 100V.

6.2 Voltage proof DC 100V for one second.

7. Mechanical properties

7.1 Robustness of terminations

a) Tensile to horizontal direction

Hold the thermistor so that the lead wires shall be in a horizontal position. After applying 5N load horizontally for one minute, the change ratio of R_{25} and $B_{25/85}$ shall be within ±1% of the initial value.

b) Tensile to vertical direction

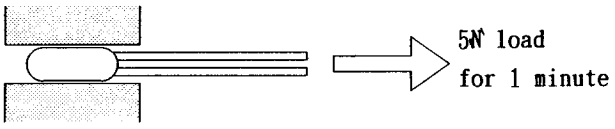
One of the lead wires shall be fixed for another one to be loaded 1N gradual tension.

After 1 minute, the change ratio of R_{25} and $B_{25/85}$ shall be within ±1% of the initial value.

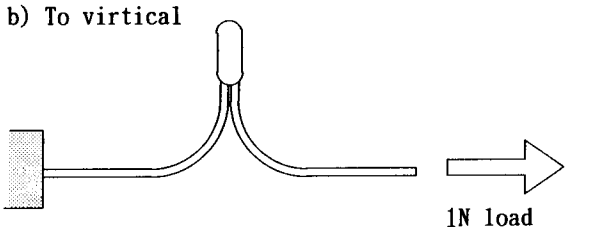
c) Bending

The terminal of the lead wire shall be soldered onto circuit board to be bent into a 90° angle and bent back in one operation with being pulled by 1N load. The lead wire shall not be broken after operating 5 times.

a) To horizontal

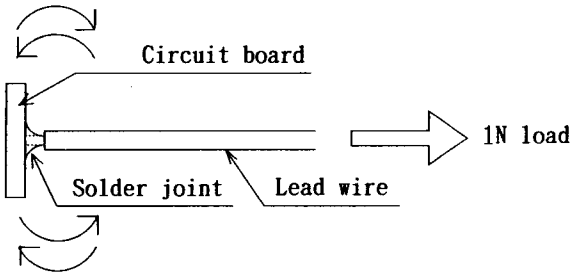


b) To virtical



c) Bending

to be bent and bent back in one operation



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7.2 Resistance to soldering heat

The terminals of lead wires shall be immersed in the solder bath at 260±5℃ for 10±1 seconds.

After being stored at room temperature and humidity for half an hour, the change ratio of R_{25} and $B_{25/85}$ shall be within ±1% of the initial value.

7.3 Solderability

The terminals of the lead wires shall be immersed in solder (P_b:S_n=4:6) bath at 235±5℃ for 2±0.5 seconds.

Over 90% of the terminal surface shall be soldered, and less than 5% of non-soldered parts shall be at one place.

7.4 Free fall

After three-time natural fall on a maple board from 75cm high, the change ratio of R_{25} and $B_{25/85}$ shall be within ±1% of the initial value.

7.5 Vibration

The sample shall be fixed to be vibrated in the frequency of 10Hz to 500Hz and whichever smaller of 1.5mm peak-to-peak or 10G acceleration for around 15 minutes with 10Hz-500Hz-10Hz of sweeping ratio.

After applying vibration to each direction (X, Y and Z) for 2 hours, 6 hours in total, the change ratio of R_{25} and $B_{25/85}$ shall be within ±1% of the initial value.

8. Climatic properties

8.1 Dry heat

Test samples shall be exposed in air at 90 ℃ for 1 000 hours. After being stored at room temperature and humidity for one hour, the change ratio of R_{25} and $B_{25/85}$ shall be within ±1% of the initial value.

8.2 Damp heat

Test samples shall be exposed at 40 ℃, 95%RH for 1 000 hours. After being stored at room temperature and humidity for one hour, the change ratio of R_{25} and $B_{25/85}$ shall be within ±1% of the initial value.

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8.3 Heat load

DC 0.1mA current shall be applied to the test samples in air at 90℃ for 1 000 hours. After being stored at room temperature and humidity for one hour, the change ratio of R_{25} and $B_{25/85}$ shall be within ±1% of the initial value.

8.4 Cold

Test samples shall be exposed in air at −40℃ for 1 000 hours. After being stored at room temperature and humidity for one hour, the change ratio of R_{25} and $B_{25/85}$ shall be within ±1% of the initial value.

8.5 Rapid change of temperature

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

① At -20℃ for 5 minutes.
② Room ambient temperature for one minute.
③ At 70℃ for 5 minutes.
④ Room ambient temperature for one minute.

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

8.6 Damp load

DC 1mA current shall be applied to the test samples at 40℃, 95%RH for 1 000 hours. After being stored at room temperature and humidity for one hour, the change ratio of R_{25} and $B_{25/85}$ shall be within ±1% of the initial value.

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