

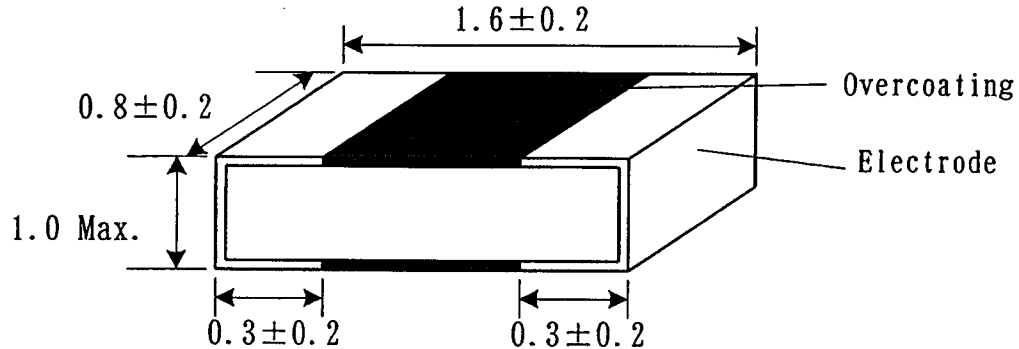
S P E C I F I C A T I O N S  
Chip thermistor  
NSM3 TYPE

## 1. Scope

This specification is applicable to dimensions and electrical characteristics of SMD type chip thermistor.

## 2. Shape &amp; Dimensions

Unit; mm



## 3. Electrical characteristics

| Item                               | Standard                    | Test Method & Condition  |
|------------------------------------|-----------------------------|--|
| 1. Resistance (R25)                | REFER TO THE LIST ON PAGE 3 | R <sub>25</sub> ; The resistance value at 25°C   |
| 2. B-value (B25/85)                |                             | B25/85 ; Calculated by<br>Ln (R25/R85) / (1/T25-1/T85)<br>(T25, T85 are absolute temperature values with for 25°C & 85°C respectively) |
| 3. Maximum rated wattage (at 25°C) | 150 mW                      | This value is measured in the still air with the sample which is soldered on a glass epoxy board t=1.6mm                               |
| 4. Thermal dissipation constant    | 1.7 mW/°C                   | This value is measured in the still air with the sample which is soldered on a solder coated copper wire φ=0.25mm                      |
| 5. Category temperature            | -40°C~+125°C                |  |

|                   |                     |
|-------------------|---------------------|
| Approved;         | <i>N. Furukawa</i>  |
| Checked ;         | <i>T. Sawame</i>    |
| Designed;         | <i>T. Nishimura</i> |
| 8) April 27, 2004 |                     |

4. Soldering condition

This device can be applied to both flow and reflow soldering

5. Meaning of Part No.

NSM 3 000 □ 000 □ ○ ○  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

- ① Chip type thermistor
- ② Chip size
- ③ Resistance value
- ④ Tolerance of Resistance
- ⑤ B-value
- ⑥ Tolerance of B-value
- ⑦ Electrode structures (tin plating)
- ⑧ Packing

Tolerance

| Symbol | Tolerance of Resistance | Tolerance of B-value |
|--------|-------------------------|----------------------|
| F      | 1 %                     |                      |
| G      | 2 %                     |                      |
| H      | 3 %                     | 3 %                  |
| J      | 5 %                     | 5 %                  |
| K      | 10 %                    |                      |

Packing

| Symbol | Form of packing      |
|--------|----------------------|
| Z      | Bulk                 |
| R      | Punched carrier tape |

For example

NSM 3 101 J 280 J 3 R  
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧

- ① Chip type thermistor
- ② Chip size : 1.6×0.8 mm size
- ③ Resistance value : 10×10<sup>1</sup> ohm
- ④ Tolerance of Resistance : ±5%
- ⑤ B-value : 2800K
- ⑥ Tolerance of B-value : ±5%
- ⑦ Electrode structures : Three sided Electrodes
- ⑧ Packing : Taping Reel Type

## 6. Specifications

| PART No.      | R25<br>(Ω) | B25/85<br>(K) | B25/50<br>(K) |
|---------------|------------|---------------|---------------|
| NSM3400□280□3 | 40         | 2800          | 2800          |
| NSM3500□280□3 | 50         | 2800          | 2800          |
| NSM3680□280□3 | 68         | 2800          | 2800          |
| NSM3800□280□3 | 80         | 2800          | 2800          |
| NSM3101□280□3 | 100        | 2800          | 2800          |
| NSM3221□295□3 | 220        | 2950          | 2950          |
| NSM3331□320□3 | 330        | 3200          | 3150          |
| NSM3471□320□3 | 470        | 3200          | 3150          |
| NSM3501□320□3 | 500        | 3200          | 3150          |
| NSM3681□325□3 | 680        | 3250          | 3200          |
| NSM3102□325□3 | 1 k        | 3250          | 3200          |
| NSM3152□345□3 | 1.5 k      | 3450          | 4100          |
| NSM3202□410□3 | 2 k        | 4100          | 4100          |
| NSM3222□410□3 | 2.2 k      | 4100          | 4100          |
| NSM3252□410□3 | 2.5 k      | 4100          | 4100          |
| NSM3272□410□3 | 2.7 k      | 4100          | 4100          |
| NSM3302□410□3 | 3 k        | 4100          | 4100          |
| NSM3332□410□3 | 3.3 k      | 4100          | 4100          |
| NSM3472□355□3 | 4.7 k      | 3550          | 3500          |
| NSM3502□355□3 | 5 k        | 3550          | 3500          |
| NSM3682□355□3 | 6.8 k      | 3550          | 3500          |
| NSM3103□344□3 | 10 k       | 3435          | 3390          |
| NSM3103□375□3 | 10 k       | 3750          | 3700          |
| NSM3103□400□3 | 10 k       | 4000          | 3950          |
| NSM3153□380□3 | 15 k       | 3800          | 3750          |
| NSM3203□380□3 | 20 k       | 3800          | 3750          |
| NSM3223□380□3 | 22 k       | 3800          | 3750          |
| NSM3303□400□3 | 30 k       | 4000          | 3950          |
| NSM3333□400□3 | 33 k       | 4000          | 3950          |
| NSM3473□400□3 | 47 k       | 4000          | 3950          |
| NSM3503□400□3 | 50 k       | 4000          | 3950          |
| NSM3683□400□3 | 68 k       | 4000          | 3950          |
| NSM3104□415□3 | 100 k      | 4150          | 4100          |
| NSM3154□425□3 | 150 k      | 4250          | 4200          |
| NSM3204□425□3 | 200 k      | 4250          | 4200          |
| NSM3474□435□3 | 470 k      | 4350          | 4300          |

※ B25/50 ; nominal B constant for the range 25°C to 50°C (reference value)

## 7. Testing

| No | Item                          | Performance   | Test method   |
|----|-------------------------------|---|---|
| 1  | Solderability                 | The dipped terminal area shall be at least 90% covered with new solder coating.                   | The terminal area shall be immersed in a solder tank kept at $235\pm 5^{\circ}\text{C}$ for $2\pm 0.5$ seconds.   |
| 2  | Resistance to soldering heat  | $\Delta R/R$<br>Not exceeding $\pm 5\%$<br>No mechanical damage and no make change in appearance. | A thermistor shall be immersed in solder pot kept as $260\pm 5^{\circ}\text{C}$ for $10\pm 1$ seconds. It shall be left at room temperature for more than one hour before the resistance value is measured.   |
| 3  | Thermal shock test            | $\Delta R/R$<br>Not exceeding $\pm 5\%$<br>No mechanical damage and no make change in appearance. | One cycle during which the thermistor is kept at $-40^{\circ}\text{C}$ for 30 minutes and at $+125^{\circ}\text{C}$ for 30 minutes shall be repeated 100 cycles. The thermistor shall be left at room temperature for 1~24 hours before the resistance value is measured. |
| 4  | Damp heat test (steady state) | $\Delta R/R$<br>Not exceeding $\pm 5\%$<br>No mechanical damage and no make change in appearance. | It shall be left at $65\pm 2^{\circ}\text{C}$ and 90~95 %RH with no load for 1000 hours. The thermistor shall be left at room temperature for 1~24 hours before the resistance value is measured.   |
| 5  | Dry heat test                 | $\Delta R/R$<br>Not exceeding $\pm 5\%$<br>No mechanical damage and no make change in appearance. | It shall be left in a thermostatic oven kept at $+125\pm 3^{\circ}\text{C}$ with no load for 1000 hours. The thermistor shall be left at room temperature for 1~24 hours before the resistance value is measured.   |
| 6  | Cold test                     | $\Delta R/R$<br>Not exceeding $\pm 5\%$<br>No mechanical damage and no make change in appearance. | It shall be left in a thermostatic oven kept at $-40\pm 3^{\circ}\text{C}$ with no load for 1000 hours. The thermistor shall be left at room temperature for 1~24 hours before the resistance value is measured.  |

# SPECIFICATION

## TAPING OF RECTANGULAR CHIP THERMISTOR

1.6 mm×0.8 mm size  
(NSM3 TYPE · NSH3 TYPE)

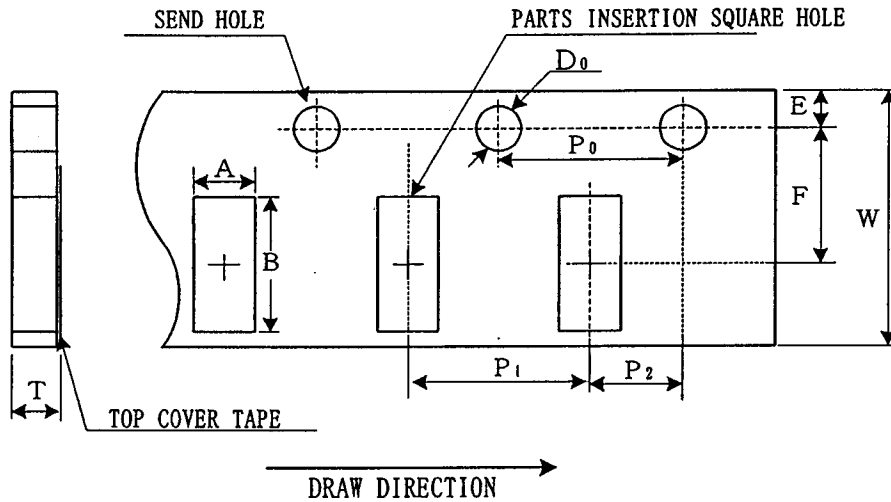
1. SCOP

This specification defines the taping configuration, space dimensions and packing of chip type thermistor.

Reel packing of electronic components covers this specification, JIS C 0806.

2. TAPING SHAPE AND DIMENSIONS, JIS C 0806 TP.

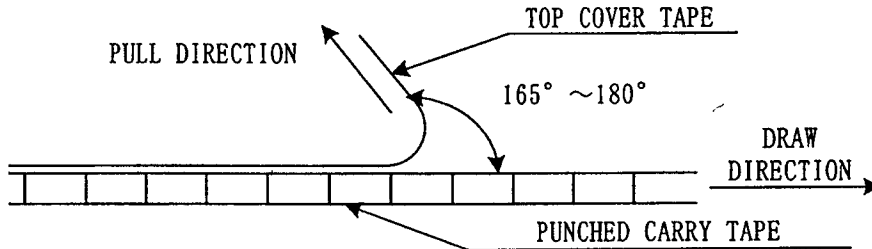
TP TYPE; Punched carrier tape



Unit; mm

|        |                |                |                |                |          |
|--------|----------------|----------------|----------------|----------------|----------|
| SYMBOL | A              | B              | W              | F              | E        |
| TP     | 1.10±0.1       | 1.90±0.1       | 8.0±0.3        | 3.5±0.05       | 1.75±0.1 |
| SYMBOL | P <sub>1</sub> | P <sub>2</sub> | P <sub>0</sub> | D <sub>0</sub> | T        |
| TP     | 4.0±0.1        | 2.0±0.05       | 4.0±0.1        | 1.55±0.05      | 0.8±0.2  |

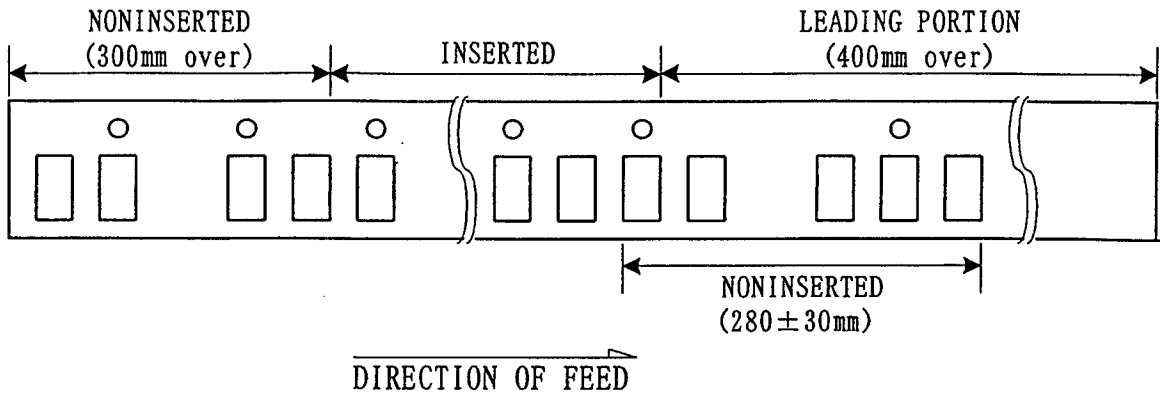
- NOTE
1. Accumulated tolerance shall be ±0.2mm per 10 pitches.
  2. Carrier tape can be bent up to a radius~10mm
  3. Cover tape width; 5.5±0.1mm(not across the sprocket hole).
  4. Force required to take the cover tape off shall be 0.1N~0.7N.



5. Missing chips from the tape shall be zero.
6. The chips shall fall out smoothly from the tape pocket by their own weight, after tearing off the cover tape.

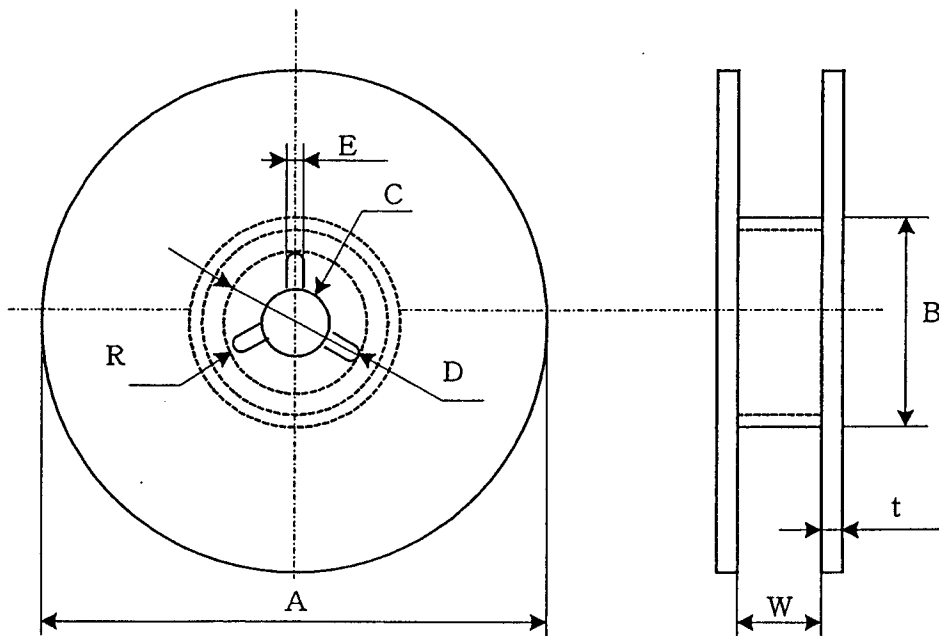
|                 |                     |
|-----------------|---------------------|
| Approved;       | <i>N. Takahashi</i> |
| Checked;        | <i>T. Sawami</i>    |
| Designed;       | <i>T. Nishimura</i> |
| 4) July 8, 2004 |                     |

3. TAPING CONITION



4. TAPING REEL DIMENSIONS

Material: plastics



Unit; mm

|        |                    |                        |                   |                   |
|--------|--------------------|------------------------|-------------------|-------------------|
| SYMBOL | A                  | B                      | C                 | D                 |
| R08B   | $\phi 180 \pm 2.0$ | $\phi 60 \text{ min.}$ | $\phi 13 \pm 0.5$ | $\phi 21 \pm 0.8$ |
| SYMBOL | E                  | W                      | t                 | R                 |
| R08B   | $2.0 \pm 0.5$      | $10.0 \pm 1.5$         | $2.0 \pm 0.5$     | R1.0              |

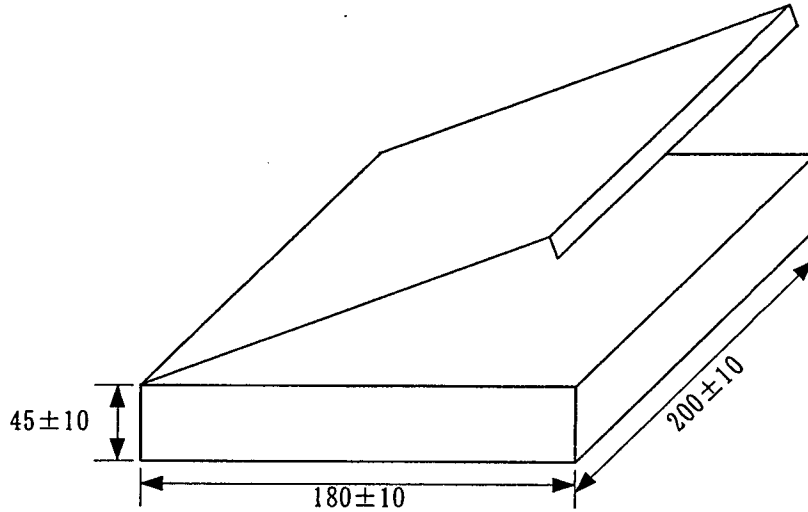
5. CALCULATION

1 reel package: 3,000-piece max.

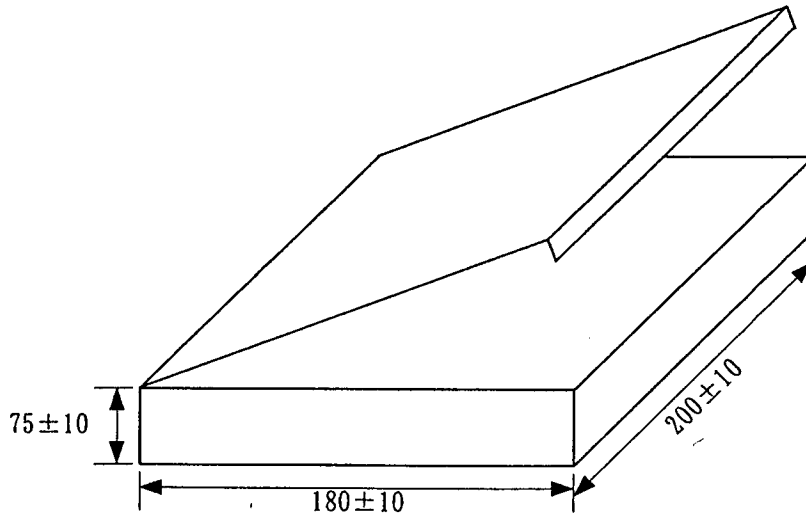
6. PACKING

6-1 INSIDE PACKING

- ① The number of articles : 3 reel max.  
Corrugated board carton.  
unit : mm



- ② The number of articles : 6 reel max.  
Corrugated board carton.  
unit : mm



6-2 OUTSIDE PACKING

In inside packing box.

7. INDICATION

In the case that there is not the designation of a label it attaches and attaches a label to a reel and also a packing box.

Moreover in the case of a "lead-less article", it indicates to the portion as for which the display label is vacant by lead free.

[surface of reel]

サーミスタ  
(THERMISTOR)

部品番号 (CUSTOMER PART No.)

品 番 (PART No.)

ロットNo.(LOT No.)

個 数 (QUANTITY)

 株式会社 大泉製作所  
 OHIZUMI MFG.CO.,LTD.

Lot number for example

2004 ———— 4 7 \* \* \* \* OS Lot number  
                   |    |    |    |  
                   7 July  
                   X October  
                   Y November