# Surface-Mount NTC Thermistor
# （SMD-3225 Series）

## 1、Characteristics

- Advanced packaging technology, packaging materials meet UL94-V0
- Compact structure, small size, space-saving
- Excellent high-temperature and high-humidity performance
- Strong surge suppression capability
- SMD tape and reel packaging, suitable for lead-free reflow soldering/wave soldering automatic assembly

## 2、Application

- Circuit protection
- Industrial equipment
- Communication equipment
- Consumer electronics
- Automotive electronics

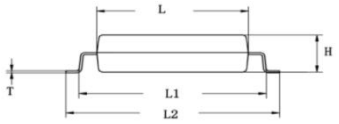
Part numbering on request.

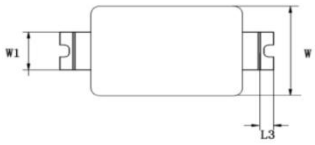
## 4、Product Imprinting (Sample)

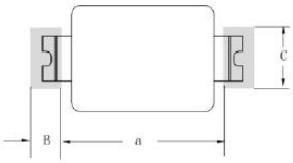
| Sample | Description | | |
|---|---|---|---|
|  | 1 | STE | SongTian Logo |
| | 2 | 3225 | Dimension：3225 ≈ 8.1*6.0mm |
| | 3 | M | Resistance tolerance ： M（±20%） |
| | 4 | 050 | Zero-power resistance value @25°C ： 5.0Ω |

## 5、Physical Dimensions

### ■ Lead Type W：Gull Wing



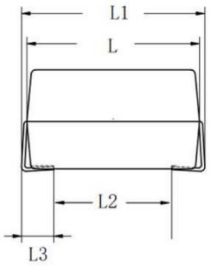



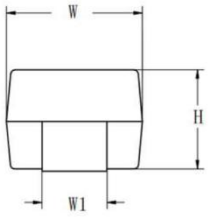




| Dimension(mm)（Gull Wing） | | | |
|---|---|---|---|
| L | 8.1±0.3 | L1 | 10.0±0.3 |
| W | 6.0±0.3 | L2 | 11.4±0.3 |
| H | 2.5±0.3 | L3 | 0.5±0.3 |
| W1 | 2.5±0.3 | T | 0.15±0.01 |

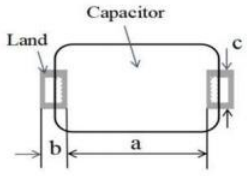
| Pad Dimension(mm) | |
|---|---|
| a | 10.0±0.2 |
| b | 2.2±0.2 |
| c | 3.6±0.2 |

### ■ Lead Type N：Internal Bent




| Dimension(mm)（Internal Bent） | | | |
|---|---|---|---|
| L | 8.1±0.3 | L1 | 8.5±0.3 |
| W | 6.0±0.3 | L2 | 6.0 min |
| H | 2.5±0.3 | L3 | 1.1±0.3 |
| W1 | 2.5±0.3 | | |




| Pad Dimension(mm) | |
|---|---|
| a | 5.7±0.2 |
| b | 1.65±0.2 |
| c | 3.0±0.2 |

## 6、Safety Certificate

| Approval | | Organization | Safety Standards | Certificate No. |
|---|---|---|---|---|
| China | | CQC | GB/T6663.1-2007 | CQC25001492227 |
| USA / Canada | | UL/cUL | UL1434 | E474052 |
| Germany | | TUV | EN IEC60539-1:2023<br>EN IEC60539-2:2019 | B117168-0004 |

## 7、Electrical Performance

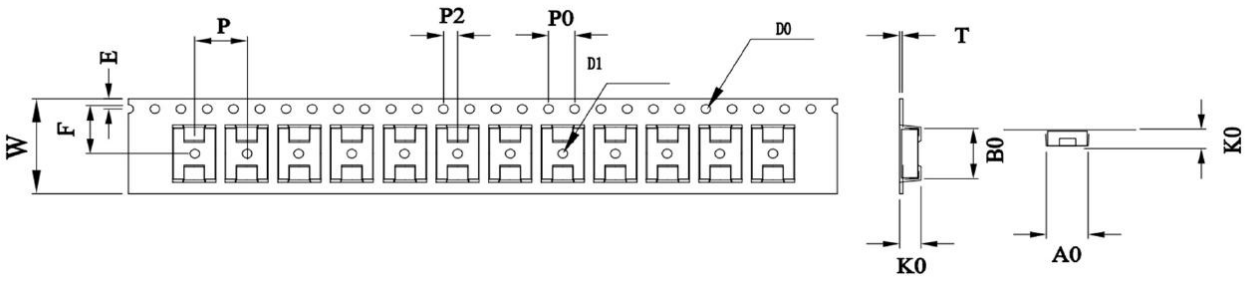
| Model Number | Rated Zero Power Resistance @25℃（Ω） | Maximum Steady Current @25℃（A） | Residual Resistor At Max Steady Current @25℃（Ω） | B Value（K）±10% | Thermal Time Constant（S） | Heat Dissipation Coefficient mW/℃） | Operating Temperature Range（℃） |
|---|---|---|---|---|---|---|---|
| SMDNTC3225*1R505*** | 1.5 | 5 | 0.065 | 2600 | ＜43 | ＞13 | -40℃～175℃ |
| SMDNTC3225*02005*** | 2 | 5 | 0.085 | 2600 | ＜43 | ＞13 | -40℃～175℃ |
| SMDNTC3225*2R505*** | 2.5 | 5 | 0.095 | 2600 | ＜43 | ＞13 | -40℃～175℃ |
| SMDNTC3225*03005*** | 3 | 5 | 0.100 | 2600 | ＜43 | ＞13 | -40℃～175℃ |
| SMDNTC3225*04004*** | 4 | 4 | 0.150 | 2600 | ＜44 | ＞13 | -40℃～175℃ |
| SMDNTC3225*05004*** | 5 | 4 | 0.156 | 2800 | ＜45 | ＞13 | -40℃～175℃ |
| SMDNTC3225*06003*** | 6 | 3 | 0.240 | 2800 | ＜45 | ＞13 | -40℃～175℃ |
| SMDNTC3225*6R803*** | 6.8 | 3 | 0.245 | 2800 | ＜45 | ＞13 | -40℃～175℃ |
| SMDNTC3225*07003*** | 7 | 3 | 0.2824 | 2800 | ＜45 | ＞13 | -40℃～175℃ |
| SMDNTC3225*08003*** | 8 | 3 | 0.255 | 2800 | ＜47 | ＞14 | -40℃～175℃ |
| SMDNTC3225*10003*** | 10 | 3 | 0.275 | 2800 | ＜47 | ＞14 | -40℃～175℃ |
| SMDNTC3225*12002*** | 12 | 2 | 0.462 | 2800 | ＜48 | ＞14 | -40℃～175℃ |
| SMDNTC3225*13002*** | 13 | 2 | 0.465 | 2800 | ＜50 | ＞14 | -40℃～175℃ |
| SMDNTC3225*15002*** | 15 | 2 | 0.468 | 2800 | ＜50 | ＞14 | -40℃～175℃ |
| SMDNTC3225*16002*** | 16 | 2 | 0.470 | 2800 | ＜50 | ＞14 | -40℃～175℃ |
| SMDNTC3225*18002*** | 18 | 2 | 0.495 | 3000 | ＜52 | ＞15 | -40℃～175℃ |
| SMDNTC3225*20002*** | 20 | 2 | 0.512 | 3000 | ＜52 | ＞15 | -40℃～175℃ |
| SMDNTC3225*22002*** | 22 | 2 | 0.563 | 3000 | ＜52 | ＞15 | -40℃～175℃ |
| SMDNTC3225*25002*** | 25 | 2 | 0.623 | 3000 | ＜52 | ＞15 | -40℃～175℃ |
| SMDNTC3225*300S5*** | 30 | 1.5 | 0.667 | 3000 | ＜52 | ＞15 | -40℃～175℃ |
| SMDNTC3225*330S5*** | 33 | 1.5 | 0.734 | 3000 | ＜52 | ＞15 | -40℃～175℃ |
| SMDNTC3225*470S5*** | 47 | 1.5 | 1.002 | 3000 | ＜52 | ＞15 | -40℃～175℃ |
| SMDNTC3225*500S5*** | 50 | 1.5 | 1.021 | 3000 | ＜52 | ＞15 | -40℃～175℃ |
| SMDNTC3225*600S5*** | 60 | 1.5 | 1.215 | 3000 | ＜52 | ＞15 | -40℃～175℃ |
| SMDNTC3225*800S2*** | 80 | 1.2 | 1.656 | 3200 | ＜52 | ＞15 | -40℃～175℃ |
| SMDNTC3225*101S1*** | 100 | 1.1 | 2.053 | 3200 | ＜50 | ＞15 | -40℃～175℃ |
| SMDNTC3225*121S1*** | 120 | 1.1 | 2.253 | 3200 | ＜50 | ＞15 | -40℃～175℃ |
| SMDNTC3225*20101*** | 200 | 1 | 4.121 | 3200 | ＜50 | ＞13 | -40℃～175℃ |

## 8、Reliability Testing

| No. | Item | Testing Method | Standard |
|---|---|---|---|
| 1 | Vibration | Frequency：10~55Hz<br>Amplitude：0.75mm<br>Direction and Time：2 hours each for X, Y and Z axes | No visible damage<br>Resistance change rate：±10% |
| 2 | Solderability | Temperature：245±5℃<br>Time：3±0.5s | Tinning is uniform covering area≥95% |
| 3 | Resistance To Soldering Heat | Dip the finished pins into solder at 260°C±5°C for 10±1 seconds and then remove | Resistance change rate：±10% |
| 4 | High-Temperature Storage | Place it at 125±2℃ for 1000+48 hours, then test after a 2-hour cooldown | Resistance change rate：±20% |
| 5 | Humidity Resistance | 1. 1000 hours at 40±2℃ and 90-95% humidity.<br>2. 500 hours at 40±2℃, 90-95% humidity, with a voltage equal to 1/20 of the maximum dissipation voltage (not less than 0.5V). | Resistance change rate：±20% |
| 6 | Thermal Shock | -40℃×30min → 25℃×5min → 125℃×30min →25℃×5min, repeated five times | Resistance change rate：±20% |
| 7 | Endurance Test | 1. 25±5℃, Imax, 1000h；<br>2. 25±5℃, Imax，（1min ON /5min OFF）*1000 times | No visible damage<br>Resistance change rate：±20% |
| 8 | Insulation Withstanding Voltage | The product's surface is encapsulated with a tightly wound metal wire coil. Apply 750Vac voltage to the coil's protruding end and the pin's end for 1 minute | No external damage |

# 9、Packing Instructions

■ Taping Packaging Method Description



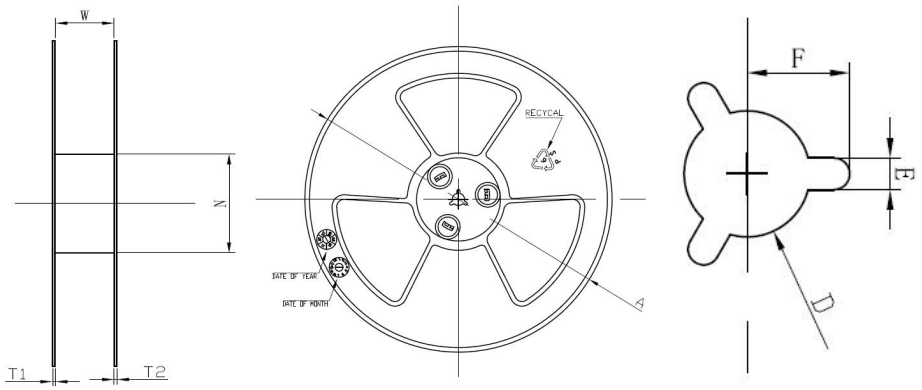

unit：mm

| SPEC | A0 | B0 | K0 | P | P0 | P2 | T |
|---|---|---|---|---|---|---|---|
| N(Internal Bent) | 6.35±0.1 | 8.45±0.1 | 3.25±0.1 | 8.0±0.1 | 4.0±0.1 | 2.0±0.1 | 0.3±0.05 |
| W(Gull Wing) | 6.16±0.1 | 11.90±0.15 | 3.10±0.1 | 8.0±0.15 | 4.0±0.15 | 2.0±0.15 | 0.3±0.05 |
| SPEC | W | E | F | D0 | D1 | Components/Reel | |
| N(Internal Bent) | 16.0±0.3 | 1.75±0.1 | 7.5±0.1 | 1.5+0.1/-0 | 1.5+0.1/-0 | 4000pcs | |
| W(Gull Wing) | 24.0±0.3 | 1.75±0.15 | 11.5±0.15 | 1.5+0.15/-0 | 1.5+0.15/-0 | 4000pcs | |

## ■ 15-inch Reel Dimensions

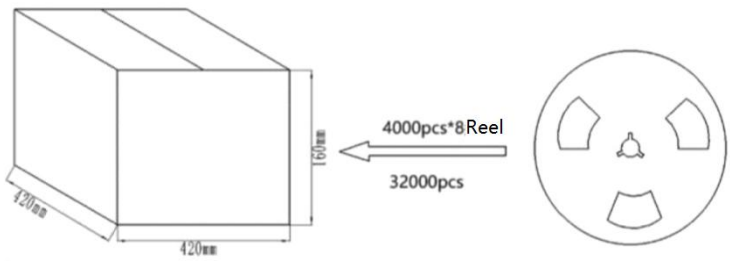
unit：mm

| SPEC | N(Internal Bent) | W(Gull Wing) |
|---|---|---|
| SPEC | 16 | 24 |
| E±0.5 | 2.3 | 2.3 |
| F±0.5 | 10.75 | 10.75 |
| W±0.2 | 16.4 | 24.4 |
| T1±0.3 | 2.2 | 2.2 |
| T2±0.3 | 2.2 | 2.2 |
| A+0/-2 | φ380 | φ380 |
| N±3.0 | φ100 | φ100 |
| D±0.3 | 13.3 | 13.3 |

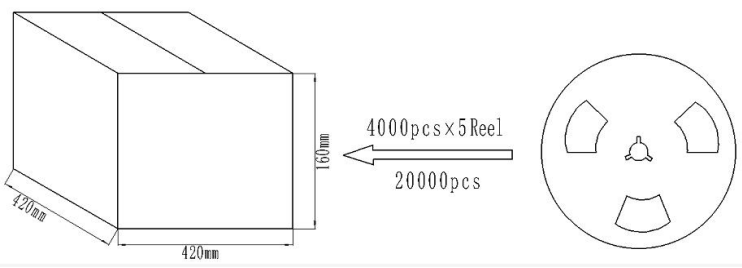



## ■ Carton Packaging

Lead Type N：Internal Bent

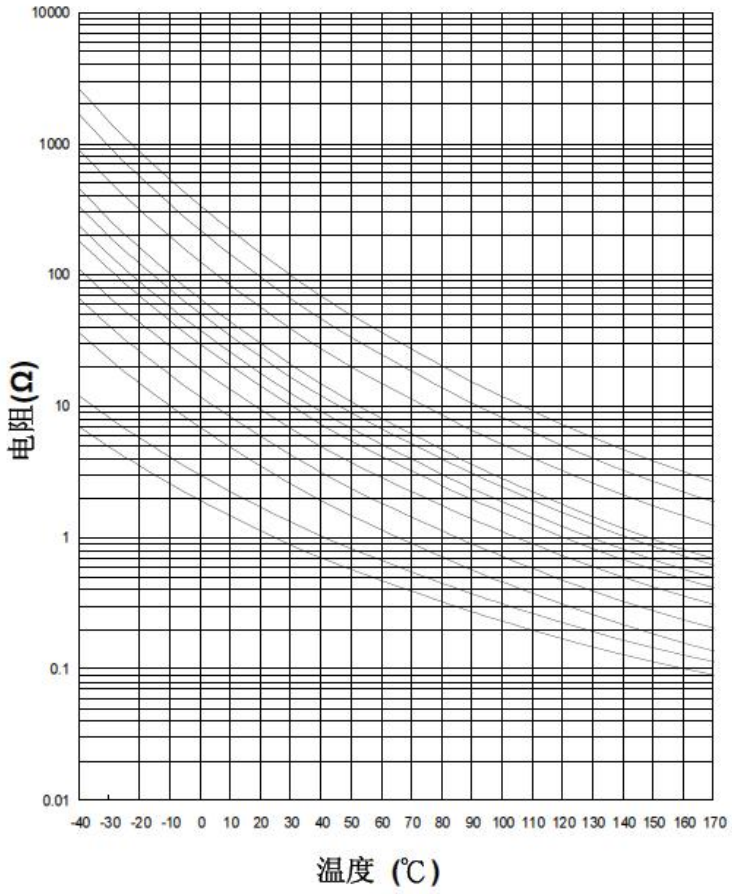



Lead Type W：Gull Wing

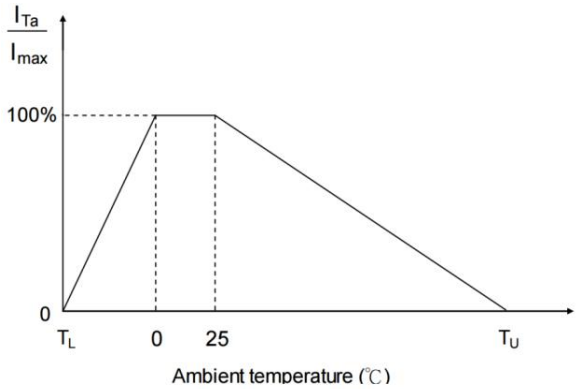


## 10、Curve Chart

■ Resistance-Temperature Characteristic Curve




■ Maximum Current Derating Curve




$I_{Ta}$ = [1-(Ta-25)/(Tu-25)]×Imax

$T_U$: Upper limit of operating temperature(℃)

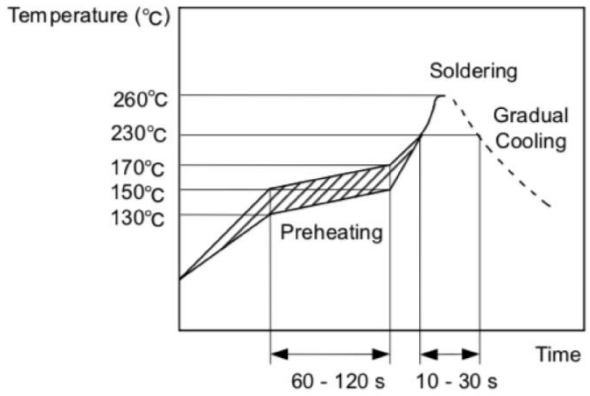
$T_L$: Lower limit of operating temperature(℃)

Ta: Ambient temperature(℃)

Imax: Maximum steady-state current

## 11、Soldering Instruction

■ Lead-Free Reflow Soldering Profile



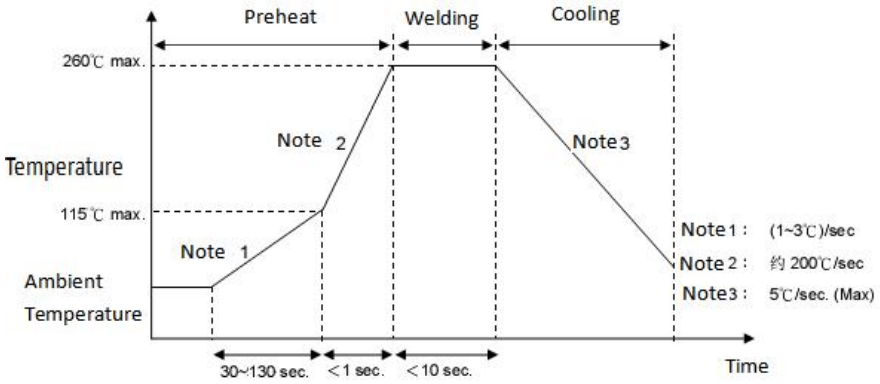

When soldering capacitors using reflow soldering, it should be performed under the following conditions:

Soldering Temperature: 230～260℃

Soldering Time: 10～30 seconds

Preheat Temperature: 170℃ max

■ Wave Soldering Profile




■ Soldering Iron Conditions

| Item | Condition |
|---|---|
| Iron tip temp. | 400℃(max.) |
| Soldering time | 3.5 sec(max.) |
| Soldering iron power | 50W(max.) |

## 12、Storage and Handling Guidelines

- Store the product between 10-30℃ with a maximum relative humidity of 60% and use it within 6 months after delivery.
- Solder the NTC within 168 hours of opening the moisture-proof packaging. Store the NTC in the moisture-proof packaging with desiccant and an HIC card after opening, maintaining the specified conditions.
- If the storage period exceeds 6 months or the HIC card's indicator color changes after opening, perform baking before soldering (60℃*168hr)
- If the opened package is exposed for a duration exceeding the bare exposure life or if other conditions cause the temperature and humidity around the product to exceed the specified limits, refer to the data for baking before reflow soldering. The bare exposure life is reset to zero after baking.

| Level | Bake@40C ζ5%RH | |
|---|---|---|
| | Saturated@30C/85%RH | At limit of Floor life+72hr@30C/60RH |
| 3 | 79days | 67days |

- Avoid storing the product in corrosive substances such as sulfur, chlorine gas, or acids, as this may cause pin oxidation, leading to reduced solderability.
- Store the product on shelves to avoid exposure to moisture, dust, etc.
- When storing the product in the warehouse, avoid thermal shock, vibration, and direct sunlight.

## 13、Usage Precaution

- The operating ambient temperature should be within the specified technical range.
- Installation should maintain a distance of at least 3 millimeters from heat-generating or flammable components to prevent damage to the components.
- Wear gloves when handling pins.
- This certificate guarantees the quality of our products as standalone units. When our products are integrated into your products, ensure that your products have been effectively evaluated and confirmed according to your specifications.
- If your use of our products exceeds the defined functional limits in this testing specification, we cannot guarantee against failures resulting from such use.
- In the event of NTC damage, failure may lead to a short circuit. To prevent hazards such as sparking, smoking, or fire during a short circuit, use safety components like fuses in the circuit to provide automatic fault protection.