

SMD 0603, Glass Protected NTC Thermistors



DESIGN SUPPORT TOOLS AVAILABLE



3D Models



Design Tools

| QUICK REFERENCE DATA | | |
|---|--------------------|------|
| PARAMETER | VALUE | UNIT |
| Resistance value at 25 °C | 2.0K to 100K | Ω |
| Tolerance on R_{25} -value | ± 1; ± 2; ± 3; ± 5 | % |
| $B_{25/85}$ -value | 3420 to 4100 | K |
| Tolerance on $B_{25/85}$ -value | ± 1 | % |
| Maximum dissipation at 25 °C | 125 | mW |
| Thermal time constant τ | ≈ 8 | s |
| Dissipation factor D | 3.0 | mW/K |
| Operating temperature range at zero power | -40 to +150 | °C |
| Weight | ≈ 0.006 | g |

FEATURES

- TCR ranging from -7 %/K at -40 °C to -2 %/K at 150 °C
- Tolerance on R_{25} down to 1 %, and on $B_{25/85}$ down to 1 %
- Suitable for wave or reflow soldering
- NiSn terminations
- Fully glass coated and protected
- cUL recognized for safety applications (file E148885)
- AEC-Q200 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

AUTOMOTIVE GRADE


RoHS
 COMPLIANT
 HALOGEN
FREE

APPLICATIONS

- Temperature sensing, protection and compensation in automotive, industrial, telecom and consumer applications. Examples are:
 - Battery chargers
 - Power suppliers
 - Office equipment
 - LCD compensation
 - In-car entertainment

DESCRIPTION

Size 0603 (M1608) glass protected SMD chip thermistor with negative temperature coefficient (TCR) and tin (Sn) plated terminations. The device has no marking.

PACKAGING

Available in 8 mm punched paper tape on reel package of 4000 units.

DESIGN-IN SUPPORT

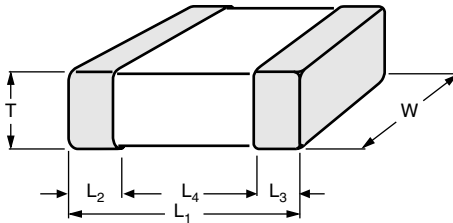
For complete curve computation, please visit:

www.vishay.com/thermistors/ntc-curve-list/

| ELECTRICAL DATA AND ORDERING INFORMATION | | | | | |
|--|-------------------------|--------------------|----------------------------|------------------|--------------------------------------|
| R_{25} (Ω) | R_{25} -TOL. (± %) | $B_{25/85}$ (K) | $B_{25/85}$ -TOL. (± %) | UL RECOGNIZED | SAP MATERIAL AND ORDERING NUMBER (1) |
| 2000 | 3, 5 | 3420 | 1 | Y | NTCS0603E3202*LT |
| 2200 | 1, 2, 3, 5 | 3520 | 1 | Y | NTCS0603E3222*MT |
| 2700 | 1, 2, 3, 5 | 3600 | 1 | Y | NTCS0603E3272*MT |
| 4700 | 1, 2, 3, 5 | 3830 | 1 | Y | NTCS0603E3472*HT |
| 10 000 | 1, 2, 3, 5 | 3435 | 1 | Y | NTCS0603E3103*LT |
| 10 000 | 1, 2, 3, 5 | 3610 | 1 | Y | NTCS0603E3103*MT |
| 10 000 | 1, 2, 3, 5 | 3960 | 1 | Y | NTCS0603E3103*HT |
| 15 000 | 1, 2, 3, 5 | 3600 | 1 | N | NTCS0603E3153*MT |
| 22 000 | 1, 2, 3, 5 | 3730 | 1 | Y | NTCS0603E3223*MT |
| 33 000 | 1, 2, 3, 5 | 3860 | 1 | Y | NTCS0603E3333*HT |
| 47 000 | 1, 2, 3, 5 | 3960 | 1 | Y | NTCS0603E3473*HT |
| 68 000 | 1, 2, 3, 5 | 3985 | 1 | Y | NTCS0603E3683*HT |
| 100 000 | 1, 2, 3, 5 | 4100 | 1 | Y | NTCS0603E3104*XT |

Note

(1) Replace * in SAP material number by J for ± 5 %, H for ± 3 %, G for ± 2 %, F for ± 1 % tolerance on R_{25}

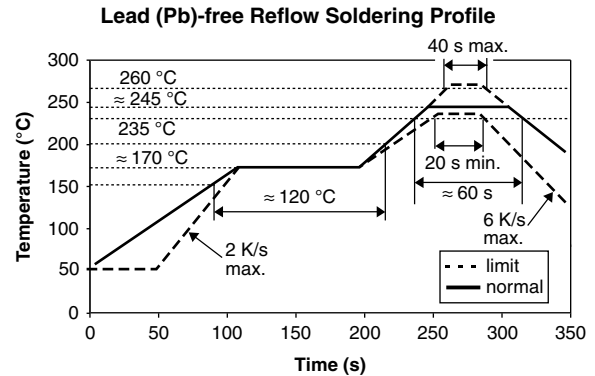
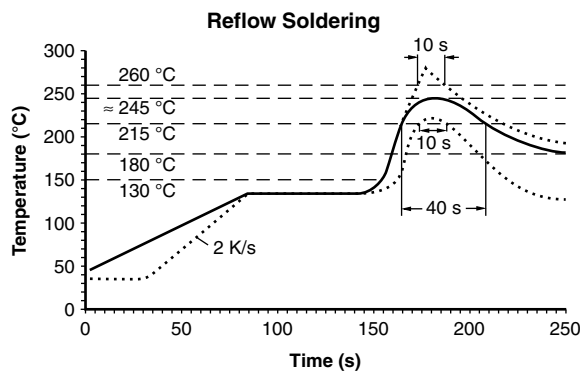
DIMENSIONS in millimeters


| L ₁ | W | T | L ₂ AND L ₃ MIN. | L ₄ MIN. |
|----------------|------------|------------|--|---------------------|
| 1.6 ± 0.15 | 0.8 ± 0.15 | 0.8 ± 0.15 | 0.2 | 0.4 |

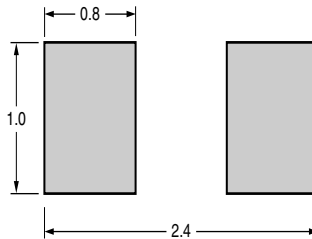
SOLDERING CONDITIONS

This SMD thermistor is only suitable for wave or reflow soldering, in accordance with JEDEC® J-STD-020. The maximum temperature of 260 °C during 40 s should not be exceeded.

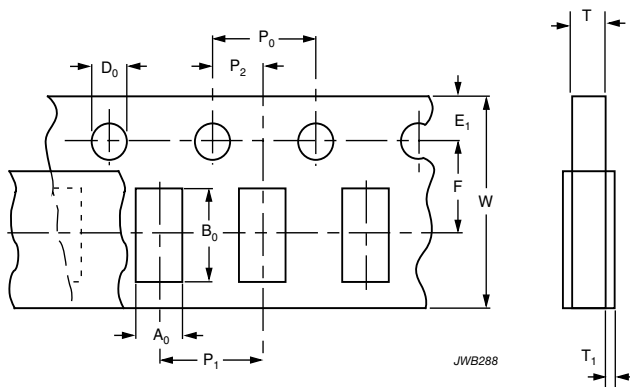
Typical examples of a soldering processes that will provide reliable joints without damage, are shown below.



Recommended solder land pattern dimensions (mm)


PACKAGING
TAPE SPECIFICATIONS

All tape specifications are in accordance with IEC 60286-3. Basic dimensions are given below. Carrier tape material is paper.

PAPER TAPE

DIMENSIONS OF PAPER TAPE in millimeters

| PARAMETER | DIMENSION |
|--|-------------|
| A ₀ ⁽¹⁾ | 1.15 ± 0.1 |
| B ₀ ⁽¹⁾ | 1.9 ± 0.1 |
| W | 8.0 ± 0.2 |
| E ₁ | 1.75 ± 0.1 |
| F | 3.5 ± 0.05 |
| D ₀ | 1.55 ± 0.05 |
| P ₀ ⁽²⁾ | 4.0 ± 0.1 |
| P ₁ | 4.0 ± 0.1 |
| P ₂ | 2.0 ± 0.05 |
| T tape thickness max. | 1.1 |
| T ₁ cover tape thickness max. | 0.1 |

Notes

- (1) Measured 0.3 mm above base pocket
- (2) P₀ pitch cumulative error over any 10 pitches ± 0.2 mm



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