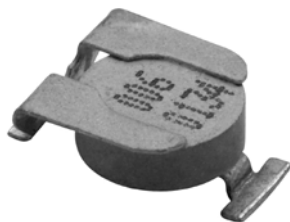


SMD PTC Thermistors For Overload Protection



FEATURES

- Ideal for pick-and-place circuit assembly
- Low mounting height
- Suitable for reflow soldering
- Small ceramic diameter for faster response
- Low heat transfer to substrate
- Flat terminations for stable positioning and good solderability
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

APPLICATIONS

Over-temperature/over-load protection:

- Telecom
 - Central Office Switching (C.O.)
 - Subscriber Terminal Equipment (T.E.)
 - Set-top Box (S.B.)
 - Modems
 - Cable TV communications
- General industry and automotive
 - Low power supplies overload protection
 - Data bus protection

DESCRIPTION

The component consists of a high-performance PTC ceramic disc mounted in a lead-frame for direct soldering onto a printed-circuit board (PCB) or substrate. Ceramics are covered with a protective high temperature silicone layer.

MARKING

- All SMD PTCs are marked with a 3-digit type number (XXX) and a date code (YYWW)

| QUICK REFERENCE DATA | | | |
|--|-------------------------------|------------------------------|------------------|
| DESCRIPTION | VALUE | | UNIT |
| | STANDARD TYPES ⁽¹⁾ | TELECOM TYPES ⁽¹⁾ | |
| Nominal R_{25} | 2 to 500 | 10 to 70 | Ω |
| Resistance tolerance | $\pm 10; \pm 15; \pm 20$ | | % |
| Maximum overload current (voltage dependent) | 2 to 10 | | A |
| Non-trip current | 50 to 500 (at 25 °C) | 50 to 100 (at 70 °C) | mA |
| Maximum voltage | 16 to 400 | 220 to 600 | V _{RMS} |
| Response time at 25 °C and 20 W overload power | < 1 | | s |
| Matching | - | Down to 0.5 | Ω |
| Maximum continuous power at 25 °C | 2 | | W |

Note

⁽¹⁾ Customized products are available on request

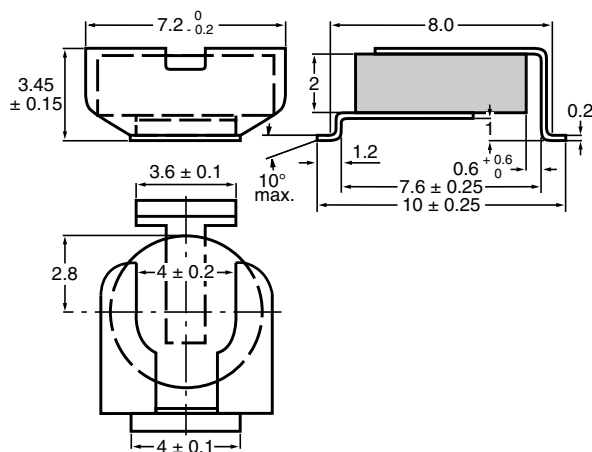
| ELECTRICAL DATA AND ORDERING INFORMATION | | | | | | | | | | |
|--|-------------|-----------------|--------------------------|--------------------|---------------|-------------------|---------------------------------|---|-------------------------------|--------------------|
| RESISTANCE | | MATCHING (Ω) | V _{max.} (V) | I _{nt} at | | I _t at | MAX. TRIP-TIME at 1 A (s) | I _{max.} at V _{max.} (A) | CATALOG NUMBER | |
| R ₂₅ (Ω) | TOL. (%) | | | 25 °C (mA) | 70 °C (mA) | 25 °C (mA) | | | SAP ORDERING CODE | TYPE NR MARKING |
| TELECOMMUNICATION TYPES | | | | | | | | | | |
| 10 | 20 | no | 245 | 165 | 100 | 270 | 3.0 | 2.0 | PTCTZ3NR100GTT ⁽²⁾ | 012 |
| 10 | 20 | 0.5 | 245 | 165 | 100 | 270 | 3.0 | 2.0 | PTCTZ3MR100GTT ⁽²⁾ | 016 |
| 40 | 25 | no | 265 | 80 | 50 | 130 | 0.8 | 2.0 | PTCTZ3NR400HTT | 002 |
| 25 | 20 | 1 | 265 | 120 | 70 | 220 | 1.3 | 2.0 | PTCTZ3MR250HTT ⁽²⁾ | 005 |
| 15 to 20 | - | no | 300 | 150 | 100 | 250 | 1.5 | 1.5 | PTCTZ3NR150KTT ⁽²⁾ | 004 |
| 15 to 20 | - | 0.5 | 300 | 150 | 100 | 250 | 1.5 | 2.0 | PTCTZ3MR150KTT ⁽²⁾ | 003 |
| 20 | 20 | 0.5 | 300 | 120 | 70 | 250 | 1.4 | 1.5 | PTCTZ3MR200KTT ⁽²⁾ | 018 |
| 35 | + 15/- 20 | 1 | 425 | 110 | 70 | 175 | 1.0 | 0.7 | PTCTZ3MR350MTT ⁽²⁾ | 009 |
| 50 | 20 | 1 | 425 | 90 | 60 | 150 | 0.8 | 0.7 | PTCTZ3MR500MTT | 019 |
| GENERAL INDUSTRIAL TYPES | | | | | | | | | | |
| 3.3 | 25 | - | 24 | 400 | - | 650 | 6.0 | 8.0 | PTCTZ3NR339CTT ⁽²⁾ | 013 |
| 9.4 | 25 | - | 60 | 150 | 100 | 300 | 1.8 | 3.0 | PTCTZ3NR949ETT ⁽²⁾ | 011 |

Note

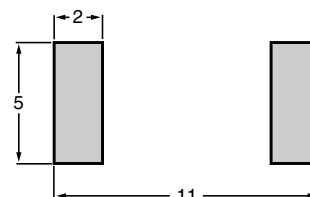
⁽²⁾ These types pass ITU-K20-21-45 telecommunication protection recommendation

PTC OUTLINES

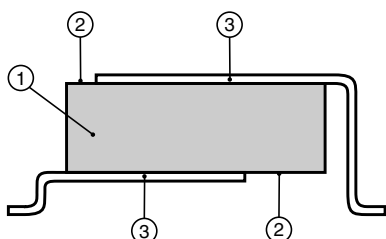
PTC SMD ceramic size: 6.5 mm



DIMENSIONS OF SOLDER LANDS in millimeters



DIMENSIONS in millimeters



MATERIAL INFORMATION

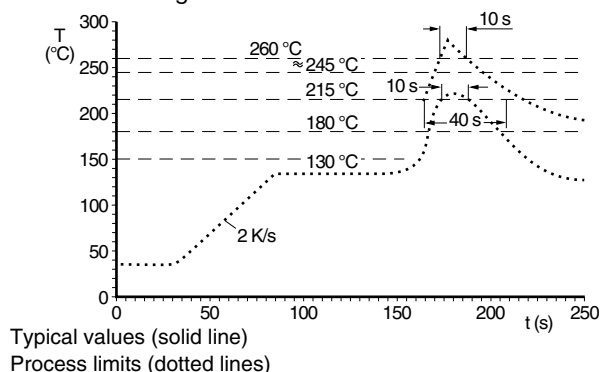
| REF. | DESCRIPTION | MATERIAL AND REMARKS |
|------|---------------|--|
| 1 | Ceramic | BaTiO ₃ doped |
| 2 | Metallization | NiCr Ag layer (vacuum deposition) |
| 3 | Leadframe | Ni plated phosphor bronze material covered by matte tin layer |

SOLDERING CONDITIONS

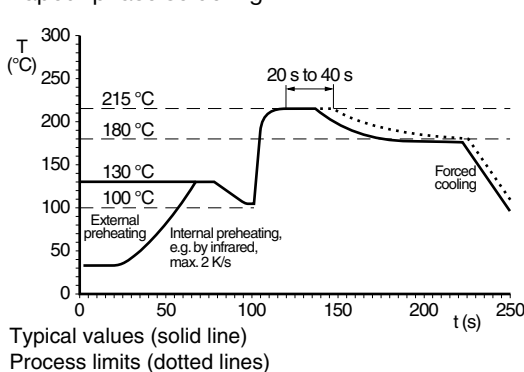
This SMD thermistor is only suitable for reflow soldering, in accordance with JEDEC J-STD-020D. Soldering processes which can be used are reflow (infrared and convection heating) and vapour phase. The maximum temperature of 260 °C during 10 s should not be exceeded and no liquid flux should be allowed to reach the ceramic body.

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

Reflow soldering



Vapour phase soldering



HANDLING PRECAUTIONS

The special leadframe construction and the applied processes do not allow high handling forces on the component.

Because of the nature of PTC ceramic material the component should not be touched with bare hands, as the residue of perspiration can influence component behaviour at high temperatures.

Handling forces vertically applied to the centre of the component should be limited to 5 N in the non-soldered condition and to 10 N in the soldered. These forces should not be exceeded during the handling, transportation and packaging of the soldered product.



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[PTCTZ3NR949ETX](#) [PTCTZ3NR400HTX](#) [PTCTZ3NR150KTX](#) [PTCTZ3MR250HTX](#) [PTCTZ3MR350MTX](#)
[PTCTZ3MR150KTX](#) [PTCZL09H161SBC052](#) [PTCTZ3MR100GTE](#) [PTCTZ3MR150KTE](#) [PTCTZ3MR200KTE](#)
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