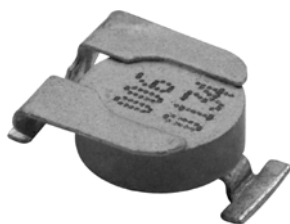


SMD PTC Thermistors For Overload Protection



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

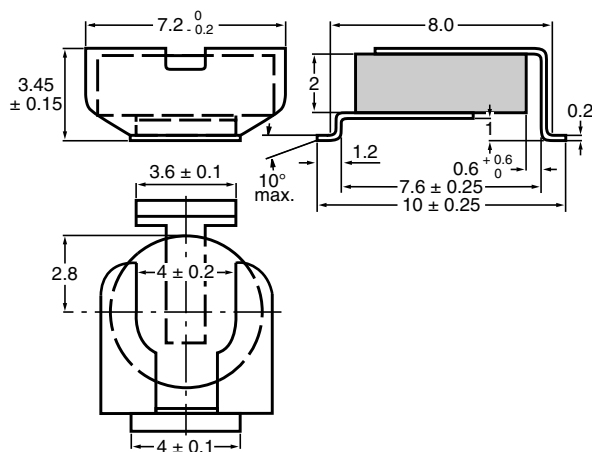
ELECTRICAL DATA AND ORDERING INFORMATION										
RESISTANCE		MATCHING (Ω)	V _{max.} (V)	I _{nt} at		I _t at	MAX. TRIP-TIME at 1 A (s)	I _{max.} at V _{max.} (A)	CATALOG NUMBER	
R ₂₅ (Ω)	TOL. (%)			25 °C (mA)	70 °C (mA)	25 °C (mA)			SAP ORDERING CODE	TYPE NR MARKING
TELECOMMUNICATION TYPES										
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

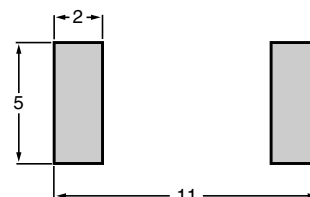
⁽²⁾ These types pass ITU-K20-21-45 telecommunication protection recommendation

PTC OUTLINES

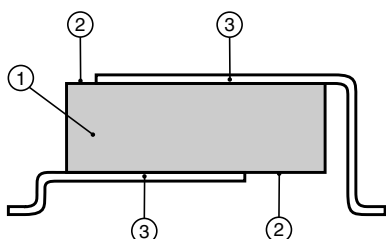
PTC SMD ceramic size: 6.5 mm



DIMENSIONS OF SOLDER LANDS in millimeters



DIMENSIONS in millimeters



MATERIAL INFORMATION

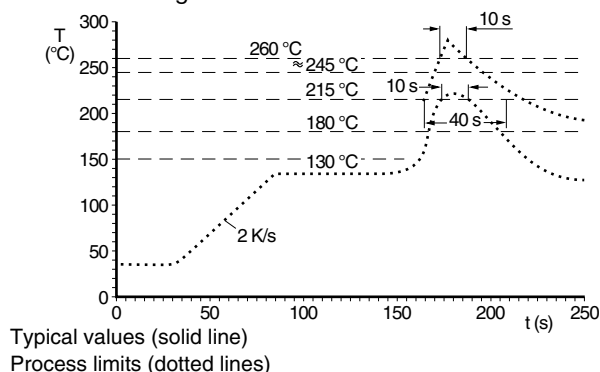
REF.	DESCRIPTION	MATERIAL AND REMARKS
1	Ceramic	BaTiO ₃ doped
2	Metallization	NiCr Ag layer (vacuum deposition)
3	Leadframe	Ni plated phosphor bronze material covered by matte tin layer

SOLDERING CONDITIONS

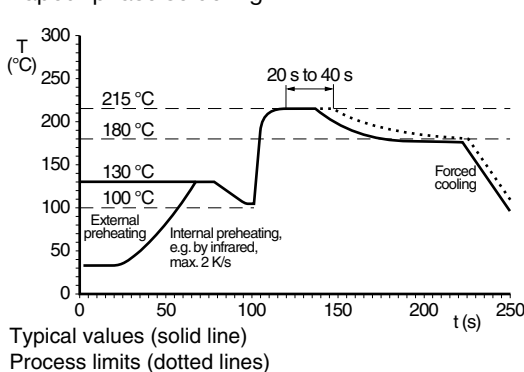
This SMD thermistor is only suitable for reflow soldering, in accordance with JEDEC J-STD-020D. Soldering processes which can be used are reflow (infrared and convection heating) and vapour phase. The maximum temperature of 260 °C during 10 s should not be exceeded and no liquid flux should be allowed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