

NTC Thermistor, Epoxy Coated Mini Sensor



FEATURES

- Advanced NTC technology
- Temperature range from -55 °C to +150 °C
- Highly resistant to thermal shocks
- Small body diameter of max. 2.5 mm
- AEC-Q200 qualified
- Fast response time
- High sensitivity
- Delivery in bulk or in tape with extra long leads (for automatic mounting)
- Mounting: radial
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

LINKS TO ADDITIONAL RESOURCES



3D Models



Design Tools



Models



Related Documents

QUICK REFERENCE DATA

PARAMETER	VALUE	UNIT
Resistance value at 25 °C	2.1K to 100K	Ω
Tolerance on R_{25} -value	± 1 to ± 5	%
$B_{25/85}$ -value	3511 to 4190	K
Tolerance on $B_{25/85}$ -value	± 0.5 to ± 1.5	%
Operating temperature range	-55 to +150	°C
Response time (63.2 % 25 °C to 85 °C stirred air (for info))	5	s
Dissipation factor δ in still air (for info)	1.8	mW
Maximum power dissipation at 55 °C	100	mW
Min. dielectric withstanding voltage between terminals and coated body	500	V _{AC}
Insulation resistance at 100 V _{DC}	> 10M	Ω
Weight	≈ 100	mg

PACKAGING

- Bulk components are delivered in boxes of 500 components
- Taped components are delivered on a reel of 1500 components (according to IEC 60286-2 but with extra long leads: H0 = 32 mm)

APPLICATIONS

Temperature sensing, control and compensation. E.g. inlet air temperature sensing thermistors or ECT in automotive applications, sensor elements in industrial and commercial applications, heating systems and industrial systems.

DESCRIPTION

These negative temperature coefficient thermistors consist of a mini-chip soldered between two tin plated 0.4 mm nickel leads, coated with ocher colored epoxy lacquer and coded with a color dot.

MOUNTING

Important mounting and handling instructions: see www.vishay.com/doc?29222

The thermistors are suitable for all standard assembly processes like crimping, soldering, welding, and potting into epoxy or silicon resins. The parameters and materials of the assembly process should be chosen in accordance with the lead-wire and coated body and validated in the application. The mounting process should be in compliance with the following guidelines and recommendations:

- Peeling forces on the leads should be reduced to a minimum and should never exceed 3 N. A strain relief tool should be used if needed
- Avoid large temperature gradients between the welding region and the sensor

ELECTRICAL DATA AND ORDERING INFORMATION

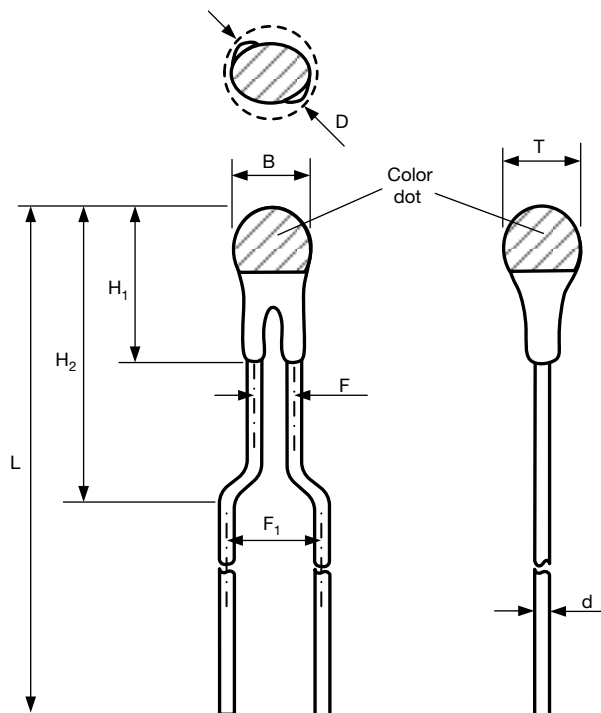
R_{25} (Ω)	R_{25} -TOL. (± %)	$B_{25/85}$ (K)	$B_{25/85}$ -TOL. (± %)	COLOR DOT (see next page)	SAP MATERIAL AND ORDERING NUMBER ⁽¹⁾	
					RoHS-COMPLIANT WITH EXEMPTION ⁽²⁾	RoHS-COMPLIANT
2100	1, 2, 3, 5	3511	1	Orange	NTCLE213E3212xMyy	-
2100	1, 2, 3, 5	3528	1	Orange	-	NTCLE213E3212xMyyA
10 000	1, 2, 3, 5	3435	1	Red	NTCLE213E3103xLyy	NTCLE213E3103xLyyA
10 000	1, 2, 3, 5	3984	0.5	Blue	NTCLE213E3103xHyy	NTCLE213E3103xHyyA
12 000	1, 2, 3, 5	3740	1	Black	NTCLE213E3123xMyy	NTCLE213E3123xMyyA
30 000	1, 2, 3, 5	3935	0.75	Green	NTCLE213E3303xHyy	NTCLE213E3303xHyyA
100 000	1, 2, 3, 5	4190	1.5	Brown	NTCLE213E3104xXyy	NTCLE213E3104xXyyA

Notes

 Preferred versions for new designs

⁽¹⁾ Replace the x-digit by J for R_{25} -tolerance of 5 %, H for 3 %, G for 2 %, and F for 1 %.
Replace the y-digits by B0 for bulk delivery and by T1 for tape and reel delivery

⁽²⁾ RoHS exemption 7(c)-I: electrical and electronic components containing lead in a glass or ceramic other than dielectric ceramic in capacitors, e.g. piezo-electronic devices, or in a glass or ceramic matrix compound

DIMENSIONS in millimeters


PARAMETER	VALUE
B max.	2.5
T max.	2.5
F	1.1
F1	2.54
D max. (mounting diameter)	2.5
d	$0.4 \pm 10 \%$
H1 max.	5.5
H2 max.	10
L	41 ± 1

Note

- Non-dimensioned details do not affect the performance of the thermistors



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.