Leadless NTC Thermistor Die Suitable for Wire Bonding

FEATURES

- Flat chip contacted top and bottom (gold: NTCC300E4 series or silver: NTCC200E4 series)
- Green thermistor - does not use RoHS exemptions
- Wide temperature range from -55 °C to +175 °C
- Highly resistant to thermal shocks
- Ideal for wire bonding (aluminum or gold depending on metalization type)
- Resistance to leaching
- Delivered on blister tape
- AEC-Q200 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e4

RoHS COMPLIANT

HALOGEN FREE

GREEN (5-2008)

QUICK REFERENCE DATA		
PARAMETER	VALUE	UNIT
Resistance value at 25 °C	4.7K to 20K	Ω
Tolerance on R_{25}-value	± 1; ± 2; ± 3; ± 5	%
$B_{25/85}$-value	3435 to 3865	K
Tolerance on $B_{25/85}$-value	± 1	%
Operating temperature range	-55 to +175	°C
Response time (63.2 %) 25 °C to 85 °C still air (for info)	3	s
Dissipation factor δ in still air (for info, non-mounted die)	3	mW
Maximum power dissipation	50	mW
Weight	3	mg

APPLICATIONS

- High temperature sensing, control and compensation. E.g. IGBT modules (inverters in EV and HEV vehicles)
- IC and semiconductor protecting
- DC/AC power inverters and HIC overheat protecting

DESIGN-IN SUPPORT

For complete curve computation, please visit: www.vishay.com/thermistors/ntc-curve-list/

MARKING

The thermistors have no marking and have electrode termination design without orientation.

MOUNTING

The thermistors are primarily intended for wire bonding. The parameters of the assembly process should be chosen in accordance with the lead-wire material.
The mounting process should be in compliance with the following guidelines and recommendations:

Die bonding:

- Gold electrode: silver epoxy gluing
- Silver electrode: (vacuum) reflow soldering - silver epoxy gluing - nano silver sintering

Soldering process under reducing atmosphere (e.g. forming or formic gases) and ultrasonic cleaning processes can be applied under the condition that NTC die is not damaged. Consult Vishay for further assistance.

Wire bonding:

- The gold electrode has been tested for gold wire bonding with a wire diameter of max. 32 µm
- The silver electrode has been tested for aluminum wire bonding with a wire diameter of max. 300 µm

Encapsulation:

- In order to preserve the characteristics of the bonded die at long term an encapsulation is mandatory
- The encapsulation is defined by the user. Silicon and epoxy encapsulations have been tested. For recommendations on compatible encapsulants contact Vishay

ELECTRICAL DATA AND ORDERING INFORMATION

R_{25} (Ω)	R_{25}-TOL. (± %)	$B_{25/85}$ (K)	$B_{25/85}$-TOL. (± %)	DESCRIPTION	SAP MATERIAL AND ORDERING NUMBER (1)
4700	1, 2, 3, 5	3435	1	Bare die with top / bottom silver terminations	NTCC200E4472*T
12 000	1, 2, 3, 5	3740	1	Bare die with top / bottom silver terminations	NTCC200E4123*T
20 000	1, 2, 3, 5	3865	1	Bare die with top / bottom silver terminations	NTCC200E4203*T
4700	1, 2, 3, 5	3435	1	Bare die with top / bottom gold terminations	NTCC300E4472*T
12 000	1, 2, 3, 5	3740	1	Bare die with top / bottom gold terminations	NTCC300E4123*T
20 000	1, 2, 3, 5	3865	1	Bare die with top / bottom gold terminations	NTCC300E4203*T

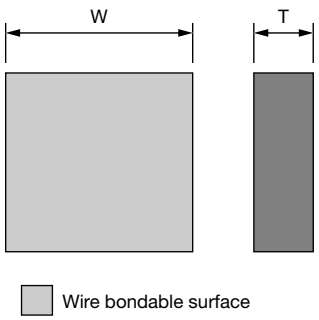
Note

(1) In order to define R_{25}-tolerance, replace * in SAP part number by F (± 1 %), G (± 2 %), H (± 3 %), or J (± 5 %)

For technical questions, contact: nlr@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

DIMENSIONS in millimeters



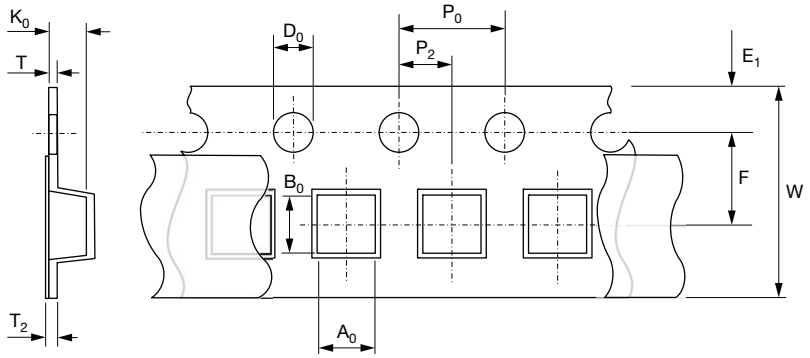
PARAMETER	VALUE
W	2 ± 0.1
T	0.7 max.

Note

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

PACKAGING

The components are delivered on 8 mm embossed blister tape (0.3 mm conductive PS) conforming to EIA-481 and IEC 60286-3, with 2000 parts per reel.



PARAMETER	VALUE
A_0	Adapted to die dimensions
B_0	Adapted to die dimensions
K_0	Adapted to die dimensions
W	8 ± 0.3
F	3.5 ± 0.05
E_1	1.75 ± 0.1
P_0	4.0 ± 0.1
P_2	2.0 ± 0.05
D_0	1.5 ± 0.1
T	0.35 max.
T_2	0.50 max.

For technical questions, contact: nlr@vishay.com

THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE. THE PRODUCTS DESCRIBED HEREIN AND THIS DOCUMENT ARE SUBJECT TO SPECIFIC DISCLAIMERS, SET FORTH AT www.vishay.com/doc?91000

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.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. 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.

© 2024 VISHAY INTERTECHNOLOGY, INC. ALL RIGHTS RESERVED