

Enhanced Leadless NTC Thermistor Die Suitable for Wire Bonding



LINKS TO ADDITIONAL RESOURCES

SPICE

[Models](#)

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

MOUNTING

The thermistors are primarily intended for wire bonding or sintering. Contact specifications (thickness material) and bonding parameters are available on request. 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: reflow soldering under vacuum or with formic acid / forming gases, with SAC or HMP / silver epoxy gluing / nano silver paste sintering.

Cleaning:

- Detergent spraying
- Ultrasonic cleaning is allowed if limited in time to 5 minutes

FEATURES

- Flat chip contacted top and bottom (NTCC201E4 series)
- Green thermistor - does not use RoHS exemptions
- Wide temperature range from -55 °C to +175 °C (resistant to repetitive short periods at 200 °C, as for example, 10 times 10 s)
- Highly resistant to mounting conditions
- Ideal for aluminum wire
- Resistance to leaching during reflow soldering process
- Delivered on blister tape
- AEC-Q200 qualified
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

APPLICATIONS

- High temperature sensing, control and compensation in power semiconductor modules (e.g. IGBT, SiC MOSFET, Diodes, ...), inverters in EV/HEV vehicles, and windmills
- 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.

Wire bonding:

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

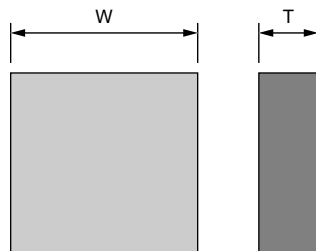
Encapsulation:

- 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	NTCC201E4472*T
5000	1, 2, 3, 5	3435	1	Bare die with top / bottom silver terminations	NTCC201E4502*T
10 000	1, 2, 3, 5	3435	1	Bare die with top / bottom silver terminations	NTCC201E4103*T
20 000	1, 2, 3, 5	3865	1	Bare die with top / bottom silver terminations	NTCC201E4203*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 %)

DIMENSIONS in millimeters


Wire bondable surface

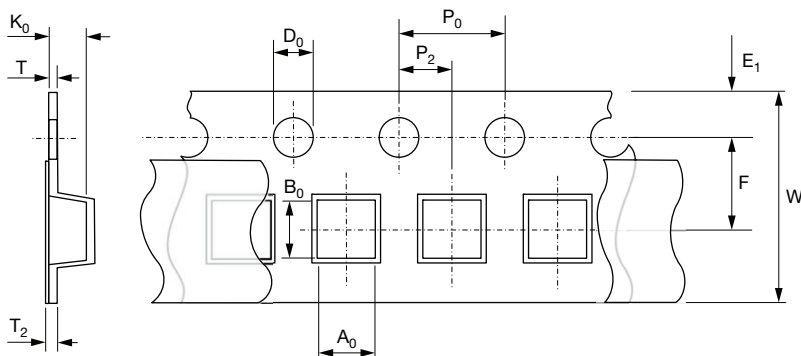
PARAMETER	VALUE	
W	NTCC201E4472/502*T/203*T	2.0 ± 0.1
	NTCC201E4103*T	1.4 ± 0.1
T	NTCC201E4472*T	0.6 ± 0.1
	NTCC201E4502*T	0.66 ± 0.1
	NTCC201E4103*T	0.62 ± 0.1
	NTCC201E4203*T	0.71 ± 0.1

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.



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.