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

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

Pb-free
e4
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.

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

Wire bonding:

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

Encapsulation:

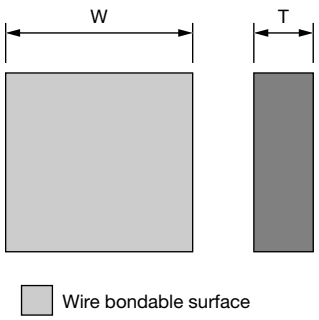
- In order to preserve the characteristics of the bonded die at long term an encapsulation is mandatory
- The encapsulation is defined by the user. Silicon and epoxy encapsulations have been tested. For recommendations on compatible encapsulants contact Vishay

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 %)

For technical questions, contact: nlr@vishay.com

DIMENSIONS in millimeters



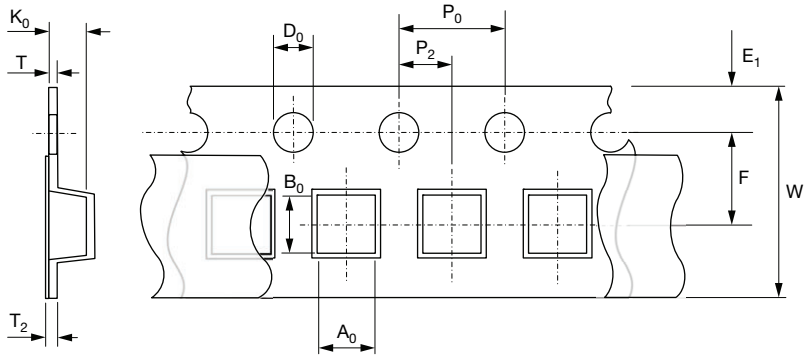
PARAMETER	VALUE	
W	NTCC201E4472/502*T/203*T	2.0 ± 0.1
	NTCC201E4103*T	1.4 ± 0.1
T	NTCC201E4472*T	0.6 ± 0.1
	NTCC201E4502*T	0.66 ± 0.1
	NTCC201E4103*T	0.62 ± 0.1
	NTCC201E4203*T	0.71 ± 0.1

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.

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