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

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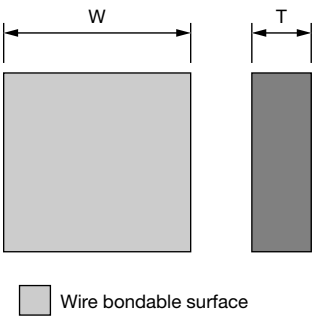
DIMENSIONS in millimeters



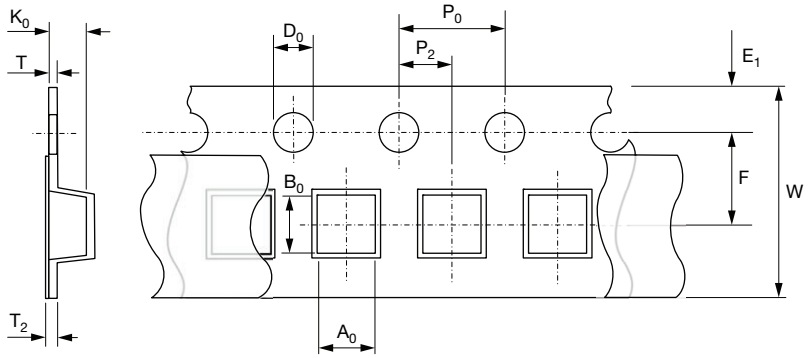
PARAMETER	VALUE
W	2 ± 0.1
T	0.7 max.

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.

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