

Leadless NTC Thermistor Die Suitable for Wire Bonding



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. 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.

Cleaning:

- Detergent spraying.
- Ultrasonic or formic acid vapor cleaning is not recommended.

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



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.

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.

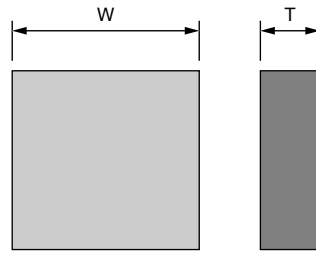
Encapsulation:

- 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 %)

DIMENSIONS in millimeters


Wire bondable surface

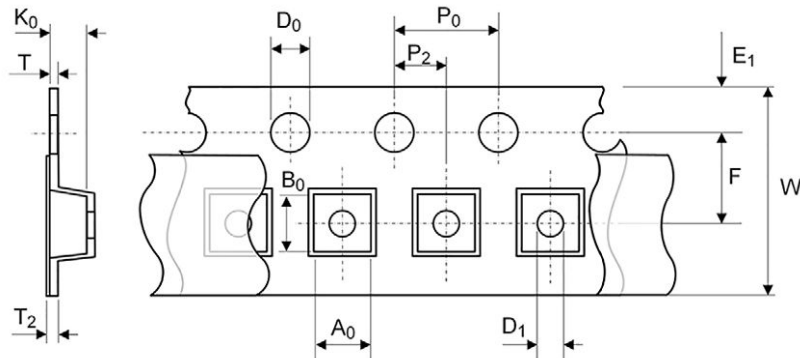
PARAMETER	VALUE
W	2 ± 0.1
T	0.7 max.

Note

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

PACKAGING

The components are delivered on 8mm 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	2.2 ± 0.1
B ₀	2.2 ± 0.1
K ₀	1.0 ± 0.1
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
D ₁	1.0 ± 0.1
T	0.35 max.
T ₂	0.50 max.



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