

## SMD 0402, Industrial Grade NTC Thermistors



### FEATURES

- TCR ranging from -6.5 %/K at -40 °C to -2 %/K at 150 °C
- Tolerance on  $R_{25}$  of  $\pm 0.5\%$  and  $\pm 1\%$
- Suitable for wave or reflow soldering
- NiSn terminations
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**

### LINKS TO ADDITIONAL RESOURCES



QUICK REFERENCE DATA		
PARAMETER	VALUE	UNIT
Resistance value at 25 °C	10K to 100K	$\Omega$
Tolerance on $R_{25}$ -value	$\pm 0.5$ ; $\pm 1$	%
$B_{25/85}$ -value	3435 to 4311	K
Tolerance on $B_{25/85}$ -value	$\pm 3$	%
Maximum power dissipation at 25 °C $P_{max25}$	70	mW
Thermal time constant $\tau$	$\approx 5$	s
Dissipation factor D	$\approx 1.7$	mW/K
Operating temperature range at zero power <sup>(1)</sup>	-40 to +150	°C
Storage temperature range	-40 to +150	°C
Weight	$\approx 1.2$	mg

#### Note

<sup>(1)</sup> Zero power is considered as measuring power maximum 1 % of  $P_{max25}$

### AGENCY APPROVALS

Agency approval documents, please see:

[www.vishay.com/ppg?29238&documents](http://www.vishay.com/ppg?29238&documents)

### DESIGN-IN SUPPORT

For complete curve computation, please visit:

[www.vishay.com/thermistors/ntc-rt-calculator/](http://www.vishay.com/thermistors/ntc-rt-calculator/)

### APPLICATIONS

- Temperature sensing, protection and compensation in industrial, telecom and consumer applications.

Examples are:

- Battery chargers
- Power supplies
- Office equipment
- LED compensation

This series is recommended for industrial applications, in particular the ones requiring high operation temperatures, and demanding high level of reliability for the products (similar to automotive standard AEC-Q200).

### DESCRIPTION

Size 0402 (M1005) SMD chip thermistor with negative temperature coefficient (TCR) and matte tin (Sn) plated terminations. The device has no marking.

### PACKAGING

Available in 8 mm punched paper tape on reel package of 10 000 units.

### CAUTIONS AND WARNINGS ON MOUNTING AND HANDLING

Please read the special instructions:

see [www.vishay.com/doc?29224](http://www.vishay.com/doc?29224).

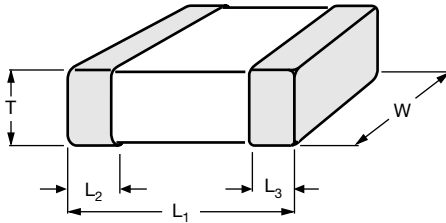
ELECTRICAL DATA AND ORDERING INFORMATION				
$R_{25}$ ( $\Omega$ )	$R_{25}$ -TOL. ( $\pm$ %)	$B_{25/85}$ (K)	$B_{25/85}$ -TOL. ( $\pm$ %)	SAP MATERIAL AND ORDERING NUMBER
10 000	0.5, 1	3435	3	NTCSI0402E3103*LHT <sup>(1)</sup>
47 000	0.5, 1	4108	3	NTCSI0402E3473*XHT <sup>(1)</sup>
100 000	0.5, 1	4311	3	NTCSI0402E3104*XHT <sup>(1)</sup>

#### Note

<sup>(1)</sup> Replace digit \* by D for tolerance  $\pm 0.5\%$  on  $R_{25}$  and by F for tolerance  $\pm 1\%$  on  $R_{25}$



**DIMENSIONS** in millimeters

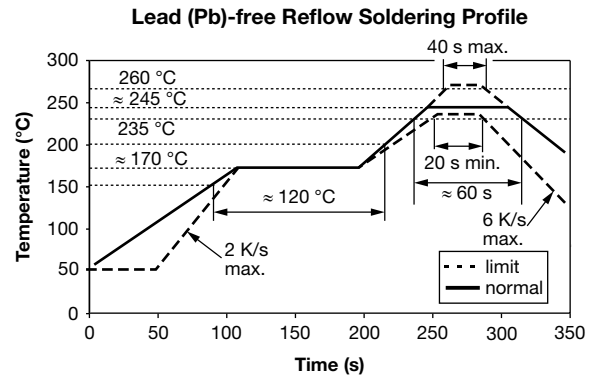
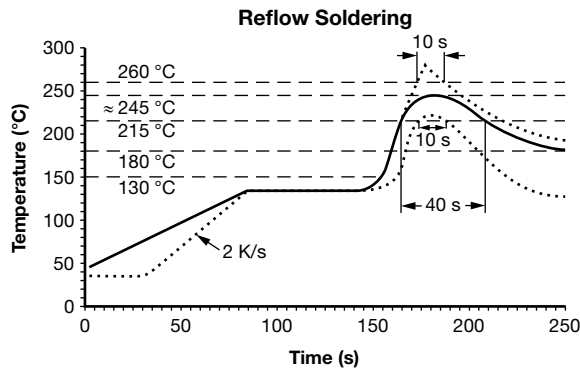


L <sub>1</sub>	W	T	L <sub>2</sub> AND L <sub>3</sub>
1.0 ± 0.15	0.5 ± 0.15	0.5 ± 0.15	0.25 ± 0.1

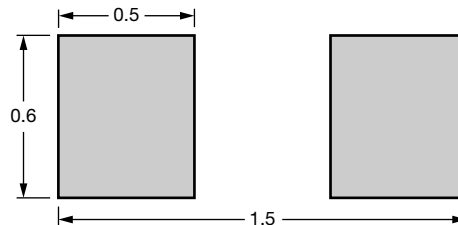
**SOLDERING CONDITIONS**

Soldering, handling, and mounting conditions are detailed in the instructions document: see [www.vishay.com/doc?29224](http://www.vishay.com/doc?29224).

Typical examples of soldering processes that will provide reliable joints without damage, are shown below.

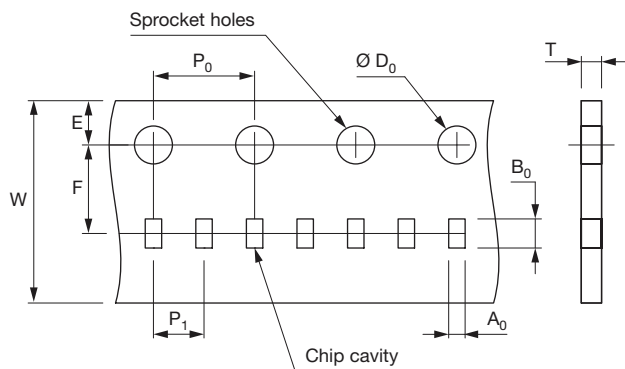


**Recommended solder land pattern dimensions (mm)**



**PACKAGING TAPE SPECIFICATIONS**

All tape specifications are in accordance with IEC 60286-3. Basic dimensions are given below. Carrier tape material is paper.



<b>DIMENSIONS OF PAPER TAPE</b> in millimeters	
PARAMETER	DIMENSION
A <sub>0</sub> <sup>(1)</sup>	0.65 ± 0.1
B <sub>0</sub> <sup>(1)</sup>	1.15 ± 0.1
W	8.0 ± 0.2
E	1.75 ± 0.1
F	3.5 ± 0.05
D <sub>0</sub>	1.55 ± 0.05
P <sub>0</sub> <sup>(2)</sup>	4.0 ± 0.05
P <sub>1</sub>	2.0 ± 0.05
T tape thickness max.	0.8

**Notes**

- (1) Measured 0.3 mm above base pocket
- (2) P<sub>0</sub> pitch cumulative error over any 10 pitches ± 0.2 mm



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