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## Vishay BCcomponents

## SMD 0402, Glass Protected NTC Thermistors





#### **LINKS TO ADDITIONAL RESOURCES**





QUICK REFERENCE DATA				
PARAMETER	VALUE	UNIT		
Resistance value at 25 °C	4.7K to 470K	Ω		
Tolerance on R <sub>25</sub> -value	± 1; ± 2; ± 3; ± 5	%		
B <sub>25/85</sub> -value	3490 to 4075	K		
Tolerance on B <sub>25/85</sub> -value	± 3	%		
Maximum dissipation at 25 °C	70	mW		
Thermal time constant τ	≈ 5	s		
Dissipation factor D	≈ 2.0	mW/K		
Operating temperature range at zero power	-40 to +150	°C		
Weight	≈ 1.2	mg		

#### **AGENCY APPROVALS**

Agency approval documents, please see: www.vishay.com/ppq?29003&documents

#### **DESIGN-IN SUPPORT**

For complete curve computation, please visit: www.vishay.com/thermistors/ntc-rt-calculator/

#### **FEATURES**

- $\bullet$  TCR ranging from -6.5 %/K at -40 °C to -2 %/K at 150 °C
- Tolerance on R<sub>25</sub> down to 1 %
- · Suitable for wave or reflow soldering
- NiSn terminations
- · Fully glass coated and protected
- cULus recognized, file E148885 (UL category XGPU2 / XGPU8)
- AEC-Q200 qualified
- Material categorization: for definitions of compliance please see <a href="https://www.vishay.com/doc?99912">www.vishay.com/doc?99912</a>

#### **APPLICATIONS**

- Temperature sensing, protection and compensation in automotive, industrial, telecom and consumer applications. Examples are:
  - Battery chargers
  - Power supplies
  - Office equipment
  - LCD compensation
  - In-car entertainment

#### **DESCRIPTION**

Size 0402 (M1005) glass protected 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 <a href="https://www.vishay.com/doc?29224">www.vishay.com/doc?29224</a>.

ELECTRICAL DATA AND ORDERING INFORMATION					
R <sub>25</sub> (Ω)	R <sub>25</sub> -TOL. (± %)	B <sub>25/85</sub> (K)	B <sub>25/85</sub> -TOL. (± %)	SAP MATERIAL AND ORDERING NUMBER (1)	
4700	3, 5	3595	3	NTCS0402E3472*MT	
10 000	1, 2, 3, 5	3490	3	NTCS0402E3103*L1T (2)	
10 000	3, 5	3950	3	NTCS0402E3103*HT	
15 000	3, 5	3965	3	NTCS0402E3153*HT	
22 000	3, 5	3590	3	NTCS0402E3223*MT	
33 000	3, 5	3670	3	NTCS0402E3333*MT	
47 000	1, 2, 3, 5	4075	3	NTCS0402E3473*XT	
68 000	3, 5	3910	3	NTCS0402E3683*HT	
100 000	1, 2, 3, 5	3950	3	NTCS0402E3104*HT	
470 000	3, 5	3807	3	NTCS0402E3474*HT (3)	

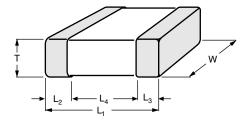
#### Notes

- (1) Replace \* in SAP by J for  $\pm$  5 %, H for  $\pm$  3 %, G for  $\pm$  2 %, F for  $\pm$  1 % tolerance on  $R_{25}$
- (2) The digit 1 at the end of this part number NTCS0402E3103\*L1T differentiates it from the legacy P/N
- (3) This P/N is not UL recognized



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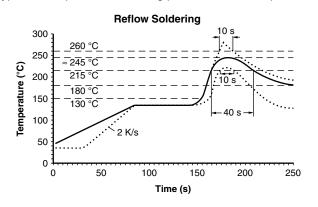
#### **DIMENSIONS** in millimeters

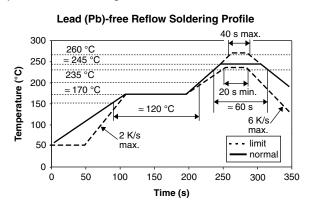


L <sub>1</sub>	w	Т	L <sub>2</sub> AND L <sub>3</sub> MIN.	L <sub>4</sub> MIN.
1.0 ± 0.15	0.5 ± 0.15	0.5 ± 0.15	0.1	0.3

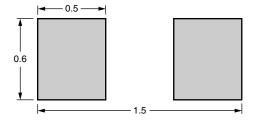
#### **SOLDERING CONDITIONS**

Soldering, handling, and mounting conditions are detailed in the instructions document: see <a href="https://www.vishay.com/doc?29224">www.vishay.com/doc?29224</a>. Typical examples of a soldering processes that will provide reliable joints without damage, are shown below.



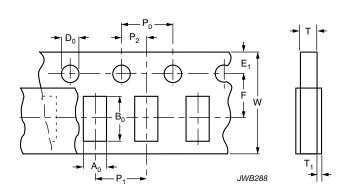


#### Recommended solder land pattern dimensions (mm)



# PACKAGING TAPE SPECIFICATIONS

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



DIMENSIONS OF PAPER TAPE 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	$8.0 \pm 0.2$	
E <sub>1</sub>	1.75 ± 0.1	
F	3.5 ± 0.05	
$D_0$	1.55 ± 0.05	
P <sub>0</sub> <sup>(2)</sup>	4.0 ± 0.1	
P <sub>1</sub>	4.0 ± 0.1	
P <sub>2</sub>	2.0 ± 0.05	
T tape thickness max.	0.8	
$T_1$ cover tape thickness max.	0.1	

#### Notes

- (1) Measured 0.3 mm above base pocket
- $^{(2)}$  P<sub>0</sub> pitch cumulative error over any 10 pitches  $\pm$  0.2 mm



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