

## SMD 0603, Glass Protected NTC Thermistors



### FEATURES

- TCR ranging from -7 %/K at -40 °C to -2 %/K at 150 °C
- Tolerance on  $R_{25}$  down to 1 %, and on  $B_{25/85}$  down to 1 %
- Suitable for wave or reflow soldering
- NiSn terminations
- Fully glass coated and protected
- cUL recognized for safety applications (file E148885)
- AEC-Q200 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

### DESIGN SUPPORT TOOLS AVAILABLE



QUICK REFERENCE DATA		
PARAMETER	VALUE	UNIT
Resistance value at 25 °C	2.0K to 100K	$\Omega$
Tolerance on $R_{25}$ -value	$\pm 1$ ; $\pm 2$ ; $\pm 3$ ; $\pm 5$	%
$B_{25/85}$ -value	3420 to 4100	K
Tolerance on $B_{25/85}$ -value	$\pm 1$	%
Maximum dissipation at 25 °C	125	mW
Thermal time constant $\tau$	$\approx 8$	s
Dissipation factor D	3.0	mW/K
Operating temperature range at zero power	-40 to +150	°C
Weight	$\approx 0.006$	g

### APPLICATIONS

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

### DESCRIPTION

Size 0603 (M1608) glass protected SMD chip thermistor with negative temperature coefficient (TCR) and tin (Sn) plated terminations. The device has no marking.

### PACKAGING

Available in 8 mm punched paper tape on reel package of 4000 units.

### DESIGN-IN SUPPORT

For complete curve computation, please visit: [www.vishay.com/thermistors/ntc-curve-list/](http://www.vishay.com/thermistors/ntc-curve-list/)

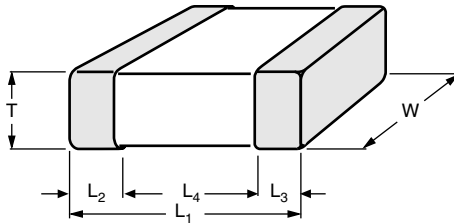
ELECTRICAL DATA AND ORDERING INFORMATION					
$R_{25}$ ( $\Omega$ )	$R_{25}$ -TOL. ( $\pm$ %)	$B_{25/85}$ (K)	$B_{25/85}$ -TOL. ( $\pm$ %)	UL RECOGNIZED	SAP MATERIAL AND ORDERING NUMBER (1)
2000	3, 5	3420	1	Y	NTCS0603E3202*LT
2200	1, 2, 3, 5	3520	1	Y	NTCS0603E3222*MT
2700	1, 2, 3, 5	3600	1	Y	NTCS0603E3272*MT
4700	1, 2, 3, 5	3830	1	Y	NTCS0603E3472*HT
10 000	1, 2, 3, 5	3435	1	Y	NTCS0603E3103*LT
10 000	1, 2, 3, 5	3610	1	Y	NTCS0603E3103*MT
10 000	1, 2, 3, 5	3960	1	Y	NTCS0603E3103*HT
15 000	1, 2, 3, 5	3600	1	N	NTCS0603E3153*MT
22 000	1, 2, 3, 5	3730	1	Y	NTCS0603E3223*MT
33 000	1, 2, 3, 5	3860	1	Y	NTCS0603E3333*HT
47 000	1, 2, 3, 5	3960	1	Y	NTCS0603E3473*HT
68 000	1, 2, 3, 5	3985	1	Y	NTCS0603E3683*HT
100 000	1, 2, 3, 5	4100	1	Y	NTCS0603E3104*XT

#### Note

(1) Replace \* in SAP material number by J for  $\pm 5$  %, H for  $\pm 3$  %, G for  $\pm 2$  %, F for  $\pm 1$  % tolerance on  $R_{25}$



**DIMENSIONS** in millimeters

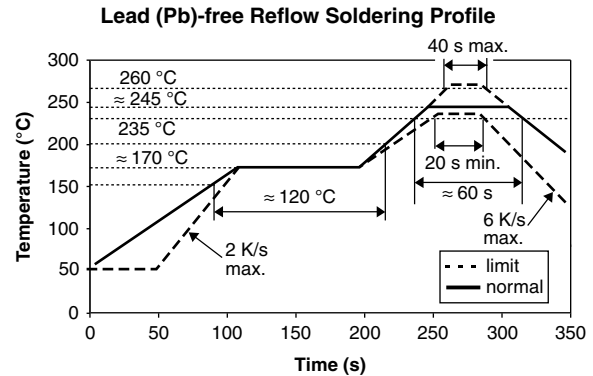


L <sub>1</sub>	W	T	L <sub>2</sub> AND L <sub>3</sub> MIN.	L <sub>4</sub> MIN.
1.6 ± 0.15	0.8 ± 0.15	0.8 ± 0.15	0.2	0.4

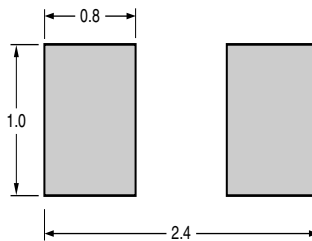
**SOLDERING CONDITIONS**

This SMD thermistor is only suitable for wave or reflow soldering, in accordance with JEDEC® J-STD-020. The maximum temperature of 260 °C during 40 s should not be exceeded.

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



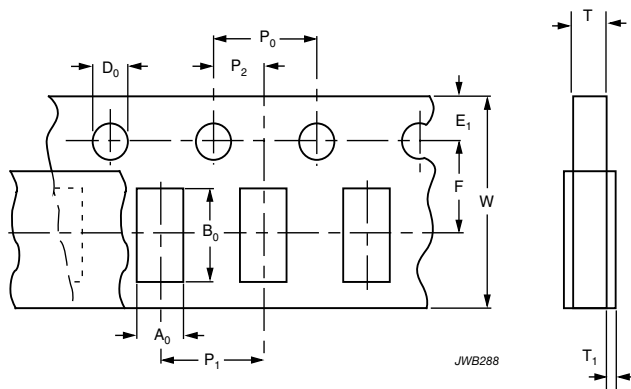
Recommended solder land pattern dimensions (mm)



**PACKAGING TAPE SPECIFICATIONS**

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

**PAPER TAPE**



DIMENSIONS OF PAPER TAPE in millimeters	
PARAMETER	DIMENSION
A <sub>0</sub> <sup>(1)</sup>	1.15 ± 0.1
B <sub>0</sub> <sup>(1)</sup>	1.9 ± 0.1
W	8.0 ± 0.2
E <sub>1</sub>	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 ± 0.1
P <sub>1</sub>	4.0 ± 0.1
P <sub>2</sub>	2.0 ± 0.05
T tape thickness max.	1.1
T <sub>1</sub> 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 ± 0.2 mm



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