

## SMD 0603, Glass Protected NTC Thermistors



### LINKS TO ADDITIONAL RESOURCES




**RoHS**  
COMPLIANT  
HALOGEN  
FREE

### 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
- cULus recognized, file E148885 (UL category XGPU2 / XGPU8)
- AEC-Q200 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

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

### CAUTIONS AND WARNINGS ON MOUNTING AND HANDLING

Please read the special instructions:  
see [www.vishay.com/doc?29224](http://www.vishay.com/doc?29224).

### PACKAGING

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

### QUICK REFERENCE DATA

PARAMETER	VALUE	UNIT
Resistance value at 25 °C	1K to 100K	Ω
Tolerance on $R_{25}$ -value	± 1; ± 2; ± 3; ± 5	%
$B_{25/85}$ -value	3170 to 4100	K
Tolerance on $B_{25/85}$ -value	± 1	%
Maximum power dissipation at 25 °C $P_{max25}$	125	mW
Thermal time constant $\tau$	< 4	s
Dissipation factor D	3.0	mW/K
Operating temperature range at zero power <sup>(1)</sup>	-55 to +150	°C
Storage temperature range	-55 to +150	°C
Weight	≈ 0.006	g

#### Note

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

### DESIGN-IN SUPPORT

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

### AGENCY APPROVALS

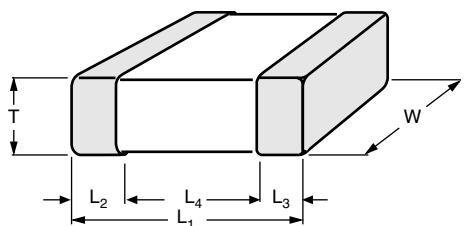
Agency approval documents, please see:  
[www.vishay.com/ppg?29056&documents](http://www.vishay.com/ppg?29056&documents)

### ELECTRICAL DATA AND ORDERING INFORMATION

$R_{25}$ (Ω)	$R_{25}$ -TOL. (± %)	$B_{25/85}$ (K)	$B_{25/85}$ -TOL. (± %)	UL RECOG. 	SAP MATERIAL AND ORDERING NUMBER <sup>(1)</sup>
1000	3, 5	3170	1		NTCS0603E3102*LT
1500	3, 5	3280	1		NTCS0603E3152*LT
2000	1, 2, 3, 5	3420	1	✓	NTCS0603E3202*LT
2200	1, 2, 3, 5	3520	1	✓	NTCS0603E3222*MT
2700	1, 2, 3, 5	3600	1	✓	NTCS0603E3272*MT
4700	1, 2, 3, 5	3830	1	✓	NTCS0603E3472*HT
5000	1, 2, 3, 5	3480	1		NTCS0603E3502*LT
10 000	1, 2, 3, 5	3435	1	✓	NTCS0603E3103*LT
10 000	1, 2, 3, 5	3610	1	✓	NTCS0603E3103*MT
10 000	1, 2, 3, 5	3960	1	✓	NTCS0603E3103*HT
15 000	1, 2, 3, 5	3600	1		NTCS0603E3153*MT
22 000	1, 2, 3, 5	3730	1	✓	NTCS0603E3223*MT
33 000	1, 2, 3, 5	3860	1	✓	NTCS0603E3333*HT
47 000	1, 2, 3, 5	3960	1	✓	NTCS0603E3473*HT
68 000	1, 2, 3, 5	3985	1	✓	NTCS0603E3683*HT
100 000	1, 2, 3, 5	4100	1	✓	NTCS0603E3104*HT

#### Note

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

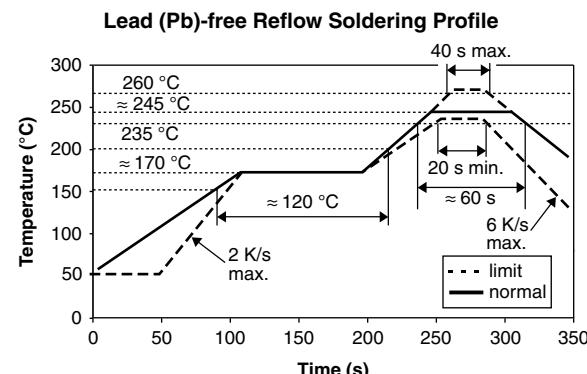
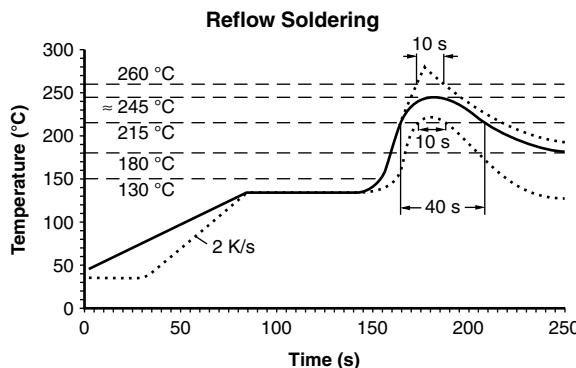
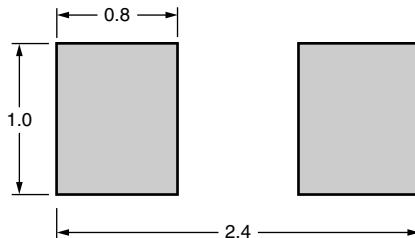
**DIMENSIONS** in millimeters


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

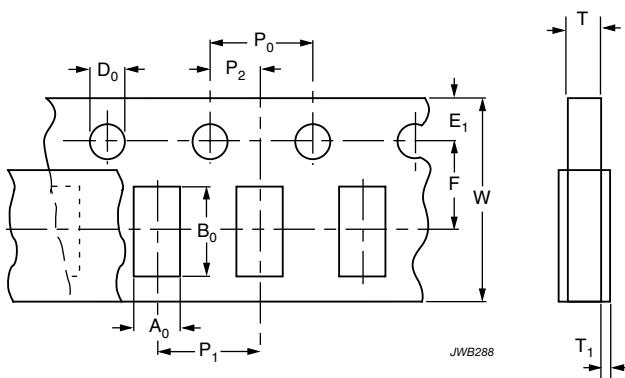
**SOLDERING CONDITIONS**

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 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**


<b>DIMENSIONS OF PAPER TAPE</b> 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**

<sup>(1)</sup> Measured 0.3 mm above base pocket

<sup>(2)</sup> P<sub>0</sub> pitch cumulative error over any 10 pitches ± 0.2 mm

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