SMD 0603, Glass Protected NTC Thermistors



LINKS TO ADDITIONAL RESOURCES

3D Models

Design Tools

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 τ	< 4	s
Dissipation factor D	3.0	mW/K
Operating temperature range at zero power (1)	-55 to +150	°C
Storage temperature range	-55 to +150	°C
Weight	≈ 0.006	g

Note

(1) 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/

AGENCY APPROVALS

Agency approval documents, please see:
www.vishay.com/ppg?29056&documents

FEATURES

AUTOMOTIVE GRADE

- 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
- Sulfur resistance verified according to ANSI/EIA-977 condition B, with electrical drifts < ± 5 %
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

RoHS COMPLIANT

HALOGEN FREE

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.

PACKAGING

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

ELECTRICAL DATA AND ORDERING INFORMATION

R_{25} (Ω)	R_{25}-TOL. (± %)	$B_{25/85}$ (K)	$B_{25/85}$-TOL. (± %)	UL RECOG. cULus	SAP MATERIAL AND ORDERING NUMBER (1)
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*XT

Note

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

For technical questions, contact: nlr@vishay.com

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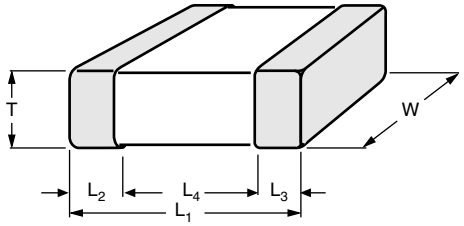
DIMENSIONS in millimeters



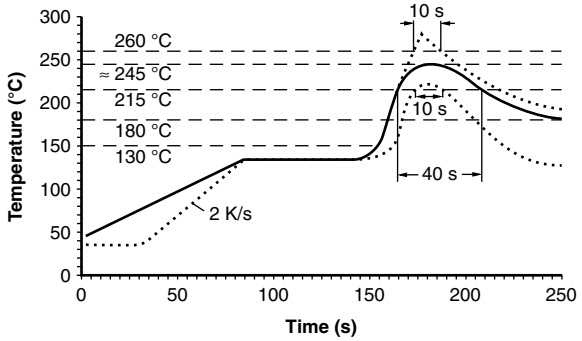
L_1	W	T	L_2 AND L_3 MIN.	L_4 MIN.
1.6 ± 0.15	0.8 ± 0.15	0.8 ± 0.15	0.2	0.4

SOLDERING CONDITIONS

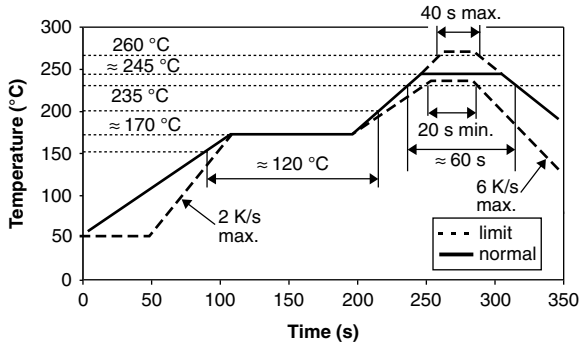
Soldering, handling, and mounting conditions are detailed in the instructions document: see www.vishay.com/doc?29224.

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

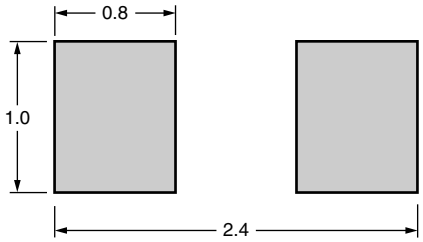
Reflow Soldering



Lead (Pb)-free Reflow Soldering Profile



Recommended solder land pattern dimensions (mm)

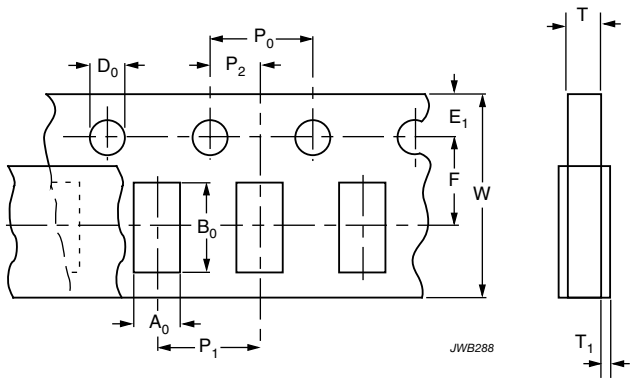


PACKAGING

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_0 (1)	1.15 ± 0.1
B_0 (1)	1.9 ± 0.1
W	8.0 ± 0.2
E_1	1.75 ± 0.1
F	3.5 ± 0.05
D_0	1.55 ± 0.05
P_0 (2)	4.0 ± 0.1
P_1	4.0 ± 0.1
P_2	2.0 ± 0.05
T tape thickness max.	1.1
T_1 cover tape thickness max.	0.1

Notes

(1) Measured 0.3 mm above base pocket

(2) P_0 pitch cumulative error over any 10 pitches ± 0.2 mm

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