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**SPECIFICATION FOR APPROVAL**

CUSTOMER Blume-Benning

CERTIFIED _____

MODEL/TYPE _____

PART NO. TPM4P121H120R (RoHS+HF)

APPLICATION _____

CUSTOMER P/N _____

ISSUE DATE Dec. 26, 2024

REV. NO. _____

REV. DATE _____

FOR CUSTOMER APPROVAL	CHECKED BY
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	APPROVED BY
	<i>Kun Lin Lin</i>





CPTC Thermistor TPM Type
Part No. :TPM4P121H120R

REVISED RECORD SHEET

REV. NO	REV. DATE	REVISED CONTENT



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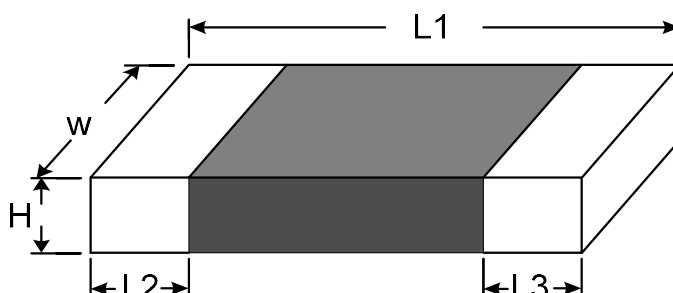
Part Number Code

Example :

TPM **4** **P** **121** **H** **120** **R**
 (1) (2) (3) (4) (5) (6) (7)

No.	Item	Digit	Specification
(1)	Product Type	TPM	Thinking CPTC thermistor TPM type
(2)	Size (EIA)	4	1210
(3)	Type Series	P	Over current protection series
(4)	Zero Power Resistance at 25°C	121	$12 \times 10^1 = 120\Omega$
(5)	Tolerance of R_{25}	H	$\pm 25\%$
(6)	Curie Point Temperature	120	$T_c = 120^\circ\text{C}$
(7)	Packaging	R	Reel

Structure and Dimensions



(unit : mm)

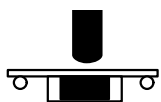
L1	W	H max.	L2 and L3
3.20±0.30	2.50±0.25	1.80	0.50±0.20

Electrical Characteristics

Part No.	Curie Point Temperature	Zero Power Resistance at 25°C	Non-operating Current		Trip Current (at +25°C)	
	T _c (°C)	R ₂₅ (Ω)	(at +85°C) (mA)	(at +25°C) (mA)	(at +25°C) (mA)	(at -40°C) (mA)
TPM4P121H120R	120±10	120±25%	23	40	90	132

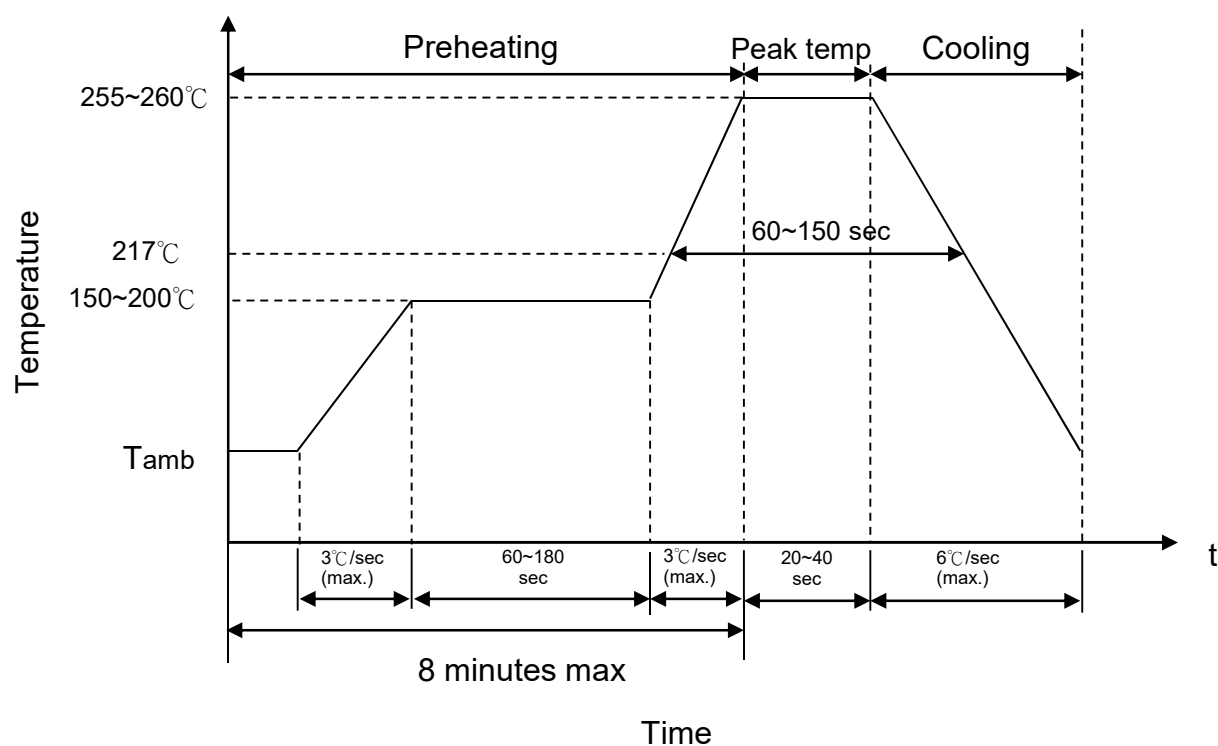
Part No.	Max. Voltage	Max. Current	Operating Temperature Range(at V=0)	Operating Temperature Range(at Vmax.)
	V _{max} (V _{DC})	I _{max} (mA)	(°C)	(°C)
TPM4P121H120R	80	300	-40 ~ +125	-40 ~ +85

Reliability

Item	Standard	Test conditions / Methods	Specifications															
Bending Strength	IEC 60068-2-21	Warp : 2mm ; Speed < 0.5mm/sec. Duration : 10 sec on PCB. 	No visible damage $\Delta R_{25}/R_{25}$ $\leq 10\%$															
Damp Heat, Steady State	IEC 60068-2-78	60 ± 2 °C , 90 ~ 95% RH , 1000± 24 hrs	No visible damage $\Delta R_{25}/R_{25}$ $\leq 20\%$															
High Temp. Storage	IEC 60068-2-2	125 ± 2 °C , 1000 ± 24 hrs	No visible damage $\Delta R_{25}/R_{25}$ $\leq 20\%$															
Low Temp. Storage	IEC 60068-2-1	-40 ± 3 °C , 1000 ± 24 hrs	No visible damage $\Delta R_{25}/R_{25}$ $\leq 20\%$															
Rapid Change of Temperature	IEC 60068-2-14	The conditions shown below shall be repeated 5 cycles on PCB <table><tr><th>Step</th><th>Temperature (°C)</th><th>Period (minutes)</th></tr><tr><td>1</td><td>-40 ± 3</td><td>30 ± 3</td></tr><tr><td>2</td><td>Room temperature</td><td>≤ 3</td></tr><tr><td>3</td><td>125 ± 2</td><td>30 ± 3</td></tr><tr><td>4</td><td>Room temperature</td><td>≤ 3</td></tr></table>	Step	Temperature (°C)	Period (minutes)	1	-40 ± 3	30 ± 3	2	Room temperature	≤ 3	3	125 ± 2	30 ± 3	4	Room temperature	≤ 3	No visible damage $\Delta R_{25}/R_{25}$ $\leq 20\%$
Step	Temperature (°C)	Period (minutes)																
1	-40 ± 3	30 ± 3																
2	Room temperature	≤ 3																
3	125 ± 2	30 ± 3																
4	Room temperature	≤ 3																
High Temp. Load	IEC 60738-1 7.24.3	85 ± 5 °C , Vmax. , 1000 ± 24 hrs	No visible damage $\Delta R_{25}/R_{25}$ $\leq 20\%$															
Climatic Sequence	IEC 60738-1 7.22	a. 125°C x 16 hrs b. 1st cycle : 40 °C 95 %RH x 24 hrs c. -40 °C x 2 hrs d. 5 cycles : 40°C 95% RH x 24 hrs / Cycle	No visible damage $\Delta R_{25}/R_{25}$ $\leq 20\%$															
Solderability	IEC 60068-2-58	245 ± 5 °C , 3 ± 0.3 sec	At least 95% of terminal electrode is covered by new solder															
Resistance to Soldering Heat	IEC 60068-2-58	8.1.2.2 Solder reflow method Preheating: 150~180°C ,60~120 secs. Peak temp.: 245~255°C , ≤ 20 secs. (reflow)	No visible damage $\Delta R_{25}/R_{25}$ $\leq 20\%$															

Soldering Recommendation

■ IR-Reflow Soldering Profile

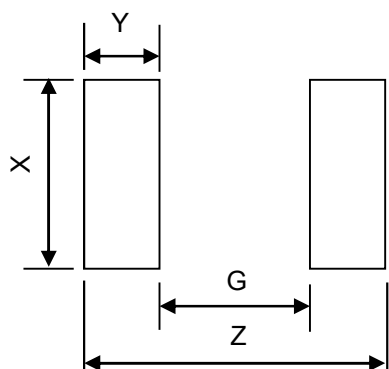


Note : Suitable for reflow soldering only.

■ Recommended Reworking Conditions with Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	360°C (max.)
Soldering Time	3 sec (max.)
Diameter of Soldering Iron-tip	φ 3mm (max.)
Caution: Not to touch the component surface with soldering iron directly to prevent component damage.	

Recommended Soldering Pad Dimensions



Size (EIA)	1210
Z	4.5 mm
G	2.1 mm
X	2.8 mm
Y	1.2 mm

RoHS Compliant Declaration

We hereby declare that the components delivered to your company are compliant with RoHS directive 2015/863/EU.

Restriction of Weapon and Military End-Use

Thinking has established and implemented the fundamental policy on no of our product should be used or sold, through any channels, for use in the design, development, production, utilization, maintenance or operation of, or otherwise contribution to any weapons (Weapons of Mass Destruction [nuclear, chemical or biological weapons or missiles] or conventional weapons) or goods or systems specially designed or intended for military end-use or utilization by military end-users.

Warehouse Storage Conditions of Products

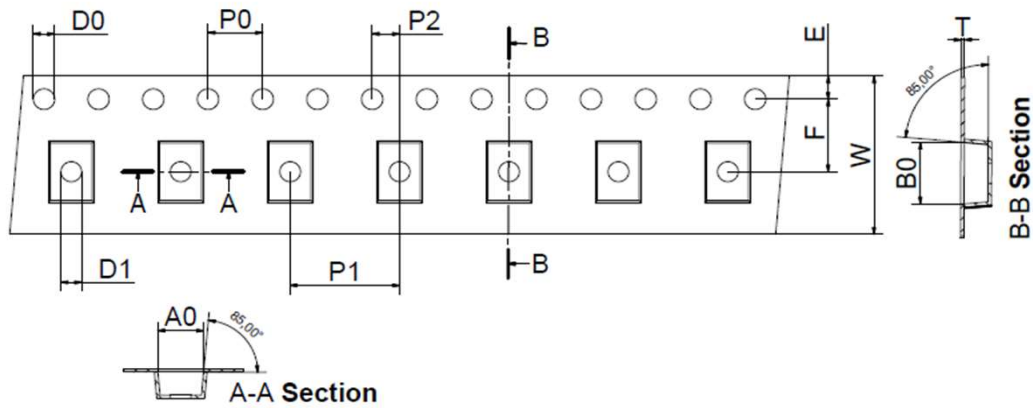
(I) Storage Conditions :

- 1.Storage Temperature : -10°C ~+40°C
- 2.Relative Humidity : $\leq 75\%RH$
- 3.Keep away from corrosive atmosphere and sunlight.

(II) Period of Storage : 1 year

Packaging

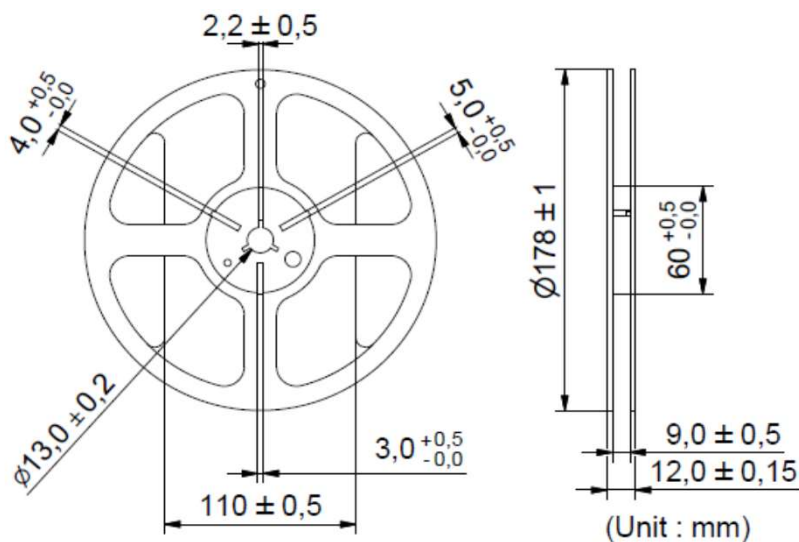
■ Taping Specification (1210 Series)



(Unit : mm)

Index	A_0	B_0	W	E	F	P_1	P_2	P_0	D_0	D_1	T
Size	± 0.2	± 0.2	± 0.2	± 0.1	± 0.05	± 0.1	± 0.05	± 0.1	± 0.1	± 0.1	± 0.1
1210	2.75	3.55	8	1.75	3.5	4	2	4	1.55	1	0.25

■ Quantity (2500 pcs / reel)



Certificates

- (1) IATF 16949 certificate
- (2) ISO 9001 certificate
- (3) QC 080000 certificate

Test Report

- (1) RoHS test report
- (2) Halogen-free test report

Protective Threshold Current Range