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SPECIFICATION FOR APPROVAL

CUSTOMER	Codico
CERTIFIED MODEL/TYPE	TPM0S103P130
PART NO.	TPM0S103P130R (RoHS+HF)
APPLICATION	
CUSTOMER P/N	
ISSUE DATE	Mar. 11, 2016
REV. NO.	
REV. DATE	

FOR CUSTOMER APPROVAL	CHECKED BY
	Shu Ling Fu
	APPROVED BY
	Chun Chu Tu

REVISED RECORD SHEET

REV. NO	REV. DATE	REVISED CONTENT

INDEX

Part Number Code

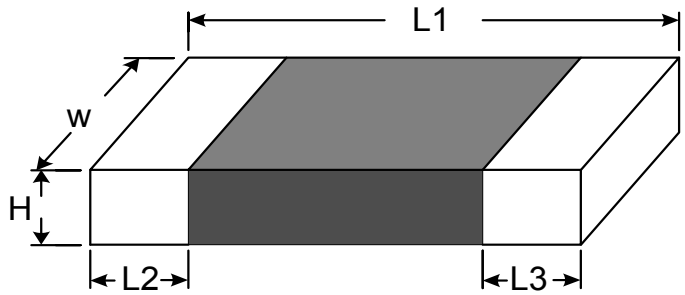
Example :

TPM 0 S 103 P 130 R

(1) (2) (3) (4) (5) (6) (7)

No.	Item	Digit	Specification
(1)	Product Type	TPM	Thinking CPTC thermistor TPM type
(2)	Size (EIA)	0	0402
(3)	Type Series	S	Sensing series
(4)	Zero Power Resistance at 25℃	103	$10x10^3$= 10KΩ
(5)	Tolerance of R_{25}	P	± 50%
(6)	Sensing Temperature	130	Ts=130℃
(7)	Packaging	R	Reel

Structure and Dimensions



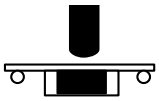
(unit : mm)

L1	W	H max.	L2 and L3
1.00±0.15	0.50±0.10	0.60	0.20±0.10

Electrical Characteristics

Part No.	Sensing Temperature @ 4.7MΩ	Zero Power Resistance at 25℃	Max. Voltage	Operating Temperature Range
	Ts (℃)	R_{25} (KΩ)	Vmax. (V_{DC})	(℃)
TPM0S103P130R	130±5	10±50%	32	-25 ~ +145

Reliability

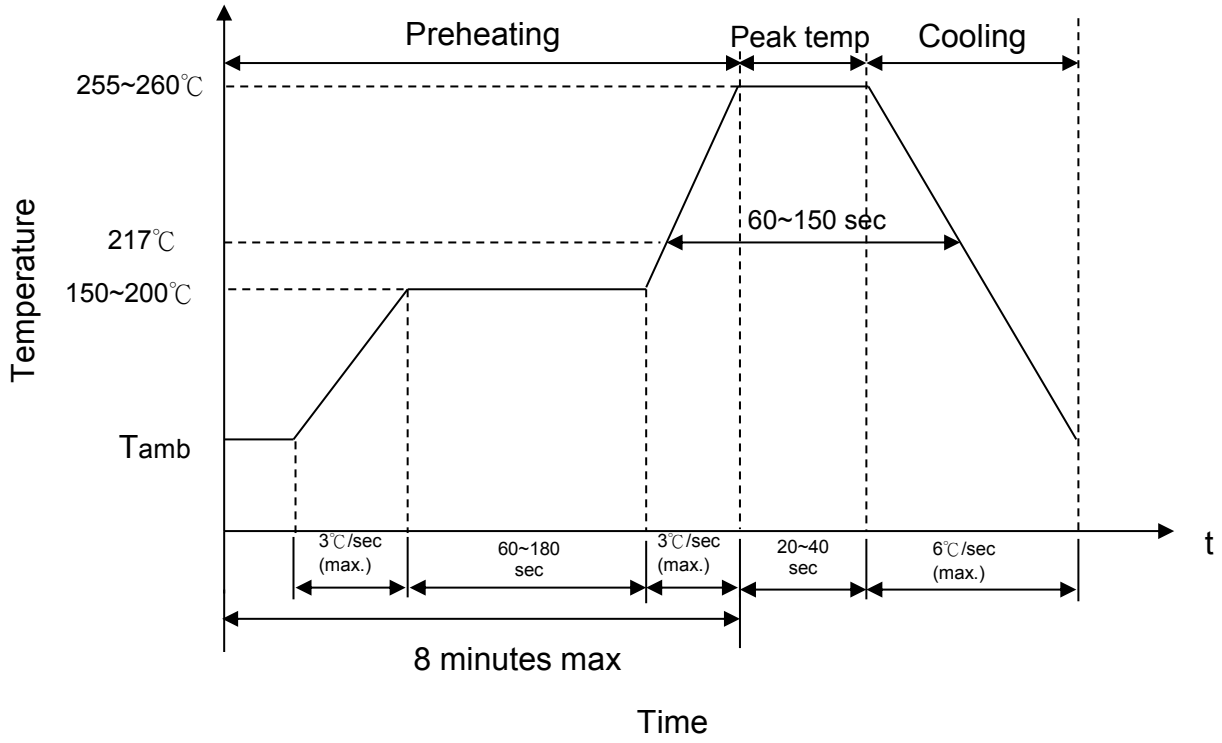
<table>
<tr><th>Item</th><th>Standard</th><th>Test conditions / Methods</th><th>Specifications</th></tr>
<tr><td>Bending Strength</td><td>IEC 60068-2-21</td><td>Warp : 2mm ; Speed ＜ 0.5mm/sec.
Duration : 10 sec on PCB.  </td><td>No visible damage
$|\triangle R_{25}/R_{25}| \leqq 10\ \%$</td></tr>
<tr>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

Note: T_L = Minimum operating temperature (℃)

T_U = Maximum operating temperature (℃)

Soldering Recommendation

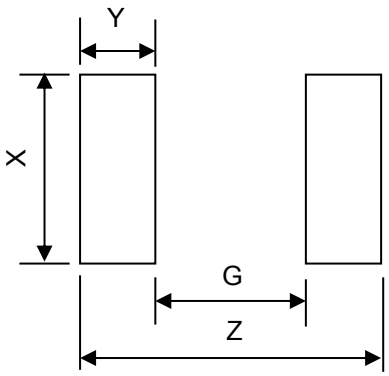
■ IR-Reflow Soldering Profile



■ Recommended Reworking Conditions with Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	360℃ (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)	0402
Z	1.7 mm
G	0.5 mm
X	0.6 mm
Y	0.6 mm

RoHS Compliant Declaration

We hereby declare that the components delivered to your company are compliant with RoHS directive 2011/65/EU.

Warehouse Storage Conditions of Products

(I) Storage Conditions :

1.Storage Temperature : -10℃~+40℃

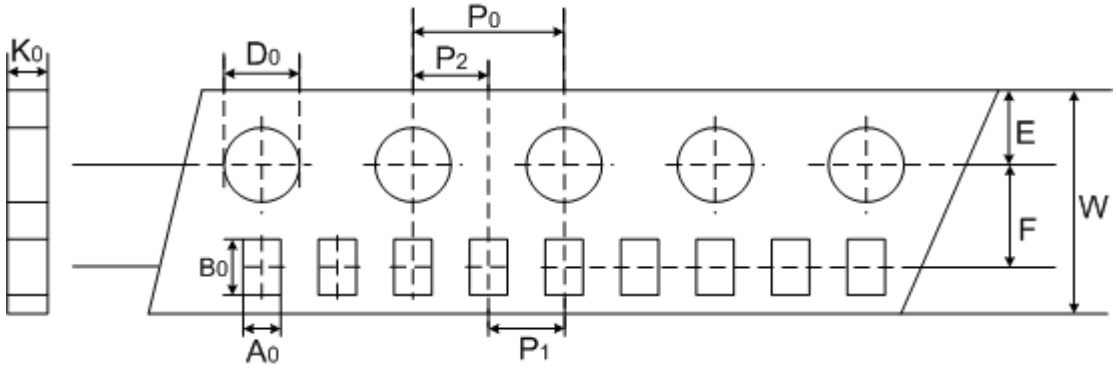
2.Relative Humidity : ≦75%RH

3.Keep away from corrosive atmosphere and sunlight.

(II) Period of Storage : 1 year

Packaging

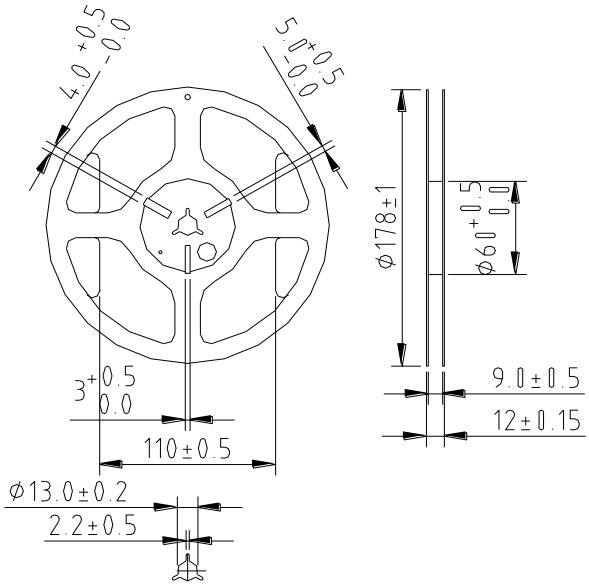
■ Taping Specification (0402 Series)



(Unit : mm)

Index / Size	A_0 ±0.05	B_0 ±0.12	W ±0.2	E ±0.1	F ±0.05	P_1 ±0.1	P_2 ±0.05	P_0 ±0.1	D_0 ±0.1	K_0 ±0.1
0402	0.62	1.12	8.0	1.75	3.5	2.0	2.0	4.0	1.55	0.60

■ Quantity (10000 pcs / reel)



Safety Approvals **(Certified Model/Type : TPM0S103P130)**

* UL 1434 / cUL recognized (File # E138827)

Certificates

(1) TS 16949 certificate
(2) ISO 9001 certificate
(3) QC 080000 certificate

Test Report

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

R-T Characteristic Curve