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**SPECIFICATION FOR APPROVAL**

CUSTOMER	Codico
CERTIFIED MODEL/TYPE	TPM1S471P075
PART NO.	TPM1S471P075R (RoHS+HF)
APPLICATION	
CUSTOMER P/N	
ISSUE DATE	Mar. 11, 2016
REV. NO.	
REV. DATE	

FOR CUSTOMER APPROVAL	CHECKED BY
	<i>Shu Ling Fu</i>
	APPROVED BY
	<i>Chun Chu Tu</i>





**REVISED RECORD SHEET**

REV. NO	REV. DATE	REVISED CONTENT



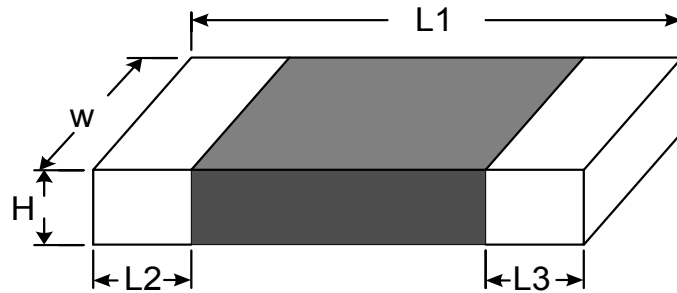
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Part Number Code

Example :

**TPM**   **1**   **S**   **471**   **P**   **075**   **R**  
 (1)   (2)   (3)   (4)   (5)   (6)   (7)

No.	Item	Digit	Specification
(1)	Product Type	TPM	Thinking CPTC thermistor TPM type
(2)	Size (EIA)	1	0603
(3)	Type Series	S	Sensing series
(4)	Zero Power Resistance at 25°C	471	$47 \times 10^1 = 470\Omega$
(5)	Tolerance of R <sub>25</sub>	P	± 50%
(6)	Sensing Temperature	075	T <sub>s</sub> =75°C
(7)	Packaging	R	Reel

Structure and Dimensions


( unit : mm )

L1	W	H max.	L2 and L3
1.60±0.15	0.80±0.15	0.95	0.40±0.20

Electrical Characteristics

Part No.	Sensing Temperature @ 4.7KΩ	Zero Power Resistance at 25°C	Max. Voltage	Operating Temperature Range
	T <sub>s</sub> (°C)	R <sub>25</sub> (Ω)	V <sub>max.</sub> (V <sub>DC</sub> )	(°C)
TPM1S471P075R	75±5	470±50%	32	-25 ~ +90

**Reliability**

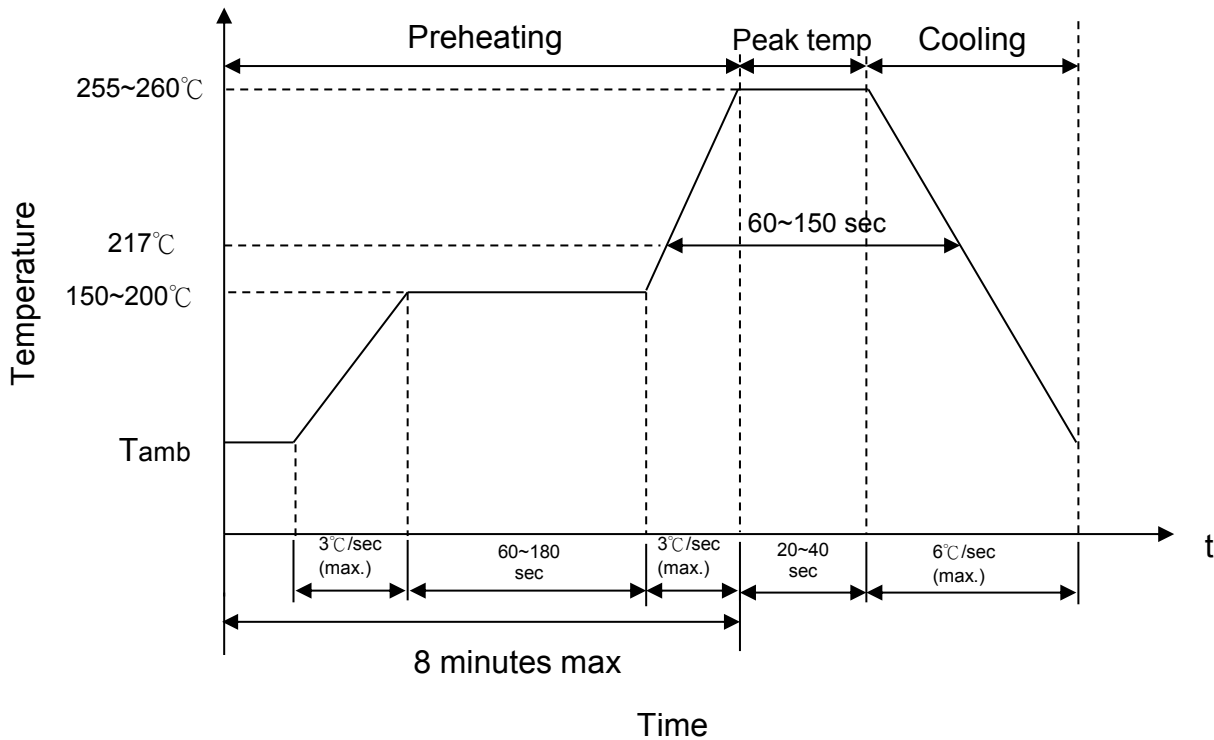
Item	Standard	Test conditions / Methods	Specifications															
Bending Strength	IEC60068-2-21	Warp : 2mm ; Speed < 0.5mm/sec. Duration : 10 sec on PCB. 	No visible damage $ \Delta R_{25}/R_{25}  \leq 10\%$															
Damp Heat, Steady State	IEC 60068-2-78	40 ± 2 °C , 90 ~ 95% RH , 1000± 24 hrs	No visible damage $ \Delta R_{25}/R_{25}  \leq 20\%$															
High Temp. Storage	IEC 60068-2-2	T <sub>U</sub> ± 5 °C , 1000 ± 24 hrs	No visible damage $ \Delta R_{25}/R_{25}  \leq 20\%$															
Low Temp. Storage	IEC 60068-2-1	T <sub>L</sub> ± 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 border="1" data-bbox="523 974 1168 1288"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <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> </tbody> </table>	Step	Temperature (°C)	Period (minutes)	1	-25± 5	30 ± 3	2	Room temperature	5 ± 3	3	150± 5	30 ± 3	4	Room temperature	5 ± 3	No visible damage $ \Delta R_{25}/R_{25}  \leq 20\%$
Step	Temperature (°C)	Period (minutes)																
1	-25± 5	30 ± 3																
2	Room temperature	5 ± 3																
3	150± 5	30 ± 3																
4	Room temperature	5 ± 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. T <sub>U</sub> x 16 hrs b. 1st cycle : 40 °C 95 %RH x 24 hrs c. T <sub>L</sub> 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\%$															

Note: T<sub>L</sub> = Minimum operating temperature (°C)

T<sub>U</sub> = Maximum operating temperature (°C)

## Soldering Recommendation

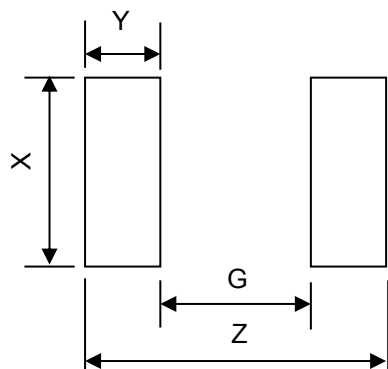
### ■ IR-Reflow Soldering Profile



### ■ 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)	0603
Z	3.0 mm
G	1.0 mm
X	1.0 mm
Y	1.0 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 :

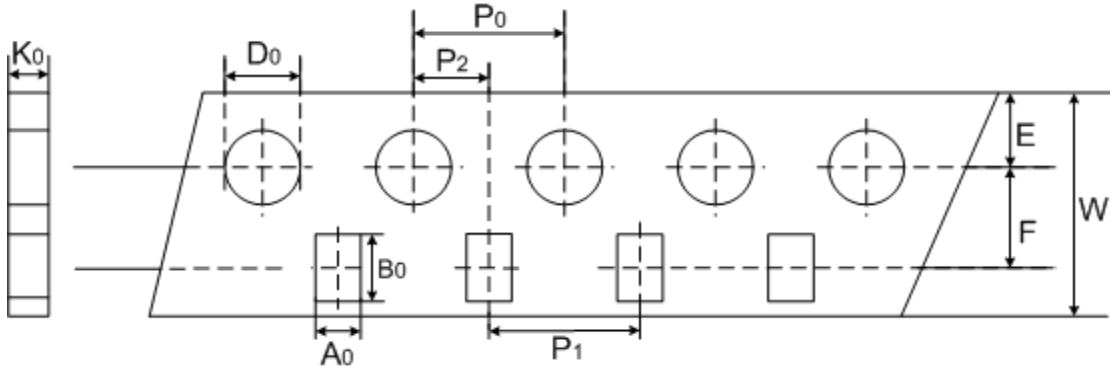
- 1.Storage Temperature : -10°C~+40°C
- 2.Relative Humidity :  $\leq 75\%RH$
- 3.Keep away from corrosive atmosphere and sunlight.

(II) Period of Storage : 1 year



Packaging

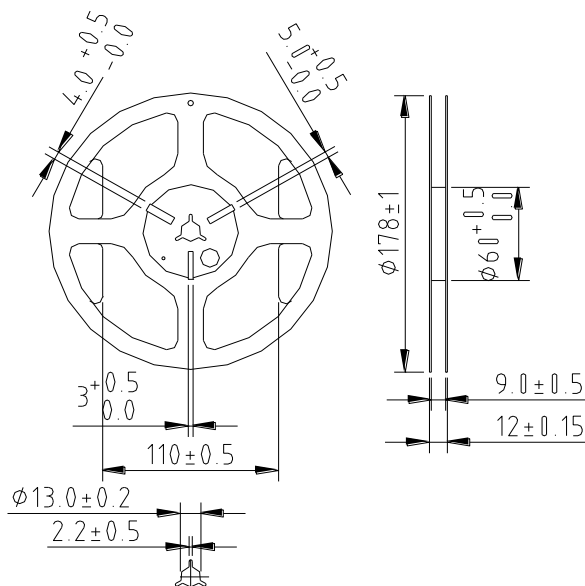
■ Taping Specification ( 0603 Series)



(Unit : mm)

Index	$A_0$	$B_0$	$W$	$E$	$F$	$P_1$	$P_2$	$P_0$	$D_0$	$K_0$
Size	$\pm 0.2$	$\pm 0.2$	$\pm 0.2$	$\pm 0.1$	$\pm 0.05$	$\pm 0.1$	$\pm 0.05$	$\pm 0.1$	$\pm 0.1$	$\pm 0.1$
0603	1.1	1.9	8.0	1.75	3.5	4.0	2.0	4.0	1.55	0.95

■ Quantity ( 4000 pcs / reel )



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Safety Approvals (Certified Model/Type : TPM1S471P075)



\* UL 1434 / cUL recognized (File # E138827)



\* TUV recognized (File # R 50133294)

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

TPM1S471P075R

