THINKING ELECTRONIC INDUSTRIAL CO., LTD.

HEAD OFFICE: 8F-1, No.93, Ta-Shun 1st Rd., Kaohsiung, Taiwan
TEL: 886-7-5577660 FAX: 886-7-5570560

MANUFACTURING SITE

☑ KAOHSIUNG FACTORY: No.51, Kaifa Road, Nantze Export Processing Zone, Kaohsiung City 81170, Taiwan
TEL: 886-7-9616668 FAX: 886-7-9616698

☐ CHANGZHOU FACTORY: No.82,Renmin Mid Rd.,WuJin High&New-Tech Industrial Development Zone,ChangZhou,JiangSu,China
TEL:86-519-86578999 FAX:86-519-86558643

☐ DONG GUAN FACTORY: Chiao-Tou Tsun, Sha-Tao Hsiang, Chang-An Town, Dong-Guan City 523863, Guangdong, China
TEL:86-769-85542016 FAX:86-769-85546890

☐ YICHANG FACTORY: No. 283 Xiaoting Avenue, Xiaoting Dist., Yichang City 443007, Hubei, China
TEL:86-717-6510010 FAX:86-717-6511430

SPECIFICATION FOR APPROVAL

CUSTOMER	Codico
CERTIFIED MODEL/TYPE	TPM2S681P100
PART NO.	TPM2S681P100R (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

	Page
Part Number Code	1
Structure and Dimensions	2
Electrical Characteristics	2
Reliability	3
Soldering Recommendation	4
Recommended Soldering Pad Dimensions	5
RoHS Compliant Declaration	5
Warehouse Storage Conditions of Products	5
Packaging	6
Safety Approvals & Certificates & Test Report	7
R-T Characteristic Curve	8

Part Number Code

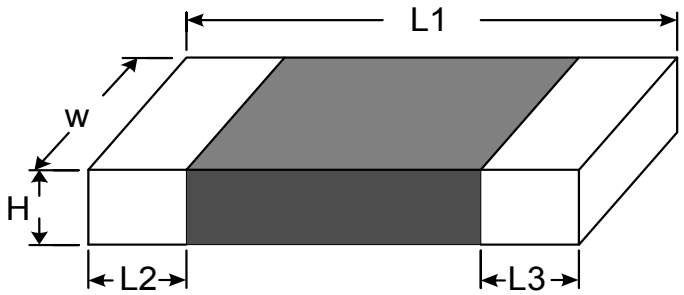
Example :

TPM 2 S 681 P 100 R

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

No.	Item	Digit	Specification
(1)	Product Type	TPM	Thinking CPTC thermistor TPM type
(2)	Size (EIA)	2	0805
(3)	Type Series	S	Sensing series
(4)	Zero Power Resistance at 25℃	681	$68x10^1 = 680\Omega$
(5)	Tolerance of R_{25}	P	± 50%
(6)	Sensing Temperature	100	Ts=100℃
(7)	Packaging	R	Reel

Structure and Dimensions



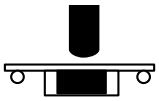
(unit : mm)

L1	W	H max.	L2 and L3
2.00±0.20	1.25±0.20	1.00	0.45±0.25

Electrical Characteristics

Part No.	Sensing Temperature	Resistance Value				Max. Voltage	Operating Temperature Range
	Ts (℃)	R_{25} (Ω)	Ts-5℃ (KΩ)	Ts+5℃ (KΩ)	Ts+15℃ (KΩ)	Vmax. (V_{DC})	(℃)
TPM2S681P100R	100	680±50%	≦5.5	≧13.3	≧40	32	-40 ~ +125

Reliability

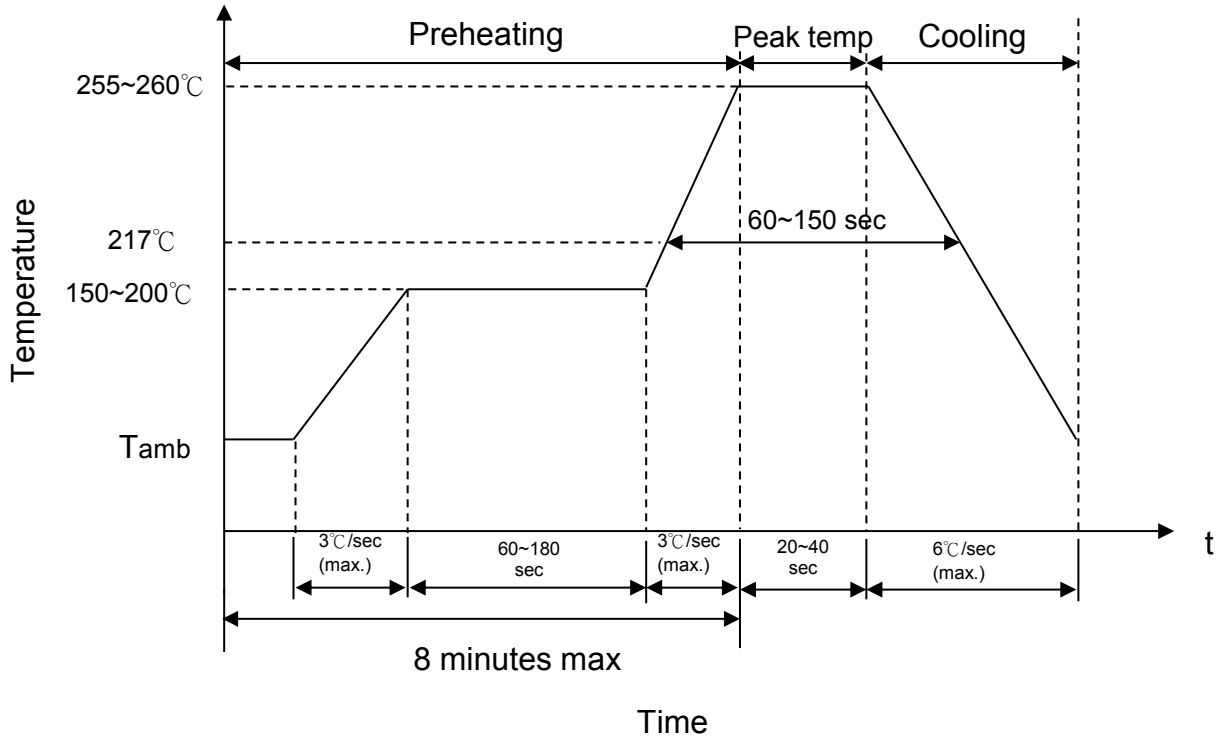
Item	Standard	Test conditions / Methods	Specifications
Bending Strength	IEC60068-2-21	Warp : 2mm ; Speed ＜ 0.5mm/sec. Duration : 10 sec on PCB. 	No visible damage $\lvert \triangle R_{25}/R_{25} \rvert \leqq 10\ \%$
Damp Heat, Steady State	IEC 60068-2-78	40 ± 2 ℃ , 90 ~ 95% RH , 1000± 24 hrs	No visible damage $\lvert \triangle R_{25}/R_{25} \rvert \leqq 20\ \%$
High Temp. Storage	IEC 60068-2-2	T_U ± 5 ℃ , 1000 ± 24 hrs	No visible damage $\lvert \triangle R_{25}/R_{25} \rvert \leqq 20\ \%$
Low Temp. Storage	IEC 60068-2-1	T_L ± 3 ℃ , 1000 ± 24 hrs	No visible damage $\lvert \triangle R_{25}/R_{25} \rvert \leqq 20\ \%$
Rapid Change of Temperature	IEC 60068-2-14	The conditions shown below shall be repeated 5 cycles on PCB Step / Temperature (℃) / 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 $\lvert \triangle R_{25}/R_{25} \rvert \leqq 20\ \%$
High Temp. Load	IEC 60738-1 7.24.3	85 ± 5 ℃ , Vmax. , 1000 ± 24 hrs	No visible damage $\lvert \triangle R_{25}/R_{25} \rvert \leqq 20\ \%$
Climatic Sequence	IEC 60738-1 7.22	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	No visible damage $\lvert \triangle R_{25}/R_{25} \rvert \leqq 20\ \%$
Solderability	IEC 60068-2-58	245 ± 5 ℃ , 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 $\lvert \triangle R_{25}/R_{25} \rvert \leqq 20\ \%$

Note: T_L = Minimum operating temperature (℃)

T_U = Maximum operating temperature (℃)

Soldering Recommendation

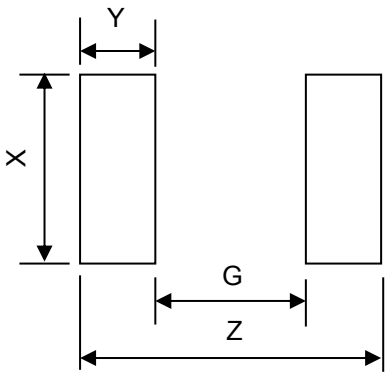
■ IR-Reflow Soldering Profile



■ 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)	0805
Z	3.4 mm
G	1.0 mm
X	1.4 mm
Y	1.2 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℃

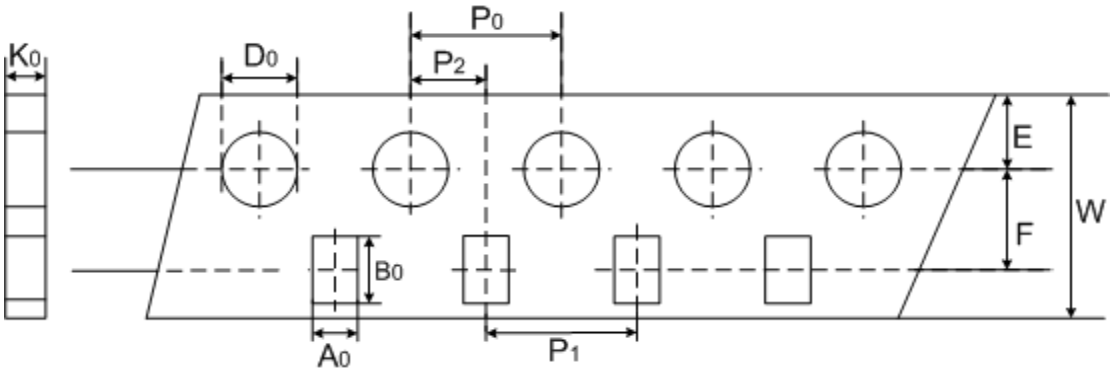
2.Relative Humidity : ≦75%RH

3.Keep away from corrosive atmosphere and sunlight.

(II) Period of Storage : 1 year

Packaging

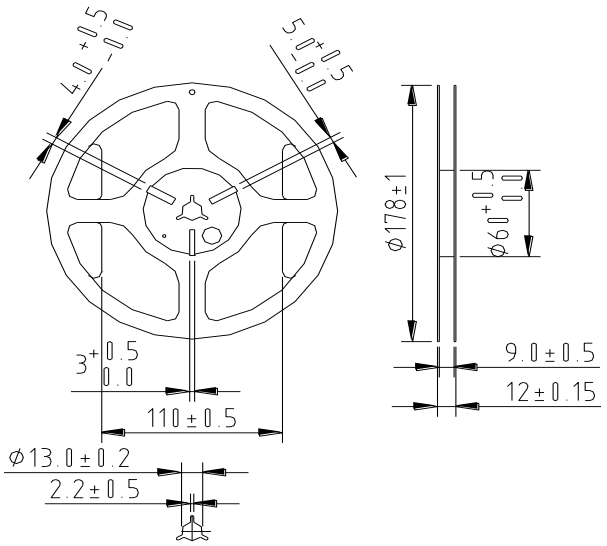
■ Taping specification (0805 Series)



(Unit : mm)

Index / Size	A_0 ±0.2	B_0 ±0.2	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
0805	1.5	2.3	8	1.75	3.5	4	2	4	1.55	1

■ Quantity (3500 pcs / reel)



Safety Approvals **(Certified Model/Type : TPM2S681P100)**

* 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