

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

R 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

R 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	全緯
CERTIFIED MODEL/TYPE	TTC-472
PART NO.	TTC05472KSY(RoHS)
APPLICATION	
CUSTOMER P/N	
ISSUE DATE	Aug.02.2016
REV. NO.	
REV. DATE	

FOR CUSTOMER APPROVAL	CHECKED BY
	HuiMin Xu
	APPROVED BY
	Huaifang Zhang





NTC Thermistor TTC05 Type

Part No.: TTC05472KSY

REVISED RECORD SHEET

REV. NO	REV. DATE	REVISED CONTENT



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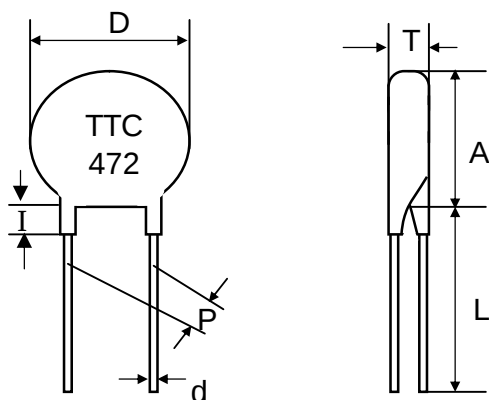
Part Number Code

Example :

TTC **05** **472** **K** **S** **Y**
 (1) (2) (3) (4) (5) (6)

No.	Item	Digit	Specification
(1)	Product Type	TTC	Thinking NTC thermistor TTC type
(2)	Body Size	05	φ 5 mm
(3)	Zero Power Resistance at 25°C (R ₂₅)	472	$47 \times 10^2 = 4.7\text{k}\Omega$
(4)	Tolerance of R ₂₅	K	±10%
(5)	Appearance	S	Straight lead
(6)	Optional Suffix	Y	RoHS compliance

Structure and Dimensions



(unit : mm)

Body Size	D max.	P	d	A max.	L min.	T max.	I max.
φ 5mm	6.5	3.5±0.5	0.5±0.02	6.5	31	5	3

Electrical Characteristics

Part No.	Zero Power Resistance at 25℃	Tolerance of R ₂₅	B _{25/50} Value	Max. Power Dissipation at 25℃	Dissipation Factor	Thermal Time Constant	Operating Temperature Range
	R ₂₅ (KΩ)	(± %)	(K)	P _{max} (mW)	δ (mW/℃)	τ (sec.)	T _L ~T _U (℃)
TTC05472KSY	4.7	10	4050	450	Approx. 4.5	Approx. 20	-30 ~+125

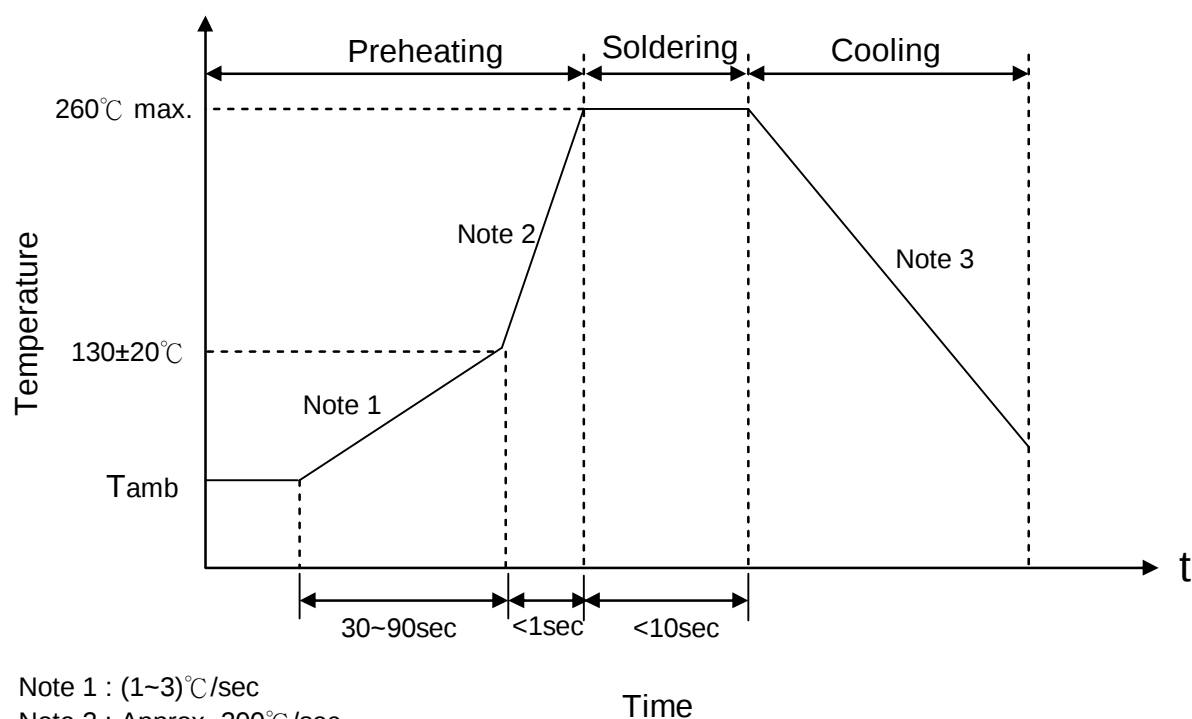
Reliability

Item	Standard	Test conditions / Methods		Specifications															
Tensile Strength of Terminals	IEC60068-2-21	Gradually applying the force specified and keeping the unit fixed for 10±1 sec. <table><tr><td>Terminal diameter (mm)</td><td>Force (Kg)</td></tr><tr><td>0.3<d≤0.5</td><td>0.5</td></tr><tr><td>0.5<d≤0.8</td><td>1.0</td></tr></table>		Terminal diameter (mm)	Force (Kg)	0.3<d≤0.5	0.5	0.5<d≤0.8	1.0	No visible damage									
Terminal diameter (mm)	Force (Kg)																		
0.3<d≤0.5	0.5																		
0.5<d≤0.8	1.0																		
Bending Strength of Terminals	IEC60068-2-21	Hold specimen and apply the force specified below to each lead. Bend the specimen to 90°, then return to the original position. Repeat the procedure in the opposite direction. <table><tr><td>Terminal diameter (mm)</td><td>Force (Kg)</td></tr><tr><td>0.3<d≤0.5</td><td>0.25</td></tr><tr><td>0.5<d≤0.8</td><td>0.50</td></tr></table>		Terminal diameter (mm)	Force (Kg)	0.3<d≤0.5	0.25	0.5<d≤0.8	0.50	No visible damage									
Terminal diameter (mm)	Force (Kg)																		
0.3<d≤0.5	0.25																		
0.5<d≤0.8	0.50																		
Solderability	IEC60068-2-20	245 ± 3 °C , 3 ± 0.3 sec		At least 95% of terminal electrode is covered by new solder															
Resistance to Soldering Heat	IEC60068-2-20	260 ± 3 °C , 10 ± 1 sec		No visible damage ΔR ₂₅ /R ₂₅ ≤ 3 %															
High Temperature Storage	IEC60068-2-2	125 ± 5 °C , 1000 ± 24 hrs		No visible damage ΔR ₂₅ /R ₂₅ ≤ 5 %															
Damp Heat, Steady State	IEC 60068-2-78	40 ± 2°C , 90 ~ 95 % RH , 1000 ± 24 hrs		No visible damage ΔR ₂₅ /R ₂₅ ≤ 3 %															
Rapid Change of Temperature	IEC60068-2-14	The conditions shown below shall be repeated 5 cycles <table><tr><td>Step</td><td>Temperature (°C)</td><td>Period (minutes)</td></tr><tr><td>1</td><td>-30 ± 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>125 ± 5</td><td>30 ± 3</td></tr><tr><td>4</td><td>Room temperature</td><td>5 ± 3</td></tr></table>		Step	Temperature (°C)	Period (minutes)	1	-30 ± 5	30 ± 3	2	Room temperature	5 ± 3	3	125 ± 5	30 ± 3	4	Room temperature	5 ± 3	No visible damage ΔR ₂₅ /R ₂₅ ≤ 3 %
Step	Temperature (°C)	Period (minutes)																	
1	-30 ± 5	30 ± 3																	
2	Room temperature	5 ± 3																	
3	125 ± 5	30 ± 3																	
4	Room temperature	5 ± 3																	
Max. Power Dissipation	IEC60539-1 4.26.3	25 ± 5 °C , Pmax. , 1000 ± 24 hrs		No visible damage ΔR ₂₅ /R ₂₅ ≤ 5 %															
Insulation test	MIL-STD-202F-Method 302	1000 V _{DC} 1 min		No visible damage ≥500 MΩ															

Products have been tested at Thinking Electronic Industrial Co.,Ltd. Laboratory recognized by UL (Underwriters Laboratories Inc.) under CTDTP (Client Test Data Program).

Soldering Recommendation

■ Wave Soldering Profile



Note 1 : $(1 \sim 3)^{\circ}\text{C/sec}$

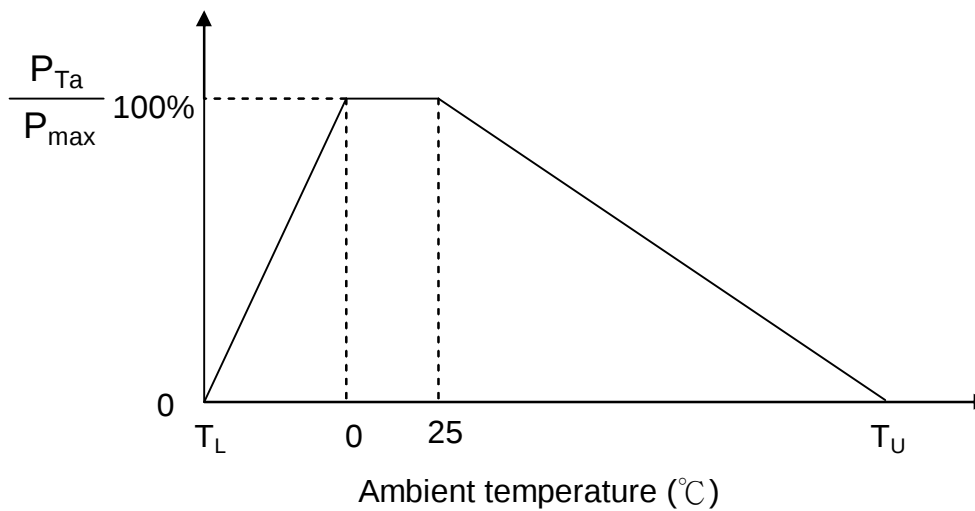
Note 2 : $\text{Approx. } 200^{\circ}\text{C/sec}$

Note 3 : $5^{\circ}\text{C/sec max}$

■ Recommended Reworking Conditions with Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	$360^{\circ}\text{C (max.)}$
Soldering Time	3 sec (max.)
Distance From Thermistor	2 mm (min.)

Max. Power Dissipation Derating Curve



Note: T_L = Minimum operating temperature ($^{\circ}\text{C}$)

T_U = Maximum operating temperature ($^{\circ}\text{C}$)

For example :

Ambient temperature(T_a) = 55 $^{\circ}\text{C}$

Maximum operating temperature(T_u) = 125 $^{\circ}\text{C}$

$P_{Ta} = (T_u - T_a) / (T_u - 25) \times P_{max} = 70\% P_{max}$

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 $^{\circ}\text{C}$ ~ +40 $^{\circ}\text{C}$
- 2.Relative Humidity : $\leq 75\% \text{RH}$
- 3.Keep away from corrosive atmosphere and sunlight.

(II) Period of Storage : 1 year

Safety Approvals (Certified Model/Type : TTC-472)

* UL 1434 / cUL recognized (File # E138827)



* CSA recognized (File # 97495)



* TUV recognized (File # R 50050155)



*CQC GB/T 6663.1-2007 recognized (File # CQC05001011994)

* CQC GB6663-86 recognized (File # CQC05001011991)

Certificates

- (1) TS 16949 certificate
- (2) ISO 9001 certificate

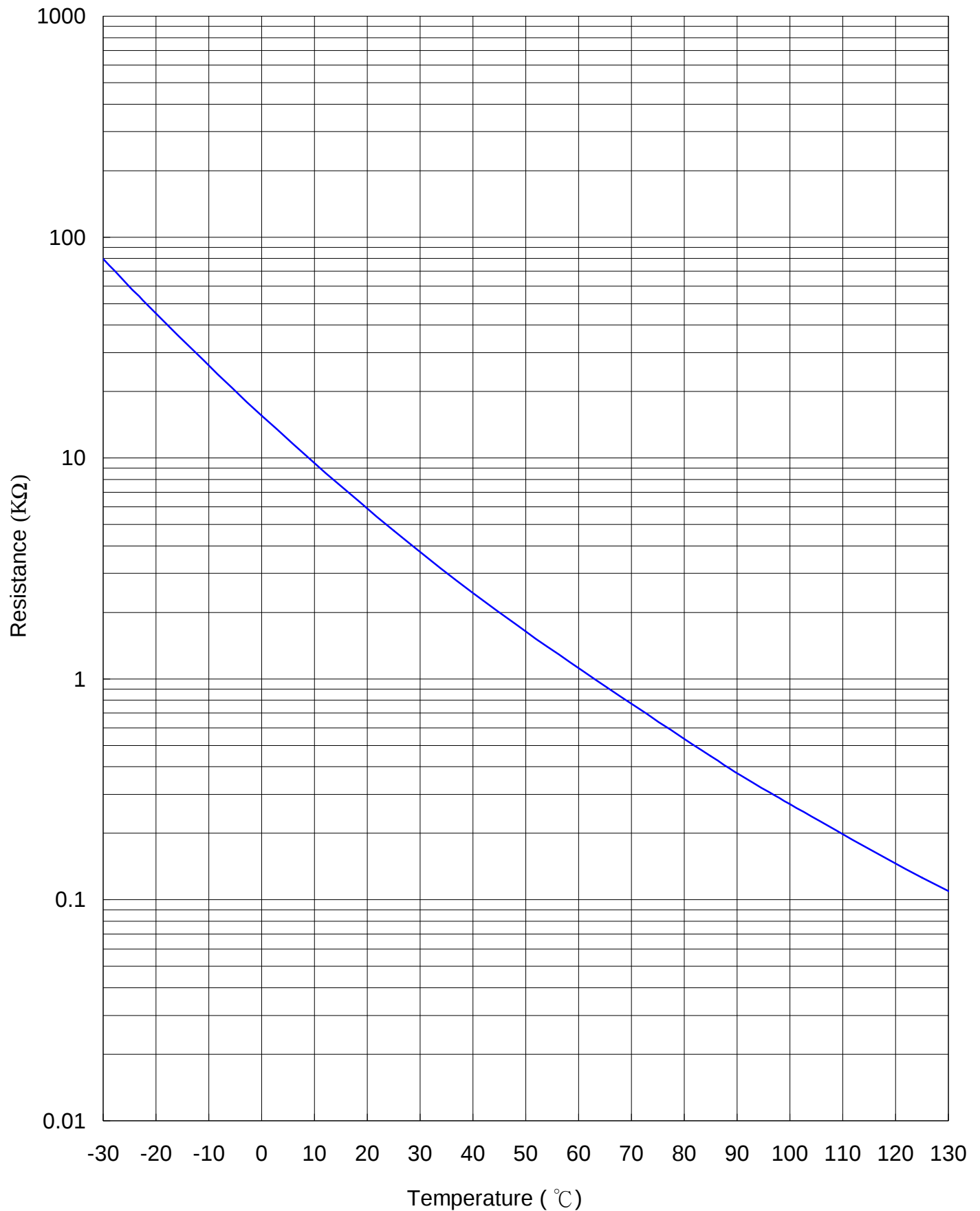
Test Report

- (1) RoHS test report



R-T Characteristic Curve

TTC05472KSY



V-I Characteristic Curve (Ambient $T_a=25^\circ\text{C}$)