



# THINKING ELECTRONIC INDUSTRIAL CO., LTD.

HEAD OFFICE: 12F, No.93, Dashun 1st Rd., Zuoying Dist., Kaohsiung, Taiwan  
TEL: 886-7-5577660 FAX: 886-7-5570560

## MANUFACTURING SITE

- KAOHSIUNG FACTORY 1: No. 51, Kaifa Rd., N.E.P.Z, Kaohsiung City 81170, Taiwan  
TEL: 886-7-9616668 FAX: 886-7-9616698
- KAOHSIUNG FACTORY 2: No. 2-2, Xinjian S. Rd., N.E.P.Z., Kaohsiung City 81170, Taiwan  
TEL: 886-7-9630001 FAX: 886-7-3635113
- CHANGZHOU FACTORY: No.6 Longmen Rd., Wujin High & New-Tech Industrial  
Development Zone, Changzhou, Jiangsu, China 213161  
TEL:86-519-86578999 FAX:86-519-86558643
- DONG GUAN FACTORY: No.45, East Rd., Sha-Tao Dist., Chang-An Town,  
Dongguan City, Guangdong, China 523863  
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 \_\_\_\_\_  
 CERTIFIED \_\_\_\_\_  
 MODEL/TYPE \_\_\_\_\_  
 PART NO. PLA03472NP8F0YO4 (RoHS)  
 APPLICATION \_\_\_\_\_  
 CUSTOMER P/N \_\_\_\_\_  
 ISSUE DATE Nov.14.2018  
 REV. NO. \_\_\_\_\_  
 REV. DATE \_\_\_\_\_

FOR CUSTOMER APPROVAL	CHECKED BY
	<i>Haili Gong</i>
	APPROVED BY
	<i>Huaifang Zhang</i>





**REVISED RECORD SHEET**

REV. NO	REV. DATE	REVISED CONTENT



<b>INDEX</b>	<b>Page</b>
■ <b>Part Number Code</b>	<b>1</b>
■ <b>Structure and Dimensions</b>	<b>2</b>
■ <b>Electrical Characteristics</b>	<b>2</b>
■ <b>Reliability</b>	<b>3</b>
■ <b>Soldering Recommendation</b>	<b>4</b>
■ <b>RoHS Compliant Declaration</b>	<b>5</b>
■ <b>Warehouse Storage Conditions of Products</b>	<b>5</b>
■ <b>Certificates</b>	<b>6</b>

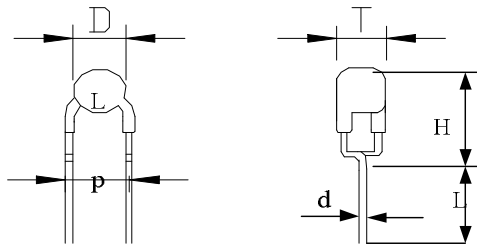


Part Number Code

Example :

**PL**    **A**    **03**    **472**    **N**    **P8**    **F0**    **Y**    **O4**  
(1)    (2)    (3)    (4)    (5)    (6)    (7)    (8)    (9)

No.	Item	Digit	Specification
(1)	Product Type	PL	Thinking PTC thermistor for switching type
(2)	Type Series	A	Lead type
(3)	Body Size	03	φ3mm
(4)	Resistance (R <sub>25</sub> )	472	$47 \times 10^2 \Omega = 4700 \Omega$
(5)	Tolerance of R <sub>25</sub>	N	±30%
(6)	Curie Temperature	P8	80°C
(7)	Withstanding Voltage	F0	600V
(8)	Packaging	Y	RoHS compliance & bulk
(9)	Optional Suffix	O4	Silicone coating

Structure and Dimensions

( unit : mm )

Item	D	T	L	P	d	H
Max.	4.5	4.5	4.0	6.0	0.52	8.5
Min.	3.0	3.5	3.0	4.0	0.48	---

Electrical Characteristics

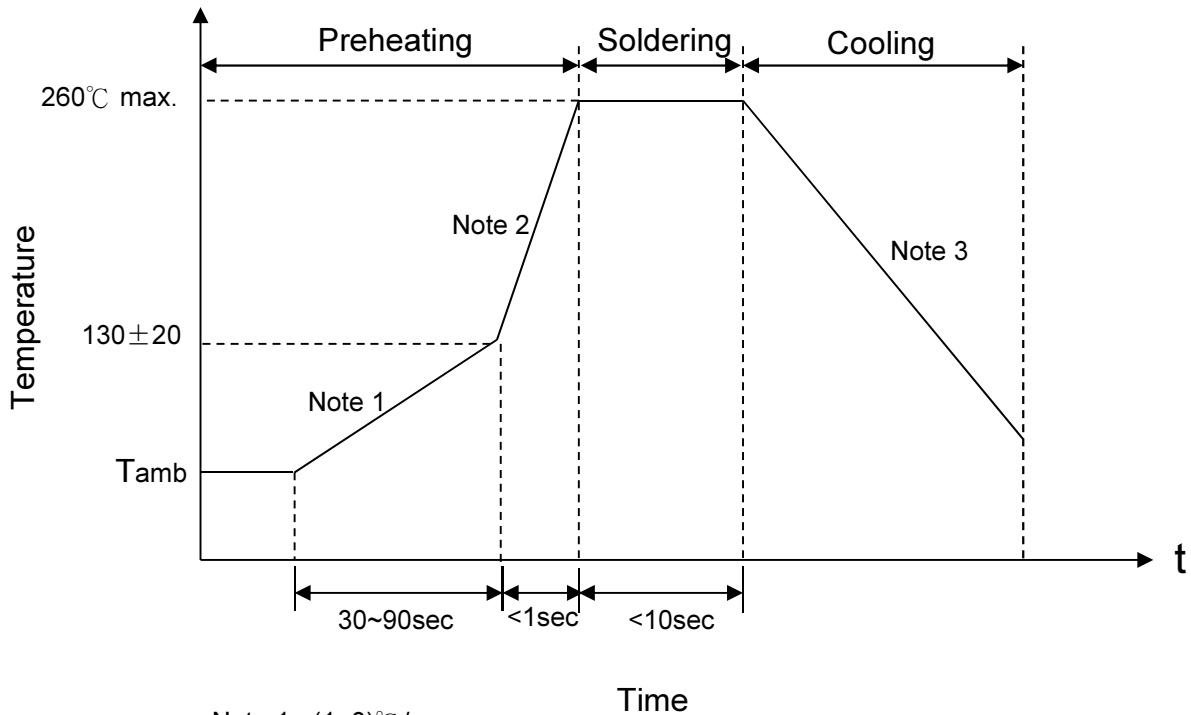
Part No.	Curie Temp.	Zero-power Resistance at 25 $\pm$ 2 $^{\circ}$ C	Withstanding Voltage	Max. Current	Rated Voltage	Max. Voltage	Operating Temperature Range (V=Vmax)	Operating Temperature Range (V=0)
	T <sub>c</sub> (°C)	R <sub>25</sub> (Ω)	V <sub>w</sub> (V)	I <sub>max</sub> (A)	V <sub>R</sub> (V)	V <sub>max</sub> (V)	(°C)	(°C)
PLA03472NP8F0YO4	80 $\pm$ 10	4700 $\pm$ 30%	600	0.2	220	270	0~+60	-25~+125

Reliability

Item	Standard	Test conditions / Methods	Specifications															
Robustness of Terminations	IEC 60738-1	<p>Gradually apply the specified force and keep the unit fixed for 10±1 sec.</p> <table border="1"> <thead> <tr> <th>Terminal diameter (mm)</th> <th>Force T±10% (N)</th> </tr> </thead> <tbody> <tr> <td>0.35&lt;d≤0.5</td> <td>5.0</td> </tr> <tr> <td>0.5&lt;d≤0.8</td> <td>10.0</td> </tr> <tr> <td>0.8&lt;d≤1.25</td> <td>20.0</td> </tr> </tbody> </table>	Terminal diameter (mm)	Force T±10% (N)	0.35<d≤0.5	5.0	0.5<d≤0.8	10.0	0.8<d≤1.25	20.0	<p>  ΔR<sub>25</sub>/R<sub>25</sub>   ≤20% No visible damage</p>							
Terminal diameter (mm)	Force T±10% (N)																	
0.35<d≤0.5	5.0																	
0.5<d≤0.8	10.0																	
0.8<d≤1.25	20.0																	
Solderability	IEC 60738-1	245 ± 3 °C , 2± 0.5sec	At least 95% of terminal electrode is covered by new solder															
Resistance to Soldering Heat	IEC 60738-1	260 ± 3 °C , 10 ± 1 sec	<p>  ΔR<sub>25</sub>/R<sub>25</sub>   ≤20% No visible damage</p>															
Vibration	IEC 60738-1	<p>Frequency range:10~55Hz Amplitude:0.75mm or 98m/S<sup>2</sup> Direction:3 mutually perpendicular directions Duration :6HRS(3x2HRS)</p>	<p>  ΔR<sub>25</sub>/R<sub>25</sub>   ≤20% No visible damage</p>															
Shock	IEC 60738-1	<p>Wave:half-sine ΔV:1.0m/s Acceleration:50m/s<sup>2</sup> Pulse time:30ms</p>	<p>  ΔR<sub>25</sub>/R<sub>25</sub>   ≤20% No visible damage</p>															
Rapid Change of Temperature	IEC 60738-1	<p>The thermal shock conditions shown below shall be repeated 5 cycles</p> <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature(°C)</th> <th>Period(minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40 ± 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>85 ± 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	-40 ± 5	30 ± 3	2	Room temperature	5 ± 3	3	85 ± 5	30 ± 3	4	Room temperature	5 ± 3	<p>  ΔR<sub>25</sub>/R<sub>25</sub>   ≤20% No visible damage</p>
Step	Temperature(°C)	Period(minutes)																
1	-40 ± 5	30 ± 3																
2	Room temperature	5 ± 3																
3	85 ± 5	30 ± 3																
4	Room temperature	5 ± 3																
Climatic Sequence	IEC 60738-1	<p>Dry heat: 125 °C for 16 hrs Damp heat first cycle: 40°C, 95% R.H, cycle time: 24 hrs Cold: -25°C for 2 hrs Damp heat (cyclic), remaining cycles: 5 cycles Test according to IEC60068-2-30</p>	<p>  ΔR<sub>25</sub>/R<sub>25</sub>   ≤20% No visible damage</p>															
Damp Heat, Steady State	IEC 60738-1	40±2°C, 90~95% RH, for 1000±2hrs	<p>  ΔR<sub>25</sub>/R<sub>25</sub>   ≤20% No visible damage</p>															
Endurance at maximum operating temperature and maximum voltage	IEC 60738-1	UCT=60°C, 270Vac, I ≤ I <sub>max</sub> for 1000±2hrs.	<p>  ΔR<sub>25</sub>/R<sub>25</sub>   ≤20% No visible damage</p>															
Endurance at maximum voltage	IEC 60738-1	25±5°C, 270Vac, I ≤ I <sub>max</sub> 1min. on and 5min. Off ×10,000 cycles	<p>  ΔR<sub>25</sub>/R<sub>25</sub>   ≤20% No visible damage</p>															

## Soldering Recommendation

### ■ Wave Soldering Profile



- Note 1 :  $(1\sim 3)^{\circ}\text{C}/\text{sec}$   
 Note 2 : Approx.  $200^{\circ}\text{C}/\text{sec}$   
 Note 3 :  $5^{\circ}\text{C}/\text{sec}$  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.)

### 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 :  $-10^{\circ}\text{C}\sim+40^{\circ}\text{C}$
- 2.Relative Humidity :  $\leq 75\%RH$
- 3.Keep away from corrosive atmosphere and sunlight.

(II) Period of Storage : 1 year





Certificates

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

Test Report

- (1) RoHS test report