

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

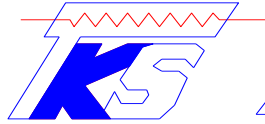
- KAOHSIUNG FACTORY: No.51, Kaifa Road, Nantze Export Processing Zone,
 Kaohsiung City 81170, Taiwan
 TEL: 886-7-9616668 FAX: 886-7-9616698
- KAOHSIUNG FACTORY 2:No. 2-2, Xinjian S. Rd., N.E.P.Z., Kaohsiung City 81170, Taiwan
 TEL: 886-7-9630001 FAX: 886-7-3635113
- CHANGZHOU FACTORY: No.6,Longmen Road,Wujin National 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	立創電子
CERTIFIED MODEL/TYPE	NTST3103
PART NO.	NTST3103FP005(RoHS+PHF)
APPLICATION	
CUSTOMER P/N	
ISSUE DATE	DEC.02.2020
REV. NO.	1.3
REV. DATE	APR.14.2020

FOR CUSTOMER APPROVAL	CHECKED BY
	戶峰
	APPROVED BY
	朱鳳美





Part Number Code

Example :

NTS **T3** **103** **F** **P005**
 (1) (2) (3) (4) (5)

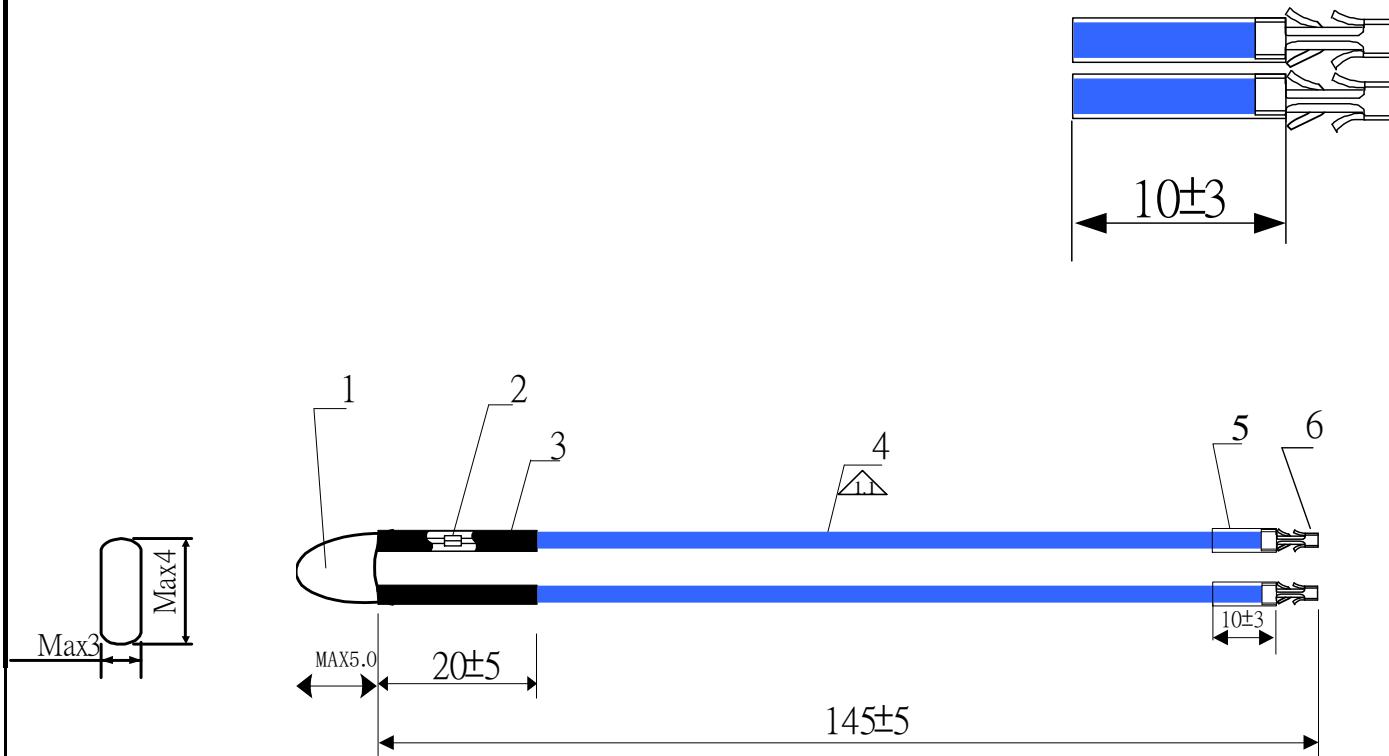
No.	Item	Digit	Specification
(1)	Product Type	NTS	Thinking NTC thermistor for temperature sensor
(2)	Type Series	T3	Housing type
(3)	Zero power resistance at 25°C (R ₂₅)	103	$10 \times 10^3 \Omega = 10K \Omega$
(4)	Tolerance of R ₂₅	F	±1%
(5)	Optional Suffix	P005	Special code for customer RoHS+PHF

A. Material List

NO.	ITEM	DESCRIPTION
1	THERMISTOR	TTC3A103F34D1EY
2	TERMINAL	G10108BS-0
3	TUBE	Φ1.5黑色熱縮套管(ZHP)
4	LEAD WIRE	UL10368#24 TS藍色線
5	TUBE	Φ2.0黑色熱縮套管(ZHP)
6	TERMINAL	B1411T0P-2e

B. Electrical Characteristic

ITEM	VALUE
R25	10KΩ±1%
B25/85	3435K±1%



						Customer	立創電子		
						Customer P/N			
						Thinking P/N	NTST3103FP005		
						Drawing NO.	ST1501020		
1.3	2020/4/14	修正端子圖	曹建暉	戶鋒	朱鳳美	Date	2020/4/14		
1.2	2016/5/9	線材UL3266#24 TS藍色線 變更為UL10368#24 TS藍色線	蘭英	戶鋒	盧宜睦	Scale:		Tol: ±0.3mm	Unit: mm
1.1	2016/3/2	UL4413#24x2C TS藍色線(藍底黑邊)變更為UL3266#24 TS藍色線	林淑迎	戶鋒	盧宜睦	THINKING ELECTRONIC INDUSTRIAL CO.,LTD.			
1.0	2015/1/12	新規格制訂	劉威	戶鋒	朱鳳美				
Rev.	Date	Subjects of Change	Designed by	Checked by	Approved by				

興勤電子工業股份有限公司
 THINKING ELECTRONIC INDUSTRIAL CO.,LTD
 SUBJECT: CERTIFICATION OF MATERIALS

CUSTOMER: 立創電子

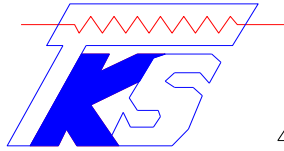
THINKING P/N: NTST3103FP005

NO	Part name	DESCRIPTION	Supplier	Supplier P/n	UL file NO.	Q'TY	Remark
1	THERMISTOR		THINKING	TTC3A103F34D1EY			
2	TERMINAL		WELI SHENG TERMINAL INDUSTRIAL CO LTD	G10108BS-0		2	
3	TUBE	Φ2.0mm black heat-shrink tube VW-1, 125°C, 600VAC	CHANGYUAN ELECTRONICS GROUP CO LTD	CYG-ZHP	E180908	2	
			DONGGUAN SALIPT CO LTD	SALIPT S-901-600	E209436		
			WELL ONE CO LTD	GT-2	E257529		
3	LEAD WIRE	VW-1 105°C, 300VAC TS Blue WIRE	REI HSING (DONG GUAN)ELECTRIC WIRE AND CABLE CO.,LTD	UL10368#28	E108485	2	
5	TERMINAL	PHOS BRONZE	JOWLE TECHNOLOGY CO LTD	B1411T0P-2e		2	
6	TUBE	Φ1.5mm black heat-shrink tube VW-1, 125°C, 600VAC	CHANGYUAN ELECTRONICS GROUP CO LTD	CYG-ZHP	E180908	2	
			DONGGUAN SALIPT CO LTD	SALIPT S-901-600	E209436		
			WELL ONE CO LTD	GT-2	E257529		

Approved By: 盧宜睦

Checked By: 戶峰

Designed By: 蘭英



Specification of NTC Thermistor for Sensor

PART NO. NTST3103FP005

CUSTOMER P/N. _____

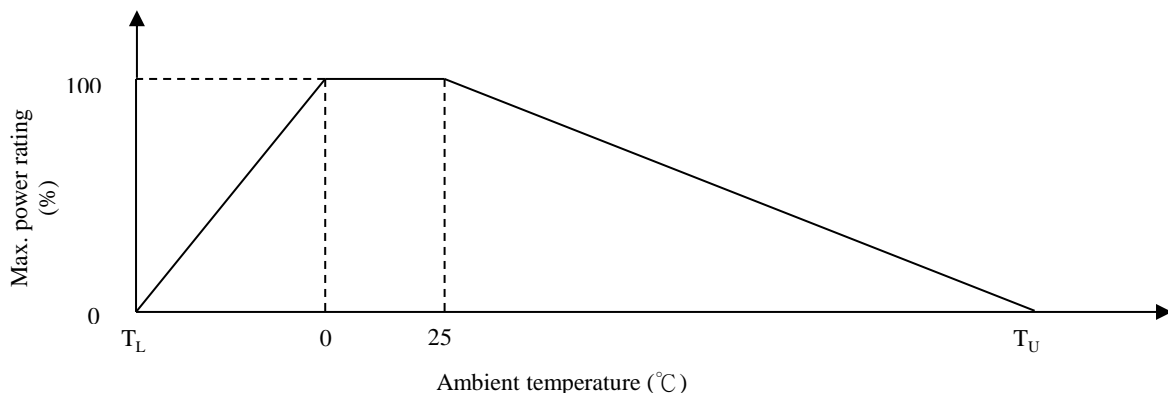
1. Electrical characteristics

	Parameter	Symbol	Test Conditions	Min.	Nor.	Max.	Unit.
a.	Resistance At 25°C	R ₂₅	Ta=25°C±0.1°C I<0.5mA	9.9	10	10.1	KΩ
b.	Resistance At 85°C	R ₈₅	Ta=85°C±0.1°C I<0.5mA	-----	1.4513	-----	KΩ
c.	R ₂₅ / R ₈₅	K	-----	-----	6.890	-----	-----
d.	B Constant	B25/85	(1779.707* LnK)	3401	3435	3469	K
e.	Thermal Dissipation Constant	δ	Ta=25°C±0.1°C	5	-----	-----	mW/°C
f.	Thermal Time Constant	τ	Ta=25°C±0.1°C	-----	-----	11	Sec

2. Maximun Ratings

	Parameter	Specification	Unit
a.	Operation Temperature Range	-20 ----- +105	°C
b.	Max' Power Rating (in air at 25°C)	150	m W

Maximum power rating (Pmax)



Note: T_L = Minimum Temp. of Operating Temp. Range (°C)

T_U = Maximum Temp. of Operating Temp. Range (°C)

3. Mechanical Characteristics

Leads Terminal Tensile Strength

Conditions	Tests Result	
Fasten body with a Load Applied to each lead 0.5 kg for 10 sec.	No break out and damage	OK

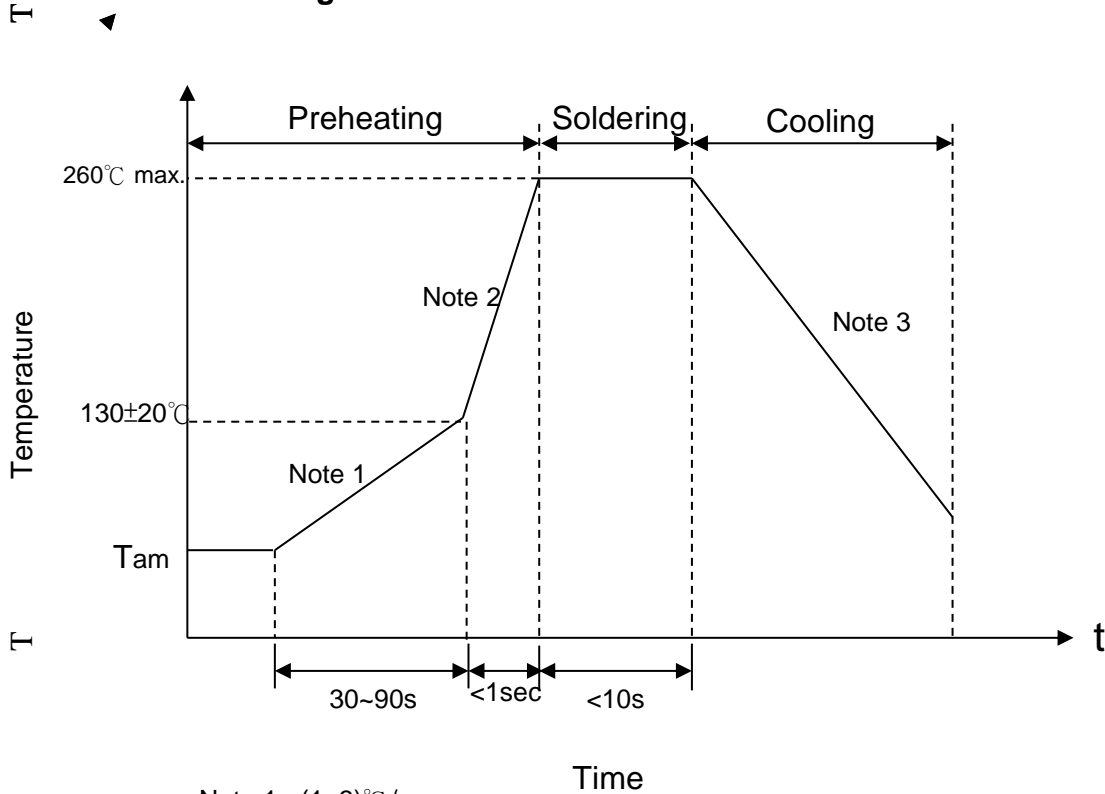
4. Reliability Test

Item	Test Conditions	Variable
Temp. cycle test	-20 °C X 30min → +25 °C X 5 min X 5Cycles +105 °C X 30min → +25 °C X 5 min	Within ± 3 %
High Temperature Storage	105 ± 5 °C , 1000 ± 24 hrs	No visible damage △R25/R25 ≤ 5 %
low Temperature Storage	-20 °C ± 5 °C , 1000 ± 24 hrs	No visible damage △R25/R25 ≤ 5 %
Humidity test	40°C 95 % RH X 1000 HRS	Within ± 3 %
Life Test	25 ± 5 °C , 150mW. , 1000 ± 24 hrs	No visible damage △R25/R25 ≤ 5 %

5. Solderability Test (TERMINAL)

Item	Standard	Conditions
Soldering Temperature	IEC60068-2-20	245±3°C
Soldering Time		3 ±0.5sec
Immersed Degree		95% of Immersed

6. Wave Flow Soldering Profile



- Note 1 : (1~3)°C/sec
 Note 2 : Approx. 200°C/sec
 Note 3 : 5°C/sec Max

7. Recommended Reworking Conditions With Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	360°C (max.)
Soldering Time	3 sec (max.)
Distance from Thermistor	10 mm (max.)

8.Storage condition of products

(I)產品使用條件：

- 1.产品使用的最大工作温度，最大功率等，均依照规格书要求作业，不可超出规格书之范围。
- 2.产品移动、安装必须轻拿轻放，不可用力拉动。
- 3.感温端子发生变形、氧化等现象时，不要使用，以免影响感温精度。
- 4.产品外观发现变形、破损时，不可使用，以免影响电性能。

Install and use

1. Use this product within the specified temperature range.
2. Higher temperature may cause deterioration of the characteristics or the material quality of this product.
3. Do not melt the solder in resin head, when you solder this product. If you melt the solder in resin head, it has possibility that the break of wire, short and insulation damage.
4. Do not touch the resin head directly by solder iron. It may cause the melt of solder in resin head.
5. At least away from resin head 10mm above when lead dividing.
6. In case you cut the lead wire of this product less than 10mm from resin head, the heat of melted solder at lead wire edge is propagated easily to the resin head along the lead wire.
7. Radius of lead bending should be more than 1mm when lead bending.
Holding element by side lead wire is recommended when lead wire is bent or cut.
8. Do not apply an excessive force to the lead. Otherwise, it may cause junction between lead and element to break or crack.
9. The ceramic element of this product is fragile, and care must be taken not to load an excessive press-force or not to give a shock at handling. Such forces may cause cracking or chipping.
10. If you mold by resin this product, please evaluate the quality of this product before you use it.

Warehouse Storage Conditions of Products

To keep solderability of product from declining, the following storage condition is recommended.

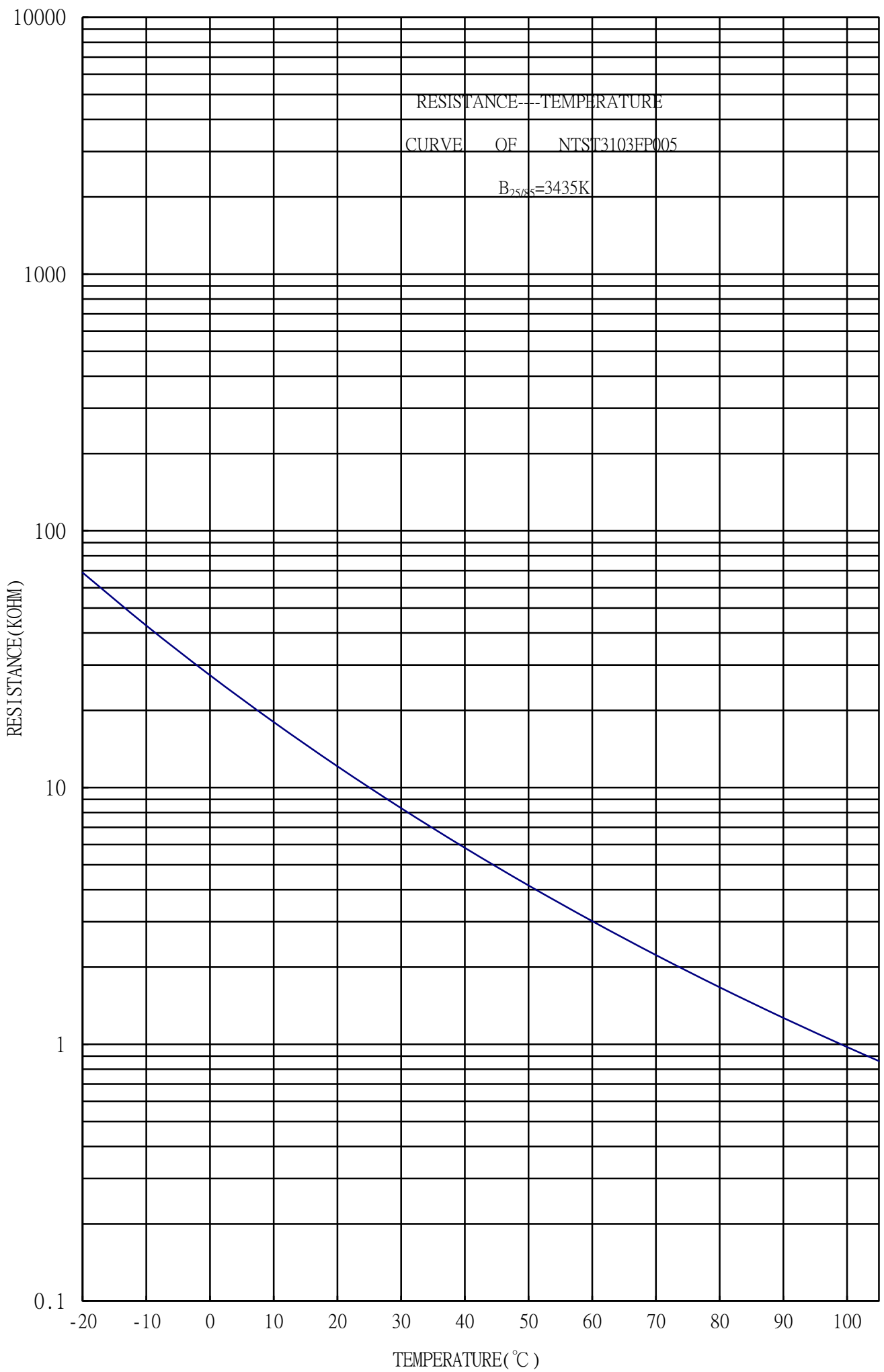
1. Storage condition:
Temperature -10°C to +40°C
Humidity less than 75%RH (not dewing condition)
2. Storage term:
Use this product within 1 year after delivery by first-in and first-out stocking system.
3. Handling after unpacking:
After unpacking, reseal product promptly or store it in a sealed container with a drying agent.
4. Storage place:
Do not store this product in corrosive gas (Sulfuric acid gas, Chlorine gas, etc.) or in direct sunlight.

Warn and note item

This product is designed for application in an ordinary environment (normal room temperature, humidity and atmospheric pressure).

Do not use under the following conditions because all of these factors can deteriorate the product characteristics or cause failures and burn-out.

1. Corrosive gas or deoxidizing gas (Chlorine gas, Hydrogen sulfide gas, Ammonia gas, Sulfuric acid gas, Nitric oxide gas, etc.)
2. Volatile or flammable gas
3. Dusty conditions
4. Under vacuum, or under high or low pressure
5. Wet or humid locations; soak in the liquid or wash with liquid
6. Places with salt water, oils, chemical liquids or organic solvents and do not use directly with quick-drying glue.
7. Strong vibrations
8. Other places where similar hazardous conditions exist
9. Be sure to provide an appropriate fail-safe function on your product to prevent secondary damages that may be caused by the abnormal function or the failure of our product.



R - T TABLE

PART NO.:NTST3103FP005

R25 =10 KOhm \pm 1%B25/85 =3435K \pm 1%

Temperature (°C)	Rmax. (K Ω)	Rnor. (K Ω)	Rmin. (K Ω)	Temperature Tol. (°C)	
-20	70.7326	68.6956	66.7106	-0.6	0.6
-19	67.3257	65.4188	63.5595	-0.6	0.6
-18	64.1040	62.3186	60.5768	-0.6	0.6
-17	61.0563	59.3844	57.7525	-0.6	0.6
-16	58.1721	56.6063	55.0772	-0.6	0.6
-15	55.4418	53.9751	52.5421	-0.6	0.5
-14	52.8560	51.4822	50.1390	-0.6	0.5
-13	50.4065	49.1193	47.8602	-0.5	0.5
-12	48.0850	46.8790	45.6987	-0.5	0.5
-11	45.8843	44.7542	43.6477	-0.5	0.5
-10	43.7972	42.7383	41.7008	-0.5	0.5
-9	41.8174	40.8250	39.8522	-0.5	0.5
-8	39.9385	39.0085	38.0963	-0.5	0.5
-7	38.1550	37.2834	36.4280	-0.5	0.5
-6	36.4615	35.6445	34.8424	-0.5	0.5
-5	34.8528	34.0871	33.3349	-0.5	0.5
-4	33.3243	32.6066	31.9013	-0.5	0.5
-3	31.8714	31.1989	30.5374	-0.5	0.5
-2	30.4901	29.8598	29.2396	-0.5	0.5
-1	29.1765	28.5858	28.0042	-0.5	0.5
0	27.9267	27.3732	26.8279	-0.5	0.5
1	26.7375	26.2188	25.7076	-0.5	0.4
2	25.6054	25.1195	24.6403	-0.4	0.4
3	24.5275	24.0723	23.6231	-0.4	0.4
4	23.5009	23.0745	22.6535	-0.4	0.4
5	22.5228	22.1235	21.7290	-0.4	0.4
6	21.5908	21.2168	20.8472	-0.4	0.4
7	20.7023	20.3522	20.0060	-0.4	0.4
8	19.8551	19.5274	19.2032	-0.4	0.4
9	19.0472	18.7405	18.4369	-0.4	0.4
10	18.2764	17.9895	17.7053	-0.4	0.4
11	17.5409	17.2725	17.0066	-0.4	0.4
12	16.8388	16.5879	16.3391	-0.4	0.4
13	16.1685	15.9340	15.7014	-0.4	0.4
14	15.5284	15.3093	15.0918	-0.4	0.4
15	14.9170	14.7124	14.5091	-0.3	0.3
16	14.3328	14.1418	13.9519	-0.3	0.3
17	13.7744	13.5962	13.4190	-0.3	0.3
18	13.2407	13.0745	12.9091	-0.3	0.3
19	12.7304	12.5755	12.4212	-0.3	0.3

R - T TABLE

PART NO.:NTST3103FP005

R25 =10 KOhm \pm 1%B25/85 =3435K \pm 1%

Temperature (°C)	Rmax. (K Ω)	Rnor. (K Ω)	Rmin. (K Ω)	Temperature Tol. (°C)	
20	12.2423	12.0980	11.9543	-0.3	0.3
21	11.7754	11.6411	11.5072	-0.3	0.3
22	11.3287	11.2038	11.0792	-0.3	0.3
23	10.9012	10.7851	10.6692	-0.3	0.3
24	10.4919	10.3841	10.2764	-0.3	0.3
25	10.1000	10.0000	9.9000	-0.3	0.3
26	9.7332	9.6333	9.5334	-0.3	0.3
27	9.3816	9.2818	9.1821	-0.3	0.3
28	9.0444	8.9449	8.8455	-0.3	0.3
29	8.7210	8.6218	8.5230	-0.3	0.3
30	8.4107	8.3121	8.2137	-0.3	0.3
31	8.1130	8.0149	7.9173	-0.3	0.3
32	7.8273	7.7299	7.6329	-0.4	0.3
33	7.5531	7.4564	7.3602	-0.4	0.4
34	7.2899	7.1940	7.0986	-0.4	0.4
35	7.0371	6.9421	6.8476	-0.4	0.4
36	6.7944	6.7002	6.6067	-0.4	0.4
37	6.5612	6.4680	6.3755	-0.4	0.4
38	6.3372	6.2450	6.1535	-0.4	0.4
39	6.1220	6.0308	5.9404	-0.4	0.4
40	5.9151	5.8250	5.7356	-0.5	0.4
41	5.7162	5.6272	5.5390	-0.5	0.5
42	5.5251	5.4371	5.3501	-0.5	0.5
43	5.3412	5.2544	5.1685	-0.5	0.5
44	5.1644	5.0788	4.9940	-0.5	0.5
45	4.9943	4.9098	4.8263	-0.5	0.5
46	4.8307	4.7474	4.6650	-0.5	0.5
47	4.6732	4.5911	4.5099	-0.5	0.5
48	4.5217	4.4407	4.3608	-0.6	0.5
49	4.3758	4.2960	4.2173	-0.6	0.6
50	4.2353	4.1568	4.0792	-0.6	0.6
51	4.1001	4.0227	3.9464	-0.6	0.6
52	3.9698	3.8936	3.8185	-0.6	0.6
53	3.8444	3.7693	3.6954	-0.6	0.6
54	3.7235	3.6496	3.5769	-0.6	0.6
55	3.6070	3.5343	3.4628	-0.7	0.6
56	3.4947	3.4232	3.3528	-0.7	0.7
57	3.3865	3.3162	3.2470	-0.7	0.7
58	3.2822	3.2130	3.1449	-0.7	0.7
59	3.1816	3.1135	3.0466	-0.7	0.7

R - T TABLE

PART NO.:NTST3103FP005

R25 =10 KOhm \pm 1%

B25/85 =3435K \pm 1%

Temperature (°C)	Rmax. (K Ω)	Rnor. (K Ω)	Rmin. (K Ω)	Temperature Tol. (°C)	
60	3.0845	3.0176	2.9519	-0.7	0.7
61	2.9909	2.9252	2.8605	-0.7	0.7
62	2.9007	2.8360	2.7725	-0.8	0.7
63	2.8135	2.7500	2.6875	-0.8	0.8
64	2.7295	2.6670	2.6056	-0.8	0.8
65	2.6483	2.5869	2.5266	-0.8	0.8
66	2.5700	2.5096	2.4504	-0.8	0.8
67	2.4944	2.4350	2.3769	-0.8	0.8
68	2.4213	2.3630	2.3059	-0.8	0.8
69	2.3508	2.2935	2.2374	-0.9	0.8
70	2.2827	2.2264	2.1712	-0.9	0.9
71	2.2168	2.1615	2.1074	-0.9	0.9
72	2.1532	2.0989	2.0457	-0.9	0.9
73	2.0918	2.0384	1.9862	-0.9	0.9
74	2.0324	1.9799	1.9286	-0.9	0.9
75	1.9749	1.9234	1.8730	-0.9	0.9
76	1.9194	1.8688	1.8193	-1.0	0.9
77	1.8657	1.8160	1.7674	-1.0	1.0
78	1.8138	1.7649	1.7172	-1.0	1.0
79	1.7635	1.7155	1.6687	-1.0	1.0
80	1.7149	1.6678	1.6218	-1.0	1.0
81	1.6679	1.6216	1.5765	-1.0	1.0
82	1.6224	1.5769	1.5326	-1.1	1.0
83	1.5783	1.5337	1.4901	-1.1	1.0
84	1.5357	1.4918	1.4491	-1.1	1.1
85	1.4944	1.4513	1.4094	-1.1	1.1
86	1.4545	1.4121	1.3709	-1.1	1.1
87	1.4158	1.3742	1.3337	-1.1	1.1
88	1.3783	1.3374	1.2977	-1.2	1.1
89	1.3419	1.3018	1.2628	-1.2	1.1
90	1.3068	1.2674	1.2290	-1.2	1.2
91	1.2727	1.2340	1.1963	-1.2	1.2
92	1.2396	1.2016	1.1647	-1.2	1.2
93	1.2076	1.1703	1.1340	-1.2	1.2
94	1.1766	1.1399	1.1042	-1.3	1.2
95	1.1465	1.1104	1.0754	-1.3	1.2
96	1.1173	1.0819	1.0475	-1.3	1.3
97	1.0890	1.0542	1.0205	-1.3	1.3
98	1.0615	1.0274	0.9942	-1.3	1.3
99	1.0349	1.0014	0.9688	-1.3	1.3

R - T TABLE

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R25 =10 KOhm \pm 1%B25/85 =3435K \pm 1%

Temperature (°C)	Rmax. (K Ω)	Rnor. (K Ω)	Rmin. (K Ω)	Temperature Tol. (°C)	
100	1.0091	0.9761	0.9441	-1.4	1.3
101	0.9840	0.9516	0.9202	-1.4	1.3
102	0.9597	0.9279	0.8970	-1.4	1.4
103	0.9361	0.9048	0.8745	-1.4	1.4
104	0.9132	0.8825	0.8527	-1.4	1.4
105	0.8909	0.8607	0.8315	-1.5	1.4

THINKING ELECTRONIC INDUSTRIAL CO.,LTD

THINKING P/N:NTST3103FP005

Safety Approvals (Certified Model/Type :NTST3103)



* UL 1434 recognized→File No. E138827

Certificates

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

Test Report

- (1) RoHS test report