



THINKING ELECTRONIC INDUSTRIAL CO., LTD.

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SPECIFICATION FOR APPROVAL

CUSTOMER	TRG
MODEL NO.	NTSE0103
PART NO.	NTSE0103FZN73(RoHS)
APPLICATION	
CUSTOMER P/N	
ISSUE DATE	Oct.25.2019
REV. NO	1.0
REV. DATE	

FOR CUSTOMER APPROVAL	CHECKED BY
	Hu Feng
	APPROVED BY
	FM.Chu



THINKING ELECTRONIC INDUSTRIAL CO.,LTD

CUSTOMER : TRG

CUSTOMER P/N :

THINKING P/N:NTSE0103FZN73

REVISED RECORD SHEET

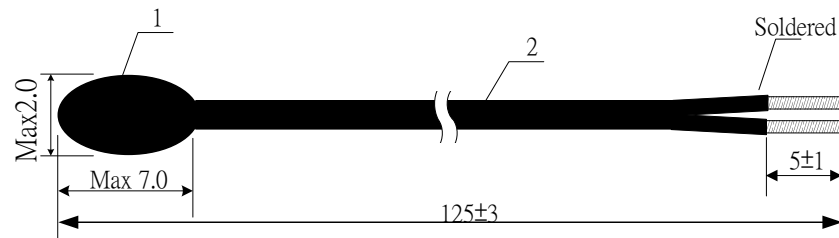
REV. NO	REV. DATE	REVISED CONTENT
1.0	2019/10/25	New Released

A. Material List

NO.	ITEM	DESCRIPTION
1	COATING RESIN	BLACK EPOXY
2	LEAD WIRE	UL4484#32*2C TS Black wire
*	ELEMENT	NTC Thermistor

B. Electrical Characteristic

ITEM	VALUE
R25	10KΩ± 1%
B25/85	3486K±1.5%



							Customer	TRG
							Customer P/N	
							Thinking P/N	NTSE0103FZN73
							Drawing NO.	SE1910037
							Date	2019/10/25
							Tol: ±mm	Unit: mm Scale:
1.0	2019/10/25	New Released		Li Qiu Ping	Hu Feng	FM.Chu	<i>THINKING ELECTRONIC INDUSTRIAL CO.,LTD</i>	
Rev.	Date	Subjects of Change	ECN.NO	Designed by	Checked by	Approved by		

Specification of NTC Thermistor for Temperature Measurement and Control

PART NO . NTSE0103FZN73 _____

CUSTOMER P/N . _____

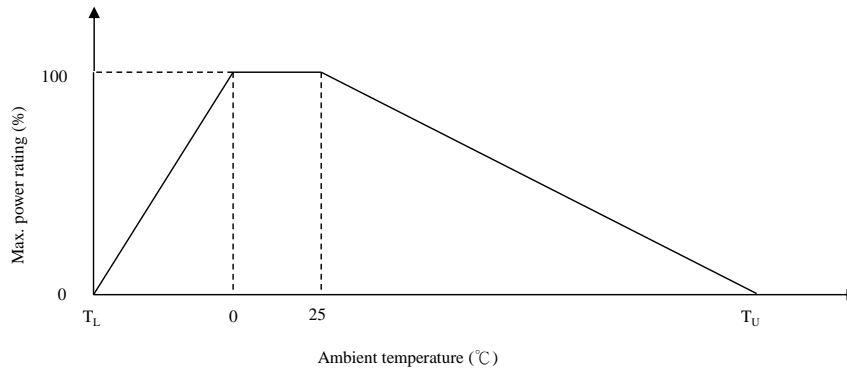
1. Electrical characteristics

	Parameter	Symbol	Test Conditions	Min.	Nor.	Max.	Unit
a.	Resistance At 25°C	R ₂₅	T _a =25°C±0.05°C P _r ≤0.02mW	9.9	10	10.1	KΩ
b.	B Constant	B _{25/85}	(1779.707*Ln (R ₂₅ /R ₈₅))	3434	3486	3538	K
c.	Thermal Dissipation Constant (in air)	δ	T _a =25°C	-----	Approx5.0	-----	mW/°C
d.	Thermal Time Constant (in water)	τ	25°C→85°C T ₁ =25+(85-25)*63.2%=62.92°C	-----	Approx15	-----	Sec
e.	Insulation test	-----	DC 500V 3 sec	Min : 100 MΩ			

2. Maximum Ratings

	Parameter	Specification	Unit
a.	Operation Temperature Range	-40 ----- +110	°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. Reliability Test

Item	Test Conditions	Variable
Temp. cycle test	-40°C x 30min → +25 °C x 5min +110°C x 30min → +25 °C x 5min } X 5Cycles	No visible damage ΔR ₂₅ /R ₂₅ ≤ ±3%
Low temp.test	-40± 5°C X 1000 HRS	No visible damage ΔR ₂₅ /R ₂₅ ≤ ±3%
High temp.test	110± 5°C X 1000 HRS	No visible damage ΔR ₂₅ /R ₂₅ ≤ ±3%
Humidity test	40 °C 95 % RH x 1000 HRS	No visible damage ΔR ₂₅ /R ₂₅ ≤ ±3%

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:

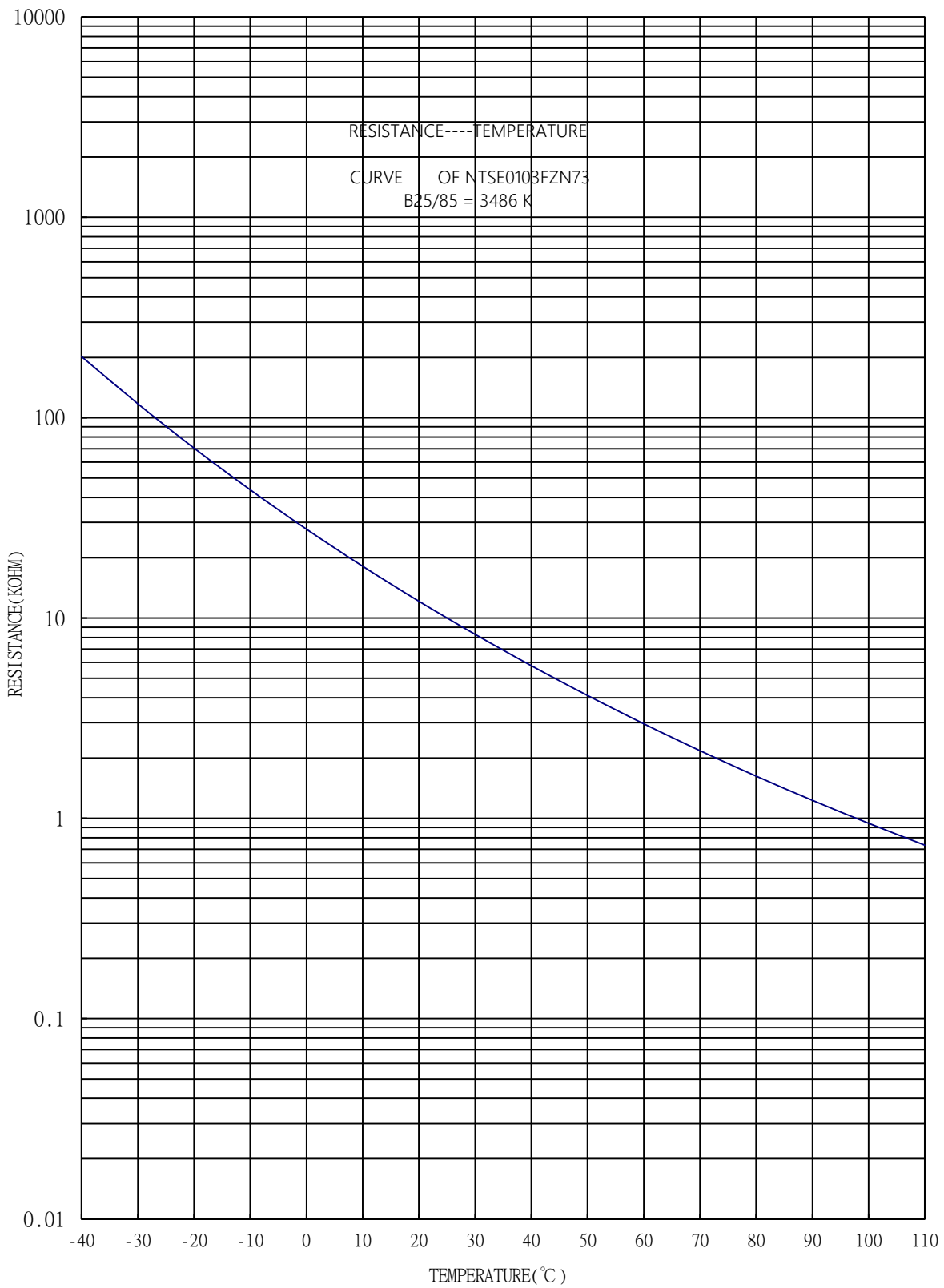
Do not store this product in corrosive gas (Sulfuric acid gas, Chlorine gas, etc.) or in direct sunlight.

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. :NTSE0103FZN73

R25=10KΩ ±1%

B25/85 = 3486 K ± 1.5%

Temperature (°C)	Rmax. (KΩ)	Rnor. (KΩ)	Rmin. (KΩ)	Temperature Tol. (°C)	
-40	213.322	201.900	191.071	-1.01	1.01
-39	201.791	191.144	181.040	-0.99	0.99
-38	190.857	180.936	171.513	-0.97	0.98
-37	180.516	171.273	162.487	-0.96	0.96
-36	170.755	162.145	153.954	-0.94	0.95
-35	161.554	153.534	145.897	-0.93	0.94
-34	152.889	145.417	138.296	-0.92	0.93
-33	144.732	137.771	131.131	-0.91	0.92
-32	137.057	130.570	124.377	-0.90	0.91
-31	129.835	123.789	118.012	-0.89	0.90
-30	123.039	117.402	112.012	-0.88	0.90
-29	116.642	111.386	106.356	-0.87	0.89
-28	110.619	105.717	101.022	-0.86	0.88
-27	104.945	100.373	95.9904	-0.86	0.87
-26	99.5990	95.3334	91.2413	-0.85	0.86
-25	94.5590	90.5787	86.7572	-0.84	0.85
-24	89.8053	86.0907	82.5215	-0.83	0.84
-23	85.3197	81.8526	78.5185	-0.82	0.83
-22	81.0851	77.8486	74.7338	-0.81	0.82
-21	77.0857	74.0642	71.1540	-0.80	0.81
-20	73.3068	70.4857	67.7665	-0.79	0.80
-19	69.7347	67.1007	64.5596	-0.78	0.79
-18	66.3569	63.8973	61.5227	-0.77	0.78
-17	63.1614	60.8646	58.6455	-0.76	0.77
-16	60.1374	57.9926	55.9187	-0.75	0.76
-15	57.2747	55.2718	53.3337	-0.74	0.75
-14	54.5638	52.6935	50.8822	-0.73	0.74
-13	51.9958	50.2492	48.5565	-0.71	0.73
-12	49.5624	47.9315	46.3497	-0.70	0.72
-11	47.2559	45.7332	44.2551	-0.69	0.71
-10	45.0691	43.6474	42.2663	-0.68	0.70
-9	42.9952	41.6679	40.3776	-0.67	0.69
-8	41.0279	39.7888	38.5834	-0.66	0.68
-7	39.1611	38.0046	36.8785	-0.65	0.66
-6	37.3893	36.3099	35.2582	-0.64	0.65
-5	35.7072	34.7000	33.7179	-0.63	0.64
-4	34.1099	33.1702	32.2532	-0.61	0.63
-3	32.5927	31.7161	30.8600	-0.60	0.62
-2	31.1513	30.3338	29.5347	-0.59	0.61
-1	29.7815	29.0192	28.2735	-0.58	0.60
0	28.4794	27.7688	27.0731	-0.57	0.58
1	27.2414	26.5791	25.9303	-0.56	0.57
2	26.0641	25.4470	24.8420	-0.55	0.56
3	24.9441	24.3693	23.8054	-0.53	0.55

4	23.8784	23.3432	22.8178	-0.52	0.54
5	22.8641	22.3660	21.8766	-0.51	0.53
6	21.8985	21.4352	20.9795	-0.50	0.51
7	20.9791	20.5482	20.1241	-0.49	0.50
8	20.1033	19.7028	19.3084	-0.47	0.49
9	19.2689	18.8969	18.5302	-0.46	0.48
10	18.4738	18.1284	17.7876	-0.45	0.46
11	17.7158	17.3953	17.0790	-0.44	0.45
12	16.9931	16.6960	16.4024	-0.42	0.44
13	16.3038	16.0285	15.7563	-0.41	0.43
14	15.6462	15.3914	15.1393	-0.40	0.41
15	15.0187	14.7831	14.5497	-0.39	0.40
16	14.4198	14.2021	13.9863	-0.37	0.39
17	13.8480	13.6471	13.4478	-0.36	0.38
18	13.3020	13.1168	12.9329	-0.35	0.36
19	12.7803	12.6099	12.4404	-0.34	0.35
20	12.2819	12.1252	11.9693	-0.32	0.34
21	11.8056	11.6618	11.5186	-0.31	0.32
22	11.3503	11.2185	11.0872	-0.30	0.31
23	10.9148	10.7944	10.6742	-0.28	0.30
24	10.4984	10.3885	10.2788	-0.27	0.28
25	10.1000	10.0000	9.90000	-0.26	0.27
26	9.72982	9.62801	9.52631	-0.27	0.29
27	9.37511	9.27177	9.16865	-0.29	0.30
28	9.03514	8.93052	8.82623	-0.31	0.32
29	8.70922	8.60356	8.49833	-0.32	0.34
30	8.39670	8.29022	8.18426	-0.34	0.35
31	8.09697	7.98986	7.88338	-0.36	0.37
32	7.80943	7.70188	7.59506	-0.37	0.39
33	7.53353	7.42572	7.31871	-0.39	0.40
34	7.26875	7.16082	7.05379	-0.41	0.42
35	7.01459	6.90669	6.79977	-0.42	0.44
36	6.77056	6.66282	6.55614	-0.44	0.46
37	6.53621	6.42875	6.32243	-0.46	0.47
38	6.31113	6.20405	6.09819	-0.48	0.49
39	6.09489	5.98831	5.88300	-0.49	0.51
40	5.88711	5.78111	5.67644	-0.51	0.53
41	5.68743	5.58208	5.47814	-0.53	0.54
42	5.49548	5.39087	5.28773	-0.55	0.56
43	5.31094	5.20714	5.10486	-0.56	0.58
44	5.13349	5.03056	4.92919	-0.58	0.60
45	4.96283	4.86081	4.76041	-0.60	0.62
46	4.79867	4.69761	4.59823	-0.62	0.63
47	4.64072	4.54068	4.44235	-0.64	0.65
48	4.48874	4.38975	4.29251	-0.66	0.67
49	4.34247	4.24456	4.14845	-0.67	0.69
50	4.20167	4.10488	4.00991	-0.69	0.71
51	4.06612	3.97047	3.87667	-0.71	0.73
52	3.93560	3.84111	3.74851	-0.73	0.74
53	3.80990	3.71659	3.62520	-0.75	0.76
54	3.68882	3.59671	3.50654	-0.77	0.78
55	3.57219	3.48128	3.39234	-0.79	0.80
56	3.45980	3.37011	3.28242	-0.81	0.82

57	3.35151	3.26304	3.17660	-0.83	0.84
58	3.24713	3.15990	3.07470	-0.85	0.86
59	3.14651	3.06052	2.97657	-0.87	0.88
60	3.04951	2.96475	2.88206	-0.89	0.90
61	2.95597	2.87245	2.79101	-0.90	0.92
62	2.86576	2.78348	2.70329	-0.92	0.93
63	2.77876	2.69770	2.61875	-0.94	0.95
64	2.69482	2.61500	2.53728	-0.97	0.97
65	2.61384	2.53524	2.45875	-0.99	0.99
66	2.53570	2.45830	2.38304	-1.01	1.01
67	2.46028	2.38409	2.31003	-1.03	1.03
68	2.38748	2.31249	2.23963	-1.05	1.05
69	2.31720	2.24340	2.17173	-1.07	1.07
70	2.24935	2.17672	2.10622	-1.09	1.10
71	2.18382	2.11235	2.04302	-1.11	1.12
72	2.12053	2.05021	1.98204	-1.13	1.14
73	2.05939	1.99022	1.92318	-1.15	1.16
74	2.00032	1.93228	1.86636	-1.17	1.18
75	1.94325	1.87632	1.81152	-1.20	1.20
76	1.88810	1.82227	1.75856	-1.22	1.22
77	1.83478	1.77004	1.70741	-1.24	1.24
78	1.78325	1.71958	1.65802	-1.26	1.26
79	1.73342	1.67081	1.61030	-1.28	1.28
80	1.68524	1.62367	1.56419	-1.31	1.31
81	1.63864	1.57810	1.51964	-1.33	1.33
82	1.59356	1.53403	1.47658	-1.35	1.35
83	1.54995	1.49142	1.43496	-1.37	1.37
84	1.50776	1.45021	1.39472	-1.40	1.39
85	1.46692	1.41035	1.35582	-1.42	1.41
86	1.42740	1.37178	1.31819	-1.44	1.44
87	1.38914	1.33445	1.28179	-1.47	1.46
88	1.35209	1.29833	1.24659	-1.49	1.48
89	1.31622	1.26337	1.21252	-1.51	1.50
90	1.28148	1.22952	1.17955	-1.53	1.52
91	1.24782	1.19674	1.14764	-1.56	1.55
92	1.21521	1.16500	1.11675	-1.58	1.57
93	1.18362	1.13426	1.08684	-1.61	1.59
94	1.15300	1.10447	1.05788	-1.63	1.61
95	1.12332	1.07561	1.02983	-1.65	1.64
96	1.09454	1.04764	1.00266	-1.68	1.66
97	1.06664	1.02054	0.97633	-1.70	1.68
98	1.03958	0.99426	0.95082	-1.72	1.70
99	1.01333	0.96878	0.92609	-1.75	1.73
100	0.98787	0.94407	0.90212	-1.77	1.75
101	0.96317	0.92011	0.87888	-1.80	1.77
102	0.93919	0.89686	0.85635	-1.82	1.80
103	0.91592	0.87430	0.83449	-1.85	1.82
104	0.89333	0.85241	0.81329	-1.87	1.84
105	0.87139	0.83117	0.79272	-1.89	1.86
106	0.85009	0.81054	0.77276	-1.92	1.89
107	0.82940	0.79052	0.75338	-1.94	1.91
108	0.80930	0.77107	0.73457	-1.97	1.93
109	0.78977	0.75218	0.71631	-1.99	1.95
110	0.77079	0.73383	0.69858	-2.01	1.98