



THINKING ELECTRONIC INDUSTRIAL CO.,LTD

SUBJECT: CERTIFICATION OF MATERIALS

CUSTOMER:

THINKING P/N: NTSE0103HZ182

NO	PART NAME	PART P/N	Q'TY	MANUFACTURER OF MATERIAL	FLAMMABILITY SOLID BURNING CLASS	UL FILE NO
1	COATING RESIN	BLACK EPOXY		SOMAR		
2	WIRE	UL2651#26×2C TS BLACK (BLACK/WHITE)	1	LTK OR EQUIVALENT	VW-1	UL APPROVED
3	HOUSING (white)	P2-I25002	1	WST	UL94V-0	UL APPROVED
4	TERMINAL	I25002PS-2	2	WST	PHOS BRONZE	
REMARK						

Approved by: FM CHU

Checked by: MATT

Designed by: KITTY

Specification of NTC Thermistor for Temperature Measurement and Control

PART NO . NTSE0103HZ182

CUSTOMER P/N . _____

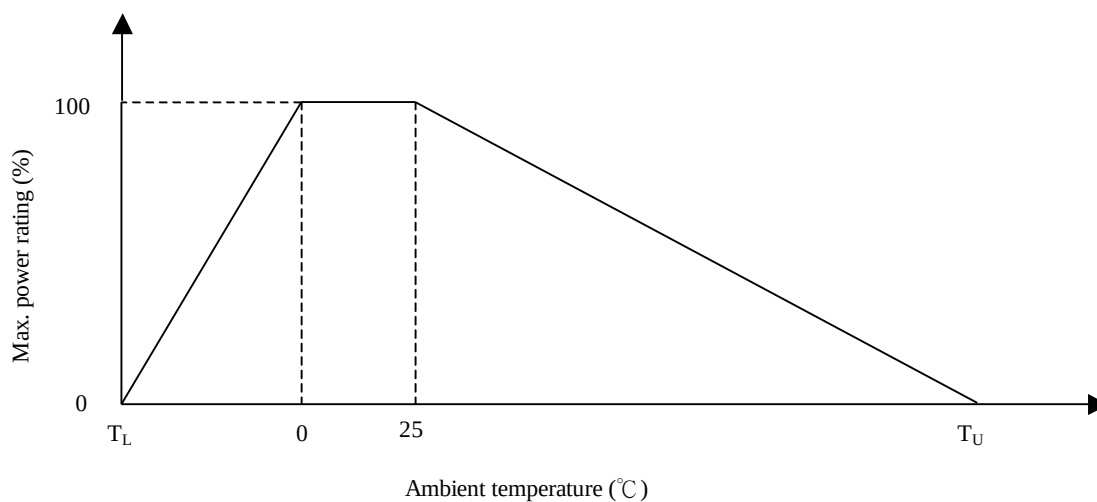
1. Electrical characteristics

	Parameter	Symbol	Test Conditions	Min.	Nor.	Max.	Unit.
a.	Resistance At 25°C	$R_{25^{\circ}\text{C}}$	$T_a=25^{\circ}\text{C}\pm 0.05^{\circ}\text{C}$ $P_T\leq 0.1\text{mW}$	9.7	10.0	10.3	KOHM
b.	Resistance At 85°C	$R_{85^{\circ}\text{C}}$	$T_a=85^{\circ}\text{C}\pm 0.05^{\circ}\text{C}$ $P_T\leq 0.1\text{mW}$	-----	1,451	-----	KOHM
c.	$R_{25^{\circ}\text{C}}/R_{85^{\circ}\text{C}}$	K	-----	-----	6.890	-----	-----
d.	B Constant	$B_{25^{\circ}\text{C}/85^{\circ}\text{C}}$	(1779.707* LnK)	3366	3435	3504	K
e.	Thermal Dissipation Constant	δ	$T_a=25^{\circ}\text{C}\pm 0.5^{\circ}\text{C}$	5	-----	-----	mW/°C
f.	Thermal Time Constant	τ	$T_a=25^{\circ}\text{C}\pm 0.5^{\circ}\text{C}$	-----	-----	30	Sec
g.	Hi-Pot Test	-----	1500V AC 1 min	-----	-----	10	mA

2. Maximum Ratings

	Parameter	Specification	Unit
a.	Operation Temperature Range	-40 ----- +85	°C
b.	Max' Power Rating (in air at 25°C)	210	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)

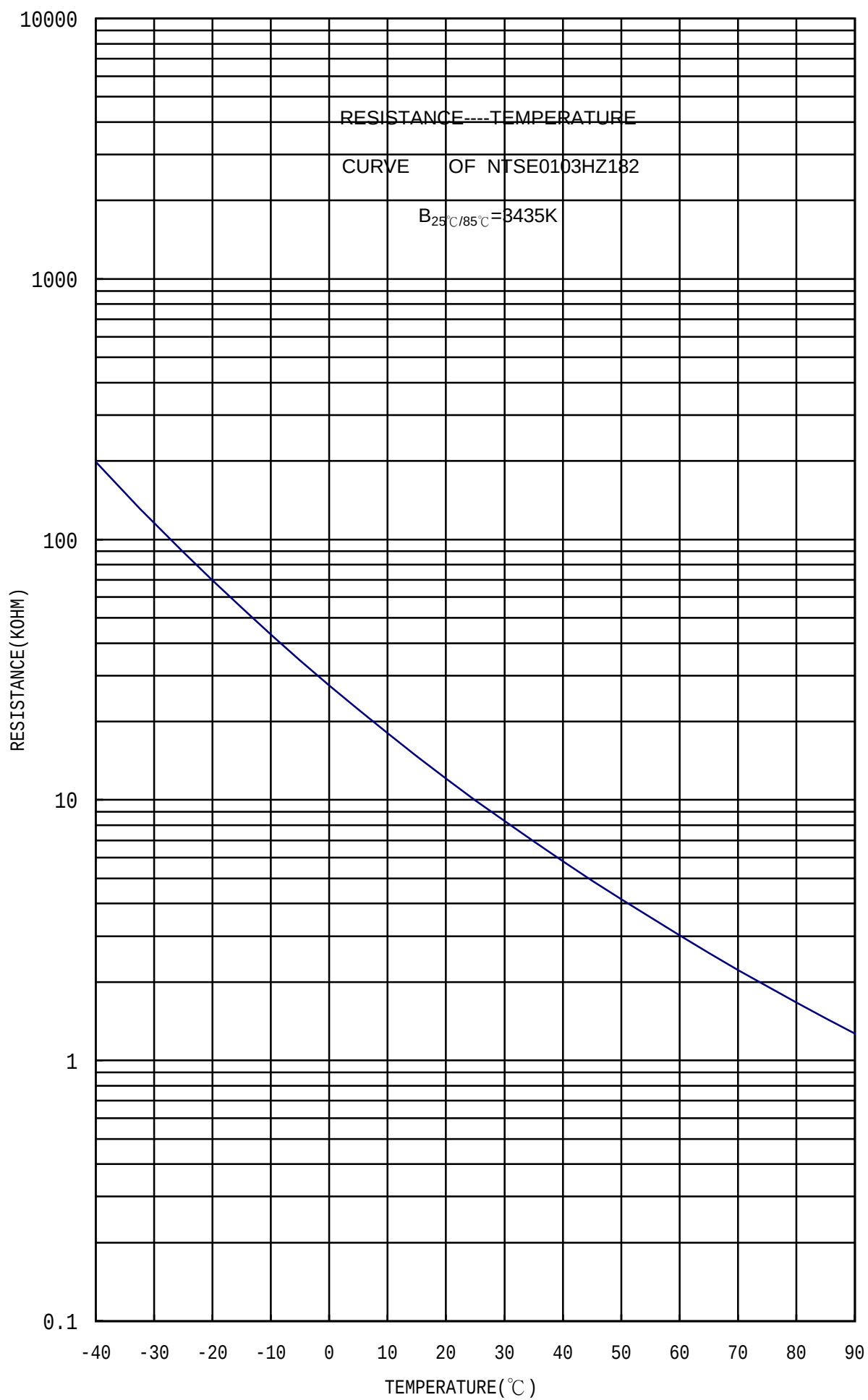
3. Mechanical Characteristics

3-1. Leads Terminal Tensile Strength

Conditions	Test Result	
Fasten body with a Load Applied to each lead 1.0 kg for 10 sec.	No break out and damage	OK

4. Reliability Test

Item	Test Conditions	Variable
Temp. cycle test	-40 °C X 30min → +25 °C X 5min X 5Cycles +85 °C X 30min → +25 °C X 5min	Within ± 3 %
Humidity test	40 °C 95 % RH X 1000 HRS	Within ± 3 %
Insulation test	DC 500 V	MIN: 100 MOHM



THINKING ELECTRONIC INDUSTRIAL CO., LTD.

R-T TABLE

Part No:NTSE0103HZ182

$R_{25^{\circ}\text{C}} = 10\text{K}\Omega \pm 3\%$

$B_{25^{\circ}\text{C}/85^{\circ}\text{C}} = 3435\text{K} \pm 2\%$

T	Rmax.	Rnor.	Rmin.	Temp. Tolerance	
(°C)	(KΩ)	(KΩ)	(KΩ)	(°C)	
-40	216.8358	198.3110	181.2056	-1.60	1.60
-39	204.8705	187.5766	171.5880	-1.60	1.60
-38	193.6364	177.4870	162.5380	-1.60	1.60
-37	183.0851	168.0001	154.0193	-1.60	1.60
-36	173.1710	159.0764	145.9975	-1.60	1.60
-35	163.8524	150.6796	138.4411	-1.50	1.60
-34	155.0901	142.7755	131.3204	-1.50	1.60
-33	146.8479	135.3326	124.6081	-1.50	1.60
-32	139.0923	128.3216	118.2784	-1.50	1.50
-31	131.7916	121.7149	112.3075	-1.50	1.50
-30	124.9169	115.4871	106.6730	-1.50	1.50
-29	118.4409	109.6143	101.3542	-1.50	1.50
-28	112.3386	104.0746	96.3318	-1.50	1.50
-27	106.5860	98.8470	91.5874	-1.50	1.50
-26	101.1615	93.9125	87.1045	-1.40	1.50
-25	96.0445	89.2530	82.8671	-1.40	1.50
-24	91.2160	84.8517	78.8604	-1.40	1.50
-23	86.6580	80.6928	75.0706	-1.40	1.40
-22	82.3542	76.7619	71.4849	-1.40	1.40
-21	78.2889	73.0451	68.0912	-1.40	1.40
-20	74.4475	69.5296	64.8781	-1.40	1.40
-19	70.8167	66.2035	61.8351	-1.40	1.40
-18	67.3838	63.0556	58.9523	-1.40	1.40
-17	64.1368	60.0753	56.2204	-1.30	1.40
-16	61.0649	57.2530	53.6308	-1.30	1.40
-15	58.1575	54.5793	51.1752	-1.30	1.40
-14	55.4050	52.0456	48.8459	-1.30	1.30
-13	52.7985	49.6440	46.6360	-1.30	1.30
-12	50.3293	47.3668	44.5386	-1.30	1.30
-11	47.9895	45.2069	42.5473	-1.30	1.30
-10	45.7717	43.1577	40.6564	-1.30	1.30
-9	43.6688	41.2129	38.8601	-1.30	1.30
-8	41.6743	39.3667	37.1534	-1.20	1.30
-7	39.7821	37.6135	35.5311	-1.20	1.30
-6	37.9864	35.9482	33.9888	-1.20	1.20
-5	36.2818	34.3660	32.5221	-1.20	1.20
-4	34.6631	32.8622	31.1268	-1.20	1.20
-3	33.1257	31.4326	29.7992	-1.20	1.20
-2	31.6650	30.0731	28.5356	-1.20	1.20
-1	30.2767	28.7799	27.3325	-1.20	1.20
0	28.9570	27.5495	26.1868	-1.10	1.20
1	27.7008	26.3773	25.0944	-1.10	1.20

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R-T TABLE

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$R_{25^{\circ}\text{C}} = 10\text{K}\Omega \pm 3\%$

$B_{25^{\circ}\text{C}/85^{\circ}\text{C}} = 3435\text{K} \pm 2\%$

T	Rmax.	Rnor.	Rmin.	Temp. Tolerance	
(°C)	(KΩ)	(KΩ)	(KΩ)	(°C)	
2	26.5063	25.2617	24.0539	-1.10	1.10
3	25.3699	24.1994	23.0622	-1.10	1.10
4	24.2886	23.1878	22.1170	-1.10	1.10
5	23.2595	22.2242	21.2159	-1.10	1.10
6	22.2797	21.3060	20.3565	-1.10	1.10
7	21.3466	20.4308	19.5367	-1.00	1.10
8	20.4578	19.5965	18.7546	-1.00	1.10
9	19.6109	18.8008	18.0080	-1.00	1.00
10	18.8038	18.0419	17.2953	-1.00	1.00
11	18.0343	17.3178	16.6148	-1.00	1.00
12	17.3006	16.6268	15.9648	-1.00	1.00
13	16.6008	15.9671	15.3438	-1.00	1.00
14	15.9330	15.3372	14.7504	-0.90	1.00
15	15.2958	14.7356	14.1831	-0.90	1.00
16	14.6876	14.1609	13.6408	-0.90	0.90
17	14.1069	13.6118	13.1223	-0.90	0.90
18	13.5522	13.0869	12.6262	-0.90	0.90
19	13.0224	12.5851	12.1515	-0.90	0.90
20	12.5162	12.1053	11.6974	-0.90	0.90
21	12.0324	11.6464	11.2626	-0.80	0.90
22	11.5699	11.2073	10.8463	-0.80	0.90
23	11.1276	10.7871	10.4476	-0.80	0.80
24	10.7046	10.3850	10.0658	-0.80	0.80
25	10.3000	10.0000	9.7000	-0.80	0.80
26	9.9277	9.6313	9.3353	-0.80	0.80
27	9.5709	9.2782	8.9864	-0.80	0.90
28	9.2288	8.9399	8.6523	-0.90	0.90
29	8.9008	8.6158	8.3325	-0.90	0.90
30	8.5861	8.3051	8.0261	-0.90	0.90
31	8.2842	8.0072	7.7325	-0.90	1.00
32	7.9946	7.7217	7.4514	-1.00	1.00
33	7.7166	7.4478	7.1819	-1.00	1.00
34	7.4496	7.1850	6.9235	-1.00	1.00
35	7.1934	6.9329	6.6758	-1.00	1.10
36	6.9473	6.6910	6.4383	-1.10	1.10
37	6.7110	6.4588	6.2105	-1.10	1.10
38	6.4838	6.2358	5.9919	-1.10	1.10
39	6.2656	6.0217	5.7821	-1.10	1.20
40	6.0559	5.8161	5.5808	-1.20	1.20
41	5.8542	5.6185	5.3875	-1.20	1.20
42	5.6603	5.4287	5.2019	-1.20	1.20
43	5.4738	5.2462	5.0236	-1.20	1.30

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T	Rmax.	Rnor.	Rmin.	Temp. Tolerance	
(°C)	(KΩ)	(KΩ)	(KΩ)	(°C)	
44	5.2944	5.0709	4.8524	-1.30	1.30
45	5.1219	4.9023	4.6879	-1.30	1.30
46	4.9557	4.7401	4.5298	-1.30	1.40
47	4.7960	4.5842	4.3778	-1.30	1.40
48	4.6421	4.4342	4.2318	-1.40	1.40
49	4.4939	4.2898	4.0913	-1.40	1.40
50	4.3513	4.1509	3.9562	-1.40	1.50
51	4.2139	4.0172	3.8263	-1.50	1.50
52	4.0814	3.8884	3.7012	-1.50	1.50
53	3.9539	3.7645	3.5809	-1.50	1.60
54	3.8310	3.6451	3.4651	-1.50	1.60
55	3.7125	3.5301	3.3536	-1.60	1.60
56	3.5983	3.4193	3.2463	-1.60	1.60
57	3.4881	3.3125	3.1429	-1.60	1.70
58	3.3819	3.2096	3.0433	-1.70	1.70
59	3.2794	3.1104	2.9474	-1.70	1.70
60	3.1806	3.0148	2.8551	-1.70	1.80
61	3.0853	2.9226	2.7660	-1.70	1.80
62	2.9933	2.8337	2.6802	-1.80	1.80
63	2.9044	2.7479	2.5975	-1.80	1.80
64	2.8186	2.6651	2.5177	-1.80	1.90
65	2.7358	2.5852	2.4407	-1.90	1.90
66	2.6558	2.5081	2.3665	-1.90	1.90
67	2.5786	2.4337	2.2949	-1.90	2.00
68	2.5039	2.3618	2.2258	-1.90	2.00
69	2.4319	2.2925	2.1592	-2.00	2.00
70	2.3622	2.2255	2.0948	-2.00	2.10
71	2.2948	2.1607	2.0326	-2.00	2.10
72	2.2297	2.0982	1.9727	-2.10	2.10
73	2.1668	2.0378	1.9148	-2.10	2.10
74	2.1059	1.9794	1.8588	-2.10	2.20
75	2.0471	1.9230	1.8048	-2.20	2.20
76	1.9901	1.8684	1.7526	-2.20	2.20
77	1.9351	1.8157	1.7021	-2.20	2.30
78	1.8818	1.7647	1.6534	-2.20	2.30
79	1.8303	1.7154	1.6063	-2.30	2.30
80	1.7804	1.6677	1.5607	-2.30	2.40
81	1.7320	1.6215	1.5167	-2.30	2.40
82	1.6852	1.5768	1.4740	-2.40	2.40
83	1.6400	1.5336	1.4328	-2.40	2.50
84	1.5961	1.4918	1.3930	-2.40	2.50
85	1.5537	1.4513	1.3545	-2.50	2.50