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SPECIFICATION FOR APPROVAL

CUSTOMER 立創電子

CERTIFIED MODEL/TYPE NTSA3104

PART NO. NTSA3104GP014(RoHS+PHF)

APPLICATION _____

CUSTOMER P/N _____

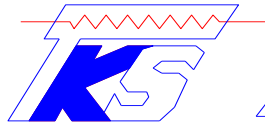
ISSUE DATE DEC.02.2020

REV. NO. 1.0

REV. DATE _____

FOR CUSTOMER APPROVAL	CHECKED BY
	戶鋒
	APPROVED BY
	朱鳳美



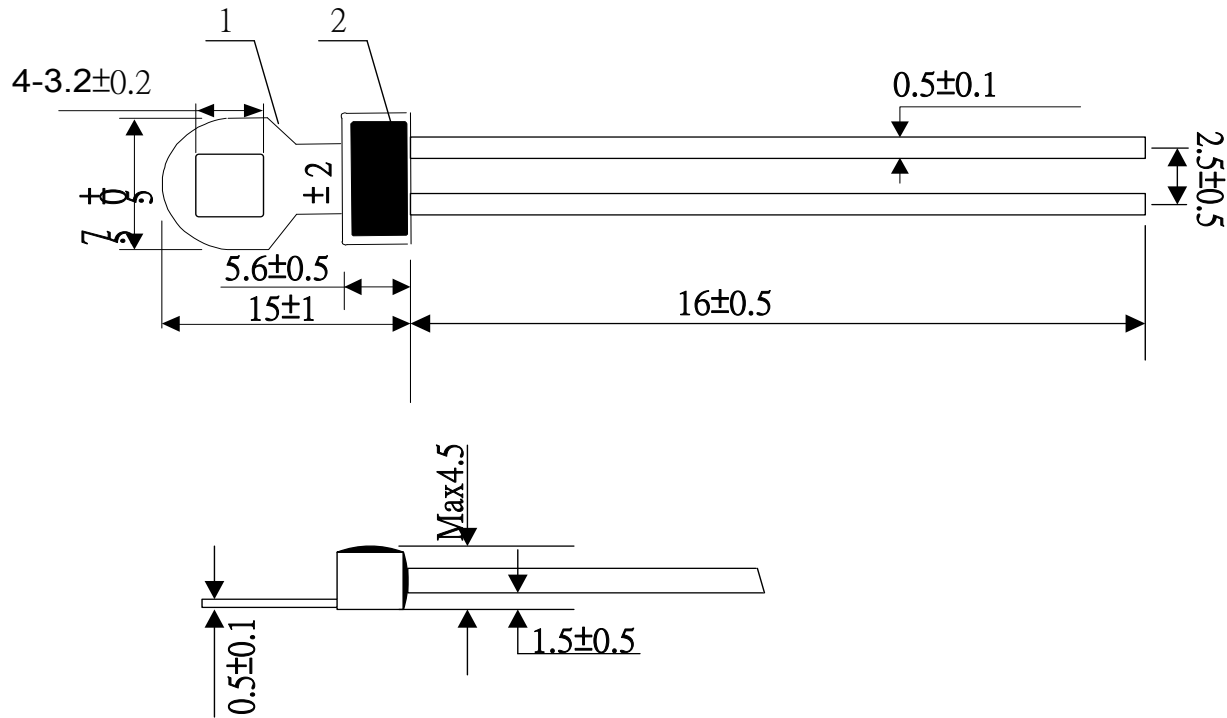


Example :

NTS A3 104 G P014

(1) (2) (3) (4) (5)

No.	Item	Digit	Specification
(1)	Product Type	NTS	Thinking NTC thermistor for temperature sensor
(2)	Type Series	A3	Housing type
(3)	Zero power resistance at 25°C (R ₂₅)	104	10 x 10 ⁴ Ω = 100 KΩ
(4)	Tolerance of R ₂₅	G	±2%
(5)	Optional Suffix	P014	Special code for customer (RoHS+PHF)



A. Material List

NO.	ITEM	DESCRIPTION
1	TERMINAL	3.2*3.2*15-2磷青銅鍍銀端子
2	COATING RESIN	BLACK EPOXY
*	THERMISTOR	TTC3A104G4361W

B. Electrical Characteristic

ITEM	VALUE
R25°C	100KΩ±2%
B25/85	4360K±1%

							Customer	立創電子	
							Customer P/N		
							Thinking P/N	NTSA3104GP014	
							Drawing NO.	SA1707034	
							Date	2017/7/12	
							Scale:	Tol: ±mm Unit: mm	
1.0	2017/7/12	新资料制作		曹建暉	戶鋒	朱鳳美	THINKING ELECTRONIC INDUSTRIAL CO.,LTD		
Rev.	Date	Subjects of Change	ECN No	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

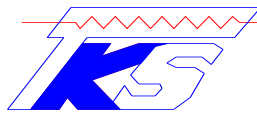
THINKING P/N:NTSA3104GP014

NO	Part name	DESCRIPTION	Supplier	Supplier P/n	UL file NO.	Q'TY	Remark
1	TERMINAL			3.2*3.2*15-2磷青銅鍍銀端子		1	
2	COATING RESIN			BLACK EPOXY			
*	THERMISTOR		THINKING	TTC3A104G4361W		1	
	Notes						

Approved By: 朱鳳美 _____

Checked By: 戶鋒 _____

Designed By: 曹建暉 _____



Specification of NTC Thermistor for Temperature Compensation

PART NO . NTSA3104GP014

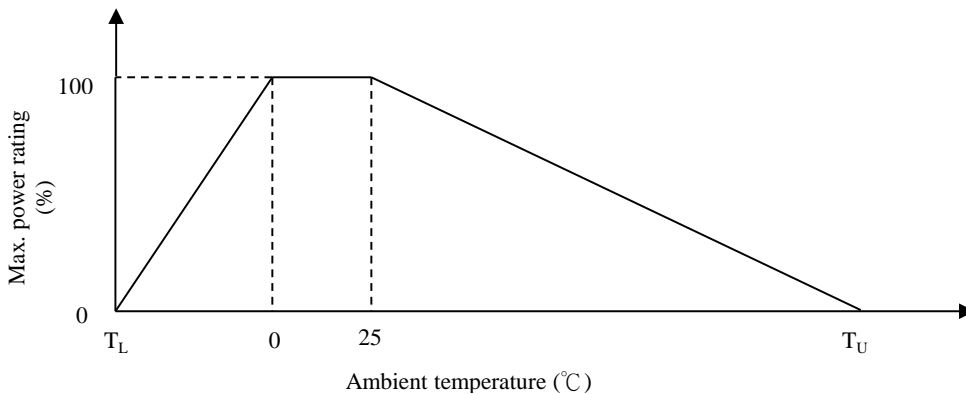
CUSTOMER P/N . _____

1. Electrical characteristics

	Parameter	Symbol	Test Conditions	Min.	Nor.	Max.	Unit.
a.	Resistance At 25°C	R ₂₅	Ta=25°C±0.05°C I<0.5mA	98	100	102	KΩ
b.	Resistance At 85°C	R85	Ta=85°C±0.05°C I<0.5mA	-----	8.631	-----	KΩ
c.	R ₂₅ / R85	K	-----	-----	11.587	-----	-----
d.	B Constant	B25/85	(1779.707* LnK)	4316	4360	4404	K
e.	Thermal Dissipation Constant	δ	Ta=25°C (in air)	-----	Apporx4	-----	mW/°C
f.	Thermal Time Constant	τ	25°C→85°C T1=25+(85-25)*63.2%=62.9°C	-----	Apporx30	-----	Sec
g.	Insulation test	-----	DC 500V 5 Sec	100	-----	-----	MΩ
h.	Hi-Pot Test	-----	1500V AC 5 sec	-----	-----	10	mA

2.Maximun Ratings

	Parameter	Specification	Unit
a.	Operation Temperature Range	-40 ----- +125	°C
b.	Max' power rating at 25°C (finished product)	270	mW
c.	Max' power rating at 25°C (Chip)	150	mW



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

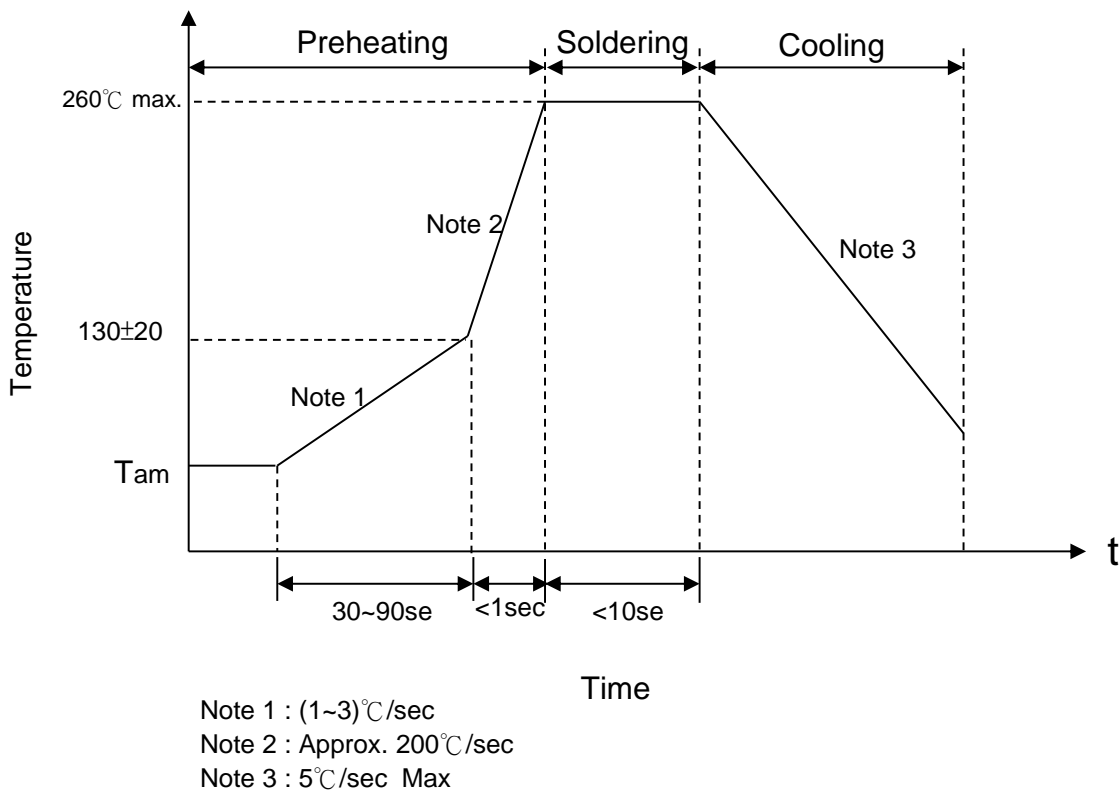
4. Reliability Test

Item	Test Conditions	Variable
Temp. cycle test	-40 °C X 30 min → +25 °C X 5 min +125 °C X 30 min → +25 °C X 5 min } X 10cycles	Within ± 5 %
Humidity test	40 °C 95 % RH X 1000 HRS	Within ± 5 %
High Temperature Storage	125 ± 5 °C , 1000 ± 24 hrs	No visible damage ΔR25/R25 ≤ 5 %
low Temperature Storage	-40 °C ± 5 °C , 1000 ± 24 hrs	No visible damage ΔR25/R25 ≤ 5 %
Life Test	25 ± 5 °C , 270mW. , 1000 ± 24 hrs	No visible damage ΔR25/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

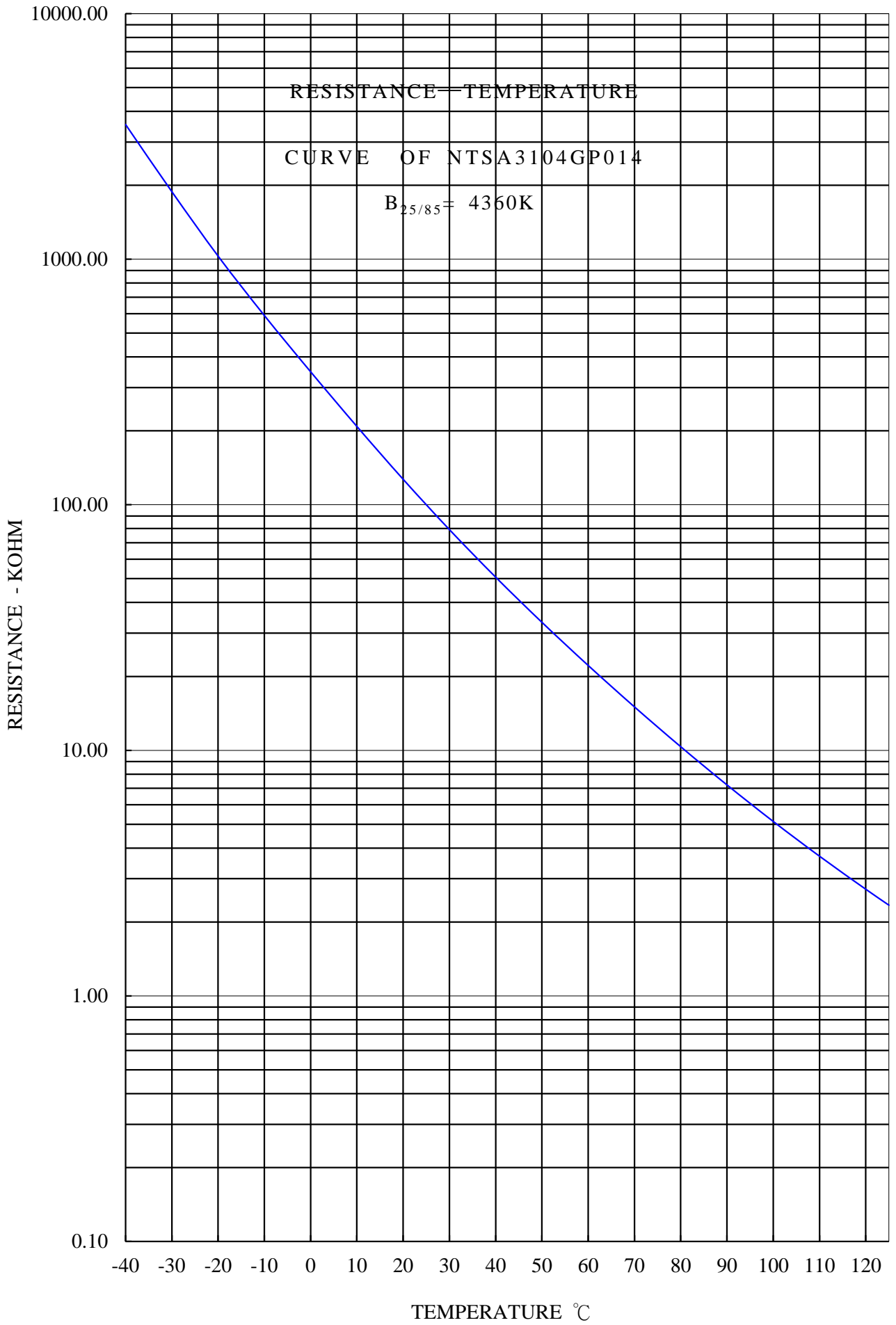


7. Recommended Reworking Conditions With Soldering Iron

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

8. 產品使用條件：

1. 產品使用的最大工作溫度，最大功率等，均依照規格書要求作業，不可超出規格書之範圍。
2. 產品移動，安裝必須輕拿輕放，不可用力拉動。
3. 感溫端子發生變形，氧化等現象時，不要使用，以免影響感溫精度。
4. 產品外觀發現變形，破損時，不可使用，以免影響電性能。





R - T Table

Part No. : NTSA3104GP014

R25=100KΩ ±2%

B25/85 = 4360 K ± 1%

Temperature (°C)	Rmax. (KΩ)	Rnor. (KΩ)	Rmin. (KΩ)	Temperature Tol. (°C)	
-40	3739.68	3537.91	3345.68	-0.76	0.83
-39	3492.64	3306.44	3128.91	-0.80	0.85
-38	3271.14	3098.75	2934.28	-0.83	0.87
-37	3068.82	2908.93	2756.27	-0.84	0.87
-36	2881.61	2733.18	2591.36	-0.84	0.86
-35	2706.91	2569.07	2437.28	-0.84	0.86
-34	2543.09	2415.08	2292.60	-0.83	0.85
-33	2389.07	2270.22	2156.42	-0.82	0.83
-32	2244.18	2133.86	2028.15	-0.81	0.82
-31	2107.91	2005.53	1907.36	-0.80	0.81
-30	1979.88	1884.89	1793.73	-0.79	0.80
-29	1859.73	1771.61	1686.98	-0.78	0.80
-28	1747.14	1665.38	1586.81	-0.77	0.79
-27	1641.76	1565.90	1492.94	-0.76	0.78
-26	1543.23	1472.82	1405.06	-0.76	0.78
-25	1451.19	1385.82	1322.86	-0.75	0.77
-24	1365.24	1304.53	1246.03	-0.75	0.77
-23	1285.03	1228.62	1174.22	-0.74	0.77
-22	1210.16	1157.73	1107.13	-0.74	0.76
-21	1140.29	1091.52	1044.43	-0.74	0.76
-20	1075.04	1029.66	985.814	-0.73	0.76
-19	1014.08	971.841	930.991	-0.73	0.76
-18	957.094	917.755	879.682	-0.73	0.75
-17	903.782	867.127	831.626	-0.72	0.75
-16	853.865	819.696	786.579	-0.72	0.74
-15	807.085	775.220	744.315	-0.72	0.74
-14	763.203	733.476	704.625	-0.71	0.74
-13	722.001	694.261	667.319	-0.71	0.73
-12	683.280	657.386	632.220	-0.70	0.73
-11	646.858	622.682	599.170	-0.70	0.72
-10	612.569	589.993	568.021	-0.69	0.71
-9	580.262	559.176	538.641	-0.68	0.71
-8	549.800	530.103	510.908	-0.68	0.70
-7	521.057	502.657	484.714	-0.67	0.69
-6	493.920	476.731	459.956	-0.66	0.68
-5	468.284	452.227	436.545	-0.66	0.68
-4	444.057	429.055	414.394	-0.65	0.67
-3	421.149	407.135	393.430	-0.64	0.66
-2	399.482	386.391	373.580	-0.63	0.65
-1	378.983	366.755	354.779	-0.62	0.64
0	359.584	348.163	336.970	-0.61	0.64
1	341.222	330.556	320.094	-0.61	0.63
2	323.839	313.879	304.103	-0.60	0.62
3	307.381	298.081	288.946	-0.59	0.61

4	291.798	283.115	274.580	-0.58	0.60
5	277.042	268.936	260.963	-0.57	0.59
6	263.068	255.502	248.054	-0.56	0.59
7	249.836	242.774	235.818	-0.55	0.58
8	237.304	230.715	224.218	-0.55	0.57
9	225.438	219.289	213.222	-0.54	0.56
10	214.200	208.463	202.798	-0.53	0.55
11	203.557	198.205	192.917	-0.52	0.54
12	193.479	188.487	183.550	-0.51	0.54
13	183.935	179.279	174.670	-0.51	0.53
14	174.896	170.554	166.253	-0.50	0.52
15	166.336	162.287	158.273	-0.49	0.51
16	158.229	154.453	150.708	-0.48	0.50
17	150.550	147.030	143.535	-0.47	0.50
18	143.276	139.995	136.735	-0.47	0.49
19	136.386	133.328	130.286	-0.46	0.48
20	129.859	127.008	124.171	-0.45	0.47
21	123.674	121.018	118.371	-0.44	0.47
22	117.813	115.338	112.870	-0.44	0.46
23	112.258	109.952	107.651	-0.43	0.45
24	106.992	104.845	102.699	-0.42	0.44
25	102.000	100.000	98.0000	-0.41	0.44
26	97.3577	95.4038	93.4518	-0.43	0.45
27	92.9505	91.0425	89.1380	-0.44	0.46
28	88.7657	86.9032	85.0456	-0.45	0.47
29	84.7912	82.9736	81.1625	-0.46	0.49
30	81.0154	79.2423	77.4770	-0.48	0.50
31	77.4276	75.6984	73.9782	-0.49	0.51
32	74.0176	72.3316	70.6557	-0.50	0.52
33	70.7756	69.1322	67.4999	-0.51	0.54
34	67.6927	66.0911	64.5016	-0.53	0.55
35	64.7601	63.1996	61.6520	-0.54	0.56
36	61.9697	60.4496	58.9431	-0.55	0.58
37	59.3139	57.8333	56.3672	-0.57	0.59
38	56.7855	55.3437	53.9169	-0.58	0.60
39	54.3777	52.9738	51.5855	-0.59	0.62
40	52.0840	50.7173	49.3666	-0.61	0.63
41	49.8984	48.5680	47.2541	-0.62	0.64
42	47.8152	46.5203	45.2423	-0.63	0.65
43	45.8290	44.5688	43.3259	-0.65	0.67
44	43.9348	42.7084	41.4997	-0.66	0.68
45	42.1277	40.9344	39.7590	-0.67	0.69
46	40.4033	39.2423	38.0994	-0.69	0.71
47	38.7573	37.6278	36.5166	-0.70	0.72
48	37.1858	36.0870	35.0066	-0.71	0.73
49	35.6849	34.6160	33.5657	-0.73	0.75
50	34.2511	33.2114	32.1904	-0.74	0.76
51	32.8810	31.8698	30.8773	-0.75	0.77
52	31.5715	30.5880	29.6232	-0.77	0.79
53	30.3196	29.3631	28.4253	-0.78	0.80
54	29.1224	28.1922	27.2808	-0.79	0.81
55	27.9774	27.0727	26.1869	-0.81	0.83
56	26.8819	26.0022	25.1412	-0.82	0.84

57	25.8336	24.9782	24.1414	-0.84	0.85
58	24.8303	23.9984	23.1852	-0.85	0.87
59	23.8697	23.0609	22.2706	-0.86	0.88
60	22.9500	22.1636	21.3955	-0.88	0.89
61	22.0692	21.3045	20.5581	-0.89	0.91
62	21.2255	20.4820	19.7566	-0.90	0.92
63	20.4172	19.6942	18.9893	-0.92	0.93
64	19.6426	18.9397	18.2546	-0.93	0.95
65	18.9003	18.2168	17.5510	-0.95	0.96
66	18.1887	17.5242	16.8772	-0.96	0.97
67	17.5065	16.8604	16.2316	-0.97	0.99
68	16.8524	16.2242	15.6131	-0.99	1.00
69	16.2251	15.6143	15.0205	-1.00	1.02
70	15.6234	15.0295	14.4524	-1.02	1.03
71	15.0463	14.4688	13.9080	-1.03	1.04
72	14.4926	13.9311	13.3860	-1.04	1.06
73	13.9613	13.4153	12.8856	-1.06	1.07
74	13.4514	12.9206	12.4057	-1.07	1.08
75	12.9621	12.4459	11.9454	-1.09	1.10
76	12.4924	11.9904	11.5040	-1.10	1.11
77	12.0415	11.5533	11.0805	-1.12	1.13
78	11.6085	11.1338	10.6742	-1.13	1.14
79	11.1928	10.7312	10.2844	-1.15	1.16
80	10.7936	10.3446	9.91033	-1.16	1.17
81	10.4102	9.97352	9.55131	-1.18	1.18
82	10.0419	9.61719	9.20672	-1.19	1.20
83	9.68816	9.27501	8.87592	-1.21	1.21
84	9.34826	8.94638	8.55835	-1.22	1.23
85	9.02167	8.63073	8.25342	-1.24	1.24
86	8.70783	8.32751	7.96061	-1.25	1.26
87	8.40622	8.03620	7.67940	-1.27	1.27
88	8.11631	7.75631	7.40931	-1.29	1.29
89	7.83763	7.48735	7.14986	-1.30	1.31
90	7.56972	7.22887	6.90060	-1.32	1.32
91	7.31212	6.98043	6.66112	-1.34	1.34
92	7.06442	6.74162	6.43099	-1.35	1.35
93	6.82620	6.51203	6.20983	-1.37	1.37
94	6.59708	6.29128	5.99725	-1.39	1.39
95	6.37668	6.07901	5.79292	-1.40	1.40
96	6.16465	5.87487	5.59647	-1.42	1.42
97	5.96063	5.67851	5.40758	-1.44	1.43
98	5.76431	5.48963	5.22594	-1.45	1.45
99	5.57537	5.30790	5.05124	-1.47	1.47
100	5.39351	5.13305	4.88321	-1.49	1.48
101	5.21844	4.96478	4.72155	-1.51	1.50
102	5.04988	4.80282	4.56601	-1.53	1.52
103	4.88757	4.64692	4.41634	-1.54	1.54
104	4.73126	4.49682	4.27229	-1.56	1.55
105	4.58070	4.35230	4.13363	-1.58	1.57
106	4.43565	4.21312	4.00014	-1.60	1.59
107	4.29591	4.07906	3.87161	-1.62	1.61
108	4.16124	3.94992	3.74783	-1.64	1.62
109	4.03145	3.82549	3.62861	-1.66	1.64
110	3.90633	3.70559	3.51376	-1.67	1.66
111	3.78571	3.59003	3.40311	-1.69	1.68

112	3.66940	3.47864	3.29647	-1.71	1.70
113	3.55723	3.37124	3.19369	-1.73	1.71
114	3.44902	3.26767	3.09462	-1.75	1.73
115	3.34463	3.16779	2.99909	-1.77	1.75
116	3.24390	3.07143	2.90697	-1.79	1.77
117	3.14668	2.97847	2.81812	-1.81	1.79
118	3.05284	2.88876	2.73240	-1.83	1.81
119	2.96223	2.80217	2.64969	-1.85	1.82
120	2.87474	2.71858	2.56987	-1.87	1.84
121	2.79023	2.63786	2.49282	-1.89	1.86
122	2.70859	2.55992	2.41843	-1.91	1.88
123	2.62971	2.48462	2.34660	-1.93	1.90
124	2.55347	2.41187	2.27722	-1.95	1.92
125	2.47978	2.34157	2.21019	-1.97	1.93

THINKING ELECTRONIC INDUSTRIAL CO.,LTD

THINKING P/N:NTSA3104GP014

Safety Approvals (Certified Model/Type :NTSA3104)



* UL 1434 recognized→File No. E138827

Certificates

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

Test Report

- (1) RoHS test report