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SPECIFICATION FOR APPROVAL

CUSTOMER

MODEL NO.

PART NO.

NTSA0104JZ231(RoHS)

APPLICATION

CUSTOMER P/N

ISSUE DATE

JAN.26.2021

REV. NO

1.0

REV. DATE

FOR CUSTOMER APPROVAL	CHECKED BY
	Hu Feng
	APPROVED BY
	FM Chu



THINKING P/N:NTSA0104JZ231

[illegible]

							A. Material List			
NO.		ITEM		DESCRIPTION						
1		TERMINAL		MA236013BH204P000						
2		LEAD WIRE		UL4413 #26*2C TS Black (Black wire with White Stripe)						
*		ELEMENT		NTC THERMISTOR						
B. Electrical Characteristic										
ITEM		VALUE								
R25		100K Ω $\pm$ 5%								
B25/50		4400K $\pm$ 5%								

Technical drawing of a thermistor assembly. The drawing shows a top view and a side view. The top view includes dimensions: a circular terminal with diameter $\Phi 3.6 \pm 0.2$, a distance of 7.7 ± 0.5 from the terminal center to the start of the lead wire, a distance of 13.2 ± 1 from the terminal center to the start of the main body, a main body length of 150 ± 15 , a distance of 6.4 ± 0.5 from the start of the main body to the start of the lead wire, and a lead wire length of 5 ± 1 . The side view shows a distance of 0.5 ± 0.1 from the bottom of the main body to the bottom of the lead wire, a distance of 5.8 ± 0.5 from the start of the main body to the start of the lead wire, and a lead wire diameter of 4 ± 0.5 . The lead wire is labeled "Soldered".

							Customer	
							Customer P/N	
							Thinking P/N	NTSA0104JZ231
							Drawing NO.	SA1503035
							Date	2021/1/26
							Scale:	Tol: $\pm 0.3\text{mm}$ Unit: mm
1.0	2021/1/26	NEW DRAWING		CAO JINA HUI	Hu Feng	FM Chu	THINKING ELECTRONIC INDUSTRIAL CO.,LTD	
Rev.	Date	Subjects of Change	ECN No	Designed by	Checked by	Approved by		

THINKING ELECTRONIC INDUSTRIAL CO.,LTD

SUBJECT: CERTIFICATION OF MATERIALS

CUSTOMER:

THINKING P/N: NTSA0104JZ231

NO	PART NAME	PART P/N	Q'TY	FLAMMABILITY SOLID BURNING CLASS	UL FILE NO
1	TERMINAL	MA236013BH204P000	1		
2	LEAD WIRE	UL4413 #26*2C TS Black (Black wire with White Stripe)	1	FT2	UL APPROVED
*	ELEMENT	NTC THERMISTOR	1		
REMARK					

Approved by: FM Chu

Checked by: Hu Feng

Designed by: CAO JINA HUI

Specification of NTC Thermistor for Temperature Measurement and Control

PART NO . NTSA0104JZ231

CUSTOMER P/N . _____

1. Electrical characteristics

	Parameter	Symbol	Test Conditions	Min.	Nor.	Max.	Unit.
a.	Resistance At 25°C	R_{25}	$T_a=25^{\circ}\text{C}\pm 0.05^{\circ}\text{C}$ $P_T\leq 0.1\text{mW}$	95.00	100	105.00	K Ω
b.	Resistance At 50°C	R_{50}	$T_a=50^{\circ}\text{C}\pm 0.05^{\circ}\text{C}$ $P_T\leq 0.1\text{mW}$	-----	31.927	-----	K Ω
c.	R_{25}/R_{50}	K	-----	-----	3.132	-----	-----
d	B Constant	$B_{25/50}$	$(3853.887*\ln K)$	4180	4400	4620	K
e.	Thermal Dissipation Constant	δ	$T_a=25^{\circ}\text{C}$	-----	Apporx5	-----	mW/°C
f.	Thermal Time Constant	τ	$25^{\circ}\text{C}\rightarrow 85^{\circ}\text{C}$ $T_1=25+(85-25)*63.2\%=62.9^{\circ}\text{C}$	-----	Apporx15	-----	Sec
g.	Insulation test	-----	DC 500 V 3 Sec	100	-----	-----	M Ω
h	Hi-Pot Test (between lead wire and terminal)	-----	1500V AC 1Min	-----	-----	10	mA

2.Maximun Ratings

	Parameter	Specification	Unit
a.	Operation Temperature Range	-20 ----- +125	°C

3. Reliability Test

Item	Test Conditions	Variable
Temp. cycle test	-20 °C X 30min → +25 °C X 5min X 5Cycles +125 °C X 30min → +25 °C X 5min	Within ± 3 %
High Temperature Storage	125± 5 °C , 1000 ± 24 hrs	No visible damage $\Delta R_{25}/R_{25}$ ≤ 3 %
low Temperature Storage	-20 °C ± 5 °C , 1000 ± 24 hrs	No visible damage $\Delta R_{25}/R_{25}$ ≤ 3 %
Humidity test	40 °C 95 % RH X 1000 HRS	Within ± 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:

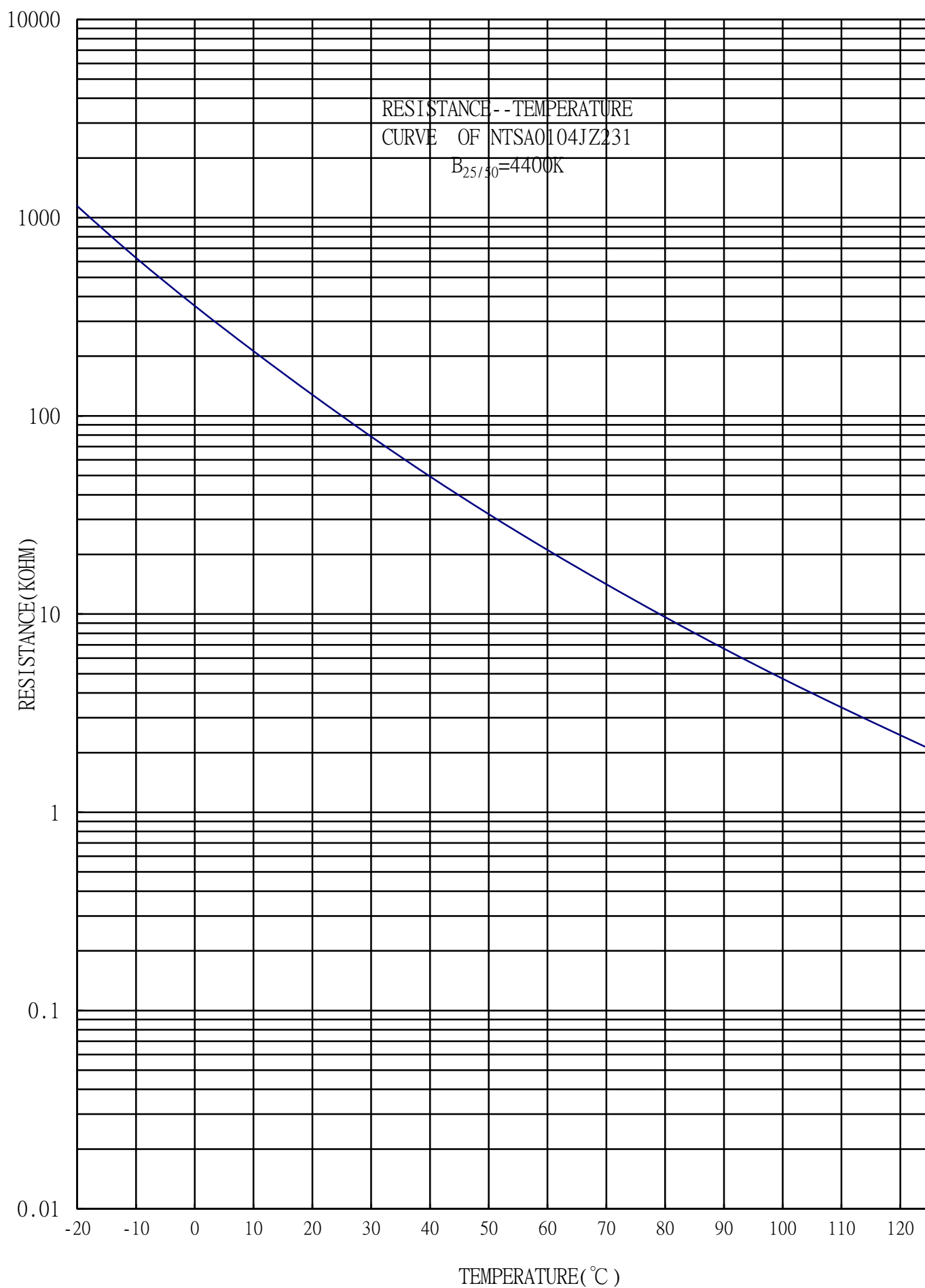
Do not store this product in corrosive gas (Sulfuric acid gas, Chlorine gas, etc.) or in direct sunlight.

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. : NTSA0104JZ231

R25=100KΩ ±5%

B25/50 = 4400 K ± 5%

Temperature (°C)	Rmax. (KΩ)	Rnor. (KΩ)	Rmin. (KΩ)	Temperature Tol. (°C)	
-20	1357.51	1144.52	962.533	-2.90	2.65
-19	1272.18	1075.90	907.624	-2.86	2.62
-18	1192.59	1011.70	856.095	-2.82	2.59
-17	1118.38	951.650	807.750	-2.78	2.56
-16	1049.19	895.494	762.401	-2.74	2.53
-15	984.691	842.985	719.867	-2.70	2.51
-14	924.560	793.885	679.976	-2.66	2.48
-13	868.497	747.971	642.561	-2.63	2.45
-12	816.219	705.029	607.464	-2.59	2.43
-11	767.456	664.857	574.533	-2.55	2.40
-10	721.957	627.263	543.626	-2.52	2.38
-9	679.484	592.068	514.608	-2.48	2.35
-8	639.817	559.103	487.350	-2.45	2.32
-7	602.751	528.212	461.733	-2.41	2.30
-6	568.093	499.246	437.645	-2.38	2.27
-5	535.667	472.069	414.982	-2.34	2.24
-4	505.310	446.555	393.645	-2.30	2.21
-3	476.870	422.586	373.545	-2.26	2.18
-2	450.208	400.054	354.598	-2.23	2.14
-1	425.196	378.858	336.725	-2.19	2.11
0	401.716	358.906	319.856	-2.15	2.08
1	379.659	340.113	303.925	-2.10	2.04
2	358.927	322.401	288.869	-2.06	2.01
3	339.428	305.699	274.633	-2.02	1.97
4	321.078	289.939	261.165	-1.98	1.93
5	303.801	275.061	248.417	-1.93	1.90
6	287.525	261.008	236.344	-1.89	1.86
7	272.185	247.729	224.906	-1.84	1.82
8	257.722	235.176	214.066	-1.80	1.78
9	244.080	223.305	203.787	-1.75	1.74
10	231.208	212.075	194.039	-1.70	1.70
11	219.058	201.448	184.790	-1.66	1.66
12	207.588	191.389	176.013	-1.61	1.61
13	196.756	181.865	167.682	-1.56	1.57
14	186.524	172.847	159.773	-1.52	1.53
15	176.857	164.305	152.262	-1.47	1.49
16	167.723	156.213	145.129	-1.42	1.45
17	159.091	148.547	138.355	-1.38	1.40
18	150.932	141.282	131.919	-1.33	1.36
19	143.219	134.398	125.804	-1.28	1.32
20	135.927	127.873	119.995	-1.23	1.27
21	129.033	121.688	114.475	-1.19	1.23
22	122.513	115.825	109.229	-1.14	1.19
23	116.347	110.267	104.243	-1.09	1.14
24	110.516	104.997	99.5042	-1.05	1.10
25	105.000	100.000	95.0000	-1.00	1.06



R - T Table

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R25=100KΩ ±5%

B25/50 = 4400 K ± 5%

Temperature (°C)	Rmax. (KΩ)	Rnor. (KΩ)	Rmin. (KΩ)	Temperature Tol. (°C)	
26	100.268	95.2614	90.2789	-1.06	1.11
27	95.7684	90.7673	85.8123	-1.11	1.16
28	91.4907	86.5047	81.5859	-1.17	1.22
29	87.4231	82.4612	77.5864	-1.23	1.27
30	83.5549	78.6250	73.8010	-1.29	1.33
31	79.8759	74.9851	70.2178	-1.34	1.38
32	76.3763	71.5309	66.8255	-1.40	1.44
33	73.0469	68.2524	63.6133	-1.46	1.49
34	69.8789	65.1402	60.5711	-1.52	1.55
35	66.8641	62.1854	57.6894	-1.58	1.60
36	63.9946	59.3794	54.9593	-1.64	1.66
37	61.2627	56.7142	52.3721	-1.71	1.71
38	58.6615	54.1822	49.9198	-1.77	1.77
39	56.1841	51.7762	47.5949	-1.83	1.83
40	53.8241	49.4895	45.3903	-1.90	1.89
41	51.5756	47.3157	43.2991	-1.96	1.94
42	49.4326	45.2485	41.3150	-2.02	2.00
43	47.3898	43.2823	39.4321	-2.09	2.06
44	45.4419	41.4118	37.6447	-2.15	2.12
45	43.5842	39.6316	35.9474	-2.22	2.17
46	41.8119	37.9371	34.3353	-2.29	2.23
47	40.1207	36.3236	32.8036	-2.35	2.29
48	38.5064	34.7868	31.3479	-2.42	2.35
49	36.9652	33.3227	29.9641	-2.49	2.41
50	35.4932	31.9274	28.6481	-2.56	2.47
51	34.0870	30.5974	27.3963	-2.62	2.52
52	32.7434	29.3291	26.2052	-2.69	2.58
53	31.4591	28.1195	25.0715	-2.76	2.64
54	30.2312	26.9653	23.9922	-2.83	2.70
55	29.0569	25.8639	22.9643	-2.90	2.76
56	27.9335	24.8125	21.9850	-2.97	2.82
57	26.8587	23.8085	21.0519	-3.04	2.87
58	25.8299	22.8495	20.1625	-3.11	2.93
59	24.8450	21.9334	19.3145	-3.18	2.99
60	23.9019	21.0578	18.5058	-3.25	3.05
61	22.9986	20.2210	17.7344	-3.32	3.11
62	22.1332	19.4208	16.9983	-3.39	3.17
63	21.3039	18.6556	16.2957	-3.46	3.22
64	20.5090	17.9236	15.6250	-3.53	3.28
65	19.7470	17.2233	14.9846	-3.60	3.34
66	19.0163	16.5531	14.3730	-3.68	3.40
67	18.3155	15.9117	13.7887	-3.75	3.46
68	17.6433	15.2975	13.2305	-3.82	3.51
69	16.9983	14.7095	12.6970	-3.89	3.57
70	16.3794	14.1462	12.1870	-3.97	3.63
71	15.7854	13.6068	11.6995	-4.04	3.69

R - T Table

Part No. : NTSA0104JZ231

R25=100KΩ ±5%

B25/50 = 4400 K ± 5%

Temperature (°C)	Rmax. (KΩ)	Rnor. (KΩ)	Rmin. (KΩ)	Temperature Tol. (°C)	
72	15.2152	13.0899	11.2333	-4.11	3.75
73	14.6678	12.5946	10.7874	-4.19	3.81
74	14.1422	12.1200	10.3610	-4.26	3.87
75	13.6374	11.6650	9.95299	-4.34	3.93
76	13.1525	11.2289	9.56263	-4.41	3.98
77	12.6868	10.8107	9.18907	-4.49	4.04
78	12.2393	10.4098	8.83154	-4.56	4.10
79	11.8094	10.0252	8.48930	-4.64	4.16
80	11.3963	9.65638	8.16166	-4.72	4.22
81	10.9992	9.30256	7.84795	-4.80	4.29
82	10.6176	8.96313	7.54755	-4.87	4.35
83	10.2507	8.63744	7.25985	-4.95	4.41
84	9.89805	8.32491	6.98429	-5.03	4.47
85	9.55896	8.02497	6.72031	-5.11	4.53
86	9.23289	7.73708	6.46740	-5.20	4.59
87	8.91932	7.46073	6.22507	-5.28	4.66
88	8.61773	7.19542	5.99284	-5.36	4.72
89	8.32764	6.94069	5.77027	-5.44	4.78
90	8.04857	6.69608	5.55693	-5.53	4.85
91	7.78008	6.46115	5.35241	-5.61	4.91
92	7.52173	6.23551	5.15631	-5.70	4.98
93	7.27311	6.01875	4.96827	-5.79	5.04
94	7.03383	5.81050	4.78793	-5.87	5.11
95	6.80350	5.61039	4.61494	-5.96	5.18
96	6.58176	5.41808	4.44899	-6.05	5.24
97	6.36826	5.23323	4.28975	-6.14	5.31
98	6.16265	5.05553	4.13693	-6.23	5.38
99	5.96462	4.88467	3.99025	-6.32	5.44
100	5.77385	4.72036	3.84944	-6.41	5.51
101	5.59004	4.56231	3.71422	-6.50	5.58
102	5.41291	4.41027	3.58436	-6.59	5.65
103	5.24218	4.26396	3.45961	-6.69	5.71
104	5.07758	4.12315	3.33975	-6.78	5.78
105	4.91886	3.98759	3.22455	-6.87	5.85
106	4.76576	3.85706	3.11381	-6.96	5.91
107	4.61807	3.73134	3.00733	-7.05	5.98
108	4.47554	3.61021	2.90491	-7.14	6.04
109	4.33796	3.49349	2.80638	-7.23	6.11
110	4.20512	3.38097	2.71155	-7.32	6.17
111	4.07682	3.27247	2.62025	-7.41	6.23
112	3.95286	3.16782	2.53234	-7.50	6.29
113	3.83306	3.06684	2.44765	-7.59	6.35
114	3.71723	2.96937	2.36603	-7.67	6.41
115	3.60522	2.87525	2.28735	-7.76	6.47
116	3.49684	2.78434	2.21148	-7.84	6.52
117	3.39194	2.69649	2.13827	-7.92	6.57



R - T Table

Part No. : NTSA0104JZ231

R25=100K Ω $\pm$ 5%

B25/50 = 4400 K $\pm$ 5%

Temperature (°C)	Rmax. (K Ω)	Rnor. (K Ω)	Rmin. (K Ω)	Temperature Tol. (°C)	
118	3.29038	2.61157	2.06762	-7.99	6.62
119	3.19200	2.52944	1.99940	-8.07	6.67
120	3.09667	2.44999	1.93350	-8.14	6.72
121	3.00424	2.37307	1.86982	-8.21	6.76
122	2.91460	2.29860	1.80826	-8.27	6.80
123	2.82762	2.22645	1.74870	-8.33	6.83
124	2.74318	2.15651	1.69108	-8.39	6.86
125	2.66116	2.08870	1.63528	-8.44	6.89