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**SPECIFICATION FOR APPROVAL**

CUSTOMER

CERTIFIED
MODEL/TYPE

TTC-104

PART NO.

TTC05104KIYDA4 (RoHS)

APPLICATION

CUSTOMER P/N

ISSUE DATE

JAN. 07, 2009

REV. NO.

REV. DATE

FOR CUSTOMER APPROVAL	CHECKED BY
	<i>Xiaona Qian</i>
	APPROVED BY
	<i>Huaifang Zhang</i>





REVISED RECORD SHEET

REV. NO	REV. DATE	REVISED CONTENT



INDEX	Page
■ Part number code	1
■ Structure and Dimensions	2
■ Electrical Characteristics	2
■ Reliability	3
■ Soldering Recommendation	4
■ Maximum power rating (Pmax)	5
■ Restrictively used substances	5
■ Warehouse Storage Conditions of Products	5
■ Taping and Dimensions	6
■ Standard Packing	7
■ Safety Approvals & Certificates & Test Report	8
■ R-T characteristic curve	9
■ V-I characteristic curve	10

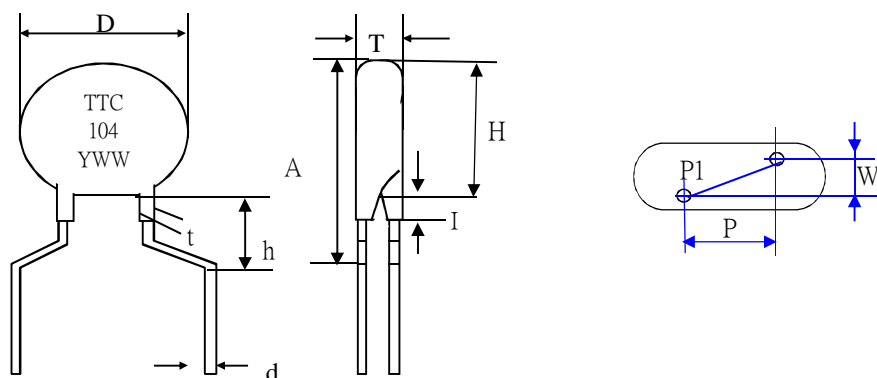
Part Number Code

Example :

TTC **05** **104** **K** **I** **YDA4**
 (1) (2) (3) (4) (5) (6)

No.	Item	Digit	Specification
(1)	Product Type	TTC	Thinking NTC thermistor TTC type
(2)	Body Size	05	φ 5 mm
(3)	Zero Power Resistance at 25°C (R ₂₅)	104	10 x 10 = 100 KΩ
(4)	Tolerance of R ₂₅	K	± 10%
(5)	Appearance	I	Inner Kink Lead
(6)	Optional Suffix	YDA4	For Delta Only Taping 12.7mm & Box RoHS compliance

Structure and Dimensions



(unit : mm)

Disc size	D max.	P	d	H max.	I max.	T max.	W	P1	t max	h	A max.
φ 05	5.8	5±0.5	0.5±0.02	6.5	3	3.2	1.5±0.2	5.2±0.6	1.5	5±1	11.5

* Print of Marking : TTC / 104 / YWW

* "Y" is "year" code ; "WW" is "weeks" code .

Electrical Characteristics

Part No.	Zero power resistance at 25°C (KΩ)	Tolerance of resistance (± %)	B-value (K)		Max. power rating at 25°C (mW)	Thermal dissipation constant (mW/°C)	Thermal time Constant (sec.)	Operating temperature range (°C)
			25/50	4400				
TTC05104KIYDA4	100	10	25/50	4400	450	Approx. 4.5	Approx. 20	-30 ~+125

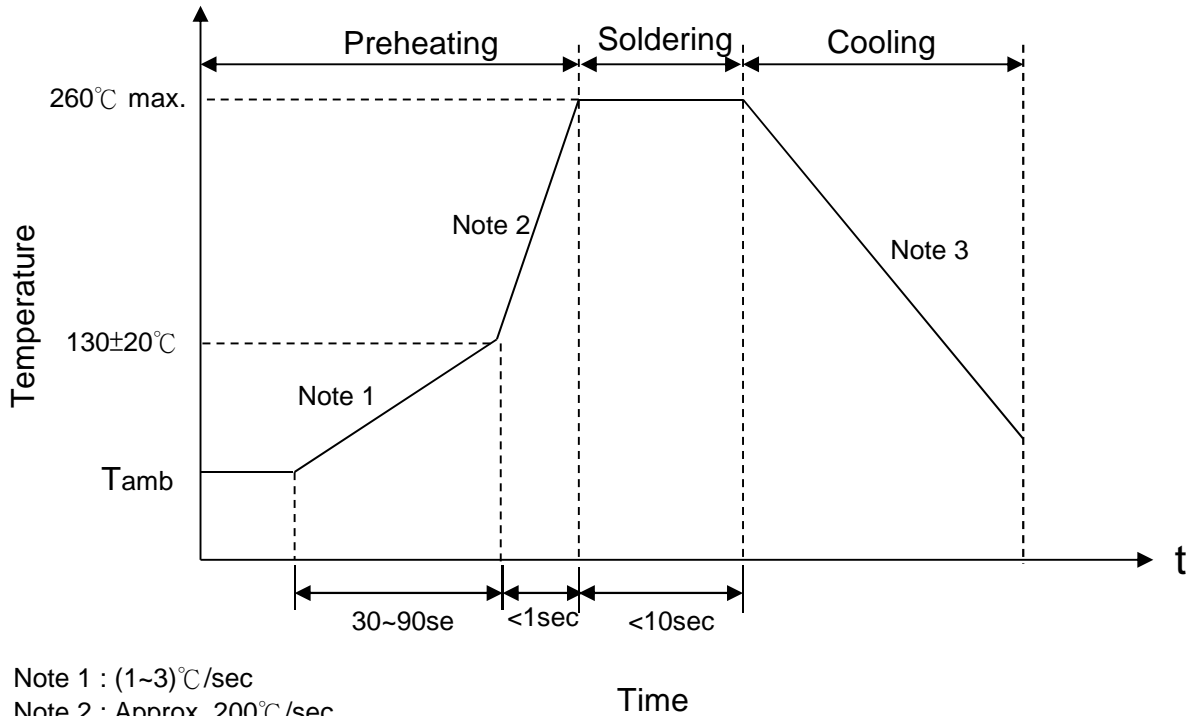
Reliability

Item	Standard	Test conditions / Methods	Specifications															
Tensile Strength of Terminals	IEC60068-2-21	Gradually applying the force specified and keeping the unit fixed for 10±1 sec. <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Terminal diameter (mm)</td> <td style="text-align: center;">Force (Kg)</td> </tr> <tr> <td style="text-align: center;">0.3<d≤0.5</td> <td style="text-align: center;">0.5</td> </tr> <tr> <td style="text-align: center;">0.5<d≤0.8</td> <td style="text-align: center;">1.0</td> </tr> </table>	Terminal diameter (mm)	Force (Kg)	0.3<d≤0.5	0.5	0.5<d≤0.8	1.0	No visible damage									
Terminal diameter (mm)	Force (Kg)																	
0.3<d≤0.5	0.5																	
0.5<d≤0.8	1.0																	
Bending Strength of Terminals	IEC60068-2-21	Hold specimen and apply the force specified below to each lead. Bend the specimen to 90°, then return to the original position. Repeat the procedure in the opposite direction. <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Terminal diameter (mm)</td> <td style="text-align: center;">Force (Kg)</td> </tr> <tr> <td style="text-align: center;">0.3<d≤0.5</td> <td style="text-align: center;">0.25</td> </tr> <tr> <td style="text-align: center;">0.5<d≤0.8</td> <td style="text-align: center;">0.50</td> </tr> </table>	Terminal diameter (mm)	Force (Kg)	0.3<d≤0.5	0.25	0.5<d≤0.8	0.50	No visible damage									
Terminal diameter (mm)	Force (Kg)																	
0.3<d≤0.5	0.25																	
0.5<d≤0.8	0.50																	
Solderability	IEC60068-2-20	245 ± 3 °C , 3 ± 0.3 sec	At least 95% of terminal electrode is covered by new solder															
Resistance to Soldering Heat	IEC60068-2-20	260 ± 3 °C , 10 ± 1 sec	No visible damage ΔR ₂₅ /R ₂₅ ≤ 3 %															
High Temperature Storage	IEC60068-2-2	125 ± 5 °C , 1000 ± 24 hrs	No visible damage ΔR ₂₅ /R ₂₅ ≤ 5 %															
Damp Heat, Steady State	IEC 60068-2-78	40 ± 2°C , 90 ~ 95 % RH , 1000 ± 24 hrs	No visible damage ΔR ₂₅ /R ₂₅ ≤ 3 %															
Rapid Change of Temperature	IEC6008-2-14	The conditions shown below shall be repeated 5 cycles <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">-30 ± 5</td> <td style="text-align: center;">30 ± 3</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">Room temperature</td> <td style="text-align: center;">5 ± 3</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">125 ± 5</td> <td style="text-align: center;">30 ± 3</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">Room temperature</td> <td style="text-align: center;">5 ± 3</td> </tr> </tbody> </table>	Step	Temperature (°C)	Period (minutes)	1	-30 ± 5	30 ± 3	2	Room temperature	5 ± 3	3	125 ± 5	30 ± 3	4	Room temperature	5 ± 3	No visible damage ΔR ₂₅ /R ₂₅ ≤ 3 %
Step	Temperature (°C)	Period (minutes)																
1	-30 ± 5	30 ± 3																
2	Room temperature	5 ± 3																
3	125 ± 5	30 ± 3																
4	Room temperature	5 ± 3																
Max. Power Dissipation	IEC60539-1 4.26.3	25 ± 5 °C , Pmax. , 1000 ± 24 hrs	No visible damage ΔR ₂₅ /R ₂₅ ≤ 5 %															
Insulation test	MIL-STD-202F-Method 302	1000 V _{DC} 1 min	No visible damage ≥ 500 MΩ															

Products have been tested at Thinking Electronic Industrial Co.,Ltd. Laboratory recognized by UL (Underwriters Laboratories Inc.) under CTRP (Client Test Data Program).

Soldering Recommendation

Wave Soldering Profile



Note 1 : $(1 \sim 3)^\circ\text{C}/\text{sec}$

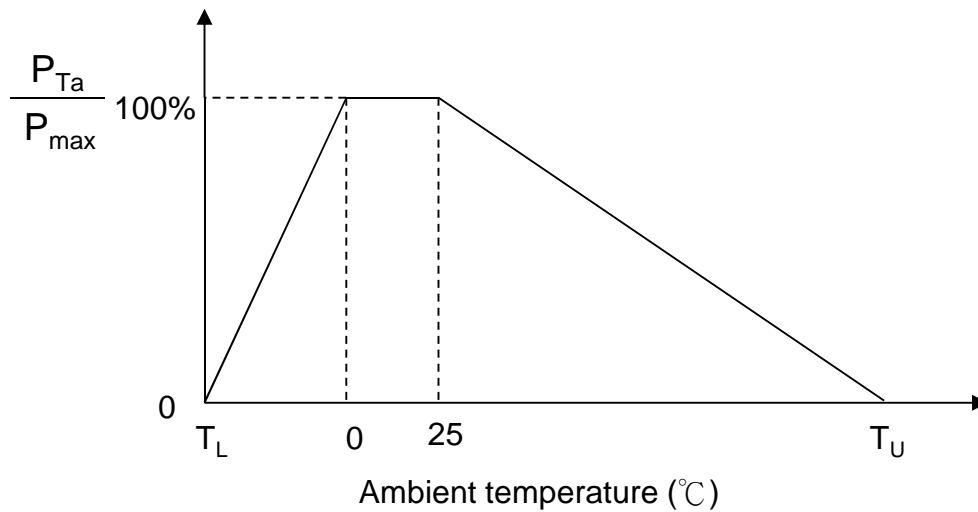
Note 2 : $\text{Approx. } 200^\circ\text{C}/\text{sec}$

Note 3 : $5^\circ\text{C}/\text{sec max.}$

Recommended Reworking Conditions with Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	360°C (max.)
Soldering Time	3 sec (max.)
Distance From Thermistor	2 mm (min.)

Power Derating Curve



Note: T_L = Minimum operating temperature (°C)

T_U = Maximum operating temperature (°C)

For example :

Ambient temperature(T_a)=55°C

Maximum operating temperature(T_u)= 125°C

$P_{Ta} = (T_u - T_a) / (T_u - 25) \times P_{max} = 70\% P_{max}$

RoHS Compliant Declaration

We hereby declare that the components delivered to your company are compliant with RoHS directive 2011/65/EU.

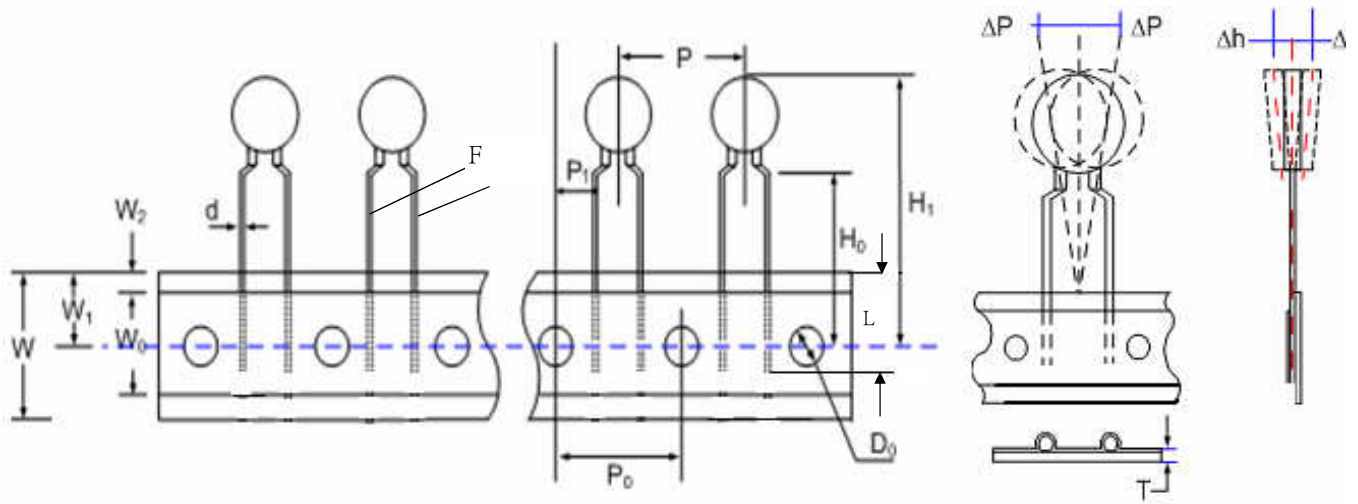
Warehouse Storage Conditions of Products

(I) Storage Conditions :

- 1.Storage Temperature : -10°C ~+40°C
- 2.Relative Humidity : $\leq 75\%RH$
- 3.Keep away from corrosive atmosphere and sunlight.

(II) Period of Storage : 1 year

Taping and Dimensions



Unit:mm

Item	P0	F	P	P1	H0	H1	d	W0	W1	W2	W	ΔP	Δh	L	D0	T
	±0.5	±0.5	±1	±0.7	±0.5	Max.	±0.02	±1	+0.75 /-0.5	Max.	+1/ -0.5	Max.	Max.	Min	±0.2	±0.2
	12.7	5	12.7	3.85	16	28	0.5	12	9	3	18	1	2	9	4	0.6

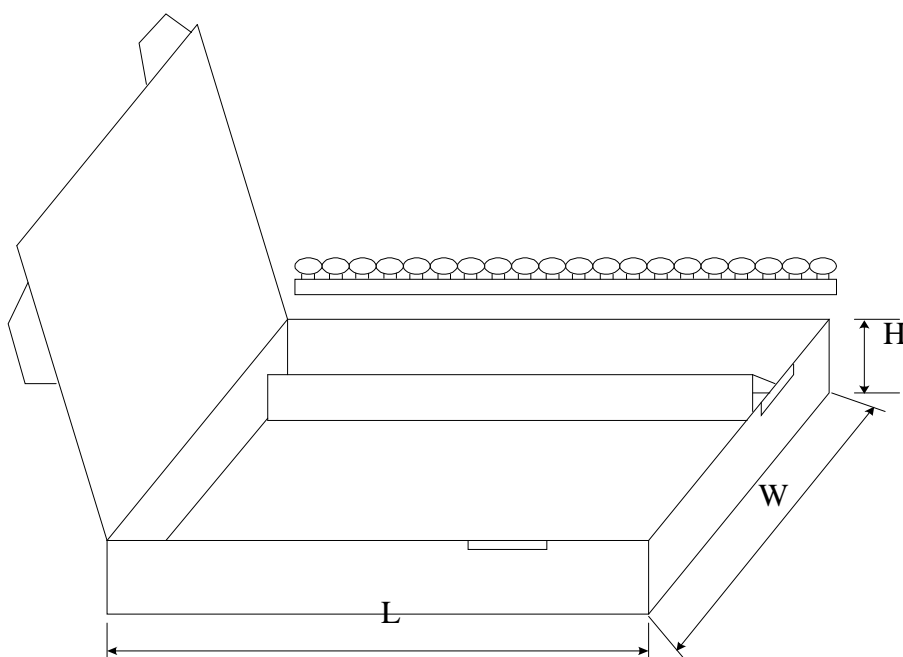
Standard Packing

1: 2000 PCS (Taping) In The Box , See figure(1)

2 : Box Dimensions

L x W x H

345 x 275 x 55 (Unit:mm)



See figure(1)

安規報備的型號

產品的全料號

生產的批號

數量

日期

Model No. 型號	TTC-104		
Part No. 料號	TTC05104KIYDA4		
Lot No. 批號	WNC0980004-00		
Quantity 數量	2000	Pcs	
Date 日期	2009. 08. 04		
		THINKING ELECTRONIC INDUSTRIAL CO., LTD 兴勤电子工业股份有限公司	

Safety Approvals (Certified Model/Type : TTC-104)



* UL 1434 / cUL / IEC60730-1 Annex J. recognized (File # E138827)



* CSA / C22.2 No.1 recognized (File # 97495)



* TÜV recognized (File # R 50050155)



* CQC GB/T 6663.1-2007 recognized (File # CQC05001011994)

* CQC GB6663-86 recognized (File # CQC05001011991)

Certificates

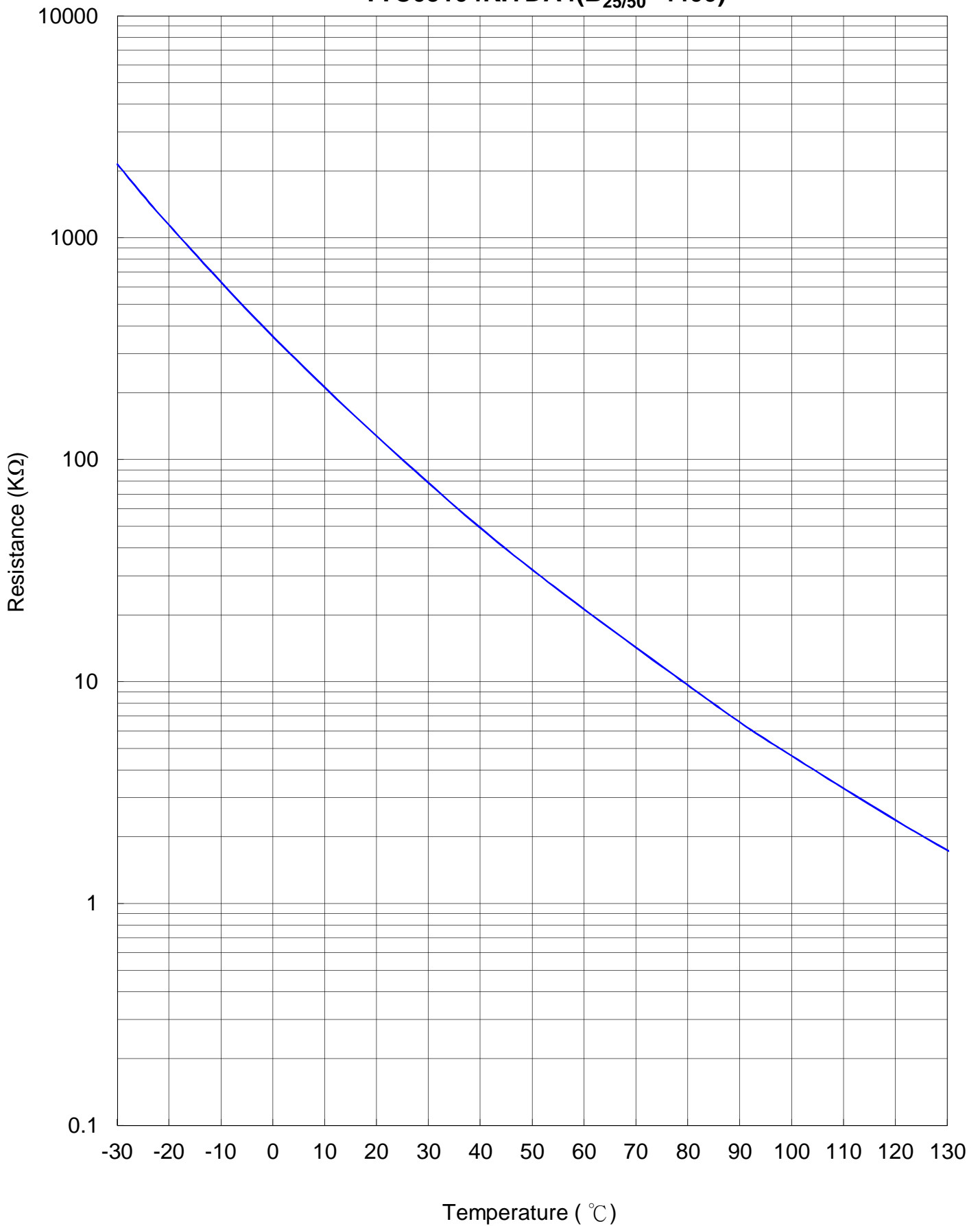
- (1) TS 16949 certificate
- (2) ISO 9001 certificate

Test Report

- (1) RoHS test report

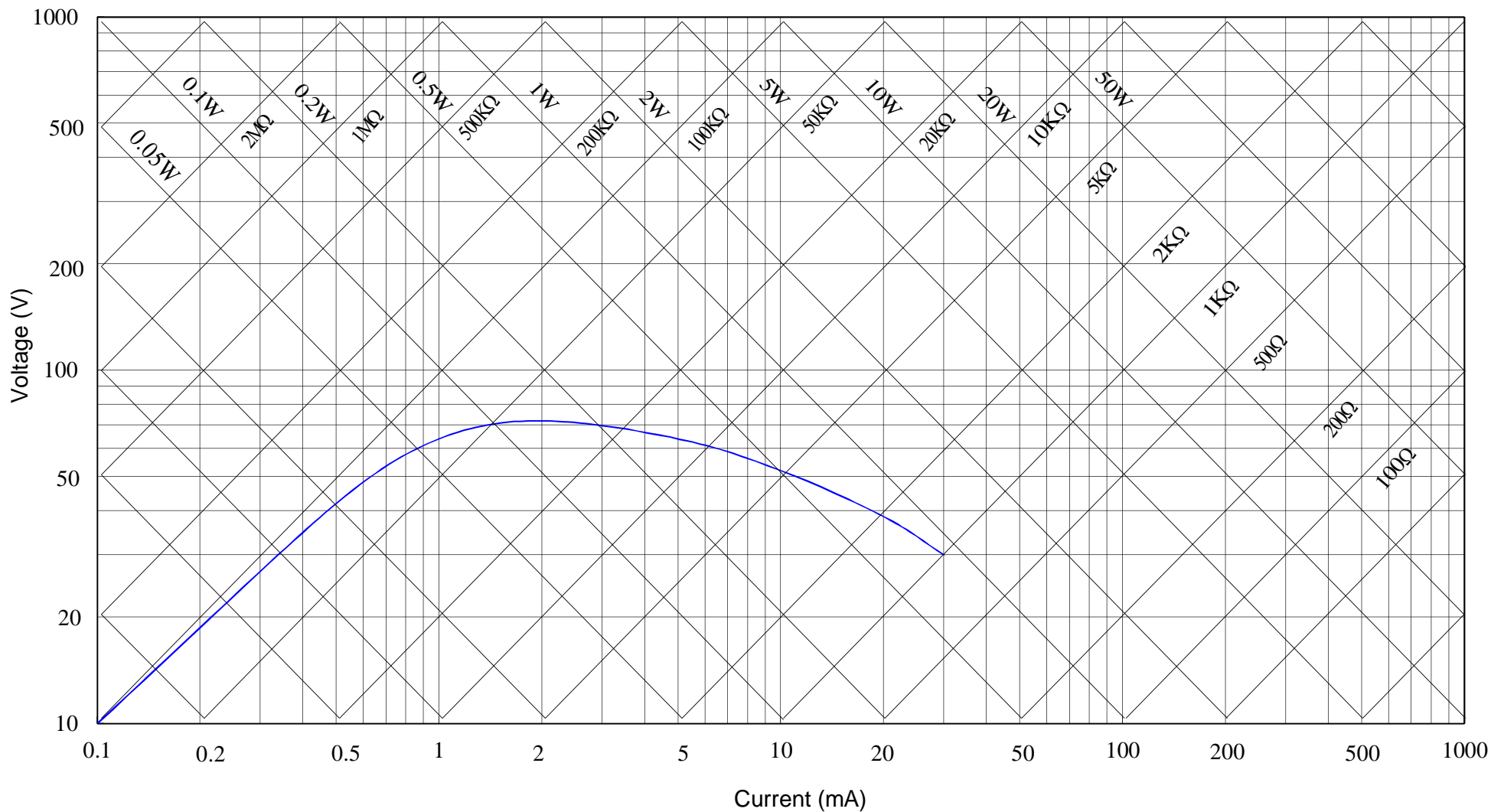
R-T Characteristic Curve

TTC05104KIYDA4($B_{25/50}=4400$)



V-I Characteristic Curve (Ambient $T_a=25\text{ }^\circ\text{C}$)

TTC05104KIYDA4





NTC Thermistor TTC05 Type

Part No.:TTC05104KIYDA4

R - T Table

Part No. : TTC05104KIYDA4

R25 =100 KOhm ±10%

B25/50 = 4400 K ± 5%

Temperature (°C)	Rmax. (KΩ)	Rnor. (KΩ)	Rmin. (KΩ)	Temperature Tol.		Resistance Tol.	
				(°C)		(%)	
-30	2,753.4	2,147.3	1,657.8	-4.23	3.66	28.2%	-22.8%
-29	2,573.7	2,013.6	1,559.6	-4.19	3.63	27.8%	-22.5%
-28	2,406.3	1,888.6	1,467.5	-4.14	3.61	27.4%	-22.3%
-27	2,250.3	1,771.9	1,381.2	-4.10	3.58	27.0%	-22.0%
-26	2,105.0	1,662.7	1,300.3	-4.05	3.55	26.6%	-21.8%
-25	1,969.7	1,560.8	1,224.4	-4.01	3.53	26.2%	-21.6%
-24	1,843.5	1,465.4	1,153.2	-3.97	3.50	25.8%	-21.3%
-23	1,726.0	1,376.3	1,086.5	-3.92	3.48	25.4%	-21.1%
-22	1,616.5	1,293.0	1,023.9	-3.88	3.46	25.0%	-20.8%
-21	1,514.5	1,215.2	965.28	-3.85	3.43	24.6%	-20.6%
-20	1,419.4	1,142.4	910.29	-3.81	3.41	24.2%	-20.3%
-19	1,330.8	1,074.4	858.73	-3.77	3.39	23.9%	-20.1%
-18	1,248.2	1,010.8	810.37	-3.73	3.37	23.5%	-19.8%
-17	1,171.3	951.35	765.01	-3.70	3.35	23.1%	-19.6%
-16	1,099.5	895.74	722.46	-3.66	3.33	22.7%	-19.3%
-15	1,032.5	843.71	682.54	-3.63	3.31	22.4%	-19.1%
-14	970.04	795.02	645.06	-3.59	3.29	22.0%	-18.9%
-13	911.73	749.44	609.88	-3.56	3.27	21.7%	-18.6%
-12	857.29	706.76	576.83	-3.53	3.25	21.3%	-18.4%
-11	806.43	666.77	545.78	-3.49	3.23	20.9%	-18.1%
-10	758.91	629.29	516.60	-3.46	3.21	20.6%	-17.9%
-9	714.47	594.15	489.16	-3.42	3.19	20.3%	-17.7%
-8	672.91	561.19	463.34	-3.39	3.16	19.9%	-17.4%
-7	634.01	530.25	439.03	-3.35	3.14	19.6%	-17.2%
-6	597.59	501.20	416.15	-3.32	3.12	19.2%	-17.0%
-5	563.46	473.90	394.59	-3.28	3.09	18.9%	-16.7%
-4	531.48	448.25	374.27	-3.24	3.07	18.6%	-16.5%
-3	501.48	424.12	355.11	-3.21	3.04	18.2%	-16.3%
-2	473.34	401.42	337.03	-3.17	3.01	17.9%	-16.0%
-1	446.92	380.06	319.96	-3.13	2.99	17.6%	-15.8%
0	422.11	359.94	303.85	-3.09	2.96	17.3%	-15.6%
1	398.80	340.98	288.63	-3.05	2.93	17.0%	-15.4%
2	376.89	323.11	274.24	-3.01	2.90	16.6%	-15.1%
3	356.28	306.26	260.64	-2.97	2.87	16.3%	-14.9%
4	336.90	290.37	247.77	-2.93	2.84	16.0%	-14.7%
5	318.65	275.37	235.60	-2.89	2.81	15.7%	-14.4%
6	301.47	261.22	224.08	-2.84	2.78	15.4%	-14.2%
7	285.29	247.85	213.17	-2.80	2.75	15.1%	-14.0%
8	270.05	235.22	202.83	-2.76	2.71	14.8%	-13.8%
9	255.68	223.28	193.04	-2.71	2.68	14.5%	-13.5%



NTC Thermistor TTC05 Type

Part No.:TTC05104KIYDA4

R - T Table

Part No. : TTC05104KIYDA4

R25 =100 KOhm \pm 10%

B25/50 = 4400 K \pm 5%

Temperature (°C)	Rmax. (K Ω)	Rnor. (K Ω)	Rmin. (K Ω)	Temperature Tol. (°C)		Resistance Tol. (%)	
10	242.13	212.00	183.77	-2.67	2.65	14.2%	-13.3%
11	229.36	201.34	174.97	-2.63	2.61	13.9%	-13.1%
12	217.31	191.25	166.64	-2.58	2.58	13.6%	-12.9%
13	205.94	181.71	158.73	-2.54	2.55	13.3%	-12.6%
14	195.21	172.68	151.23	-2.50	2.51	13.0%	-12.4%
15	185.08	164.14	144.11	-2.45	2.48	12.8%	-12.2%
16	175.52	156.05	137.36	-2.41	2.44	12.5%	-12.0%
17	166.49	148.40	130.95	-2.36	2.41	12.2%	-11.8%
18	157.96	141.15	124.86	-2.32	2.37	11.9%	-11.5%
19	149.90	134.28	119.08	-2.27	2.34	11.6%	-11.3%
20	142.28	127.77	113.59	-2.23	2.30	11.4%	-11.1%
21	135.08	121.61	108.38	-2.19	2.26	11.1%	-10.9%
22	128.28	115.76	103.43	-2.14	2.23	10.8%	-10.7%
23	121.84	110.23	98.723	-2.10	2.19	10.5%	-10.4%
24	115.76	104.98	94.251	-2.05	2.15	10.3%	-10.2%
25	110.00	100.00	90.000	-2.01	2.12	10.0%	-10.0%
26	105.06	95.279	85.544	-2.07	2.17	10.3%	-10.2%
27	100.36	90.802	81.328	-2.14	2.23	10.5%	-10.4%
28	95.899	86.554	77.338	-2.20	2.29	10.8%	-10.6%
29	91.651	82.523	73.561	-2.26	2.34	11.1%	-10.9%
30	87.610	78.697	69.984	-2.33	2.40	11.3%	-11.1%
31	83.766	75.066	66.598	-2.40	2.46	11.6%	-11.3%
32	80.107	71.619	63.390	-2.46	2.51	11.9%	-11.5%
33	76.624	68.345	60.351	-2.53	2.57	12.1%	-11.7%
34	73.309	65.236	57.472	-2.60	2.63	12.4%	-11.9%
35	70.152	62.282	54.743	-2.66	2.69	12.6%	-12.1%
36	67.145	59.476	52.155	-2.73	2.74	12.9%	-12.3%
37	64.282	56.809	49.702	-2.80	2.80	13.2%	-12.5%
38	61.553	54.273	47.376	-2.87	2.86	13.4%	-12.7%
39	58.953	51.863	45.169	-2.94	2.92	13.7%	-12.9%
40	56.475	49.571	43.076	-3.01	2.98	13.9%	-13.1%
41	54.113	47.391	41.088	-3.08	3.04	14.2%	-13.3%
42	51.860	45.316	39.202	-3.15	3.10	14.4%	-13.5%
43	49.712	43.343	37.411	-3.23	3.16	14.7%	-13.7%
44	47.663	41.464	35.710	-3.30	3.22	15.0%	-13.9%
45	45.707	39.675	34.095	-3.37	3.28	15.2%	-14.1%
46	43.841	37.972	32.560	-3.45	3.34	15.5%	-14.3%
47	42.060	36.350	31.100	-3.52	3.40	15.7%	-14.4%
48	40.359	34.804	29.713	-3.59	3.46	16.0%	-14.6%
49	38.735	33.331	28.395	-3.67	3.52	16.2%	-14.8%



NTC Thermistor TTC05 Type

Part No.:TTC05104KIYDA4

R - T Table

Part No. : TTC05104KIYDA4

R25 =100 KOhm \pm 10%

B25/50 = 4400 K \pm 5%

Temperature (°C)	Rmax. (K Ω)	Rnor. (K Ω)	Rmin. (K Ω)	Temperature Tol. (°C)		Resistance Tol. (%)	
50	37.183	31.927	27.140	-3.74	3.58	16.5%	-15.0%
51	35.701	30.589	25.947	-3.82	3.64	16.7%	-15.2%
52	34.284	29.313	24.812	-3.90	3.70	17.0%	-15.4%
53	32.930	28.096	23.731	-3.97	3.76	17.2%	-15.5%
54	31.636	26.934	22.702	-4.05	3.82	17.5%	-15.7%
55	30.398	25.826	21.722	-4.13	3.88	17.7%	-15.9%
56	29.214	24.768	20.789	-4.20	3.94	18.0%	-16.1%
57	28.081	23.758	19.900	-4.28	4.00	18.2%	-16.2%
58	26.997	22.794	19.052	-4.36	4.06	18.4%	-16.4%
59	25.959	21.872	18.245	-4.44	4.12	18.7%	-16.6%
60	24.966	20.992	17.475	-4.52	4.18	18.9%	-16.8%
61	24.015	20.151	16.740	-4.59	4.24	19.2%	-16.9%
62	23.104	19.348	16.040	-4.67	4.30	19.4%	-17.1%
63	22.231	18.579	15.372	-4.75	4.37	19.7%	-17.3%
64	21.395	17.844	14.734	-4.83	4.43	19.9%	-17.4%
65	20.594	17.142	14.125	-4.91	4.49	20.1%	-17.6%
66	19.826	16.469	13.544	-4.99	4.55	20.4%	-17.8%
67	19.090	15.826	12.989	-5.07	4.61	20.6%	-17.9%
68	18.384	15.211	12.459	-5.15	4.67	20.9%	-18.1%
69	17.706	14.621	11.953	-5.24	4.73	21.1%	-18.2%
70	17.057	14.057	11.469	-5.32	4.79	21.3%	-18.4%
71	16.434	13.517	11.007	-5.40	4.85	21.6%	-18.6%
72	15.836	13.000	10.565	-5.48	4.91	21.8%	-18.7%
73	15.261	12.504	10.143	-5.56	4.97	22.1%	-18.9%
74	14.710	12.029	9.7387	-5.65	5.04	22.3%	-19.0%
75	14.181	11.574	9.3523	-5.73	5.10	22.5%	-19.2%
76	13.673	11.138	8.9827	-5.81	5.16	22.8%	-19.4%
77	13.185	10.720	8.6291	-5.90	5.22	23.0%	-19.5%
78	12.717	10.320	8.2908	-5.98	5.28	23.2%	-19.7%
79	12.267	9.9355	7.9669	-6.07	5.34	23.5%	-19.8%
80	11.834	9.5669	7.6569	-6.15	5.40	23.7%	-20.0%
81	11.418	9.2134	7.3601	-6.24	5.47	23.9%	-20.1%
82	11.018	8.8743	7.0760	-6.32	5.53	24.2%	-20.3%
83	10.634	8.5490	6.8038	-6.41	5.59	24.4%	-20.4%
84	10.265	8.2367	6.5431	-6.50	5.65	24.6%	-20.6%
85	9.9099	7.9370	6.2934	-6.58	5.71	24.9%	-20.7%
86	9.5683	7.6494	6.0541	-6.67	5.78	25.1%	-20.9%
87	9.2399	7.3732	5.8248	-6.76	5.84	25.3%	-21.0%
88	8.9239	7.1080	5.6050	-6.85	5.90	25.5%	-21.1%
89	8.6199	6.8534	5.3944	-6.94	5.97	25.8%	-21.3%



NTC Thermistor TTC05 Type

Part No.:TTC05104KIYDA4

R - T Table

Part No. : TTC05104KIYDA4

R25 =100 KOhm \pm 10%

B25/50 = 4400 K \pm 5%

Temperature (°C)	Rmax. (K Ω)	Rnor. (K Ω)	Rmin. (K Ω)	Temperature Tol. (°C)		Resistance Tol. (%)	
90	8.3274	6.6088	5.1925	-7.03	6.03	26.0%	-21.4%
91	8.0460	6.3739	4.9988	-7.12	6.09	26.2%	-21.6%
92	7.7751	6.1482	4.8132	-7.21	6.16	26.5%	-21.7%
93	7.5144	5.9314	4.6351	-7.30	6.22	26.7%	-21.9%
94	7.2634	5.7231	4.4643	-7.39	6.29	26.9%	-22.0%
95	7.0217	5.5228	4.3004	-7.49	6.35	27.1%	-22.1%
96	6.7891	5.3303	4.1432	-7.58	6.42	27.4%	-22.3%
97	6.5650	5.1453	3.9923	-7.67	6.48	27.6%	-22.4%
98	6.3492	4.9675	3.8475	-7.77	6.55	27.8%	-22.5%
99	6.1414	4.7964	3.7086	-7.86	6.61	28.0%	-22.7%
100	5.9411	4.6320	3.5752	-7.96	6.68	28.3%	-22.8%
101	5.7482	4.4738	3.4471	-8.06	6.75	28.5%	-22.9%
102	5.5623	4.3216	3.3241	-8.15	6.82	28.7%	-23.1%
103	5.3832	4.1753	3.2060	-8.25	6.88	28.9%	-23.2%
104	5.2106	4.0344	3.0925	-8.35	6.95	29.2%	-23.3%
105	5.0442	3.8989	2.9836	-8.45	7.02	29.4%	-23.5%
106	4.8838	3.7685	2.8789	-8.55	7.09	29.6%	-23.6%
107	4.7291	3.6430	2.7783	-8.65	7.16	29.8%	-23.7%
108	4.5800	3.5222	2.6816	-8.75	7.23	30.0%	-23.9%
109	4.4362	3.4059	2.5887	-8.86	7.30	30.3%	-24.0%
110	4.2975	3.2939	2.4994	-8.96	7.37	30.5%	-24.1%
111	4.1637	3.1860	2.4135	-9.06	7.44	30.7%	-24.2%
112	4.0346	3.0821	2.3310	-9.17	7.51	30.9%	-24.4%
113	3.9101	2.9821	2.2516	-9.27	7.58	31.1%	-24.5%
114	3.7899	2.8857	2.1752	-9.38	7.65	31.3%	-24.6%
115	3.6739	2.7928	2.1018	-9.49	7.72	31.5%	-24.7%
116	3.5620	2.7033	2.0311	-9.59	7.79	31.8%	-24.9%
117	3.4539	2.6170	1.9631	-9.70	7.86	32.0%	-25.0%
118	3.3496	2.5339	1.8976	-9.81	7.94	32.2%	-25.1%
119	3.2488	2.4537	1.8347	-9.92	8.01	32.4%	-25.2%
120	3.1515	2.3764	1.7740	-10.03	8.08	32.6%	-25.3%
121	3.0575	2.3019	1.7156	-10.14	8.15	32.8%	-25.5%
122	2.9667	2.2300	1.6594	-10.25	8.23	33.0%	-25.6%
123	2.8790	2.1606	1.6053	-10.36	8.30	33.2%	-25.7%
124	2.7942	2.0937	1.5531	-10.47	8.37	33.5%	-25.8%
125	2.7123	2.0291	1.5029	-10.58	8.44	33.7%	-25.9%