



## MEAS HD DO-35 SERIES THERMISTOR 10K BETA <sup>25/85</sup> 3450

- High Stability DO-35 Thermistor
- Highly Density (HD) electroceramic thermistor
- Hermetically sealed elements, glass encapsulation
- Axial Leads for PCB mounting
- High temperature devices for applications up to +300°C
- RoHS Compliant
- Copper clad steel (CCS Wire)

### Features

- Hermetically sealed glass package
- Proven Stability at elevated temperatures
- High temperature capability to +300°C
- 24 AWG Nickel Plated CCS Wire
- Cost effective for high volume applications
- Temp range (Nickel plated) -40°C to +300 °C
- Temp range (Tinned) -40 °C to +200 °C

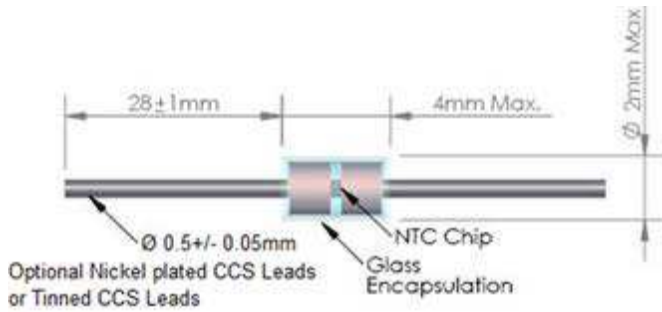
### Applications

- HVAC and refrigeration probe assemblies
- High humidity due to glass protection
- Consumer electronics
- PCB temperature sensing
- Air conditioning

TE has recently developed new advanced ceramic processing techniques and proprietary formulations for the manufacture of high-stability electroceramic thermistor materials. These materials are now used in a select range of DO-35 thermistor sensor components. The newly developed high-density thermistor chip is hermetically sealed in a glass (DO-35 diode style) package to provide protection where high humidity is present and long-term performance is required.

## MEAS NTC DO-35 THERMISTOR 10K BETA<sub>25/85</sub> 3450

### Dimensions



### Electrical Specifications

PARAMETERS	UNITS	VALUE
Resistance @ +25°C	Ohms	10,000
Resistance tolerance @ +25°C	%	± 1
Beta Value 25/85	K	3450
Tolerance on Beta Value 25/85	%	± 1
Time response in liquid	Seconds	Approx.2
Dissipation Constant in still air	mW/°C	1.9
Operating Temperature (Nickel plated CCS Leads)	°C	-40 to +300
Operating Temperature (Tinned CCS Leads)	°C	-40 to +200
Max' Permissible Current (25°C, Still Air)	A max	0.25mA
Max' Power Rating (25°C, Still Air)	P max	110 mW

### General Test

TEST ITEM	PERFORMANCE REQUIREMENTS	TEST CONDITION
A. Appearance	No Cracking	Visual examination
B. Dimension	Dimension tolerances	Caliper, Micrometer
C. Resistance (R25)	10K±1%	At zero power, 25°C
D. Beta Value	B25/85=3450K±1%	B = $\frac{\ln R25 - \ln R85}{1/298.15 - 1/358.15}$
		R25=Resistance at 25.0±0.1°C
		R85=Resistance at 85.0±0.1°C
E. Thermal time constant (τ)	Approx.2 sec	Measured in stirred water
F. Thermal Dissipation Constant (δ)	Approx.1.9m W/°C	Measured in still air, normal temp

Reliability

TEST ITEM	TEST METHODS	CRITERIA
<b>A. Low temperature storage</b>	After placing a thermistor in -40°C±3°C for 1000 hours, keep it in normal temperature and humidity for one hour.	$\Delta R/R \leq 2\%$ $\Delta B/B \leq 1\%$
<b>B. High temperature storage</b>	Tinned Version: After placing a thermistor in 200°C±3°C for 1000 hours, keep it in normal temperature and humidity for one hour.	$\Delta R/R \leq 2\%$ $\Delta B/B \leq 1\%$
	Nickel Plated Version: After placing a thermistor in 300°C±3°C for 1000 hours, keep it in normal temperature and humidity for one hour.	$\Delta R/R \leq 3\%$ $\Delta B/B \leq 2\%$
<b>C. Thermal cycle test</b>	After 100 cycles test under the conditions as shown below, keep the thermistor in normal temperature and humidity for one hour.	$\Delta R/R \leq 2\%$ $\Delta B/B \leq 1\%$
<p>The diagram illustrates the thermal cycle test waveform. It features three horizontal lines representing temperature levels: 80°C±3°C (in air) at the top, Normal temp (in air) in the middle, and -20°C±3°C (in air) at the bottom. The waveform shows a sequence of temperature steps: a 30-minute dwell at -20°C±3°C, a 15-minute dwell at Normal temp, a 30-minute dwell at 80°C±3°C, and another 15-minute dwell at Normal temp. This sequence is labeled as '1 Cycle'. A second identical sequence is shown, labeled as '2 Cycle'.</p>		
<b>D. Humidity test</b>	After placing a thermistor in 40°C±2°C, 90~95%RH, for 1000 hours, keep it in normal temperature and humidity for one hour.	$\Delta R/R \leq 2\%$ $\Delta B/B \leq 1\%$

**Resistance vs. Temperature Table**

R25=10KΩ±1% B25/85=3450K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
-40.0	194.700	204.224	214.193	-5.82
-39.0	183.872	192.727	201.988	-5.77
-38.0	173.724	181.959	190.565	-5.73
-37.0	164.208	171.869	179.870	-5.68
-36.0	155.281	162.411	169.852	-5.64
-35.0	146.902	153.540	160.461	-5.60
-34.0	139.035	145.216	151.657	-5.55
-33.0	131.645	137.402	143.397	-5.51
-32.0	124.698	130.063	135.644	-5.47
-31.0	118.167	123.167	128.365	-5.43
-30.0	112.023	116.684	121.526	-5.39
-29.0	106.242	110.587	115.100	-5.35
-28.0	100.798	104.851	109.057	-5.31
-27.0	95.671	99.452	103.373	-5.27
-26.0	90.839	94.368	98.024	-5.23
-25.0	86.285	89.578	92.988	-5.19
-24.0	81.990	85.064	88.245	-5.15
-23.0	77.937	80.808	83.776	-5.12
-22.0	74.113	76.793	79.563	-5.08
-21.0	70.501	73.005	75.590	-5.04
-20.0	67.090	69.429	71.843	-5.01
-19.0	63.866	66.052	68.305	-4.97
-18.0	60.819	62.862	64.966	-4.93
-17.0	57.937	59.846	61.812	-4.90
-16.0	55.211	56.996	58.832	-4.87
-15.0	52.631	54.299	56.014	-4.83
-14.0	50.189	51.748	53.351	-4.80
-13.0	47.875	49.334	50.831	-4.76
-12.0	45.684	47.047	48.446	-4.73
-11.0	43.607	44.882	46.189	-4.70
-10.0	41.637	42.830	44.052	-4.67
-9.0	39.770	40.885	42.027	-4.63

**Resistance vs. Temperature Table**

R25=10KΩ±1% B25/85=3450K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
-8.0	37.998	39.041	40.108	-4.60
-7.0	36.316	37.291	38.289	-4.57
-6.0	34.719	35.632	36.564	-4.54
-5.0	33.203	34.056	34.928	-4.51
-4.0	31.763	32.560	33.375	-4.48
-3.0	30.394	31.140	31.901	-4.45
-2.0	29.092	29.790	30.501	-4.42
-1.0	27.855	28.507	29.171	-4.39
0.0	26.677	27.287	27.908	-4.35
1.0	25.560	26.130	26.710	-4.32
2.0	24.496	25.029	25.571	-4.29
3.0	23.483	23.981	24.487	-4.26
4.0	22.518	22.984	23.456	-4.24
5.0	21.599	22.034	22.475	-4.21
6.0	20.723	21.129	21.541	-4.18
7.0	19.888	20.267	20.651	-4.15
8.0	19.091	19.445	19.804	-4.13
9.0	18.332	18.662	18.996	-4.10
10.0	17.607	17.915	18.226	-4.07
11.0	16.915	17.202	17.492	-4.05
12.0	16.254	16.522	16.792	-4.02
13.0	15.623	15.872	16.124	-4.00
14.0	15.021	15.253	15.487	-3.97
15.0	14.445	14.661	14.878	-3.95
16.0	13.895	14.095	14.297	-3.92
17.0	13.368	13.555	13.743	-3.90
18.0	12.865	13.038	13.213	-3.87
19.0	12.384	12.545	12.706	-3.85
20.0	11.924	12.072	12.222	-3.83
21.0	11.483	11.621	11.759	-3.80
22.0	11.061	11.189	11.316	-3.78
23.0	10.657	10.775	10.893	-3.76
24.0	10.271	10.379	10.488	-3.73
25.0	9.900	10.000	10.100	-3.71
26.0	9.536	9.637	9.738	-3.69

Resistance vs. Temperature Table

R25=10KΩ±1% B25/85=3450K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
27.0	9.188	9.289	9.391	-3.67
28.0	8.854	8.956	9.058	-3.64
29.0	8.534	8.636	8.739	-3.62
30.0	8.228	8.330	8.433	-3.60
31.0	7.934	8.036	8.139	-3.58
32.0	7.653	7.755	7.857	-3.56
33.0	7.383	7.484	7.587	-3.54
34.0	7.124	7.225	7.327	-3.52
35.0	6.875	6.976	7.078	-3.50
36.0	6.637	6.737	6.838	-3.48
37.0	6.408	6.508	6.608	-3.46
38.0	6.188	6.287	6.387	-3.44
39.0	5.977	6.076	6.175	-3.42
40.0	5.775	5.872	5.970	-3.40
41.0	5.580	5.677	5.774	-3.38
42.0	5.393	5.489	5.585	-3.36
43.0	5.214	5.308	5.404	-3.34
44.0	5.041	5.134	5.229	-3.32
45.0	4.875	4.967	5.061	-3.30
46.0	4.715	4.806	4.899	-3.28
47.0	4.561	4.652	4.743	-3.26
48.0	4.413	4.503	4.593	-3.25
49.0	4.271	4.359	4.449	-3.23
50.0	4.134	4.221	4.310	-3.28
51.0	3.999	4.085	4.172	-3.27
52.0	3.869	3.954	4.040	-3.26
53.0	3.744	3.828	3.913	-3.25
54.0	3.624	3.706	3.790	-3.23
55.0	3.507	3.588	3.671	-3.22
56.0	3.395	3.475	3.556	-3.21
57.0	3.287	3.365	3.446	-3.20
58.0	3.182	3.260	3.339	-3.18
59.0	3.082	3.158	3.236	-3.17
60.0	2.985	3.060	3.136	-3.16
61.0	2.891	2.965	3.040	-3.15

**Resistance vs. Temperature Table**

R25=10KΩ±1% B25/85=3450K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
62.0	2.800	2.873	2.947	-3.14
63.0	2.713	2.785	2.858	-3.13
64.0	2.629	2.699	2.771	-3.11
65.0	2.548	2.617	2.688	-3.10
66.0	2.469	2.537	2.607	-3.09
67.0	2.393	2.460	2.529	-3.08
68.0	2.320	2.386	2.453	-3.07
69.0	2.249	2.314	2.380	-3.06
70.0	2.181	2.244	2.310	-3.05
71.0	2.115	2.177	2.241	-3.03
72.0	2.051	2.112	2.175	-3.02
73.0	1.989	2.050	2.111	-3.01
74.0	1.930	1.989	2.050	-3.00
75.0	1.872	1.930	1.990	-2.99
76.0	1.816	1.874	1.932	-2.98
77.0	1.763	1.819	1.876	-2.97
78.0	1.710	1.766	1.822	-2.96
79.0	1.660	1.714	1.770	-2.95
80.0	1.611	1.665	1.719	-2.94
81.0	1.564	1.617	1.670	-2.93
82.0	1.519	1.570	1.623	-2.92
83.0	1.475	1.525	1.577	-2.91
84.0	1.432	1.481	1.532	-2.90
85.0	1.391	1.439	1.489	-2.89
86.0	1.351	1.398	1.447	-2.88
87.0	1.312	1.359	1.407	-2.87
88.0	1.275	1.320	1.368	-2.86
89.0	1.238	1.283	1.330	-2.85
90.0	1.203	1.247	1.293	-2.84
91.0	1.169	1.213	1.257	-2.83
92.0	1.136	1.179	1.223	-2.82
93.0	1.104	1.146	1.189	-2.81
94.0	1.073	1.114	1.157	-2.80
95.0	1.044	1.084	1.125	-2.79
96.0	1.015	1.054	1.095	-2.78

**Resistance vs. Temperature Table**

R25=10KΩ±1% B25/85=3450K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
97.0	0.986	1.025	1.065	-2.77
98.0	0.959	0.997	1.037	-2.76
99.0	0.933	0.970	1.009	-2.75
100.0	0.907	0.944	0.982	-2.66
101.0	0.883	0.919	0.956	-2.65
102.0	0.860	0.895	0.932	-2.64
103.0	0.837	0.872	0.908	-2.63
104.0	0.815	0.849	0.885	-2.62
105.0	0.794	0.827	0.862	-2.61
106.0	0.773	0.806	0.840	-2.60
107.0	0.753	0.785	0.819	-2.60
108.0	0.734	0.765	0.798	-2.59
109.0	0.715	0.746	0.778	-2.58
110.0	0.696	0.727	0.759	-2.57
111.0	0.679	0.708	0.740	-2.56
112.0	0.661	0.691	0.721	-2.55
113.0	0.644	0.673	0.703	-2.54
114.0	0.628	0.656	0.686	-2.53
115.0	0.612	0.640	0.669	-2.52
116.0	0.597	0.624	0.653	-2.51
117.0	0.582	0.609	0.637	-2.50
118.0	0.567	0.594	0.621	-2.50
119.0	0.553	0.579	0.606	-2.49
120.0	0.540	0.565	0.591	-2.48
121.0	0.526	0.551	0.577	-2.47
122.0	0.513	0.538	0.563	-2.46
123.0	0.501	0.525	0.550	-2.45
124.0	0.488	0.512	0.537	-2.44
125.0	0.477	0.500	0.524	-2.44
126.0	0.465	0.488	0.512	-2.43
127.0	0.454	0.476	0.499	-2.42
128.0	0.443	0.465	0.488	-2.41
129.0	0.432	0.454	0.476	-2.40
130.0	0.422	0.443	0.465	-2.39
131.0	0.412	0.432	0.454	-2.39



**Resistance vs. Temperature Table**

R25=10KΩ±1% B25/85=3450K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
132.0	0.402	0.422	0.444	-2.38
133.0	0.392	0.412	0.433	-2.37
134.0	0.383	0.403	0.423	-2.36
135.0	0.374	0.393	0.414	-2.35
136.0	0.365	0.384	0.404	-2.35
137.0	0.357	0.375	0.395	-2.34
138.0	0.348	0.367	0.386	-2.33
139.0	0.340	0.358	0.377	-2.32
140.0	0.332	0.350	0.369	-2.31
141.0	0.325	0.342	0.360	-2.31
142.0	0.317	0.334	0.352	-2.30
143.0	0.310	0.327	0.344	-2.29
144.0	0.303	0.319	0.337	-2.28
145.0	0.296	0.312	0.329	-2.28
146.0	0.289	0.305	0.322	-2.27
147.0	0.283	0.298	0.315	-2.26
148.0	0.276	0.292	0.308	-2.26
149.0	0.270	0.285	0.301	-2.25
150.0	0.264	0.279	0.294	-2.20
151.0	0.258	0.273	0.288	-2.19
152.0	0.252	0.267	0.282	-2.18
153.0	0.247	0.261	0.276	-2.17
154.0	0.242	0.255	0.270	-2.16
155.0	0.236	0.250	0.264	-2.15
156.0	0.231	0.245	0.259	-2.14
157.0	0.226	0.240	0.253	-2.14
158.0	0.222	0.234	0.248	-2.13
159.0	0.217	0.230	0.243	-2.12
160.0	0.212	0.225	0.238	-2.11
161.0	0.208	0.220	0.233	-2.10
162.0	0.203	0.216	0.228	-2.09
163.0	0.199	0.211	0.224	-2.08
164.0	0.195	0.207	0.219	-2.07
165.0	0.191	0.203	0.215	-2.06
166.0	0.187	0.198	0.210	-2.05

**Resistance vs. Temperature Table**

R25=10KΩ±1% B25/85=3450K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
167.0	0.183	0.194	0.206	-2.04
168.0	0.179	0.190	0.202	-2.03
169.0	0.176	0.187	0.198	-2.03
170.0	0.172	0.183	0.194	-2.02
171.0	0.169	0.179	0.190	-2.01
172.0	0.165	0.176	0.187	-2.00
173.0	0.162	0.172	0.183	-1.99
174.0	0.159	0.169	0.179	-1.98
175.0	0.156	0.166	0.176	-1.97
176.0	0.153	0.162	0.173	-1.97
177.0	0.150	0.159	0.169	-1.96
178.0	0.147	0.156	0.166	-1.95
179.0	0.144	0.153	0.163	-1.94
180.0	0.141	0.150	0.160	-1.93
181.0	0.138	0.147	0.157	-1.92
182.0	0.136	0.144	0.154	-1.92
183.0	0.133	0.142	0.151	-1.91
184.0	0.131	0.139	0.148	-1.90
185.0	0.128	0.136	0.145	-1.89
186.0	0.126	0.134	0.143	-1.88
187.0	0.123	0.131	0.140	-1.88
188.0	0.121	0.129	0.138	-1.87
189.0	0.119	0.127	0.135	-1.86
190.0	0.116	0.124	0.133	-1.85
191.0	0.114	0.122	0.130	-1.85
192.0	0.112	0.120	0.128	-1.84
193.0	0.110	0.118	0.126	-1.83
194.0	0.108	0.115	0.123	-1.82
195.0	0.106	0.113	0.121	-1.82
196.0	0.104	0.111	0.119	-1.81
197.0	0.102	0.109	0.117	-1.80
198.0	0.100	0.107	0.115	-1.79
199.0	0.099	0.105	0.113	-1.79
200.0	0.097	0.104	0.111	-1.78
201.0	0.095	0.102	0.109	-1.77

Resistance vs. Temperature Table

R25=10KΩ±1% B25/85=3450K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
202.0	0.093	0.100	0.107	-1.76
203.0	0.092	0.098	0.105	-1.76
204.0	0.090	0.097	0.103	-1.75
205.0	0.089	0.095	0.102	-1.74
206.0	0.087	0.093	0.100	-1.74
207.0	0.086	0.092	0.098	-1.73
208.0	0.084	0.090	0.096	-1.72
209.0	0.083	0.089	0.095	-1.72
210.0	0.081	0.087	0.093	-1.71
211.0	0.080	0.086	0.092	-1.70
212.0	0.078	0.084	0.090	-1.69
213.0	0.077	0.083	0.089	-1.69
214.0	0.076	0.081	0.087	-1.68
215.0	0.075	0.080	0.086	-1.67
216.0	0.073	0.079	0.084	-1.67
217.0	0.072	0.077	0.083	-1.66
218.0	0.071	0.076	0.082	-1.65
219.0	0.070	0.075	0.080	-1.65
220.0	0.069	0.074	0.079	-1.64
221.0	0.067	0.072	0.078	-1.64
222.0	0.066	0.071	0.077	-1.63
223.0	0.065	0.070	0.075	-1.62
224.0	0.064	0.069	0.074	-1.62
225.0	0.063	0.068	0.073	-1.61
226.0	0.062	0.067	0.072	-1.60
227.0	0.061	0.066	0.071	-1.60
228.0	0.060	0.065	0.070	-1.59
229.0	0.059	0.064	0.069	-1.59
230.0	0.058	0.063	0.067	-1.58
231.0	0.057	0.062	0.066	-1.57
232.0	0.056	0.061	0.065	-1.57
233.0	0.056	0.060	0.064	-1.56
234.0	0.055	0.059	0.063	-1.56
235.0	0.054	0.058	0.062	-1.55
236.0	0.053	0.057	0.061	-1.54

**Resistance vs. Temperature Table**

R25=10KΩ±1% B25/85=3450K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
237.0	0.052	0.056	0.061	-1.54
238.0	0.051	0.055	0.060	-1.53
239.0	0.051	0.054	0.059	-1.53
240.0	0.050	0.054	0.058	-1.52
241.0	0.049	0.053	0.057	-1.51
242.0	0.048	0.052	0.056	-1.51
243.0	0.048	0.051	0.055	-1.50
244.0	0.047	0.051	0.055	-1.50
245.0	0.046	0.050	0.054	-1.49
246.0	0.045	0.049	0.053	-1.49
247.0	0.045	0.048	0.052	-1.48
248.0	0.044	0.048	0.051	-1.48
249.0	0.043	0.047	0.051	-1.47
250.0	0.043	0.046	0.050	-1.46
251.0	0.042	0.046	0.049	-1.46
252.0	0.042	0.045	0.049	-1.45
253.0	0.041	0.044	0.048	-1.45
254.0	0.040	0.044	0.047	-1.44
255.0	0.040	0.043	0.046	-1.44
256.0	0.039	0.042	0.046	-1.43
257.0	0.039	0.042	0.045	-1.43
258.0	0.038	0.041	0.045	-1.42
259.0	0.038	0.041	0.044	-1.42
260.0	0.037	0.040	0.043	-1.41
261.0	0.036	0.039	0.043	-1.41
262.0	0.036	0.039	0.042	-1.40
263.0	0.035	0.038	0.042	-1.40
264.0	0.035	0.038	0.041	-1.39
265.0	0.034	0.037	0.040	-1.39
266.0	0.034	0.037	0.040	-1.38
267.0	0.034	0.036	0.039	-1.38
268.0	0.033	0.036	0.039	-1.37
269.0	0.033	0.035	0.038	-1.37
270.0	0.032	0.035	0.038	-1.36
271.0	0.032	0.034	0.037	-1.36

Resistance vs. Temperature Table

R25=10KΩ±1% B25/85=3450K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
272.0	0.031	0.034	0.037	-1.35
273.0	0.031	0.033	0.036	-1.35
274.0	0.030	0.033	0.036	-1.34
275.0	0.030	0.033	0.035	-1.34
276.0	0.030	0.032	0.035	-1.33
277.0	0.029	0.032	0.034	-1.33
278.0	0.029	0.031	0.034	-1.32
279.0	0.028	0.031	0.034	-1.32
280.0	0.028	0.030	0.033	-1.31
281.0	0.028	0.030	0.033	-1.31
282.0	0.027	0.030	0.032	-1.30
283.0	0.027	0.029	0.032	-1.30
284.0	0.027	0.029	0.031	-1.30
285.0	0.026	0.029	0.031	-1.29
286.0	0.026	0.028	0.031	-1.29
287.0	0.026	0.028	0.030	-1.28
288.0	0.025	0.027	0.030	-1.28
289.0	0.025	0.027	0.030	-1.27
290.0	0.025	0.027	0.029	-1.27
291.0	0.024	0.026	0.029	-1.26
292.0	0.024	0.026	0.028	-1.26
293.0	0.024	0.026	0.028	-1.26
294.0	0.023	0.025	0.028	-1.25
295.0	0.023	0.025	0.027	-1.25
296.0	0.023	0.025	0.027	-1.24
297.0	0.023	0.025	0.027	-1.24
298.0	0.022	0.024	0.026	-1.23
299.0	0.022	0.024	0.026	-1.23
300.0	0.022	0.024	0.026	-1.23

Resistance vs. Temperature Table

R25=10KΩ±1% B25/85=3450K±1%

