



MEAS HD DO-35 SERIES THERMISTOR 10K BETA ^{25/85} 3977

- 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

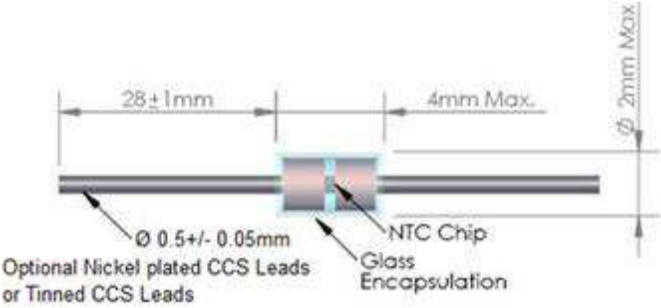
- Hermetically sealed glass package
- Proven Stability at elevated temperatures
- High temperature capability to +300°C
- 24 AWG Nickel Plated CCS Wire
- Cost effective for high volume applications
- Temp range (Nickel plated) -40°C to +300 °C
- Temp range (Tinned) -40 °C to +200 °C

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.

Dimensions



Electrical Specifications

PARAMETERS	UNITS	VALUE
Resistance @ +25°C	Ohms	10,000
Resistance tolerance @ +25°C	%	± 1
Beta Value 25/85	K	3977
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=3977K±1%	$B = \frac{\ln R_{25} - \ln R_{85}}{1/298.15 - 1/358.15}$
		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
A. Low temperature storage	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. High temperature storage	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.	$\Delta R/R \leq 3\%$ $\Delta B/B \leq 2\%$
C. Thermal cycle test	After 100 cycles test under the conditions as shown below, keep the thermistor in normal temperature and humidity for one hour.	$\Delta R/R \leq 2\%$ $\Delta B/B \leq 1\%$
80°C±3°C (in air) Normal temp (in air) -20°C±3°C (in air) 30min 15min 30min 15min 1 Cycle 2 Cycle		
D. Humidity test	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=3977K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
-40.0	319.727	337.479	356.182	-6.64
-39.0	299.519	315.888	333.119	-6.59
-38.0	280.716	295.815	311.695	-6.55
-37.0	263.212	277.144	291.783	-6.50
-36.0	246.910	259.768	273.268	-6.46
-35.0	231.719	243.590	256.044	-6.41
-34.0	217.557	228.520	240.012	-6.37
-33.0	204.349	214.476	225.083	-6.33
-32.0	192.024	201.382	211.174	-6.28
-31.0	180.518	189.167	198.211	-6.24
-30.0	169.772	177.768	186.122	-6.20
-29.0	159.731	167.125	174.844	-6.16
-28.0	150.345	157.184	164.318	-6.12
-27.0	141.567	147.895	154.489	-6.08
-26.0	133.355	139.210	145.307	-6.04
-25.0	125.668	131.087	136.726	-6.00
-24.0	118.471	123.487	128.703	-5.96
-23.0	111.728	116.373	121.198	-5.92
-22.0	105.409	109.710	114.175	-5.88
-21.0	99.485	103.469	107.601	-5.84
-20.0	93.929	97.619	101.443	-5.81
-19.0	88.715	92.134	95.674	-5.77
-18.0	83.822	86.989	90.267	-5.73
-17.0	79.226	82.161	85.197	-5.70
-16.0	74.910	77.630	80.440	-5.66
-15.0	70.853	73.374	75.977	-5.62
-14.0	67.039	69.376	71.787	-5.59
-13.0	63.453	65.619	67.852	-5.55
-12.0	60.078	62.086	64.155	-5.52
-11.0	56.903	58.764	60.680	-5.49
-10.0	53.913	55.638	57.413	-5.45
-9.0	51.097	52.697	54.341	-5.42

Resistance vs. Temperature Table

R25=10K Ω $\pm$ 1% B25/85=3977K $\pm$ 1%

TEMP. (°C)	MINIMUM (K Ω)	NOMINAL (K Ω)	MAXIMUM (K Ω)	ALPHA(%/°C)
-8.0	48.444	49.927	51.450	-5.39
-7.0	45.944	47.318	48.729	-5.35
-6.0	43.586	44.860	46.167	-5.32
-5.0	41.363	42.544	43.754	-5.29
-4.0	39.265	40.359	41.480	-5.26
-3.0	37.285	38.299	39.337	-5.23
-2.0	35.416	36.356	37.317	-5.20
-1.0	33.651	34.521	35.411	-5.17
0.0	31.983	32.790	33.613	-5.14
1.0	30.407	31.153	31.915	-5.10
2.0	28.917	29.609	30.313	-5.07
3.0	27.510	28.150	28.801	-5.04
4.0	26.179	26.771	27.374	-5.01
5.0	24.921	25.469	26.026	-4.97
6.0	23.731	24.237	24.752	-4.94
7.0	22.604	23.072	23.548	-4.91
8.0	21.538	21.970	22.409	-4.88
9.0	20.528	20.927	21.333	-4.85
10.0	19.571	19.940	20.314	-4.82
11.0	18.665	19.005	19.350	-4.79
12.0	17.806	18.120	18.437	-4.76
13.0	16.991	17.280	17.573	-4.73
14.0	16.218	16.485	16.754	-4.70
15.0	15.485	15.731	15.978	-4.67
16.0	14.790	15.015	15.242	-4.64
17.0	14.129	14.336	14.545	-4.61
18.0	13.502	13.692	13.883	-4.59
19.0	12.906	13.080	13.255	-4.56
20.0	12.340	12.499	12.660	-4.53
21.0	11.802	11.947	12.094	-4.50
22.0	11.290	11.423	11.556	-4.48
23.0	10.803	10.925	11.046	-4.45
24.0	10.341	10.451	10.561	-4.42
25.0	9.900	10.000	10.100	-4.40
26.0	9.470	9.571	9.672	-4.37

Resistance vs. Temperature Table

R25=10KΩ±1% B25/85=3977K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
27.0	9.062	9.163	9.265	-4.35
28.0	8.673	8.775	8.877	-4.32
29.0	8.303	8.405	8.508	-4.29
30.0	7.951	8.053	8.155	-4.27
31.0	7.615	7.717	7.820	-4.24
32.0	7.296	7.398	7.500	-4.22
33.0	6.992	7.093	7.195	-4.20
34.0	6.702	6.802	6.904	-4.17
35.0	6.426	6.525	6.626	-4.15
36.0	6.162	6.261	6.361	-4.12
37.0	5.911	6.009	6.108	-4.10
38.0	5.671	5.768	5.866	-4.08
39.0	5.443	5.538	5.635	-4.05
40.0	5.224	5.319	5.415	-4.03
41.0	5.016	5.109	5.204	-4.01
42.0	4.817	4.909	5.003	-3.99
43.0	4.627	4.718	4.810	-3.96
44.0	4.446	4.535	4.626	-3.94
45.0	4.272	4.360	4.450	-3.92
46.0	4.106	4.193	4.281	-3.90
47.0	3.948	4.033	4.120	-3.88
48.0	3.796	3.880	3.966	-3.86
49.0	3.651	3.734	3.818	-3.84
50.0	3.513	3.594	3.677	-3.81
51.0	3.380	3.460	3.541	-3.79
52.0	3.253	3.332	3.411	-3.77
53.0	3.132	3.209	3.287	-3.75
54.0	3.016	3.091	3.168	-3.73
55.0	2.904	2.978	3.054	-3.70
56.0	2.798	2.870	2.945	-3.68
57.0	2.696	2.767	2.840	-3.66
58.0	2.598	2.668	2.739	-3.64
59.0	2.504	2.573	2.643	-3.62
60.0	2.414	2.481	2.550	-3.60
61.0	2.328	2.394	2.461	-3.58

Resistance vs. Temperature Table

R25=10KΩ±1% B25/85=3977K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
62.0	2.245	2.310	2.376	-3.56
63.0	2.166	2.229	2.294	-3.54
64.0	2.090	2.152	2.216	-3.52
65.0	2.017	2.078	2.140	-3.50
66.0	1.947	2.007	2.068	-3.48
67.0	1.880	1.938	1.998	-3.46
68.0	1.815	1.872	1.931	-3.44
69.0	1.753	1.809	1.867	-3.42
70.0	1.694	1.748	1.805	-3.41
71.0	1.636	1.690	1.745	-3.39
72.0	1.581	1.634	1.688	-3.37
73.0	1.528	1.580	1.633	-3.35
74.0	1.478	1.528	1.580	-3.33
75.0	1.429	1.478	1.529	-3.32
76.0	1.382	1.430	1.480	-3.30
77.0	1.336	1.384	1.433	-3.28
78.0	1.293	1.339	1.387	-3.26
79.0	1.251	1.296	1.343	-3.25
80.0	1.211	1.255	1.301	-3.23
81.0	1.172	1.215	1.260	-3.21
82.0	1.135	1.177	1.221	-3.19
83.0	1.099	1.140	1.183	-3.18
84.0	1.064	1.105	1.147	-3.16
85.0	1.030	1.070	1.112	-3.14
86.0	0.998	1.037	1.078	-3.13
87.0	0.967	1.005	1.045	-3.11
88.0	0.937	0.975	1.014	-3.10
89.0	0.908	0.945	0.983	-3.08
90.0	0.881	0.916	0.954	-3.06
91.0	0.854	0.889	0.925	-3.05
92.0	0.828	0.862	0.898	-3.03
93.0	0.803	0.837	0.872	-3.02
94.0	0.779	0.812	0.846	-3.00
95.0	0.756	0.788	0.821	-2.99
96.0	0.733	0.765	0.798	-2.97

Resistance vs. Temperature Table

R25=10KΩ±1% B25/85=3977K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
97.0	0.711	0.742	0.775	-2.96
98.0	0.691	0.721	0.752	-2.94
99.0	0.670	0.700	0.731	-2.93
100.0	0.651	0.680	0.710	-2.95
101.0	0.632	0.660	0.690	-2.94
102.0	0.613	0.641	0.670	-2.92
103.0	0.595	0.623	0.651	-2.91
104.0	0.578	0.605	0.633	-2.89
105.0	0.562	0.588	0.615	-2.88
106.0	0.545	0.571	0.598	-2.86
107.0	0.530	0.555	0.581	-2.84
108.0	0.515	0.539	0.565	-2.83
109.0	0.500	0.524	0.550	-2.81
110.0	0.486	0.510	0.535	-2.80
111.0	0.473	0.496	0.520	-2.78
112.0	0.460	0.482	0.506	-2.77
113.0	0.447	0.469	0.492	-2.75
114.0	0.435	0.456	0.479	-2.74
115.0	0.423	0.444	0.466	-2.72
116.0	0.411	0.432	0.454	-2.71
117.0	0.400	0.421	0.442	-2.70
118.0	0.390	0.410	0.431	-2.68
119.0	0.379	0.399	0.419	-2.67
120.0	0.369	0.388	0.408	-2.65
121.0	0.359	0.378	0.398	-2.64
122.0	0.350	0.368	0.388	-2.63
123.0	0.341	0.359	0.378	-2.61
124.0	0.332	0.350	0.368	-2.60
125.0	0.323	0.341	0.359	-2.59
126.0	0.315	0.332	0.350	-2.57
127.0	0.307	0.324	0.341	-2.56
128.0	0.299	0.315	0.333	-2.55
129.0	0.291	0.307	0.324	-2.53
130.0	0.284	0.300	0.316	-2.52
131.0	0.277	0.292	0.309	-2.51

Resistance vs. Temperature Table

R25=10KΩ±1% B25/85=3977K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
132.0	0.270	0.285	0.301	-2.49
133.0	0.263	0.278	0.294	-2.48
134.0	0.257	0.271	0.287	-2.47
135.0	0.250	0.265	0.280	-2.46
136.0	0.244	0.258	0.273	-2.44
137.0	0.238	0.252	0.267	-2.43
138.0	0.233	0.246	0.260	-2.42
139.0	0.227	0.240	0.254	-2.41
140.0	0.221	0.234	0.248	-2.40
141.0	0.216	0.229	0.242	-2.38
142.0	0.211	0.224	0.237	-2.37
143.0	0.206	0.218	0.231	-2.36
144.0	0.201	0.213	0.226	-2.35
145.0	0.196	0.208	0.221	-2.34
146.0	0.192	0.203	0.216	-2.33
147.0	0.187	0.199	0.211	-2.31
148.0	0.183	0.194	0.206	-2.30
149.0	0.179	0.190	0.202	-2.29
150.0	0.175	0.186	0.197	-2.29
151.0	0.171	0.181	0.193	-2.28
152.0	0.167	0.177	0.188	-2.27
153.0	0.163	0.173	0.184	-2.26
154.0	0.159	0.169	0.180	-2.25
155.0	0.156	0.166	0.176	-2.24
156.0	0.152	0.162	0.172	-2.23
157.0	0.149	0.158	0.169	-2.22
158.0	0.146	0.155	0.165	-2.21
159.0	0.142	0.152	0.161	-2.20
160.0	0.139	0.148	0.158	-2.19
161.0	0.136	0.145	0.155	-2.18
162.0	0.133	0.142	0.151	-2.17
163.0	0.130	0.139	0.148	-2.16
164.0	0.128	0.136	0.145	-2.15
165.0	0.125	0.133	0.142	-2.14
166.0	0.122	0.130	0.139	-2.13

Resistance vs. Temperature Table

R25=10KΩ±1% B25/85=3977K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
167.0	0.120	0.128	0.136	-2.12
168.0	0.117	0.125	0.133	-2.11
169.0	0.115	0.122	0.131	-2.10
170.0	0.112	0.120	0.128	-2.09
171.0	0.110	0.117	0.125	-2.08
172.0	0.108	0.115	0.123	-2.07
173.0	0.105	0.113	0.120	-2.07
174.0	0.103	0.110	0.118	-2.06
175.0	0.101	0.108	0.115	-2.05
176.0	0.099	0.106	0.113	-2.04
177.0	0.097	0.104	0.111	-2.03
178.0	0.095	0.102	0.109	-2.02
179.0	0.093	0.100	0.107	-2.01
180.0	0.091	0.098	0.104	-2.00
181.0	0.089	0.096	0.102	-2.00
182.0	0.088	0.094	0.100	-1.99
183.0	0.086	0.092	0.098	-1.98
184.0	0.084	0.090	0.097	-1.97
185.0	0.082	0.088	0.095	-1.96
186.0	0.081	0.087	0.093	-1.95
187.0	0.079	0.085	0.091	-1.94
188.0	0.078	0.083	0.089	-1.94
189.0	0.076	0.082	0.088	-1.93
190.0	0.075	0.080	0.086	-1.92
191.0	0.073	0.079	0.084	-1.91
192.0	0.072	0.077	0.083	-1.90
193.0	0.071	0.076	0.081	-1.90
194.0	0.069	0.074	0.080	-1.89
195.0	0.068	0.073	0.078	-1.88
196.0	0.067	0.072	0.077	-1.87
197.0	0.065	0.070	0.076	-1.87
198.0	0.064	0.069	0.074	-1.86
199.0	0.063	0.068	0.073	-1.85
200.0	0.062	0.066	0.071	-1.84
201.0	0.061	0.065	0.070	-1.83

Resistance vs. Temperature Table

R25=10KΩ±1% B25/85=3977K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
202.0	0.060	0.064	0.069	-1.83
203.0	0.058	0.063	0.068	-1.82
204.0	0.057	0.062	0.066	-1.81
205.0	0.056	0.061	0.065	-1.80
206.0	0.055	0.060	0.064	-1.80
207.0	0.054	0.059	0.063	-1.79
208.0	0.053	0.057	0.062	-1.78
209.0	0.052	0.056	0.061	-1.78
210.0	0.051	0.055	0.060	-1.77
211.0	0.051	0.055	0.059	-1.76
212.0	0.050	0.054	0.058	-1.75
213.0	0.049	0.053	0.057	-1.75
214.0	0.048	0.052	0.056	-1.74
215.0	0.047	0.051	0.055	-1.73
216.0	0.046	0.050	0.054	-1.73
217.0	0.045	0.049	0.053	-1.72
218.0	0.045	0.048	0.052	-1.71
219.0	0.044	0.047	0.051	-1.70
220.0	0.043	0.047	0.050	-1.70
221.0	0.042	0.046	0.050	-1.69
222.0	0.042	0.045	0.049	-1.68
223.0	0.041	0.044	0.048	-1.68
224.0	0.040	0.044	0.047	-1.67
225.0	0.040	0.043	0.046	-1.66
226.0	0.039	0.042	0.046	-1.66
227.0	0.038	0.042	0.045	-1.65
228.0	0.038	0.041	0.044	-1.65
229.0	0.037	0.040	0.043	-1.64
230.0	0.036	0.040	0.043	-1.63
231.0	0.036	0.039	0.042	-1.63
232.0	0.035	0.038	0.041	-1.62
233.0	0.035	0.038	0.041	-1.61
234.0	0.034	0.037	0.040	-1.61
235.0	0.034	0.036	0.039	-1.60
236.0	0.033	0.036	0.039	-1.59
237.0	0.033	0.035	0.038	-1.59

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TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
238.0	0.032	0.035	0.038	-1.58
239.0	0.032	0.034	0.037	-1.58
240.0	0.031	0.034	0.037	-1.57
241.0	0.031	0.033	0.036	-1.56
242.0	0.030	0.033	0.035	-1.56
243.0	0.030	0.032	0.035	-1.55
244.0	0.029	0.032	0.034	-1.55
245.0	0.029	0.031	0.034	-1.54
246.0	0.028	0.031	0.033	-1.54
247.0	0.028	0.030	0.033	-1.53
248.0	0.027	0.030	0.032	-1.52
249.0	0.027	0.029	0.032	-1.52
250.0	0.027	0.029	0.031	-1.51
251.0	0.026	0.028	0.031	-1.51
252.0	0.026	0.028	0.030	-1.50
253.0	0.025	0.028	0.030	-1.50
254.0	0.025	0.027	0.030	-1.49
255.0	0.025	0.027	0.029	-1.48
256.0	0.024	0.026	0.029	-1.48
257.0	0.024	0.026	0.028	-1.47
258.0	0.024	0.026	0.028	-1.47
259.0	0.023	0.025	0.027	-1.46
260.0	0.023	0.025	0.027	-1.46
261.0	0.023	0.025	0.027	-1.45
262.0	0.022	0.024	0.026	-1.45
263.0	0.022	0.024	0.026	-1.44
264.0	0.022	0.023	0.026	-1.44
265.0	0.021	0.023	0.025	-1.43
266.0	0.021	0.023	0.025	-1.42
267.0	0.021	0.022	0.025	-1.42
268.0	0.020	0.022	0.024	-1.41
269.0	0.020	0.022	0.024	-1.41
270.0	0.020	0.022	0.024	-1.40
271.0	0.019	0.021	0.023	-1.40

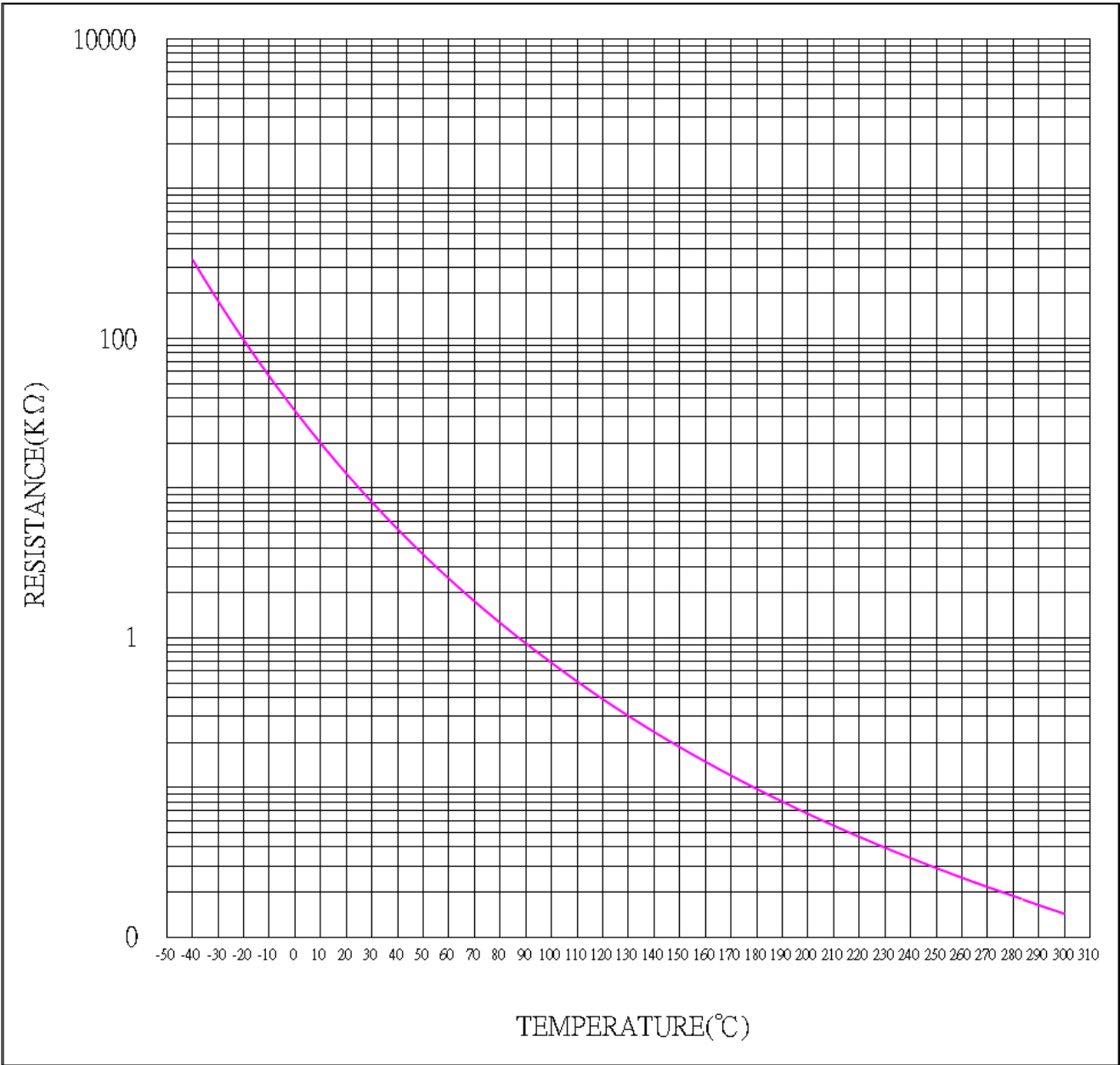
Resistance vs. Temperature Table

R25=10KΩ±1% B25/85=3977K±1%

TEMP. (°C)	MINIMUM (KΩ)	NOMINAL (KΩ)	MAXIMUM (KΩ)	ALPHA(%/°C)
272.0	0.019	0.021	0.023	-1.39
273.0	0.019	0.021	0.023	-1.39
274.0	0.019	0.020	0.022	-1.38
275.0	0.018	0.020	0.022	-1.38
276.0	0.018	0.020	0.022	-1.37
277.0	0.018	0.020	0.021	-1.37
278.0	0.018	0.019	0.021	-1.36
279.0	0.017	0.019	0.021	-1.36
280.0	0.017	0.019	0.021	-1.35
281.0	0.017	0.019	0.020	-1.35
282.0	0.017	0.018	0.020	-1.34
283.0	0.017	0.018	0.020	-1.34
284.0	0.016	0.018	0.019	-1.34
285.0	0.016	0.018	0.019	-1.33
286.0	0.016	0.017	0.019	-1.33
287.0	0.016	0.017	0.019	-1.32
288.0	0.015	0.017	0.018	-1.32
289.0	0.015	0.017	0.018	-1.31
290.0	0.015	0.016	0.018	-1.31
291.0	0.015	0.016	0.018	-1.30
292.0	0.015	0.016	0.018	-1.30
293.0	0.014	0.016	0.017	-1.29
294.0	0.014	0.016	0.017	-1.29
295.0	0.014	0.015	0.017	-1.28
296.0	0.014	0.015	0.017	-1.28
297.0	0.014	0.015	0.016	-1.28
298.0	0.014	0.015	0.016	-1.27
299.0	0.013	0.015	0.016	-1.27
300.0	0.013	0.014	0.016	-1.26

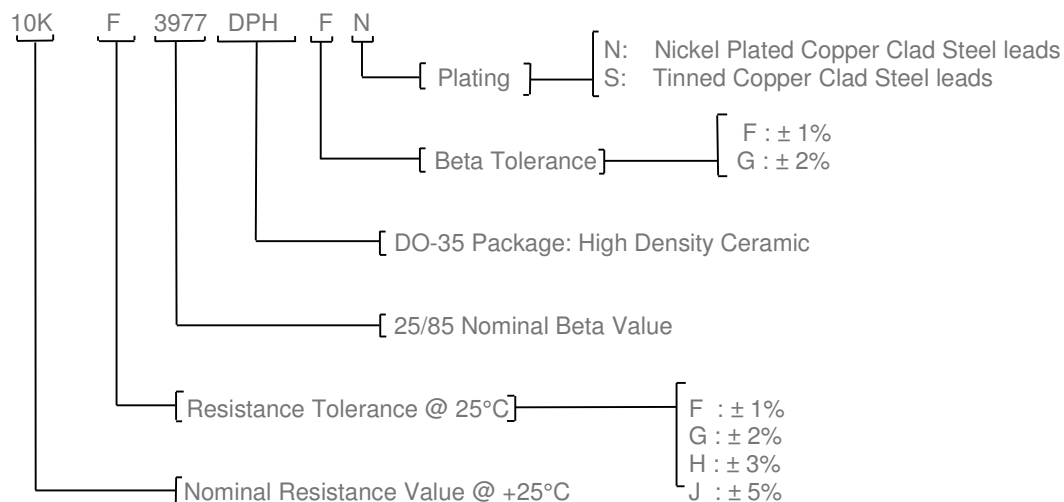
Resistance vs. Temperature Table

R25=10KΩ±1% B25/85=3977K±1%



Ordering Information

PART NUMBER	DESCRIPTION	NOM. Ω @25°C	RES. TOLERANCE	PACKAGING
10KF3977DPHFN	DO-35 Series Thermistor (+300°C) [®] for Nickel version	10,000	± 1%	Bulk
10KF3977DPHFS	DO-35 Series Thermistor (+200°C) [®] for Tinned version	10,000	± 1%	Bulk



Other Resistance values available in this series

MEAS PART NUMBER	RESISTANCE [Ω] @ +25°C	TOLERANCE @ +25°C	BETA VALUE 25/85	BETA TOLERANCE	OPERATING TEMPERATURE
5KF3950DPHFN	5000	± 1%	3950	± 1%	-40° to +300°C
5KF3950DPHFS	5000	± 1%	3950	± 1%	-40° to +200°C
10KF3450DPHFN	10000	± 1%	3450	± 1%	-40° to +300°C
10KF3450DPHFS	10000	± 1%	3450	± 1%	-40° to +200°C
50KF4050DPHFN	50000	± 1%	4050	± 1%	-40° to +300°C
50KF4050DPHFS	50000	± 1%	4050	± 1%	-40° to +200°C

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