

NTC THERMISTORS: STANDARD DISCS - D97A MATERIAL

DATA:

Resistance range @ 25°C.....300 Ω to 10K Ω†
 Temperature coefficient of resistance (α) @ 25°C.....-4.39%/°C
 Operating temperature range-50°C to +150°C

Temp. Range (°C)	Resistance Ratio (Nom.)	Beta (°K)
0/50	9.1	3899
37.8/104.4	9.7	4005
25/125	29.1	4000

†This resistance range is based on the diameter/thickness combinations shown in the table below. Other R₀ @ 25°C values are available in this material system.

CALCULATIONS:

To calculate $\frac{R_T}{R_{25}}$ at temperatures other than those listed in the table, use the following equation:

$$\frac{R_T}{R_{25}} = e^{(\ln A - C \ln T + \frac{D}{T})}$$

T = temperature in °K and equation constants are as follows:

Temperature Range (°C)	Ln A	C	D
-50 to 0	18.98492	4.82379	2530.37
0 to 50	6.06088	2.85978	3050.97
50 to 100	-2.18707	1.64231	3443.03
100 to 150	-3.18801	1.49310	3486.81

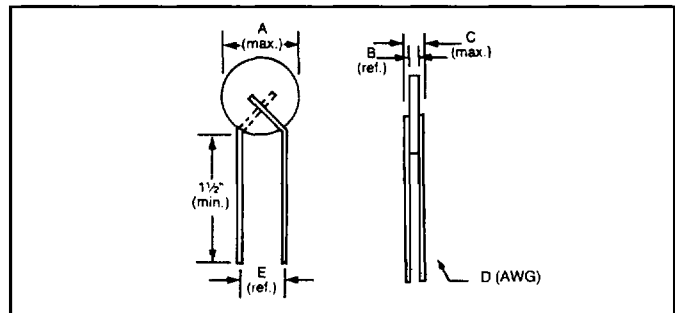
To calculate the actual thermistor temperature as a function of the thermistor resistance, use the following equation:

$$T = \frac{1}{a + b (\ln \frac{R_T}{R_{25}}) + c (\ln \frac{R_T}{R_{25}})^2 + d (\ln \frac{R_T}{R_{25}})^3}$$

T = temperature in °K and equation constants are as follows:

$\frac{R_T}{R_{25}}$ Range	a	b	c	d
3.277 to 69.27	3.35705E-03	2.52136E-04	3.37974E-06	-6.56471E-08
.3599 to 3.277	3.35402E-03	2.56173E-04	2.14011E-06	-7.28080E-08
.0681 to .3599	3.35305E-03	2.54200E-04	1.14170E-06	-6.96322E-08
.0187 to .0681	3.35361E-03	2.53762E-04	8.51422E-07	-8.82042E-08

DIMENSIONS:



Temperature (°F)	Temperature (°C)	$\frac{R_T}{R_{25}}$	Temperature Coef. Of Resistance (α) (%/°C)
-58	-50	69.27	-7.25
-49	-45	48.55	-6.98
-40	-40	34.47	-6.73
-31	-35	24.78	-6.49
-22	-30	18.01	-6.27
-13	-25	13.24	-6.06
-4	-20	9.832	-5.86
5	-15	7.372	-5.67
14	-10	5.579	-5.49
23	-5	4.258	-5.32
32	0	3.277	-5.14
41	5	2.546	-4.97
50	10	1.993	-4.82
59	15	1.573	-4.67
68	20	1.250	-4.53
77	25	1.000	-4.39
86	30	0.8055	-4.26
95	35	0.6528	-4.14
104	40	0.5323	-4.03
113	45	0.4365	-3.91
122	50	0.3599	-3.81
131	55	0.2983	-3.70
140	60	0.2486	-3.60
149	65	0.2082	-3.50
158	70	0.1753	-3.40
167	75	0.1482	-3.31
176	80	0.1258	-3.23
185	85	0.1073	-3.14
194	90	0.09189	-3.06
203	95	0.07899	-2.99
212	100	0.06816	-2.90
221	105	0.05906	-2.83
230	110	0.05134	-2.77
239	115	0.04479	-2.70
248	120	0.03920	-2.64
257	125	0.03441	-2.57
266	130	0.03030	-2.52
275	135	0.02676	-2.46
284	140	0.02369	-2.40
293	145	0.02104	-2.35
302	150	0.01873	-2.30

Type Number	R° @ 25°C Ω	Tolerance* ± %	A		B		C		D	E		δ (mW/°C)	τ (Sec.)
			(In.)	(mm)	(In.)	(mm)	(In.)	(mm)	(AWG)	(In.)	(mm)		
RL1009-5820-97-D1	10K	10	0.110	2.79	0.090	2.29	0.170	4.32	26	0.100	2.54	3.0	10
RL1007-4364-97-D1	7.5K				0.070	1.78	0.150	3.81				2.8	10
RL1004-2910-97-D1	5K				0.040	1.02	0.120	3.05				2.5	9
RL1003-1746-97-D1	3K				0.030	0.76	0.110	2.79				2.5	9
RL2007-1164-97-D1	2K	10	0.220	5.59	0.070	1.78	0.160	4.06	24	0.156	3.96	6.5	30
RL2006-873-97-D1	1.5K				0.060	1.52	0.150	3.81				6.5	20
RL2004-582-97-D1	1K				0.040	1.02	0.130	3.30				6.5	20
RL3006-436-97-D1	750	10	0.320	8.13	0.060	1.52	0.150	3.81	24	0.250	6.35	7.2	35
RL3004-291-97-D1	500				0.040	1.02	0.130	3.30				7.0	35
RL4004-175-97-D1	300	10	0.430	10.92	0.040	1.02	0.130	3.30	24	0.250	6.35	9.0	40

*Consult Keystone Thermometrics Engineering Department for information on other tolerances or tolerances at temperatures other than 25°C.

KEYSTONE THERMOMETRICS