

NTC THERMISTORS:

STANDARD DISCS - D155 MATERIAL

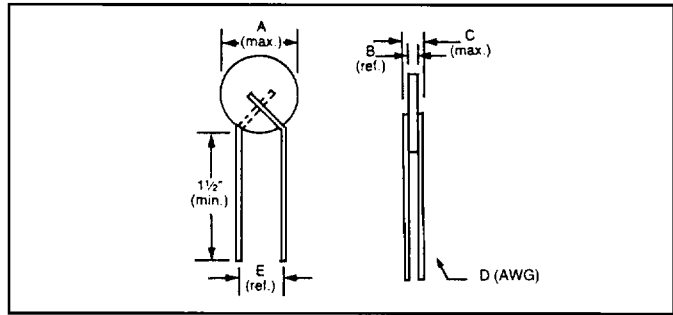
DATA:

Resistance range @ 25°C25K Ω to 350K Ω†
 Temperature coefficient of resistance (α) @ 25°C.....-5.23%/°C
 Operating temperature range-50°C to +150°C

Temp. Range (°C)	Resistance Ratio (Nom.)	Beta (°K)
0/50	13.8	4640
37.8/104.4	15.5	4831
25/125	58.3	4827

†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.

DIMENSIONS:



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	52.81189	10.31829	1769.11
0 to 50	25.52041	6.13829	2818.44
50 to 100	-1.21583	2.19137	4088.57
100 to 150	2.14682	2.67382	3899.90

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
4.066 to 139.80	3.363098E-03	2.067115E-04	4.050600E-06	-1.518075E-08
.2936 to 4.066	3.354016E-03	2.151149E-04	2.712729E-06	-4.744757E-08
.0393 to .2936	3.351355E-03	2.105653E-04	7.573417E-07	-5.976153E-08
.0081 to .0393	3.355437E-03	2.125929E-04	9.861552E-07	-6.305168E-08

Temperature (°F)	Temperature (°C)	$\frac{R_T}{R_{25}}$	Temperature Coef. Of Resistance (α) (%/°C)
-58	-50	139.80	-8.18
-49	-45	93.47	-7.92
-40	-40	63.29	-7.68
-31	-35	43.36	-7.45
-22	-30	30.03	-7.24
-13	-25	21.02	-7.03
-4	-20	14.87	-6.84
5	-15	10.61	-6.65
14	-10	7.642	-6.48
23	-5	5.552	-6.31
32	0	4.066	-6.03
41	5	3.022	-5.85
50	10	2.265	-5.68
59	15	1.712	-5.52
68	20	1.303	-5.37
77	25	1.000	-5.23
86	30	0.7726	-5.09
95	35	0.6009	-4.96
104	40	0.4704	-4.83
113	45	0.3705	-4.71
122	50	0.2936	-4.59
131	55	0.2341	-4.46
140	60	0.1878	-4.34
149	65	0.1516	-4.22
158	70	0.1231	-4.11
167	75	0.1005	-4.00
176	80	0.08250	-3.90
185	85	0.06806	-3.80
194	90	0.05642	-3.70
203	95	0.04699	-3.61
212	100	0.03931	-3.52
221	105	0.03304	-3.44
230	110	0.02790	-3.36
239	115	0.02363	-3.28
248	120	0.02009	-3.20
257	125	0.01715	-3.13
266	130	0.01469	-3.06
275	135	0.01262	-2.99
284	140	0.01089	-2.92
293	145	0.009416	-2.86
302	150	0.008170	-2.80

Type Number	R° @ 25°C Ω	Tolerance* ± %	A		B		C		D (AWG)	E		δ (mW/°C)	τ (Sec.)
			(in.)	(mm)	(in.)	(mm)	(in.)	(mm)		(in.)	(mm)		
RL1007-183K-155-D1	350K	10	0.110	2.79	0.070	1.78	0.150	3.81	26	0.100	2.54	2.8	10
RL1006-157K-155-D1	300K				0.060	1.52	0.140	3.56				2.5	10
RL1005-130.9K-155-D1	250K				0.050	1.27	0.130	3.30				2.5	10
RL1004-104.7K-155-D1	200K				0.040	1.02	0.120	3.05				2.5	9
RL1003-78.4K-155-D1	150K				0.030	0.76	0.110	2.79				2.5	9
RL2008-52.3K-155-D1	100K	10	0.220	5.59	0.080	2.03	0.170	4.32	24	0.156	3.96	6.5	30
RL2007-44.5K-155-D1	85K				0.070	1.78	0.160	4.06				6.5	30
RL2004-26K-155-D1	50K				0.040	1.02	0.130	3.30				6.5	20
RL3006-15.7K-155-D1	30K	10	0.320	8.13	0.060	1.52	0.150	3.81	24	0.250	6.35	7.2	35
RL3005-13.1K-155-D1	25K				0.050	1.27	0.140	3.56				7.0	35

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

KEYSTONE THERMOMETRICS

A COMMITMENT TO EXCELLENCE

967 WINDFALL ROAD • ST. MARYS • PENNSYLVANIA • 15857-3397 • TEL: (814) 834-9140 • FAX: (814) 781-7969

D155