NTC THERMISTORS:
STANDARD DISCS – D150 MATERIAL

DATA:

Resistance range @ 25°C .....10K Ω to 200K Ω†
Temperature coefficient of
resistance (α) @ 25°C.....–5.18%/°C
Operating temperature range .....–50°C to +150°C

Temp. Range (°C)	Resistance Ratio (Nom.)	Beta (°K)
0/50	13.5	4600
37.8/104.4	15.0	4774
25/125	55.6	4769

†This resistance range is based on the diameter/thickness combinations shown in the table below. Other R_o @ 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:

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

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

Temperature Range (°C)	Ln A	C	D
–50 to 0	47.35287	9.46733	1953.36
0 to 50	22.25511	5.63031	2929.06
50 to 100	–3.15556	1.87815	4134.49
100 to 150	–2.24871	2.01319	4094.51

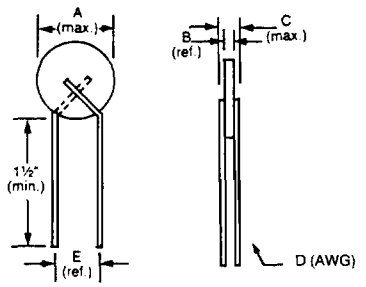
To calculate the actual thermistor temperature as a function of the thermistor resistance, use the following equation:

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

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

$\frac{R_T}{R_{25}}$ Range	a	b	c	d
4.024 to 135.50	3.361652E-03	2.096670E-04	3.868669E-06	–2.330818E-08
.2972 to 4.024	3.354016E-03	2.170211E-04	2.554422E-06	–5.028151E-08
.0408 to .2972	3.351874E-03	2.131902E-04	8.879379E-07	–2.149824E-08
.0086 to .0408	3.350159E-03	2.123333E-04	6.784237E-07	–5.479374E-08

DIMENSIONS:



Temperature (°F)	Temperature (°C)	$\frac{R_T}{R_{25}}$	Temperature Coef. Of Resistance (α) (%/°C)
–58	–50	135.50	–8.17
–49	–45	90.65	–7.90
–40	–40	61.45	–7.65
–31	**–35**	**42.16**	**–7.42**
–22	**–30**	**29.25**	**–7.20**
–13	**–25**	**20.52**	**–6.99**
– 4	–20	14.54	–6.79
5	–15	10.41	–6.60
14	–10	7.516	–6.42
23	**– 5**	**5.477**	**–6.25**
32	**0**	**4.024**	**–5.99**
41	**5**	**2.996**	**–5.81**
50	10	2.250	–5.64
59	15	1.704	–5.48
68	20	1.301	–5.33
77	**25**	**1.000**	**–5.18**
86	**30**	**0.7744**	**–5.04**
95	**35**	**0.6038**	**–4.91**
104	40	0.4738	–4.78
113	45	0.3741	–4.66
122	50	0.2972	–4.54
131	**55**	**0.2376**	**–4.41**
140	**60**	**0.1912**	**–4.29**
149	**65**	**0.1547**	**–4.17**
158	70	0.1260	–4.06
167	75	0.1031	–3.95
176	80	0.08484	–3.85
185	**85**	**0.07017**	**–3.75**
194	**90**	**0.05832**	**–3.65**
203	**95**	**0.04870**	**–3.56**
212	100	0.04085	–3.47
221	105	0.03440	–3.39
230	110	0.02910	–3.31
239	**115**	**0.02469**	**–3.23**
248	**120**	**0.02104**	**–3.15**
257	**125**	**0.01800**	**–3.08**
266	130	0.01545	–3.01
275	135	0.01331	–2.94
284	140	0.01150	–2.88
293	**145**	**0.009971**	**–2.82**
302	**150**	**0.008672**	**–2.75**

Type Number	R° @ 25°C Ω	Tolerance* ± %	A (in.)	A (mm)	B (in.)	B (mm)	C (in.)	C (mm)	D (AWG)	E (in.)	E (mm)	δ (mW/°C)	τ (Sec.)
RL1006-105.3K-150-D1	**200K**	10	**0.110**	2.79	**0.060**	1.52	**0.140**	3.56	26	**0.100**	2.54	2.7	10
RL1005-79K-150-D1	**150K**				**0.050**	1.27	**0.130**	3.30				2.5	10
RL1003-52.7K-150-D1	**100K**				**0.030**	0.76	**0.110**	2.79				2.5	9
RL2008-36.9K-150-D1	**70K**	10	**0.220**	5.59	**0.080**	2.03	**0.170**	4.32	24	**0.156**	3.96	6.5	30
RL2006-26.3K-150-D1	**50K**				**0.060**	1.52	**0.150**	3.81				6.5	20
RL2004-18.4K-150-D1	**35K**				**0.040**	1.02	**0.130**	3.30				6.5	20
RL2003-13.2K-150-D1	**25K**				**0.030**	0.76	**0.120**	3.05				6.0	18
RL3006-10.5K-150-D1	**20K**	10	**0.320**	8.13	**0.060**	1.52	**0.150**	3.81	24	**0.250**	6.35	7.2	35
RL3004-7900-150-D1	**15K**				**0.040**	1.02	**0.130**	3.30				7.0	35
RL4005-5267-150-D1	**10K**	10	**0.430**	10.92	**0.050**	1.27	**0.140**	3.56	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.

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