TH10K Thermistor

TH10K

Description

Epoxy coated 10K thermistor with 0.010" Nickel PTFE insulated lead wires. Thermistor is suitable for PCB and probe mountings in relation to temperature measurement, control, and compensation.

Specifications

Electrical Specifications	
Resistance at 25 °C ($R_{25\,°C}$)	10 k-Ω
Temperature Accuracy	±1 °C @ 25 °C
Dissipation Constant	1.4 mW/°C
Time Constant (in Air)	15 sec
Operating Range	-50 to 150 °C

Resistance as a function of Thermistor Temperature, Rt

Formula

$$R_t = R_{25\,°C}\left(e^{\left(A+\frac{B}{T}+\frac{C}{T^2}+\frac{D}{T^3}\right)}\right);$$

T = Temperature in Kelvin (K)

Temp Range (°C)	A	B	C	D
-50 to -1	-1.6443767E+01	6.1080608E+03	-4.4141671E+05	2.4159818E+07
0 to 49	-1.5470381E+01	5.6022839E+03	-3.7886070E+05	2.4971623E+07
50 to 99	-1.4807463E+01	5.1550854E+03	-2.9717659E+05	2.2904187E+07
100 to 150	-1.4862658E+01	5.2676519E+03	-3.5374848E+05	3.1207901E+07

Thermistor Temperature as a function of Resistance

Formula

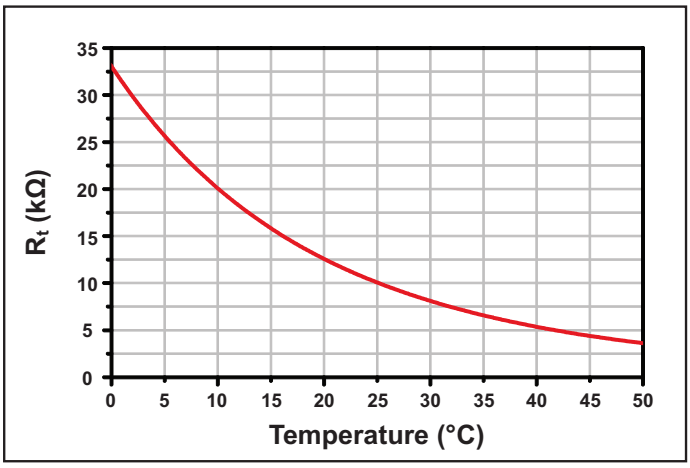
$$T = \frac{1}{a+b\ln\left(\frac{R_t}{R_{25°C}}\right)+c\ln\left(\frac{R_t}{R_{25°C}}\right)^2+d\ln\left(\frac{R_t}{R_{25°C}}\right)^3};$$

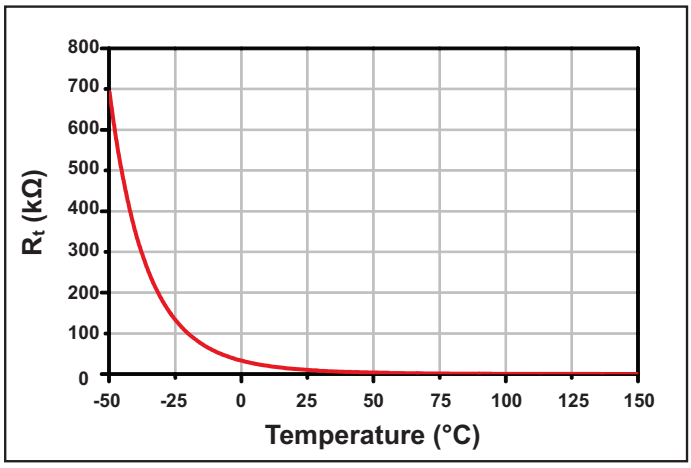
R_t = Actual measured thermistor resistance

R_t Range	a	b	c	d
692,600 to 32,770	3.3570420E-03	2.5214848E-04	3.3743283E-06	-6.4957311E-08
32,770 to 3,599	3.3540170E-03	2.5617244E-04	2.1400943E-06	-7.2405219E-08
3,599 to 681.6	3.3530481E-03	2.5420230E-04	1.1431163E-06	-6.9383563E-08
681.6 to 187	3.3536166E-03	2.5377200E-04	8.5433271E-07	-8.7912262E-08

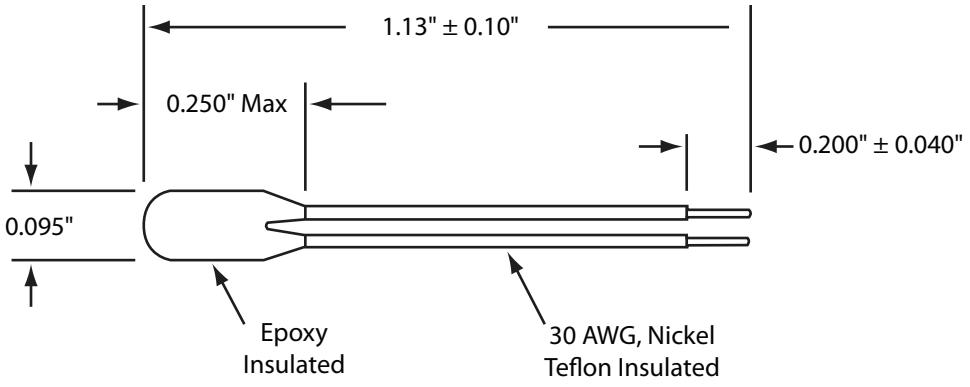
R-T Curve Selection									
Temp (°C)	Temp (°F)	Temp (K)	$\frac{R_t}{R_{25\,°C}}$	R_t (Ω)	Temp (°C)	Temp (°F)	Temp (K)	$\frac{R_t}{R_{25\,°C}}$	R_t (Ω)
-50	-58.0	223.15	69.2650	692650	55	131.0	328.15	0.2983	2983
-45	-49.0	228.15	48.5474	485475	60	140.0	333.15	0.2486	2486
-40	-40.0	233.15	34.4711	344711	65	149.0	338.15	0.2082	2082
-35	-31.0	238.15	24.7768	247768	70	158.0	343.15	0.1753	1753
-30	-22.0	243.15	18.0147	180147	75	167.0	348.15	0.1482	1482
-25	-13.0	248.15	13.2410	132410	80	176.0	353.15	0.1258	1258
-20	-4.0	253.15	9.8324	98324	85	185.0	358.15	0.1073	1073
-15	5.0	258.15	7.3724	73724	90	194.0	363.15	0.0919	919
-10	14.0	263.15	5.5787	55787	95	203.0	368.15	0.0790	790
-5	23.0	268.15	4.2583	42583	100	212.0	373.15	0.0682	682
0	32.0	273.15	3.2773	32773	105	221.0	378.15	0.0591	591
5	41.0	278.15	2.5456	25456	110	230.0	383.15	0.0513	513
10	50.0	283.15	1.9932	19932	115	239.0	388.15	0.0448	448
15	59.0	288.15	1.5725	15725	120	248.0	393.15	0.0392	392
20	68.0	293.15	1.2497	12497	125	257.0	398.15	0.0344	344
25	77.0	298.15	1.0000	10000	130	266.0	403.15	0.0303	303
30	86.0	303.15	0.8055	8055	135	275.0	408.15	0.0268	268
35	95.0	308.15	0.6528	6528	140	284.0	413.15	0.0237	237
40	104.0	313.15	0.5323	5323	145	293.0	418.15	0.0210	210
45	113.0	318.15	0.4365	4365	150	302.0	423.15	0.0187	187
50	122.0	323.15	0.3599	3599					

Thermistor Resistance vs. Temp Curve





Drawing



Precautions and Warranty Information

These products are ESD (electro static discharge) sensitive and as a result are not covered under warranty. In order to ensure the proper functioning of an LED care must be given to maintain the highest standards of compliance to the maximum electrical specifications when handling such devices. The LEDs are particularly sensitive to any voltage that exceeds the absolute maximum ratings of the product. Any applied voltage in excess of the maximum specification will cause damage and possible complete failure to the product. The user must use handling procedures that prevent any electro static discharges or other voltage surges when handling or using these devices.

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