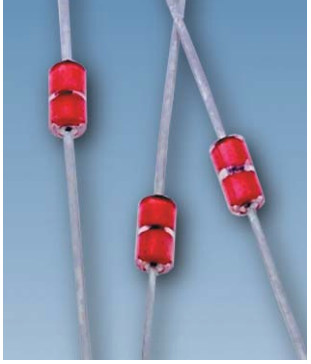


H-SERIES AXIAL LEADED

NTC Thermistor Probes

Hermetically Sealed NTC Thermistors

H-series, glass-encapsulated NTC thermistors are small, rugged devices hermetically sealed for long-term stability and electrical isolation. They are recommended for use when fast response times and interchangeability are required.

Precision 'Grade 1' thermistors are also available when tighter tolerances and interchangeability are required.

Electrical Properties

The chart shows the specifications for standard H-Series thermistors. This chart can be used as a guide in designing thermistor circuitry for a specific application. The resistance of all thermistors is given at 25°C under zero power.

Standard Values

Base P/N	R25°C (Ω)	Body Style	R-T Grade
1H103T	10,000	DO-35	1
1H203T	20,000	DO-35	1
1H303T	30,000	DO-35	1
1H503T	50,000	DO-35	1
1H104T	100,000	DO-35	1

Thermal Characteristics

Body Style	Dissipation Constant	Thermal Time Constant (air)
DO-35	2mW/°C	8 seconds
DO-41	4mW/°C	10 seconds

Dissipation Constant – The amount of power required to raise the temperature of the thermistor, in still air, 1°C over the ambient temperature.

Thermal Time Constant – The amount of time required for a thermistor to change 63.2% of the temperature difference between its initial and final sensing temperature in a step-function change of temperature.

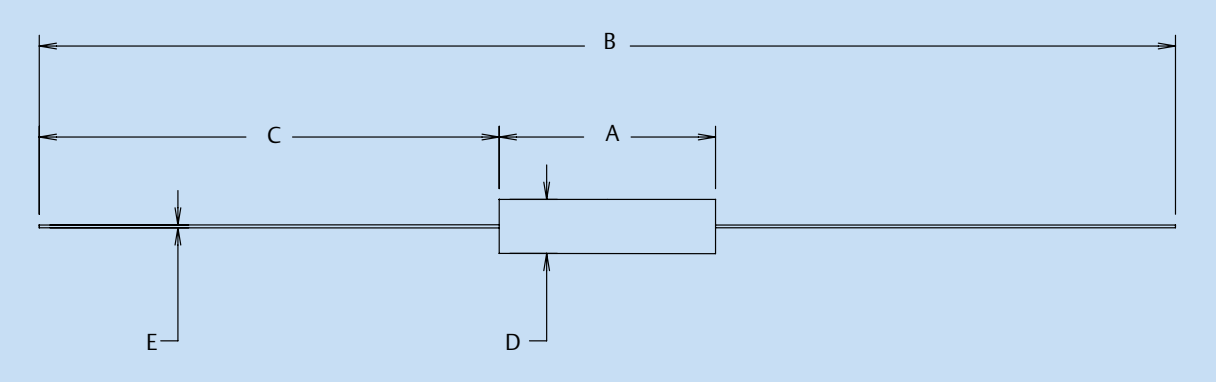
UL Ratings

UL File Number: E179543
UL Specification: UL1434
UL Temperature ratings:
'Grade 1' parts: 'Class 1' -40° to +150°C Limiting 'Class 2' -40° to +200°C Limiting

Physical Properties

The thermistor material is a ceramic metal oxide. This material is hermetically sealed within a glass capsule. The iron-core, copper-clad leads are tin-plated and can be either welded or soldered into the circuit. Therm-O-Disc will pre-cut and custom-form the leads to any specification. All H-Series NTC thermistors are available on tape and reel for automated insertion.

Axial Leaded Package



Dimensions (millimeters)

Body Style	A	B	C	D	E
DO-35	3.5/4.1	59.1/62.8	27.7/29.4	1.9/2.1	0.48/0.53
DO-41	4.1/4.6	59.1/62.8	27.3/29.0	2.1/2.7	0.73/0.79

Product Numbering System

(P) 1 H ___ 07 ___ TR

- **(P)** Precision (optional)
- **1** Grade
- **H** Package: Glass diode
- ___ Resistance @ 25C:
  10,000 = 10 x 10^3 = 103
  30,000 = 30 x 10^3 = 303
- **07** Configuration number: Physical and electrical characteristics (blank = standard)
- ___ **T** Tin-plated lead
  G Gold-plated lead
- **TR** Tape and reel (optional)
  Tape and reel spec is EIA-296-E
  5K pcs/reel

Standard Tolerances

Base part numbers are +/-10% at 25°C. Other standard tolerances available are: 5, 4, 3, 2 and 1% at 25°C. Tolerances other than those listed and tolerances at temperatures other than 25°C are also available.

Precision H-Series

'Grade 1' 10K, 20K, 30k, 50K and 100KΩ parts are available in a special ±2% version that is tested at multiple temperature points to ensure an accuracy of ±1°C from 0° to 100°C. (Example: P1H103T)

Specifications for Standard H Series Thermistors

To use this chart, multiply the thermistor's resistance at 25°C by the multiplier at the desired temperature. The alpha value is the rate of resistance change with temperature expressed in -%/°C.

Temp. °C (°F)	Grade 1 Multiplier		Temp. °C (°F)	Grade 1 Multiplier	
-40 (-40)	33.600	-6.6%	135 (275)	0.0265	2.4%
-35 (-31)	24.270	6.4%	140 (284)	0.0235	2.4%
-30 (-22)	17.700	6.1%	145 (293)	0.0209	2.3%
-25 (-13)	13.040	5.9%	150 (302)	0.0185	2.3%
-20 (-4)	9.706	5.8%	155 (311)	0.0162	2.3%
-15 (5)	7.294	5.6%	160 (320)	0.0145	2.2%
-10 (14)	5.5319	5.4%	165 (329)	0.0130	2.2%
-5 (23)	4.2324	5.3%	170 (338)	0.0118	2.2%
0 (32)	3.2654	5.2%	175 (347)	0.0107	2.2%
5 (41)	2.5396	5.1%	180 (356)	0.0097	2.1%
10 (50)	1.9903	4.8%	185 (365)	0.0087	2.0%
15 (59)	1.5714	4.7%	190 (374)	0.0079	2.0%
20 (68)	1.2493	4.5%	195 (383)	0.0072	1.9%
25 (77)	1.0000	4.4%	200 (392)	0.0065	1.9%
30 (86)	0.8056	4.3%	205 (401)	0.00598	1.9%
35 (95)	0.6530	4.2%	210 (410)	0.005462	1.8%
40 (104)	0.5327	4.0%	215 (419)	0.004997	1.8%
45 (113)	0.4370	3.9%	220 (428)	0.004580	1.8%
50 (122)	0.3603	3.8%	225 (437)	0.004205	1.8%
55 (131)	0.2986	3.6%	230 (446)	0.003867	1.7%
60 (140)	0.2488	3.6%	235 (455)	0.003561	1.7%
65 (149)	0.2083	3.5%	240 (464)	0.003285	1.6%
70 (158)	0.1752	3.4%	245 (473)	0.003035	1.6%
75 (167)	0.1480	3.3%	250 (482)	0.002808	1.5%
80 (176)	0.1255	3.3%	255 (491)	—	—
85 (185)	0.1070	3.3%	260 (500)	—	—
90 (194)	0.0915	3.2%	265 (509)	—	—
95 (203)	0.0787	3.1%	270 (518)	—	—
100 (212)	0.0680	3.0%	275 (527)	—	—
105 (221)	0.0592	2.9%	280 (536)	—	—
110 (230)	0.0517	2.8%	285 (545)	—	—
115 (239)	0.0450	2.7%	290 (554)	—	—
120 (248)	0.0390	2.6%	295 (563)	—	—
125 (257)	0.0340	2.6%	300 (572)	—	—
130 (266)	0.0300	2.5%			

Note: UL recognition to 200° C only

Beta Values

Beta is an industry term used to describe the steepness of the R-T curve. The greater the beta, the steeper the R-T curve. Please note beta is dependent on the two reference temperatures. Therm-O-Disc uses 25/75 as its standard. The other temperatures are some of the most commonly used.

R-T Grade	25°/75°C	0°/50°C	25°/50°C	25°/85°C
Grade 1	3965	3905	3934.4	3977.5