Standard Disc Style

SPECTRUM SENSORS & CONTROLS INC
A Spectrum Control Business

Features:

- Rugged, cost effective design
- -50°C to 150°C Operation
- Bare or epoxy coated
- Values from 100Ω to 20,000Ω
- Temperature measurement, control or compensation
- High sensitivity to changes in temperature
- Other tolerances and options available

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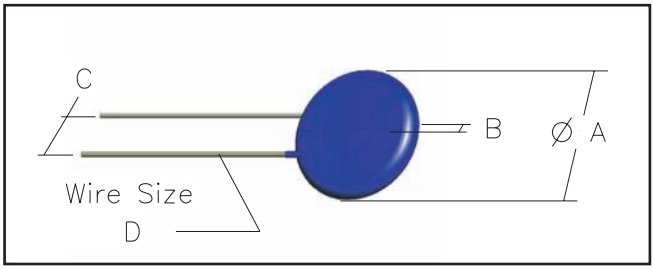
Description:

SS&C standard disc style thermistors are ideal for use in those applications where low cost and a rugged design are desired. Thermistors are available either coated or uncoated and are available in a variety of resistance values, curves and tolerances to suit a wide variety of applications. Contact the factory for specific design or application information or the availability of options.



SS&C Standard Disc Style Thermistors

Part Number	R_{25} (Ω)	Matl*	A (max.)		B (max.)		C (typ.)		D AWG	δ (mW/°C)	t sec.
			in	mm	in	mm	in	mm			
D1002K10	100	K	0.360	9.14	0.150	3.81	0.250	6.35	24	9	35
D2002K10	200	K	0.260	6.60	0.160	4.06	0.156	3.96	24	7	20
D2502K10	250	K	0.260	6.60	0.160	4.06	0.156	3.96	24	7	20
D5002K10	500	K	0.215	5.46	0.160	4.06	0.080	2.03	26	5	15
D1003K10	1,000	K	0.150	3.81	0.150	3.81	0.080	2.03	26	3	10
D1003Z10	1,000	Z	0.260	6.60	0.140	3.56	0.156	3.96	24	7	20
D2003Z10	2,000	Z	0.215	5.46	0.140	3.56	0.080	2.03	26	7	20
D2253Z10	2,252	Z	0.215	5.46	0.140	3.56	0.080	2.03	26	5	15
D3003Z10	3,000	Z	0.215	5.46	0.150	3.81	0.080	2.03	26	5	15
D5003Z10	5,000	Z	0.150	3.81	0.140	3.56	0.080	2.03	26	3	10
D1004Z10	10,000	Z	0.150	3.81	0.160	4.06	0.080	2.03	26	3	10
D2004Z10	20,000	Z	0.150	3.81	0.160	4.06	0.080	2.03	26	3	10

Standard resistance tolerances available are: ±10%, ±5%, ±2% @25°C

*See R/T tables on opposite page

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Basic P/N	Material	Wire Type		Tol. Code	Point-match Temperature (°C) (only used if other than 25°C)

Example: D1003K10-2 Curve "K" Material, 1000Ω ± 2% at 25°C
D5003Z10-5-100 Curve "Z" Material, 5kΩ at 25°C with tolerance rating of ±5% at 100°C

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SS&C Resistance vs. Temperature Conversion Table Disc Style NTC Thermistor

Material		K			Z		
Temperature Coef. @25˚C (α25)		-3.9 %/˚C			-4.4 %/˚C		
Resistance Ratio R_0/R_{50}		6.93			9.07		
Beta ($\beta_{25/85}$)		3498			3976		
Temperature (˚F)	(˚C)	$\frac{R_t}{R_{25}}$	α (%/˚C)	Curve Dev.	$\frac{R_t}{R_{25}}$	α (%/˚C)	Curve Dev.
-58	-50	39.46	6.2	8.2	66.75	7.1	5.5
-40	-40	21.68	5.8	6.8	33.56	6.6	4.3
-22	-30	12.38	5.4	5.6	17.67	6.2	3.5
-4	-20	7.389	5.1	4.4	9.697	5.8	2.7
14	-10	4.482	4.8	3.3	5.530	5.4	2.0
32	0	2.825	4.5	2.3	3.265	5.1	1.4
50	10	1.830	4.2	1.2	1.990	4.8	0.8
68	20	1.216	4.0	0.3	1.249	4.5	0.3
77	25	1.000	3.9	0.0	1.000	4.4	0.0
86	30	0.8270	3.7	0.6	0.8056	4.3	0.3
104	40	0.5747	3.5	1.4	0.5325	4.0	0.7
122	50	0.4074	3.3	2.2	0.3601	3.8	1.2
140	60	0.2942	3.2	3.0	0.2487	3.6	1.6
158	70	0.2161	3.0	3.6	0.1752	3.4	2.0
176	80	0.1612	2.9	4.3	0.1256	3.2	2.3
185	85	0.1401	2.8	4.6	0.1071	3.2	2.5
194	90	0.1221	2.7	4.9	0.09162	3.1	2.7
212	100	0.09376	2.6	5.5	0.06787	2.9	3.0
230	110	0.07292	2.5	6.1	0.05102	2.8	3.3
248	120	0.05738	2.3	6.7	0.03887	2.7	3.6
257	125	0.05112	2.3	6.9	0.03409	2.6	3.8
266	130				0.02999	2.5	3.9
284	140				0.02342	2.4	4.1
302	150				0.01849	2.3	4.4

This R/T Conversion Table is provided for reference only. SS&C uses the Steinhart-Hart equation to calculate the nominal Rt/R_{25} value. 1°C tables are available upon request.

- **Rt/R_{25}**— The ratio of the thermistor resistance at any temperature divided by its resistance at 25°C. For example, if you select a 500Ω at 25°C thermistor in Material "K", you can calculate its nominal resistance at 100°C to be 500 x .09376 = 46.88Ω.

- **α**— Negative temperature coefficient of resistance expressed in %/°C. This is the percentage change in thermistor resistance for a 1°C change in its body temperature. α is particularly useful in calculating the required resistance tolerance necessary to guarantee sensor accuracy. For example, a Material "Z" thermistor has an α of -3.80%/°C at 50°C. If you require a sensor that is accurate to within ± 2.0°C at 50°C, the thermistor must have a resistance tolerance of (± 2.0°C) x (3.80%/°C)= ± 5.6%.

- **Curve Dev.** — Applies to thermistors that are point matched at 25°C. The Curve Dev. (%) must be added to the thermistor tolerance at 25°C to calculate the total tolerance or maximum deviation at any temperature. Curve Dev. accounts for the curve variance that occurs within any given batch or lot of thermistors. For example, if you specify a Material "Z" device with a ± 5% tolerance at 25°C, it will have a total tolerance at 80°C of (± 5%) +(±2.3%)= ±7.3%.