

Material Type S12.0 – Available Products: RL, MS, NC, UD

Data for material type: D12.0

Temp Range (°C)	Ratio	Beta
0 to 50	11.42	4300
0 to 70	25.08	4314
25 to 50	3.08	4335
25 to 85	11.56	4356
25 to 100	18.99	4367
25 to 125	39.83	4374
37.8 to 104.4	12.02	4380

To calculate R_t/R_{25} at temperatures other than those listed in the table, use the following equation:

$$R_t/R_{25} = \exp\{A + B/T + C/T^2 + D/T^3\}$$

where T = temperature in K

Temp Range (°C)	A	B	C	D
-50 to 0	-18.8418	7184.9662	-573897.9929	31382714.3143
0 to 50	-16.5494	5817.5348	-338052.4515	22268200.2242
50 to 100	-16.0575	5520.3262	-294729.7484	22705480.4028
100 to 150	-16.5607	6103.9065	-499678.2473	44066975.1025

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

$$1/T = a + b(\ln R_t/R_{25}) + c(\ln R_t/R_{25})^2 + d(\ln R_t/R_{25})^3$$

R_t/R_{25} range	a	b	c	d
105.30 to 3.708	0.003357722	0.00022727	3.25109E-06	-4.87371E-08
3.708 to 0.3247	0.003354016	0.000232484	1.43011E-06	-4.79784E-08
0.3247 to 0.05265	0.003354289	0.000232087	8.60076E-07	-4.94258E-08
0.05265 to 0.0129	0.003365669	0.00023671	1.02059E-06	-8.22206E-08

†The deviation resulting from the tolerance on the material constant, Beta. The deviation must be added to the resistance tolerance of the part as specified at 25°C.

Temp. (°C)	R_t/R_{25} nominal	Temp Coef α (%/°C)	β Deviation† (±%)
-50	105.146986	7.897976	3.104220
-45	71.360794	7.615923	2.948754
-40	49.097426	7.350547	2.779829
-35	34.217404	7.100512	2.598797
-30	24.138215	6.864620	2.406887
-25	17.224167	6.641786	2.205209
-20	12.424356	6.431031	1.994775
-15	9.054405	6.231464	1.776500
-10	6.662887	6.042280	1.551218
-5	4.948396	5.862744	1.319689
0	3.707354	5.681198	1.082602
5	2.803967	5.495259	0.863603
10	2.139995	5.318797	0.645768
15	1.647348	5.151169	0.429178
20	1.278514	4.991788	0.213902
25	1.000000	4.840112	0.000000
30	0.787966	4.695646	0.212476
35	0.625282	4.557934	0.423482
40	0.499533	4.426553	0.632982
45	0.401641	4.301117	0.840943
50	0.324918	4.165089	1.047340
55	0.264634	4.046680	1.206399
60	0.216786	3.933450	1.369181
65	0.178575	3.825099	1.535362
70	0.147881	3.721348	1.704639
75	0.123086	3.621937	1.876734
80	0.102948	3.526625	2.051386
85	0.086507	3.435187	2.228353
90	0.073018	3.347413	2.407411
95	0.061898	3.263109	2.588350
100	0.052689	3.142657	2.770975
105	0.045114	3.067471	2.943675
110	0.038771	2.995115	3.112593
115	0.033438	2.925445	3.277867
120	0.028937	2.858329	3.439630
125	0.025125	2.793640	3.598009
130	0.021884	2.731261	3.753124
135	0.019120	2.671082	3.905087
140	0.016755	2.612999	4.054009
145	0.014724	2.556914	4.199992
150	0.012975	2.502735	4.343134