



# MATERIAL TYPE: S10.7

## AVAILABLE PRODUCTS: UD

Data for material type : S10.7

Temp Range (°C)	Ratio	Beta
0 to 50	10.30	4117
0 to 70	21.83	4128
25 to 50	2.93	4145
25 to 85	10.36	4161
25 to 100	16.61	4168
25 to 125	33.64	4173
37.8 to 104.4	10.72	4178

To calculate Rt/R25 at temperatures other than those listed in the table, use the following equation:

$$Rt/R25 = \exp\{A + B/T + C/T^2 + D/T^3\}$$

where T = temperature in K

Temp Range (°C)	A	B	C	D
-50 to 0	-1.7806855 x 10 <sup>01</sup>	6.6913499 x 10 <sup>03</sup>	-5.0700649 x 10 <sup>05</sup>	2.7749741 x 10 <sup>07</sup>
0 to 50	-1.5557214 x 10 <sup>01</sup>	5.3625389 x 10 <sup>03</sup>	-2.7718416 x 10 <sup>05</sup>	1.8269877 x 10 <sup>07</sup>
50 to 100	-1.5054986 x 10 <sup>01</sup>	5.0483675 x 10 <sup>03</sup>	-2.2530458 x 10 <sup>05</sup>	1.7364821 x 10 <sup>07</sup>
100 to 150	-1.4842972 x 10 <sup>01</sup>	4.9344102 x 10 <sup>03</sup>	-2.1709181 x 10 <sup>05</sup>	1.9151968 x 10 <sup>07</sup>

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

$$1/T = a + b(\ln Rt/R25) + c(\ln Rt/R25)^2 + d(\ln Rt/R25)^3$$

Rt/R25 range	a	b	c	d
89.53 to 3.513	3.3590436 x 10 <sup>-03</sup>	2.3639206 x 10 <sup>-04</sup>	3.2017589 x 10 <sup>-06</sup>	-5.4263672 x 10 <sup>-08</sup>
3.513 to 0.3411	3.3540167 x 10 <sup>-03</sup>	2.4273295 x 10 <sup>-04</sup>	1.3328516 x 10 <sup>-06</sup>	-4.9081822 x 10 <sup>-08</sup>
0.3411 to 0.06022	3.3545241 x 10 <sup>-03</sup>	2.4257068 x 10 <sup>-04</sup>	7.4466320 x 10 <sup>-07</sup>	-4.7905533 x 10 <sup>-08</sup>
0.06022 to 0.0159	3.3571801 x 10 <sup>-03</sup>	2.4263457 x 10 <sup>-04</sup>	4.1605318 x 10 <sup>-07</sup>	-5.3222558 x 10 <sup>-08</sup>

†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.

Temperature (°C)	Rt/R25 nominal	Temp Coef (%/°C)	β Deviation † (±%)
-50	89.530000	7.67	7.549274
-45	61.450000	7.39	6.929628
-40	42.750000	7.13	6.334988
-35	30.130000	6.88	5.7637473
-30	21.480000	6.65	5.2144367
-25	15.500000	6.43	4.6857101
-20	11.300000	6.22	4.1763318
-15	8.319000	6.02	3.6851651
-10	6.186000	5.84	3.2111628
-5	4.641000	5.66	2.7533581
0	3.513000	5.45	2.3108575
5	2.687000	5.27	1.8241807
10	2.073000	5.10	1.3503314
15	1.613000	4.94	0.8887159
20	1.265000	4.78	0.4387788
25	1.000000	4.64	1.485E-14
30	0.796000	4.50	0.4281084
35	0.637900	4.36	0.8460043
40	0.514600	4.23	1.2541181
45	0.417700	4.11	1.6528549
50	0.341100	3.98	2.0425962
55	0.280400	3.86	2.4321163
60	0.231800	3.75	2.8122372
65	0.192600	3.65	3.1833484
70	0.160900	3.55	3.5458176
75	0.135100	3.45	3.8999916
80	0.113900	3.36	4.2461979
85	0.096540	3.27	4.5847462
90	0.082150	3.19	4.9159295
95	0.070190	3.11	5.2400254
100	0.060220	3.01	5.5572968
105	0.051920	2.93	5.8992986
110	0.044930	2.86	6.2292682
115	0.039020	2.79	6.5477513
120	0.034000	2.72	6.8552623
125	0.029730	2.65	7.1522857
130	0.026080	2.59	7.439279
135	0.022940	2.53	7.7166738
140	0.020250	2.47	7.9848783
145	0.017920	2.42	8.2442782
150	0.015900	2.36	8.4952389

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