



Resistance-Temperature Calculator Results

Selection Criteria

Lower Temp C	Upper Temp C	Degree Change	Resistance @ 25° C	Thermistor Curve	Tolerance toleranceType
-45	130	1.0	3,000	Z/D (-4.4%/C @ 25C)	J +/- 5%

Results

(Data is for Reference Only and is subject to change)

Temp. C	Minimum	Nominal Resistance	Maximum	NTC (%/C)	Max Deviation	Degree Tolerance
-45.0	129,926.65	141,594.00	153,261.35	6.88	8.24	1.20
-44.0	121,389.71	132,204.00	143,018.29	6.84	8.18	1.20
-43.0	113,454.86	123,495.00	133,535.14	6.79	8.13	1.20
-42.0	106,101.93	115,416.00	124,730.07	6.74	8.07	1.20
-41.0	99,271.93	107,916.00	116,560.07	6.70	8.01	1.20
-40.0	92,914.38	100,950.00	108,985.62	6.65	7.96	1.20
-39.0	87,012.40	94,476.00	101,939.60	6.60	7.90	1.20
-38.0	81,516.81	88,461.00	95,405.19	6.56	7.85	1.20
-37.0	76,407.97	82,863.00	89,318.03	6.51	7.79	1.20
-36.0	71,644.50	77,655.00	83,665.50	6.47	7.74	1.20
-35.0	67,215.42	72,807.00	78,398.58	6.43	7.68	1.19
-34.0	63,081.32	68,292.00	73,502.68	6.38	7.63	1.20
-33.0	59,234.69	64,086.00	68,937.31	6.34	7.57	1.19
-32.0	55,640.59	60,165.00	64,689.41	6.30	7.52	1.19
-31.0	52,284.08	56,505.00	60,725.92	6.25	7.47	1.20
-30.0	49,159.73	53,094.00	57,028.27	6.21	7.41	1.19
-29.0	46,234.77	49,908.00	53,581.23	6.17	7.36	1.19
-28.0	43,501.27	46,932.00	50,362.73	6.13	7.31	1.19
-27.0	40,948.42	44,154.00	47,359.58	6.09	7.26	1.19
-26.0	38,563.97	41,556.00	44,548.03	6.05	7.20	1.19
-25.0	36,328.49	39,126.00	41,923.51	6.01	7.15	1.19
-24.0	34,235.51	36,852.00	39,468.49	5.97	7.10	1.19
-23.0	32,276.89	34,725.00	37,173.11	5.93	7.05	1.19
-22.0	30,444.48	32,736.00	35,027.52	5.89	7.00	1.19
-21.0	28,724.54	30,870.00	33,015.47	5.85	6.95	1.19
-20.0	27,113.05	29,122.50	31,131.95	5.81	6.90	1.19
-19.0	25,601.81	27,484.50	29,367.19	5.77	6.85	1.19
-18.0	24,183.72	25,948.20	27,712.68	5.73	6.80	1.19
-17.0	22,853.06	24,507.30	26,161.54	5.70	6.75	1.18
-16.0	21,603.52	23,154.90	24,706.28	5.66	6.70	1.18
-15.0	20,429.93	21,885.30	23,340.67	5.62	6.65	1.18
-14.0	19,326.80	20,692.50	22,058.21	5.59	6.60	1.18
-13.0	18,290.31	19,572.30	20,854.29	5.55	6.55	1.18

ERROR for site owner:
Invalid domain for site key

ccCA

-12.0	17,313.41	18,519.00	19,724.59	5.51	6.51	1.18
-11.0	16,396.35	17,528.70	18,661.05	5.48	6.46	1.18
-10.0	15,533.32	16,597.20	17,661.08	5.44	6.41	1.18
-9.0	14,719.48	15,720.90	16,722.32	5.41	6.37	1.18
-8.0	13,954.20	14,895.60	15,837.00	5.37	6.32	1.18
-7.0	13,233.64	14,118.90	15,004.16	5.34	6.27	1.17
-6.0	12,552.90	13,386.90	14,220.90	5.30	6.23	1.18
-5.0	11,912.51	12,697.20	13,481.89	5.27	6.18	1.17
-4.0	11,307.41	12,047.10	12,786.79	5.24	6.14	1.17
-3.0	10,737.86	11,434.20	12,130.54	5.20	6.09	1.17
-2.0	10,199.02	10,855.80	11,512.58	5.17	6.05	1.17
-1.0	9,691.49	10,310.10	10,928.71	5.14	6.00	1.17
0.0	9,211.50	9,795.30	10,379.10	5.11	5.96	1.17
1.0	8,758.84	9,309.00	9,859.16	5.07	5.91	1.17
2.0	8,330.22	8,849.70	9,369.18	5.04	5.87	1.16
3.0	7,925.25	8,415.90	8,906.55	5.01	5.83	1.16
4.0	7,543.06	8,005.80	8,468.54	4.98	5.78	1.16
5.0	7,180.63	7,617.90	8,055.17	4.95	5.74	1.16
6.0	6,837.98	7,251.30	7,664.62	4.92	5.70	1.16
7.0	6,513.42	6,904.20	7,294.98	4.89	5.66	1.16
8.0	6,206.80	6,575.70	6,944.60	4.86	5.61	1.15
9.0	5,915.95	6,264.90	6,613.85	4.83	5.57	1.15
10.0	5,640.14	5,970.30	6,300.46	4.80	5.53	1.15
11.0	5,379.13	5,691.60	6,004.07	4.77	5.49	1.15
12.0	5,131.23	5,427.00	5,722.77	4.74	5.45	1.15
13.0	4,896.45	5,176.50	5,456.55	4.71	5.41	1.15
14.0	4,673.68	4,938.90	5,204.12	4.68	5.37	1.15
15.0	4,462.37	4,713.60	4,964.83	4.66	5.33	1.14
16.0	4,261.95	4,500.00	4,738.05	4.63	5.29	1.14
17.0	4,071.31	4,296.90	4,522.49	4.60	5.25	1.14
18.0	3,890.47	4,104.30	4,318.13	4.57	5.21	1.14
19.0	3,718.85	3,921.60	4,124.35	4.55	5.17	1.14
20.0	3,555.26	3,747.90	3,940.54	4.52	5.14	1.14
21.0	3,399.89	3,582.60	3,765.31	4.49	5.10	1.14
22.0	3,252.64	3,426.00	3,599.36	4.46	5.06	1.13
23.0	3,111.46	3,276.60	3,441.74	4.44	5.04	1.14
24.0	2,977.62	3,135.00	3,292.38	4.41	5.02	1.14
25.0	2,850.00	3,000.00	3,150.00	4.39	5.00	1.14
26.0	2,726.07	2,871.66	3,017.25	4.36	5.07	1.16
27.0	2,609.00	2,749.50	2,890.00	4.33	5.11	1.18
28.0	2,497.87	2,633.22	2,768.57	4.31	5.14	1.19
29.0	2,391.80	2,522.46	2,653.12	4.28	5.18	1.21
30.0	2,290.84	2,417.01	2,543.18	4.26	5.22	1.23
31.0	2,194.89	2,316.51	2,438.13	4.23	5.25	1.24
32.0	2,103.27	2,220.75	2,338.23	4.21	5.29	1.26
33.0	2,015.96	2,129.46	2,242.96	4.19	5.33	1.27
34.0	1,932.96	2,042.43	2,151.90	4.16	5.36	1.29
35.0	1,853.61	1,959.42	2,065.23	4.14	5.40	1.30

36.0	1,778.15	1,880.25	1,982.35	4.11	5.43	1.32
37.0	1,705.96	1,804.68	1,903.40	4.09	5.47	1.34
38.0	1,637.27	1,732.56	1,827.85	4.07	5.50	1.35
39.0	1,571.54	1,663.71	1,755.88	4.04	5.54	1.37
40.0	1,508.94	1,597.95	1,686.96	4.02	5.57	1.39
41.0	1,449.04	1,535.16	1,621.28	4.00	5.61	1.40
42.0	1,391.96	1,475.16	1,558.36	3.97	5.64	1.42
43.0	1,337.30	1,417.83	1,498.36	3.95	5.68	1.44
44.0	1,285.22	1,363.05	1,440.88	3.93	5.71	1.45
45.0	1,235.31	1,310.67	1,386.03	3.91	5.75	1.47
46.0	1,187.71	1,260.57	1,333.43	3.89	5.78	1.49
47.0	1,142.18	1,212.63	1,283.08	3.86	5.81	1.51
48.0	1,098.53	1,166.79	1,235.05	3.84	5.85	1.52
49.0	1,056.90	1,122.93	1,188.96	3.82	5.88	1.54
50.0	1,016.94	1,080.93	1,144.92	3.81	5.92	1.55
51.0	978.69	1,040.61	1,102.53	3.79	5.95	1.57
52.0	942.08	1,002.00	1,061.92	3.77	5.98	1.59
53.0	906.94	965.04	1,023.14	3.75	6.02	1.61
54.0	873.40	929.64	985.88	3.73	6.05	1.62
55.0	841.25	895.71	950.17	3.71	6.08	1.64
56.0	810.45	863.19	915.93	3.69	6.11	1.66
57.0	780.88	832.05	883.22	3.67	6.15	1.68
58.0	752.60	802.17	851.74	3.65	6.18	1.69
59.0	725.48	773.52	821.56	3.63	6.21	1.71
60.0	699.52	746.07	792.62	3.61	6.24	1.73
61.0	674.57	719.70	764.83	3.59	6.27	1.75
62.0	650.59	694.41	738.23	3.57	6.31	1.77
63.0	627.68	670.17	712.66	3.55	6.34	1.79
64.0	605.66	646.86	688.06	3.53	6.37	1.80
65.0	584.54	624.51	664.48	3.51	6.40	1.82
66.0	564.26	603.03	641.80	3.49	6.43	1.84
67.0	544.77	582.39	620.01	3.47	6.46	1.86
68.0	526.08	562.59	599.10	3.45	6.49	1.88
69.0	508.10	543.54	578.98	3.43	6.52	1.90
70.0	490.78	525.24	559.70	3.42	6.56	1.92
71.0	474.21	507.66	541.11	3.40	6.59	1.94
72.0	458.25	490.74	523.23	3.38	6.62	1.96
73.0	442.93	474.48	506.03	3.36	6.65	1.98
74.0	428.20	458.85	489.50	3.34	6.68	2.00
75.0	414.01	443.79	473.57	3.33	6.71	2.02
76.0	400.37	429.30	458.23	3.31	6.74	2.04
77.0	387.26	415.38	443.50	3.29	6.77	2.06
78.0	374.64	401.97	429.30	3.27	6.80	2.08
79.0	362.54	389.07	415.60	3.26	6.82	2.09
80.0	350.82	376.62	402.42	3.24	6.85	2.11
81.0	339.56	364.65	389.74	3.22	6.88	2.14
82.0	328.73	353.13	377.53	3.21	6.91	2.15
83.0	318.27	342.00	365.72	3.19	6.94	2.18

83.0	316.27	342.00	353.73	3.19	6.94	2.16
84.0	308.23	331.32	354.41	3.17	6.97	2.20
85.0	298.53	321.00	343.47	3.16	7.00	2.22
86.0	289.17	311.04	332.91	3.14	7.03	2.24
87.0	280.19	301.44	322.69	3.12	7.05	2.26
88.0	271.51	292.20	312.89	3.11	7.08	2.28
89.0	263.15	283.29	303.43	3.09	7.11	2.30
90.0	255.07	274.68	294.29	3.08	7.14	2.32
91.0	247.33	266.40	285.47	3.06	7.16	2.34
92.0	239.81	258.39	276.97	3.04	7.19	2.37
93.0	232.55	250.65	268.75	3.03	7.22	2.38
94.0	225.58	243.21	260.84	3.01	7.25	2.41
95.0	218.85	236.01	253.17	3.00	7.27	2.42
96.0	212.33	229.05	245.77	2.98	7.30	2.45
97.0	206.03	222.33	238.63	2.97	7.33	2.47
98.0	199.99	215.85	231.71	2.95	7.35	2.49
99.0	194.11	209.58	225.05	2.94	7.38	2.51
100.0	188.44	203.52	218.60	2.92	7.41	2.54
101.0	183.01	197.70	212.39	2.90	7.43	2.56
102.0	177.73	192.06	206.39	2.88	7.46	2.59
103.0	172.67	186.63	200.59	2.87	7.48	2.61
104.0	167.73	181.35	194.97	2.85	7.51	2.64
105.0	163.01	176.28	189.55	2.84	7.53	2.65
106.0	158.41	171.36	184.31	2.83	7.56	2.67
107.0	153.96	166.59	179.22	2.81	7.58	2.70
108.0	149.64	161.97	174.30	2.80	7.61	2.72
109.0	145.51	157.53	169.55	2.79	7.63	2.73
110.0	141.47	153.21	164.95	2.77	7.66	2.77
111.0	137.57	149.01	160.45	2.76	7.68	2.78
112.0	133.81	144.99	156.17	2.75	7.71	2.80
113.0	130.16	141.06	151.96	2.73	7.73	2.83
114.0	126.63	137.28	147.93	2.72	7.76	2.85
115.0	123.20	133.59	143.98	2.71	7.78	2.87
116.0	119.91	130.05	140.19	2.69	7.80	2.90
117.0	116.69	126.60	136.51	2.68	7.83	2.92
118.0	113.57	123.24	132.91	2.67	7.85	2.94
119.0	110.54	120.00	129.46	2.65	7.88	2.97
120.0	107.65	116.88	126.11	2.64	7.90	2.99
121.0	104.83	113.85	122.87	2.63	7.92	3.01
122.0	102.08	110.88	119.68	2.62	7.94	3.03
123.0	99.42	108.03	116.64	2.60	7.97	3.07
124.0	96.86	105.27	113.68	2.59	7.99	3.08
125.0	94.35	102.57	110.79	2.58	8.01	3.10
126.0	91.92	99.96	108.00	2.57	8.04	3.13
127.0	89.59	97.44	105.29	2.56	8.06	3.15
128.0	87.31	94.98	102.65	2.54	8.08	3.18
129.0	85.11	92.61	100.11	2.53	8.10	3.20
130.0	82.97	90.30	97.63	2.52	8.12	3.22

Calculators for Temperature & Thermistor Applications

Beta Value Calculator - The approximate relationship between the resistance and temperature for a NTC thermistor.

Defense R – T (Resistance vs. Temperature Tables) – M23648 and M32192 Defense Ratios for defense and aerospace applications use slightly different values than QTI's standard curves. MIL-PRF and NSAS/GSFC parts always use MIL-spec curves.

R – T (Resistance vs. Temperature Tables) – A table showing the standard resistance at each temperature point.

Steinhart-Hart Calculator - The Steinhart–Hart equation is a model of the resistance of a semiconductor at different temperatures.

$$\frac{1}{T} = A + B \ln(R) + C[\ln(R)]^3$$

- T is the temperature (in Kelvin)
- R is the resistance at T (in ohms)
- A, B, and C are the Steinhart-Hart coefficients which vary depending on the type and model of the thermistor and the temperature range of interest. (The most general form of the equation contains a $(\ln(R))^2$ term, but this is frequently neglected because it is typically much smaller than the other coefficients, and is therefore not shown above.)

Calculators for Temperature & Thermistor Applications

To find degree tolerance - Add standard part tolerance to maximum deviation and divide by the NTC value.

To find percent tolerance - Multiply degree tolerance by NTC value.



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