

DATASHEET AND OPERATING GUIDE

TCS Series Thermistors



BEAD HEAD



CYLINDRICAL HEAD

BEAD HEAD THERMISTOR

These $\pm 1\%$ thermistors are epoxy coated, two-lead thermistors for applications where embedding the thermistor is required. The thermistors are epoxy-coated for durability and protection against exposure to moisture, high and low pressure, and corrosive environments. They have either solid nickel or silver-plated copper wires with Teflon® insulation to provide isolation when assembled in metal housings.

Dissipation Constant is ~ 1 mW / °C in still air.

Thermal Time Constant is ~ 1 second in stirred liquid.

APPLICATIONS

Aerospace/Automotive, Food Processing, Factory Automation, Electrical/Electronics, Meterology/Environmental, Medical Devices, Academic Research, Agriculture, Biomedical Systems, LIDAR, Medical/Dental, Quantum Systems, Spectroscopy, Materials Processing, Remote Sensing

FEATURES AND BENEFITS

- RoHS & REACH compliant
- 1% Tolerance
- Cylindrical Head
 - » Ideal for Optical or Thin Surfaces & Small Laser Packages
 - » 3" Nickel Bifilar Leads
 - » Isolated Leads Provide Isolation from Metal Housing
- Bead Head
 - » Small Size (Epoxy Coated)
 - » Wide Resistance Range
 - » Available in six Different R-T Curves
 - » 3" Solid Nickel or Silver-plated Copper Leads
 - » Teflon® Insulation Provides Isolation from Metal Housing

CYLINDRICAL HEAD THERMISTOR

This $\pm 1\%$ thermistor is encapsulated in a polyimide tube, for assemblies where surface mounting or embedding the thermistor is required. Ideal for tight mounting spaces with 38 AWG nickel bifilar leads and a maximum diameter of 0.6 mm by maximum length of 3 mm.

Dissipation Constant is ~ 0.2 mW / °C in still air.

Thermal Time Constant is ~ 200 msec in stirred liquid.

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ORDERING INFORMATION

PART NO	DESCRIPTION
TCS605	5 k Ω Thermistor, Bead Head
TCS10K5	10 k Ω Thermistor, Cylindrical Head
TCS610	10 k Ω Thermistor, Bead Head
TCS620	20 k Ω Thermistor, Bead Head
TCS650	50 k Ω Thermistor, Bead Head
TCS651	100 k Ω Thermistor, Bead Head



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THERMISTOR SELECTION GUIDE

Thermistors allow for precise temperature measurements across a wide range of temperatures. As seen below, temperatures from -45°C up to 114°C can be measured.

For a given thermistor, to accurately measure the voltage (which is related to the temperature, see the charts on the following pages), a bias current must be provided. Since the resistance of a thermistor varies as temperature changes, the bias current must be stable and consistent. In general, there are two commercially available bias current ranges, 10 or 100 µA.

Choose the bias current and thermistor combination such that the sensor voltage remains above 0.3 V for the temperature range under consideration. When the sensor voltage falls below 0.3 V, the sensitivity of the measurement is decreased. For more information, see [AN-TC14: Calibration Coefficients and Thermistor Selection](#).

For optimum performance, system operating temperature should fall in the middle of the thermistor operating range, and within a single bias current range.

Use the chart below to select the thermistor model best suited to your application.

The following pages include complete resistance vs. temperature response charts for each thermistor model, as well as the Steinhart-Hart coefficients for each bias current range.

The resistance tolerance is ± 1% @ 25°C.

Additional information about thermistors can be found in [AN-TC11: Thermistor Basics](#). Techniques for installing thermistors can be found in [AN-TC08: Mounting and Soldering Nickel-Lead Thermistors](#).

THERMISTOR SELECTION GUIDE			
MODEL	R @ 25°C	10 mA BIAS CURRENT RANGE	100 µA BIAS CURRENT RANGE
TCS605	5 KΩ	-50 TO -2 °C	-20 TO +33 °C
TCS10K5 *	10 KΩ	-45 TO +13 °C	-8 TO +50 °C
TCS610	10 KΩ	-45 TO +13 °C	-8 TO +50 °C
TCS620	20 KΩ	-35 TO +28 °C	+6 TO +69 °C
TCS650	50 KΩ	-18 TO +49 °C	+25 TO +92 °C
TCS651	100 KΩ	-6 TO +64 °C	+41 TO +114 °C

* Cylindrical Head

STEINHART-HART CALCULATION

You can approximate the response of a thermistor with the Steinhart-Hart Equation. The A, B, and C values listed in the charts for each model apply to the following equation. The coefficients are optimized for the ranges covered by the reference currents.

$$\frac{1}{T} = A + B \times \ln R + C \times (\ln R)^3, \text{ where } R \text{ is in ohms and } T \text{ is in Kelvin}$$

TCS605 5 kΩ Bead Head Thermistor @ 25°C

RESISTANCE VERSUS TEMPERATURE RESPONSE

10 μA Bias Current Temperature Range: -50 to -2°C

100 μA Bias Current Temperature Range: -20 to +33°C

Steinhart-Hart Coefficients			
10 μA BIAS CURRENT RANGE		100 μA BIAS CURRENT RANGE	
A	1.2851E-03	A	1.2751E-03
B	2.3627E-04	B	2.3781E-04
C	9.2045E-08	C	8.6537E-08

TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)	TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)	TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)
-50	335000	3.350		-20	48540	0.485	4.854	10	9951		0.995
-49	312100	3.121		-19	45810	0.458	4.581	11	9486		0.948
-48	290800	2.908		-18	43250	0.432	4.325	12	9045		0.904
-47	271100	2.711		-17	40850	0.408	4.085	13	8628		0.862
-46	252900	2.529		-16	38590	0.385	3.859	14	8232		0.823
-45	236000	2.360		-15	36480	0.364	3.648	15	7856		0.785
-44	220300	2.203		-14	34490	0.344	3.449	16	7500		0.750
-43	205800	2.058		-13	32620	0.326	3.262	17	7162		0.716
-42	192400	1.924		-12	30870	0.308	3.087	18	6841		0.684
-41	179900	1.799		-11	29210	0.292	2.921	19	6536		0.653
-40	168200	1.682		-10	27660	0.276	2.766	20	6246		0.624
-39	157500	1.575		-9	26200	0.262	2.620	21	5971		0.597
-38	147400	1.474		-8	24830	0.248	2.483	22	5710		0.571
-37	138100	1.381		-7	23530	0.235	2.353	23	5461		0.546
-36	129400	1.294		-6	22310	0.223	2.231	24	5225		0.522
-35	121300	1.213		-5	21160	0.211	2.116	25	5000		0.500
-34	113800	1.138		-4	20080	0.200	2.008	26	4786		0.478
-33	106800	1.068		-3	19060	0.190	1.906	27	4582		0.458
-32	100300	1.003		-2	18090	0.180	1.809	28	4389		0.438
-31	94200	0.942		-1	17180		1.718	29	4204		0.420
-30	88500	0.885		0	16330		1.633	30	4028		0.402
-29	83200	0.832		1	15520		1.552	31	3861		0.386
-28	78200	0.782		2	14750		1.475	32	3701		0.370
-27	73600	0.736		3	14030		1.403	33	3549		0.354
-26	69300	0.693		4	13340		1.334				
-25	65210	0.652		5	12700		1.270				
-24	61420	0.614		6	12090		1.209				
-23	57880	0.578		7	11510		1.151				
-22	54560	0.545		8	10960		1.096				
-21	51450	0.514		9	10440		1.044				

TCS10K5 10 kΩ Cylindrical Head Thermistor @ 25°C

RESISTANCE VERSUS TEMPERATURE RESPONSE

10 μA Bias Current Temperature Range: -45 to +13°C

100 μA Bias Current Temperature Range: -8 to +50°C

Steinhart-Hart Coefficients			
10 μA BIAS CURRENT RANGE		100 μA BIAS CURRENT RANGE	
A	1.1235E-03	A	1.1279E-03
B	2.3500E-04	B	2.3429E-04
C	8.4538E-08	C	8.7298E-08

TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)	TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)	TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)
-45	472000	4.720		-13	65240	0.652		19	13070		1.307
-44	440700	4.407		-12	61730	0.617		20	12490		1.249
-43	411700	4.117		-11	58430	0.584		21	11940		1.194
-42	384700	3.847		-10	55320	0.553		22	11420		1.142
-41	359700	3.597		-9	52400	0.524		23	10920		1.092
-40	336500	3.365		-8	49650	0.496	4.965	24	10450		1.045
-39	314900	3.149		-7	47060	0.470	4.706	25	10000		1.000
-38	294900	2.949		-6	44620	0.446	4.462	26	9572		0.957
-37	276200	2.762		-5	42320	0.423	4.232	27	9165		0.916
-36	258900	2.589		-4	40160	0.401	4.016	28	8777		0.877
-35	242700	2.427		-3	38110	0.381	3.811	29	8408		0.840
-34	227600	2.276		-2	36190	0.361	3.619	30	8057		0.805
-33	213600	2.136		-1	34370	0.343	3.437	31	7722		0.772
-32	200500	2.005		0	32650	0.326	3.265	32	7403		0.740
-31	188400	1.884		1	31030	0.310	3.103	33	7098		0.709
-30	177000	1.770		2	29500	0.295	2.950	34	6808		0.680
-29	166400	1.664		3	28050	0.280	2.805	35	6531		0.653
-28	156400	1.564		4	26690	0.266	2.669	36	6267		0.626
-27	147200	1.472		5	25390	0.253	2.539	37	6016		0.601
-26	138500	1.385		6	24170	0.241	2.417	38	5775		0.577
-25	130400	1.304		7	23010	0.230	2.301	39	5546		0.554
-24	122800	1.228		8	21920	0.219	2.192	40	5327		0.532
-23	115800	1.158		9	20880	0.208	2.088	41	5117		0.511
-22	109100	1.091		10	19900	0.199	1.990	42	4917		0.491
-21	102900	1.029		11	18970	0.189	1.897	43	4726		0.472
-20	97070	0.970		12	18090	0.180	1.809	44	4543		0.454
-19	91610	0.916		13	17260	0.172	1.726	45	4369		0.436
-18	86490	0.864		14	16460		1.646	46	4202		0.420
-17	81690	0.816		15	15710		1.571	47	4042		0.404
-16	77180	0.771		16	15000		1.500	48	3889		0.388
-15	72950	0.729		17	14320		1.432	49	3743		0.374
-14	68980	0.689		18	13680		1.368	50	3603		0.360

TCS610 10 kΩ Bead Head Thermistor @ 25°C

RESISTANCE VERSUS TEMPERATURE RESPONSE

10 μA Bias Current Temperature Range: -45 to +13°C

100 μA Bias Current Temperature Range: -8 to +50°C

Steinhart-Hart Coefficients			
10 μA BIAS CURRENT RANGE		100 μA BIAS CURRENT RANGE	
A	1.1235E-03	A	1.1279E-03
B	2.3500E-04	B	2.3429E-04
C	8.4538E-08	C	8.7298E-08

TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)	TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)	TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)
-45	472000	4.720		-13	65240	0.652		19	13070		1.307
-44	440700	4.407		-12	61730	0.617		20	12490		1.249
-43	411700	4.117		-11	58430	0.584		21	11940		1.194
-42	384700	3.847		-10	55320	0.553		22	11420		1.142
-41	359700	3.597		-9	52400	0.524		23	10920		1.092
-40	336500	3.365		-8	49650	0.496	4.965	24	10450		1.045
-39	314900	3.149		-7	47060	0.470	4.706	25	10000		1.000
-38	294900	2.949		-6	44620	0.446	4.462	26	9572		0.957
-37	276200	2.762		-5	42320	0.423	4.232	27	9165		0.916
-36	258900	2.589		-4	40160	0.401	4.016	28	8777		0.877
-35	242700	2.427		-3	38110	0.381	3.811	29	8408		0.840
-34	227600	2.276		-2	36190	0.361	3.619	30	8057		0.805
-33	213600	2.136		-1	34370	0.343	3.437	31	7722		0.772
-32	200500	2.005		0	32650	0.326	3.265	32	7403		0.740
-31	188400	1.884		1	31030	0.310	3.103	33	7098		0.709
-30	177000	1.770		2	29500	0.295	2.950	34	6808		0.680
-29	166400	1.664		3	28050	0.280	2.805	35	6531		0.653
-28	156400	1.564		4	26690	0.266	2.669	36	6267		0.626
-27	147200	1.472		5	25390	0.253	2.539	37	6016		0.601
-26	138500	1.385		6	24170	0.241	2.417	38	5775		0.577
-25	130400	1.304		7	23010	0.230	2.301	39	5546		0.554
-24	122800	1.228		8	21920	0.219	2.192	40	5327		0.532
-23	115800	1.158		9	20880	0.208	2.088	41	5117		0.511
-22	109100	1.091		10	19900	0.199	1.990	42	4917		0.491
-21	102900	1.029		11	18970	0.189	1.897	43	4726		0.472
-20	97070	0.970		12	18090	0.180	1.809	44	4543		0.454
-19	91610	0.916		13	17260	0.172	1.726	45	4369		0.436
-18	86490	0.864		14	16460		1.646	46	4202		0.420
-17	81690	0.816		15	15710		1.571	47	4042		0.404
-16	77180	0.771		16	15000		1.500	48	3889		0.388
-15	72950	0.729		17	14320		1.432	49	3743		0.374
-14	68980	0.689		18	13680		1.368	50	3603		0.360

TCS620 20 kΩ Bead Head Thermistor @ 25°C

RESISTANCE VERSUS TEMPERATURE RESPONSE

10 μA Bias Current Temperature Range: -35 to +28°C

100 μA Bias Current Temperature Range: +6 to +69°C

Steinhart-Hart Coefficients			
10 μA BIAS CURRENT RANGE		100 μA BIAS CURRENT RANGE	
A	9.7142E-04	A	9.6542E-04
B	2.3268E-04	B	2.3356E-04
C	8.0591E-08	C	7.7781E-08

TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)	TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)	TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)
-35	485400	4.854		0	65300	0.653		35	13063		1.306
-34	455300	4.553		1	62060	0.620		36	12535		1.253
-33	427200	4.272		2	59000	0.590		37	12031		1.203
-32	401100	4.011		3	56100	0.561		38	11550		1.155
-31	376700	3.767		4	53370	0.533		39	11091		1.109
-30	354000	3.540		5	50790	0.507		40	10653		1.065
-29	332700	3.327		6	48340	0.483	4.834	41	10234		1.023
-28	312900	3.129		7	46030	0.460	4.603	42	9835		0.983
-27	294400	2.944		8	43840	0.438	4.384	43	9452		0.945
-26	277000	2.770		9	41770	0.417	4.177	44	9087		0.908
-25	260800	2.608		10	39800	0.398	3.980	45	8738		0.873
-24	245700	2.457		11	37940	0.379	3.794	46	8404		0.840
-23	231500	2.315		12	36180	0.361	3.618	47	8084		0.808
-22	218200	2.182		13	34510	0.345	3.451	48	7779		0.777
-21	205800	2.058		14	32930	0.329	3.293	49	7486		0.748
-20	194100	1.941		15	31420	0.314	3.142	50	7206		0.720
-19	183200	1.832		16	30000	0.300	3.000	51	6937		0.693
-18	173000	1.730		17	28650	0.286	2.865	52	6680		0.668
-17	163400	1.634		18	27360	0.273	2.736	53	6434		0.643
-16	154400	1.544		19	26140	0.261	2.614	54	6198		0.619
-15	145900	1.459		20	24990	0.249	2.499	55	5971		0.597
-14	137950	1.379		21	23880	0.238	2.388	56	5755		0.575
-13	130500	1.305		22	22840	0.228	2.284	57	5547		0.554
-12	123500	1.235		23	21840	0.218	2.184	58	5348		0.534
-11	116900	1.169		24	20900	0.209	2.090	59	5157		0.515
-10	110650	1.106		25	20000	0.200	2.000	60	4974		0.497
-9	104800	1.048		26	19140	0.191	1.914	61	4798		0.479
-8	99300	0.993		27	18330	0.183	1.833	62	4629		0.462
-7	94130	0.941		28	17555	0.175	1.755	63	4468		0.446
-6	89250	0.892		29	16817		1.681	64	4312		0.431
-5	84650	0.846		30	16113		1.611	65	4163		0.416
-4	80310	0.803		31	15443		1.544	66	4020		0.402
-3	76230	0.762		32	14805		1.480	67	3883		0.388
-2	72370	0.723		33	14196		1.419	68	3751		0.375
-1	68740	0.687		34	13616		1.361	69	3624		0.362

TCS650 50 kΩ Bead Head Thermistor @ 25°C

RESISTANCE VERSUS TEMPERATURE RESPONSE

10 μA Bias Current Temperature Range: -18 to +49°C

100 μA Bias Current Temperature Range: +25 to +92°C

Steinhart-Hart Coefficients			
10 μA BIAS CURRENT RANGE		100 μA BIAS CURRENT RANGE	
A	9.5346E-04	A	9.6911E-04
B	2.1233E-04	B	2.1014E-04
C	8.1509E-08	C	8.8019E-08

TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)	TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)	TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)
-18	490000	4.900		19	66490	0.664		56	13205		1.320
-17	461500	4.615		20	63360	0.633		57	12695		1.269
-16	434700	4.347		21	60400	0.604		58	12210		1.221
-15	409700	4.097		22	57590	0.575		59	11745		1.174
-14	386200	3.862		23	54920	0.549		60	11295		1.129
-13	364300	3.643		24	52400	0.524		61	10870		1.087
-12	343600	3.436		25	50000	0.500	5.000	62	10460		1.046
-11	324300	3.243		26	47725	0.477	4.772	63	10070		1.007
-10	306200	3.062		27	45565	0.455	4.556	64	9694		0.969
-9	289200	2.892		28	43510	0.435	4.351	65	9335		0.933
-8	273200	2.732		29	41565	0.415	4.156	66	8990		0.899
-7	258200	2.582		30	39715	0.397	3.971	67	8661		0.866
-6	244100	2.441		31	37955	0.379	3.795	68	8344		0.834
-5	230800	2.308		32	36285	0.362	3.628	69	8041		0.804
-4	218400	2.184		33	34695	0.346	3.469	70	7751		0.775
-3	206700	2.067		34	33185	0.331	3.318	71	7472		0.747
-2	195700	1.957		35	31745	0.317	3.174	72	7205		0.720
-1	185300	1.853		36	30375	0.303	3.037	73	6948		0.694
0	175500	1.755		37	29075	0.290	2.907	74	6702		0.670
1	166300	1.663		38	27835	0.278	2.783	75	6466		0.646
2	157600	1.576		39	26655	0.266	2.665	76	6239		0.623
3	149500	1.495		40	25530	0.255	2.553	77	6021		0.602
4	141800	1.418		41	24460	0.244	2.446	78	5812		0.581
5	134500	1.345		42	23435	0.234	2.343	79	5612		0.561
6	127700	1.277		43	22465	0.224	2.246	80	5419		0.541
7	121200	1.212		44	21535	0.215	2.153	81	5233		0.523
8	115100	1.151		45	20650	0.206	2.065	82	5055		0.505
9	109300	1.093		46	19805	0.198	1.980	83	4884		0.488
10	103900	1.039		47	19000	0.190	1.900	84	4719		0.471
11	98760	0.987		48	18235	0.182	1.823	85	4561		0.456
12	93900	0.939		49	17500	0.175	1.750	86	4408		0.440
13	89310	0.893		50	16800		1.678	87	4262		0.426
14	84960	0.849		51	16130		1.613	88	4121		0.412
15	80850	0.808		52	15490		1.549	89	3985		0.398
16	76960	0.769		53	14880		1.488	90	3855		0.385
17	73280	0.732		54	14300		1.430	91	3729		0.372
18	69790	0.697		55	13740		1.374	92	3608		0.360

TCS651 100 kΩ Bead Head Thermistor @ 25°C

RESISTANCE VERSUS TEMPERATURE RESPONSE

10 μA Bias Current Temperature Range: -6 to +64°C

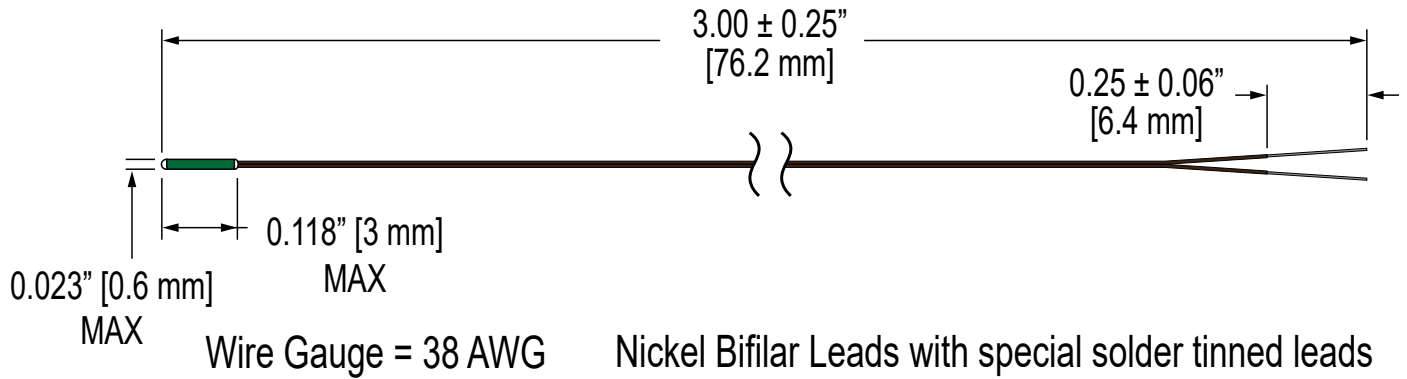
100 μA Bias Current Temperature Range: +41 to +114°C

Steinhart-Hart Coefficients			
10 μA BIAS CURRENT RANGE		100 μA BIAS CURRENT RANGE	
A	8.2458E-04	A	8.47031E-04
B	2.0913E-04	B	2.0561E-04
C	7.9780E-08	C	9.2670E-08

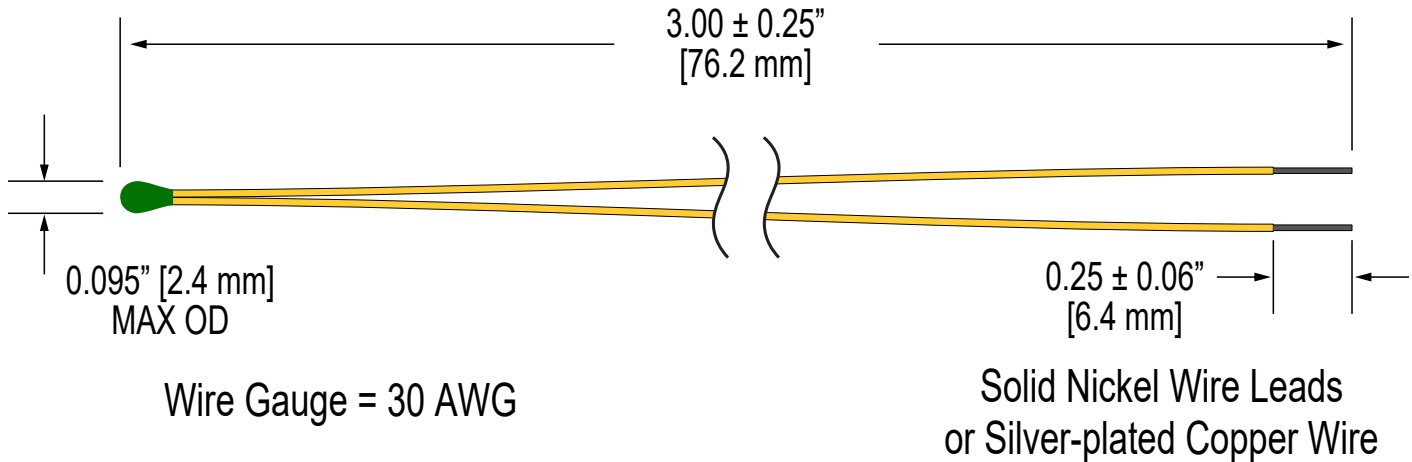
TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)	TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)	TEMP (°C)	R _T (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)
-6	488200	4.882		34	66370	0.663		74	13400		1.340
-5	461700	4.617		35	63490	0.634		75	12930		1.293
-4	436800	4.368		36	60750	0.607		76	12480		1.248
-3	413300	4.133		37	58150	0.581		77	12040		1.204
-2	391300	3.913		38	55670	0.556		78	11620		1.162
-1	370600	3.706		39	53310	0.533		79	11220		1.122
0	351000	3.510		40	51060	0.510		80	10840		1.084
1	332600	3.326		41	48920	0.489	4.892	81	10470		1.047
2	315300	3.153		42	46870	0.468	4.687	82	10110		1.011
3	299000	2.990		43	44930	0.449	4.493	83	9767		0.976
4	283600	2.836		44	43070	0.430	4.307	84	9438		0.943
5	269000	2.690		45	41300	0.413	4.130	85	9121		0.912
6	255300	2.553		46	39610	0.396	3.961	86	8817		0.881
7	242400	2.424		47	38000	0.380	3.800	87	8524		0.852
8	230200	2.302		48	36470	0.364	3.647	88	8242		0.824
9	218700	2.187		49	35000	0.350	3.500	89	7970		0.797
10	207800	2.078		50	33600	0.336	3.360	90	7709		0.770
11	197500	1.975		51	32260	0.322	3.226	91	7458		0.745
12	187800	1.878		52	30980	0.309	3.098	92	7216		0.721
13	178600	1.786		53	29760	0.297	2.976	93	6983		0.698
14	169900	1.699		54	28590	0.285	2.859	94	6759		0.675
15	161700	1.617		55	27480	0.274	2.748	95	6542		0.654
16	153900	1.539		56	26410	0.264	2.641	96	6334		0.633
17	146600	1.466		57	25390	0.253	2.539	97	6134		0.613
18	139600	1.396		58	24420	0.244	2.442	98	5940		0.594
19	133000	1.330		59	23490	0.234	2.349	99	5754		0.575
20	126700	1.267		60	22590	0.225	2.259	100	5574		0.557
21	120800	1.208		61	21740	0.217	2.174	101	5401		0.540
22	115200	1.152		62	20920	0.209	2.092	102	5234		0.523
23	109800	1.098		63	20140	0.201	2.014	103	5072		0.507
24	104800	1.048		64	19390	0.193	1.939	104	4917		0.491
25	100000	1.000		65	18670	1.867	1.867	105	4767		0.476
26	95450	0.954		66	17980	1.798	1.798	106	4622		0.462
27	91130	0.911		67	17320	1.732	1.732	107	4482		0.448
28	87030	0.870		68	16690	1.669	1.669	108	4347		0.434
29	83130	0.831		69	16080	1.608	1.608	109	4217		0.421
30	79430	0.794		70	15500	1.550	1.550	110	4091		0.409
31	75910	0.759		71	14940	1.494	1.494	111	3970		0.397
32	72570	0.725		72	14410	1.441	1.441	112	3853		0.385
33	69390	0.693		73	13900	1.390	1.390	113	3739		0.373
								114	3630		0.363

MECHANICAL SPECIFICATIONS

TCS10K5 CYLINDRICAL HEAD THERMISTOR



TCS BEAD HEAD THERMISTORS



Drawing Dimensions are typical
Exact Dimensions may vary

CERTIFICATION AND WARRANTY

CERTIFICATION

Wavelength Electronics, Inc. (Wavelength) certifies that this product met its published specifications at the time of shipment. Wavelength further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology, to the extent allowed by that organization's calibration facilities, and to the calibration facilities of other International Standards Organization members.

WARRANTY

This Wavelength product is warranted against defects in materials and workmanship for a period of one (1) year from date of shipment prior to installation. During the warranty period, Wavelength will, at its option, either repair or replace products which prove to be defective.

WARRANTY SERVICE

For warranty service or repair, this product must be returned to the factory. An RMA is required for products returned to Wavelength for warranty service. The Buyer shall prepay shipping charges to Wavelength and Wavelength shall pay shipping charges to return the product to the Buyer upon determination of defective materials or workmanship. However, the Buyer shall pay all shipping charges, duties, and taxes for products returned to Wavelength from another country.

LIMITATIONS OF WARRANTY

The warranty shall not apply to defects resulting from improper use or misuse of the product or operation outside published specifications. No other warranty is expressed or implied. Wavelength specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

EXCLUSIVE REMEDIES

The remedies provided herein are the Buyer's sole and exclusive remedies. Wavelength shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any other legal theory.

REVERSE ENGINEERING PROHIBITED

Buyer, End-User, or Third-Party Reseller are expressly prohibited from reverse engineering, decompiling, or disassembling this product.

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SAFETY

There are no user-serviceable parts inside this product. Return the product to Wavelength Electronics for service and repair to ensure that safety features are maintained.

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This important safety information applies to all Wavelength electrical and electronic products and accessories:

As a general policy, Wavelength Electronics, Inc. does not recommend the use of any of its products in life support applications where the failure or malfunction of the Wavelength product can be reasonably expected to cause failure of the life support device or to significantly affect its safety or effectiveness. Wavelength will not knowingly sell its products for use in such applications unless it receives written assurances satisfactory to Wavelength that the risks of injury or damage have been minimized, the customer assumes all such risks, and there is no product liability for Wavelength. Examples of devices considered to be life support devices are neonatal oxygen analyzers, nerve stimulators (for any use), auto-transfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal dialysis systems, ventilators of all types, and infusion pumps as well as other devices designated as "critical" by the FDA. The above are representative examples only and are not intended to be conclusive or exclusive of any other life support device.

REVISION HISTORY

DOCUMENT NUMBER: TCS-00400

REV.	DATE	CHANGE
A	January 2019	Initial Release
B	July 2021	Added TCS605 5kΩ Thermistor
C	August 2022	Updated Warranty Section & Thermistor Material



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