



### TCS605

5 kΩ NTC Bead Head Thermistor



TCS605 NTC THERMISTOR

#### GENERAL DESCRIPTION:

These ±1% thermistors are conformally coated, two-lead thermistors for applications where embedding the thermistor is required. The coating is baked on phenolic for durability and long term stability. They have solid nickel wires with Teflon® insulation to provide isolation when assembled in metal housings.

#### FEATURES:

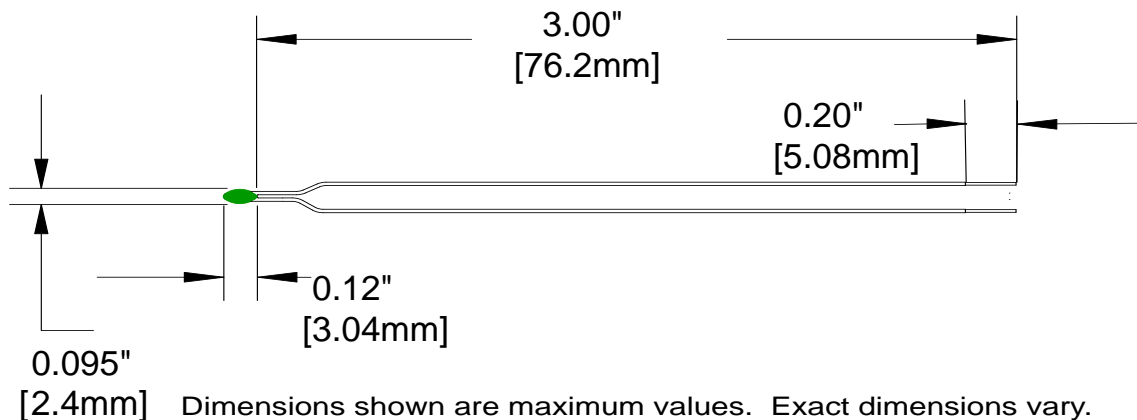
- Low Cost
- Small Size -- Conformally Coated
- Wide Resistance Range
- Available in 5 Different R-T Curves
- 1% Tolerance
- 3" Long Solid Nickel Wire Leads
- Teflon® Insulation Provides Isolation from Metal Housing
- RoHS Compliant (by exemption)

**Thermal Resistance or Dissipation Constant is 2-3 mW / °C.**

**Thermal Time Constant is 6-14 seconds.**

Thermistor Selection Guide			
MODEL	R @ 25°C	10 μA RANGE	100 μA RANGE
TCS605	5 kΩ	-55 to -2°C	-20 to +33°C
TCS610	10 kΩ	-45 to +13°C	-8 to +50°C
TCS10K5	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 +67°C	+41 to +114°C

**Figure 1**  
Dimensions



## RESISTANCE VERSUS TEMPERATURE RESPONSE

## TCS605 5 kΩ THERMISTOR @ 25°C

10 μA TEMPERATURE RANGE: -55 to -2°C

100 μA TEMPERATURE RANGE: -20 to +33°C

TEMP (°C)	R <sub>T</sub> (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)	TEMP (°C)	R <sub>T</sub> (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)	TEMP (°C)	R <sub>T</sub> (Ω)	VOLT (V) (10 μA)	VOLT (V) (100 μA)
-55	483850	4.838		-25	65250	0.652		4	13345		1.334
-54	449350	4.493		-24	61450	0.614		5	12700		1.270
-53	417600	4.176		-23	57900	0.579		6	12090		1.209
-52	388250	3.882		-22	54600	0.546		7	11510		1.151
-51	361200	3.612		-21	51500	0.515		8	10960		1.096
-50	336150	3.361		-20	48565	0.485	4.856	9	10445		1.044
-49	313050	3.130		-19	45830	0.458	4.583	10	9950		0.995
-48	291650	2.916		-18	43270	0.432	4.327	11	9485		0.948
-47	271900	2.719		-17	40865	0.408	4.086	12	9045		0.904
-46	253550	2.535		-16	38610	0.386	3.861	13	8630		0.863
-45	236600	2.366		-15	36490	0.364	3.649	14	8235		0.823
-44	220900	2.209		-14	34500	0.345	3.450	15	7855		0.785
-43	206300	2.063		-13	32630	0.326	3.263	16	7500		0.750
-42	192800	1.928		-12	30875	0.308	3.087	17	7160		0.716
-41	180250	1.802		-11	29225	0.292	2.922	18	6840		0.684
-40	168600	1.686		-10	27670	0.276	2.767	19	6535		0.653
-39	157750	1.577		-9	26210	0.262	2.621	20	6245		0.624
-38	147700	1.477		-8	24835	0.248	2.483	21	5970		0.597
-37	138350	1.383		-7	23540	0.235	2.354	22	5710		0.571
-36	129650	1.296		-6	22320	0.223	2.232	23	5460		0.546
-35	121550	1.215		-5	21170	0.211	2.117	24	5225		0.522
-34	114000	1.140		-4	20085	0.200	2.008	25	<b>5000</b>		<b>0.500</b>
-33	106950	1.069		-3	19060	0.190	1.906	26	4786		0.478
-32	100400	1.004		-2	18100	0.181	1.810	27	4583		0.458
-31	94300	0.943		-1	17190		1.719	28	4389		0.438
-30	88600	0.886		0	<b>16330</b>		<b>1.633</b>	29	4204		0.420
-29	83250	0.832		1	15520		1.552	30	4028		0.402
-28	78300	0.783		2	14755		1.475	31	3861		0.386
-27	73650	0.736		3	14030		1.403	32	3701		0.370
-26	69300	0.693						33	3549		0.354

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

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

Steinhart-Hart Coefficients			
10 μA RANGE		100 μA 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

**CERTIFICATION:**

Wavelength Electronics (WEI) certifies that this product met it's 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.

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REVISION HISTORY		
REVISION	DATE	NOTES
REV. A	17-Jun-08	Added technical detail per customer request
REV. B	25-Sep-09	Updated to reflect RoHS status
REV. C	5-Feb-11	Updated dimensions in Figure 1



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