

ZENTHERMIK SENSING TECHNOLOGIES PVT. LTD.
DATA SHEET FOR ZENAC103F39HRCL351

Product Name: NTC Thermistor

HSN Code: 85334030

Part Number: ZENAC103F39HRCL351

Features

- Rapid response time
- High accuracy
- High Reliability

Recommended Applications

Temperature measurement, control and thermal protection circuits involving below fields:

1. Ambient & Coil temperature measurement
2. Water pipe in AC pipe housings and in water lines
3. Inverters, UPS, Air Conditioners etc.
4. Water Heaters, Air Warmers, Chillers
5. Refrigerators, Freezers, Air-cooled systems etc.
6. Washing Machines, Driers, Boilers etc...
7. HVAC vent temperature (automotive)
8. In cabin temperature (automotive)
9. Air Temperature
10. HVAC airflow monitoring (industrial)

Other Features

Lower Temperature	: -40°C	Upper Temperature	: 105°C
Maximum Permissible Current at 25°C	: 5 mAmp	Rated Temperature (T_N)	: 25°C
Resistance Tolerance ($\Delta R/R_N$)	: $\pm 1\%$,	Beta Tolerance ($\Delta \beta/\beta_N$)	: $\pm 1\%$
Dissipation factor in air (δ)	: approx 1.5 mW/K	Heat capacity (C_{th})	: approx 22.5 mJ/K
Thermal cooling time constant in air (τ)	: approx 30s	Thermal Response time in oil	: approx 15s



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Part Number Identification

ZEN AC 103 F 39H RCL351

ZEN	ZEN
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ST	Surface Temperature Measurement Type
AC	AC Sensor
CP	Epoxy Coated Type

Resistance at 25 ⁰ C	
103	10 x 10 ³

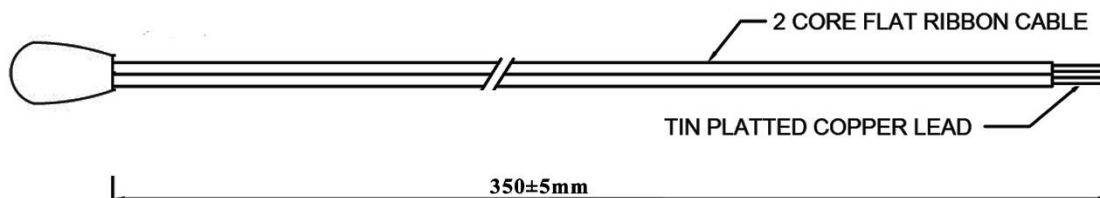
Tolerance	
F	1%
G	2%
H	3%
I	4%
J	5%

BETA Value	
39H	3970
34D	3435
405	4050
425	4250

Total Length	
L101	10 x10 mm
L351	35x 10 mm

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Model and Dimensions



Material List

- NTC thermistor :
 - Resistance @25°C: 10000 Ohm $\pm 1\%$
 - B- Value (25/85°C): 3970K $\pm 1\%$
 - Operating Temperature: -40°C to 105°C
- Epoxyresin : colour Black
- Cable : Black & White PVC FLRY wire
 - Conductor: 17/0.16mm copper 24AWG

Electrical Specification

- Resistance @25°C : 10000 Ohm $\pm 1\%$
- B- Value 25/85°C : 3970K $\pm 1\%$
- Response time : Approx. 3.0 Seconds in water
- Insulation Resistance :Minimum of 100 M Ohm @ 600V dc under water
- Voltage breakdown Strength: Min 1 kV ac for 3 sec between conductor and coating

Operating Temperature: -40°C to +105°C

Storage Temperature: -30°C to +85°C

Reliability

- Endurance at Upper category: +105°C for 1000 Hours.
- Rapid change of Temperature: With stand -40°C to +105°C silicon Oil, Each temperature 5 minutes for 20 cycles.
- Robustness of termination: 2kg between terminal and wire

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R-T Data

Temp. (°C)	R-Max (kΩ)	R-Nom (kΩ)	R-Min (kΩ)	Temp. (°C)	R-Max (kΩ)	R-Nom (kΩ)	R-Min (kΩ)
-40	364.3933	335.0656	307.3279	-15	74.8386	72.6428	70.5043
-39	340.6323	313.4261	287.6719	-14	70.7220	68.6854	66.7008
-38	318.5807	293.3301	269.4056	-13	66.8571	64.9680	63.1259
-37	298.1047	274.6576	252.4221	-12	63.2271	61.4745	59.7645
-36	279.0816	257.2986	236.6228	-11	59.8164	58.1903	56.6027
-35	261.3990	241.1525	221.9179	-10	56.6104	55.1015	53.6274
-34	244.9540	226.1266	208.2245	-9	53.5956	52.1953	50.8265
-33	229.6523	212.1365	195.4667	-8	50.7597	49.4601	48.1889
-32	215.4071	199.1040	183.5747	-7	48.0908	46.8846	45.7041
-31	202.1390	186.9577	172.4843	-6	45.5783	44.4588	43.3624
-30	183.5270	176.5670	169.8540	-5	43.2121	42.1730	41.1546
-29	172.3586	165.9252	159.7160	-4	40.9829	40.0183	39.0725
-28	161.9422	155.9939	150.2490	-3	38.8819	37.9865	37.1081
-27	152.2226	146.7212	141.4044	-2	36.9010	36.0700	35.2541
-26	143.1489	138.0594	133.1376	-1	35.0328	34.2614	33.5037
-25	134.6743	129.9646	125.4071	0	33.2701	32.5542	31.8505
-24	126.7556	122.3962	118.1750	1	31.6065	30.9421	30.2886
-23	119.3529	115.3168	111.4061	2	30.0358	29.4192	28.8125
-22	112.4294	108.6918	105.0679	3	28.5523	27.9802	27.4169
-21	105.9514	102.4893	99.1304	4	27.1507	26.6199	26.0970
-20	99.8874	96.6799	93.5660	5	25.8260	25.3337	24.8483
-19	94.2086	91.2363	88.3489	6	24.5736	24.1170	23.6666
-18	88.8881	86.1332	83.4553	7	23.3891	22.9658	22.5479
-17	83.9013	81.3474	78.8634	8	22.2685	21.8761	21.4885
-16	79.2252	76.8573	74.5527	9	21.2081	20.8444	20.4849

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10	20.2041	19.8672	19.5340	38	5.8703	5.7804	5.6913
11	19.2534	18.9414	18.6326	39	5.6395	5.5509	5.4631
12	18.3529	18.0640	17.7779	40	5.4190	5.3317	5.2453
13	17.4995	17.2322	16.9673	41	5.2083	5.1223	5.0373
14	16.6906	16.4434	16.1982	42	5.0069	4.9223	4.8386
15	15.9237	15.6951	15.4683	43	4.8143	4.7311	4.6488
16	15.1963	14.9851	14.7753	44	4.6301	4.5483	4.4675
17	14.5062	14.3111	14.1173	45	4.4539	4.3735	4.2941
18	13.8512	13.6713	13.4923	46	4.2854	4.2064	4.1284
19	13.2295	13.0636	12.8984	47	4.1241	4.0465	3.9699
20	12.6391	12.4862	12.3340	48	3.9697	3.8935	3.8183
21	12.0784	11.9376	11.7973	49	3.8218	3.7470	3.6733
22	11.5455	11.4161	11.2870	50	3.6803	3.6069	3.5346
23	11.0392	10.9203	10.8015	49	3.8218	3.7470	3.6733
24	10.5578	10.4487	10.3396	51	3.5447	3.4726	3.4017
25	10.1000	10.0000	9.9000	52	3.4147	3.3441	3.2746
26	9.6730	9.5731	9.4732	53	3.2903	3.2210	3.1528
27	9.2664	9.1667	9.0671	54	3.1709	3.1030	3.0362
28	8.8791	8.7797	8.6806	55	3.0565	2.9900	2.9245
29	8.5100	8.4112	8.3127	56	2.9469	2.8816	2.8175
30	8.1583	8.0601	7.9623	57	2.8417	2.7777	2.7149
31	7.8230	7.7256	7.6286	58	2.7408	2.6781	2.6166
32	7.5033	7.4067	7.3107	59	2.6439	2.5826	2.5224
33	7.1984	7.1027	7.0077	60	2.5510	2.4909	2.4320
34	6.9074	6.8129	6.7189	61	2.4618	2.4030	2.3452
35	6.6298	6.5363	6.4435	62	2.3762	2.3185	2.2621
35	6.6298	6.5363	6.4435	63	2.2940	2.2375	2.1822
36	6.3648	6.2725	6.1809	64	2.2150	2.1597	2.1056
37	6.1119	6.0207	5.9303	65	2.1392	2.0850	2.0321

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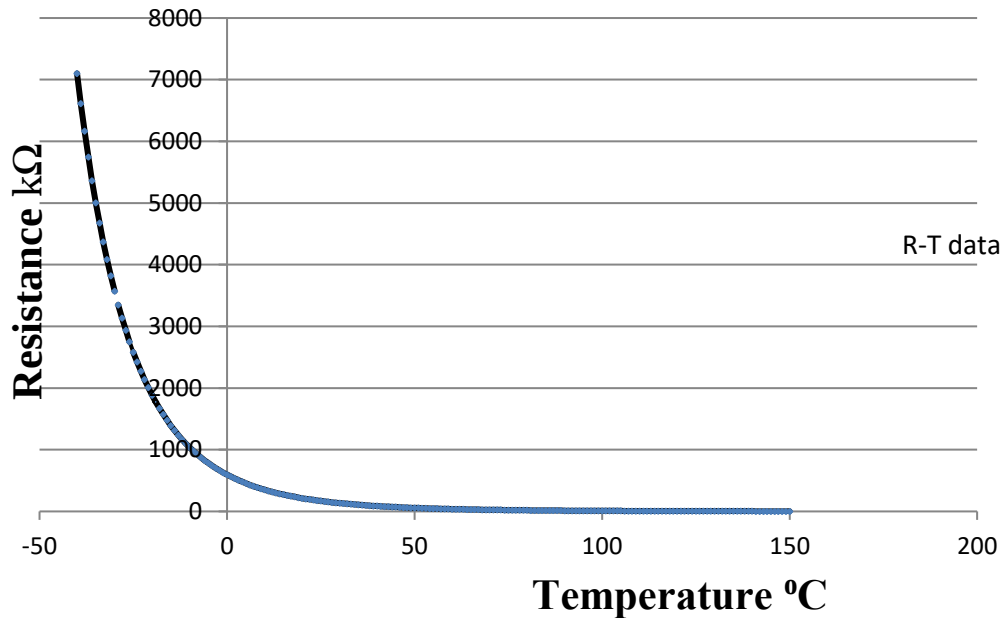
66	2.0663	2.0133	1.9615	86	1.0710	1.0367	1.0033
67	1.9963	1.9444	1.8937	87	1.0382	1.0045	0.9719
68	1.9289	1.8782	1.8285	88	1.0065	0.9736	0.9417
69	1.8642	1.8145	1.7660	89	0.9759	0.9437	0.9125
70	1.8020	1.7533	1.7059	90	0.9464	0.9149	0.8844
70	1.8020	1.7533	1.7059	91	0.9180	0.8871	0.8573
71	1.7421	1.6945	1.6481	92	0.8905	0.8603	0.8311
72	1.6846	1.6380	1.5925	93	0.8640	0.8345	0.8059
73	1.6292	1.5836	1.5391	94	0.8384	0.8095	0.7815
74	1.5759	1.5313	1.4878	95	0.8137	0.7854	0.7580
75	1.5246	1.4809	1.4384	96	0.7898	0.7621	0.7353
76	1.4752	1.4325	1.3909	97	0.7667	0.7396	0.7134
77	1.4277	1.3859	1.3452	98	0.7444	0.7179	0.6923
78	1.3819	1.3410	1.3012	99	0.7229	0.6969	0.6718
79	1.3378	1.2978	1.2589	100	0.7021	0.6767	0.6521
80	1.2954	1.2562	1.2181	101	0.6820	0.6571	0.6331
81	1.2544	1.2161	1.1789	102	0.6625	0.6382	0.6146
82	1.2150	1.1775	1.1411	103	0.6437	0.6199	0.5969
83	1.1770	1.1403	1.1047	104	0.6256	0.6022	0.5797
84	1.1404	1.1045	1.0696	105	0.6080	0.5851	0.5630
85	1.1051	1.0699	1.0358	105	0.6080	0.5851	0.5630



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R-T Chart



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Inspection standard

Inspection	Standard	Related Item
Resistance Value	n =20, Ac=0, Re=1	Inspection
B Constant	n =20, Ac=0, Re=1	Inspection
Dimension	n =10, Ac=0, Re=1	Inspection
Appearance	MIL STD 105D, AQL=0.01	Visual Inspection

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RoHS

NTC thermistor contains hazardous substances, much less than the allowed contents in RoHS (Restriction of the use of certain Hazardous Substances) in electrical and electronic equipment (Warranty of hazardous substances)

Material	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr VI)	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ether (PBDE)
Allowed PPM	< 1000ppm	< 100ppm	< 100ppm	< 1000ppm	< 1000ppm	< 1000ppm

Soldering Conditions

Item	Test Condition			Criterion Of Judging
Resistance to Soldering Heat Test		Dip Soldering	Iron Soldering	Visual : No mechanical damage Zero-power resistance at 25°C change as against pretest values within $\pm 1\%$
	Bath temperature	Max 240°C	Max 280°C	
	Soldering time	Max 10 sec	Max 3 sec	

Packing

Every 500nos are made up into a Plastic pack and Entire Quantity packed into 5 Ply Carton box.