

**Sinloon**

# Approval

**Manufacturer:**

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**Customer:**

Approved By:	Checked By:	Prepared By :

Approved By:	Examined By:	Tested By :

Company's Stamp	
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Approval No. : \_\_\_\_\_  
Product : NTC THERMISTOR SENSORS  
Mayloon Part No. : MLHT502J-3907  
Customer's Part No. : \_\_\_\_\_  
Specifications : R25 5,000 Ω ± 5 %  
B25-85 3970 °K ± 3 %  
Date : 2007/05/10

1) SCOPE

This specifications define ratings, dimension, insulation, climatic sequence and mechanical characteristics for **(Lead-free)** MLHT type thermistor.

2) PART NO. : MLHT502J-3970

3) RATING

3-1) Rated zero-power resistance  $R_{25}$  : 5 k $\Omega$   $\pm$ 5 % (at 25 $^{\circ}$ C)

3-2) B value.  $B_{25/85}$  : 3,970K  $\pm$ 3 %

\*The B value is calculated using the zero-power resistance values measured at 25 $^{\circ}$ C and 85 $^{\circ}$ C.

3-3) Dissipation factor. : Approx. 2 mW/ $^{\circ}$ C (in air)

3-4) Thermal time constant. : Approx.  $\leq$  12 Sec (in air)

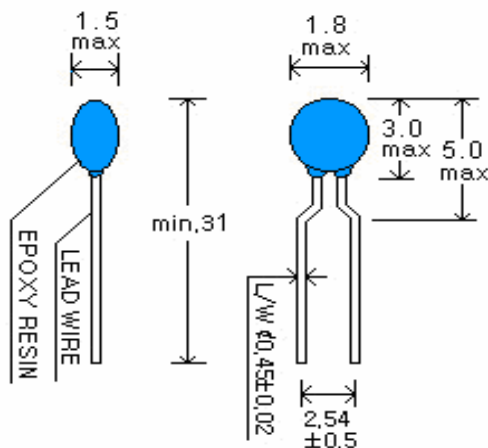
3-5) Maximum power rating. : 10 mW (at 25 $^{\circ}$ C)

3-6) Category temperature range : -30 ~ 125  $^{\circ}$ C

3-7) Lead content : **RoHs Compliant.**

3-8) Cadmium : **RoHs Compliant.**

4) DIMENSIONS UNIT: mm



Spec.No.: STANDARD		Note		REVISION	
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## 5) Insulation

### 5-1) Insulation resistance

Insulation resistance of the test samples shall be over 100MΩ when it is measured at DC 500V between coated area and lead wires.

## 6) Climatic test

### 6-1) Dry Heat

After the test samples were exposed in air at 110 °C for 1,000 hours, the change ratio of the rated zero-power resistance shall be within ±1% of the initial value.

### 6-2) Damp heat

After the test samples were exposed in the humidity of 95% at 40°C for 1,000 hours, the change ratio of the rated zero-power resistance shall be within ±1% of the initial value.

### 6-3) Cold

After the test samples were exposed in air at -30°C for 1,000 hours, the change ratio of the rated zero-power resistance shall be within ±1% of the initial value.

### 6-4) Humidity load

After DC 1mA current was applied to the test samples in the temperature of 40°C and the humidity of 95% for 1,000 hours, the change ratio of the rated zero-power resistance shall be within ±1% of the initial value.

### 6-5) Change of temperature

One cycle of the change of temperature shall be carried out in the order of the following conditions.

.Room ambient temperature.( Initial value)

.At -30°C, for 30 minutes.

.Room ambient temperature, for 3 minutes.

.At + 90°C, for 30 minutes.

.Room ambient temperature, for 3 minutes.

After 100 cycles of change of temperature, the change ratio of the rated zero-power resistance shall be within ±1% of the initial value.

6-6) High temperature load

After DC 1mA current was applied to the test samples in the temperature of 110°C for 1,000 hours, the change ratio of the rated zero-power resistance shall be within ±1% of the initial value.

7) Mechanical characteristics

7-1) Robustness of terminations

Ua: Tensile

After 2N loading weight for 3 seconds was applied to the wire terminations, there shall be no visible damage.

7-2) Free fall

After one time natural fall to a maple board from 1m high, there shall be no visible damage.

7-3) Resistance to soldering heat

After lead wire of the test samples were dipped on time within 8.5 mm from end of lead wire in solder bath at 260°C ±10% for 10 ±0.5 seconds, the change ratio of the rated zero-power resistance shall be within ±1% of the initial value.

8) R-T characteristics

**PART NO.:** **MLHT502J-3970**      **R25 :** **5 KΩ ±5%**  
**B25/85 :** **3,970K ±3%**

Temperature (°C)	Resistance (Ω)			Temp. Coef. (%/°C)	Resist. Tolerance (%)		Temp. Tolerance (°C)	
	MIN.	CENTER	MAX.		MIN.	MAX.	MIN.	MAX.
-40	147473	172637	201590	-6.81	-14.58	16.77	-2.46	2.14
-39	138083	161316	187987	-6.76	-14.40	16.53	-2.45	2.13
-38	129357	150817	175397	-6.70	-14.23	16.30	-2.43	2.12
-37	121243	141074	163739	-6.65	-14.06	16.07	-2.42	2.11
-36	113695	132029	152936	-6.60	-13.89	15.84	-2.40	2.10
-35	106669	123626	142920	-6.55	-13.72	15.61	-2.38	2.09
-34	100127	115816	133630	-6.50	-13.55	15.38	-2.37	2.08
-33	94030	108554	125007	-6.45	-13.38	15.16	-2.35	2.07
-32	88347	101796	116999	-6.40	-13.21	14.93	-2.33	2.06
-31	83046	95505	109559	-6.36	-13.05	14.72	-2.32	2.05

-30	78099	89646	102642	-6.31	-12.88	14.50	-2.30	2.04
-29	73480	84185	96209	-6.26	-12.72	14.28	-2.28	2.03
-28	69166	79094	90221	-6.21	-12.55	14.07	-2.26	2.02
-27	65134	74345	84647	-6.17	-12.39	13.86	-2.25	2.01
-26	61364	69913	79454	-6.12	-12.23	13.65	-2.23	2.00
-25	57838	65775	74614	-6.08	-12.07	13.44	-2.21	1.98
-24	54537	61909	70101	-6.04	-11.91	13.23	-2.19	1.97
-23	51447	58296	65891	-5.99	-11.75	13.03	-2.17	1.96
-22	48552	54917	61961	-5.95	-11.59	12.83	-2.16	1.95
-21	45839	51756	58291	-5.91	-11.43	12.63	-2.14	1.94
-20	43296	48798	54862	-5.86	-11.28	12.43	-2.12	1.92
-19	40910	46028	51658	-5.82	-11.12	12.23	-2.10	1.91
-18	38671	43433	48661	-5.78	-10.97	12.04	-2.08	1.90
-17	36569	41002	45857	-5.74	-10.81	11.84	-2.06	1.88
-16	34595	38722	43233	-5.70	-10.66	11.65	-2.04	1.87
-15	32740	36583	40775	-5.66	-10.51	11.46	-2.02	1.86
-14	30996	34576	38473	-5.62	-10.35	11.27	-2.00	1.84
-13	29356	32692	36316	-5.58	-10.20	11.08	-1.99	1.83
-12	27814	30923	34293	-5.55	-10.05	10.90	-1.97	1.81
-11	26362	29260	32396	-5.51	-9.90	10.72	-1.95	1.80
-10	24995	27698	30615	-5.47	-9.76	10.53	-1.93	1.78
-9	23708	26228	28943	-5.43	-9.61	10.35	-1.91	1.77
-8	22495	24846	27374	-5.40	-9.46	10.17	-1.89	1.75
-7	21352	23545	25898	-5.36	-9.31	10.00	-1.86	1.74
-6	20274	22320	24512	-5.32	-9.17	9.82	-1.84	1.72
-5	19256	21167	23208	-5.29	-9.02	9.65	-1.82	1.71
-4	18297	20080	21982	-5.25	-8.88	9.47	-1.80	1.69
-3	17391	19056	20828	-5.22	-8.74	9.30	-1.78	1.67
-2	16535	18090	19741	-5.18	-8.60	9.13	-1.76	1.66
-1	15727	17179	18718	-5.15	-8.45	8.96	-1.74	1.64
0	14963	16319	17754	-5.12	-8.31	8.79	-1.72	1.62
1	14241	15508	16846	-5.08	-8.17	8.63	-1.70	1.61
2	13558	14742	15989	-5.05	-8.03	8.46	-1.68	1.59
3	12911	14018	15181	-5.02	-7.89	8.30	-1.65	1.57
4	12300	13334	14419	-4.99	-7.75	8.14	-1.63	1.56
5	11721	12688	13699	-4.95	-7.62	7.97	-1.61	1.54
6	11173	12076	13020	-4.92	-7.48	7.81	-1.59	1.52
7	10654	11498	12379	-4.89	-7.34	7.66	-1.57	1.50
8	10162	10951	11772	-4.86	-7.21	7.50	-1.54	1.48

9	9695	10433	11199	-4.83	-7.07	7.34	-1.52	1.46
10	9253	9943	10658	-4.80	-6.94	7.19	-1.50	1.45
11	8833	9479	10145	-4.77	-6.81	7.03	-1.48	1.43
12	8435	9038	9660	-4.74	-6.67	6.88	-1.45	1.41
13	8058	8621	9202	-4.71	-6.54	6.73	-1.43	1.39
14	7699	8226	8767	-4.68	-6.41	6.58	-1.41	1.37
15	7358	7851	8356	-4.65	-6.28	6.43	-1.38	1.35
16	7035	7495	7966	-4.62	-6.15	6.28	-1.36	1.33
17	6727	7158	7597	-4.59	-6.02	6.14	-1.34	1.31
18	6435	6837	7247	-4.57	-5.89	5.99	-1.31	1.29
19	6157	6533	6915	-4.54	-5.76	5.85	-1.29	1.27
20	5892	6244	6600	-4.51	-5.63	5.70	-1.26	1.25
21	5641	5969	6301	-4.48	-5.50	5.56	-1.24	1.23
22	5401	5708	6018	-4.46	-5.38	5.42	-1.22	1.21
23	5174	5460	5749	-4.43	-5.25	5.28	-1.19	1.19
24	4957	5224	5493	-4.40	-5.13	5.14	-1.17	1.16
25	4750	5000	5250	-4.38	-5.00	5.00	-1.14	1.14
26	4541	4786	5032	-4.35	-5.12	5.14	-1.18	1.18
27	4343	4583	4825	-4.33	-5.25	5.27	-1.22	1.21
28	4154	4390	4627	-4.30	-5.37	5.41	-1.26	1.25
29	3975	4206	4439	-4.27	-5.49	5.55	-1.30	1.28
30	3804	4030	4259	-4.25	-5.61	5.68	-1.34	1.32
31	3641	3863	4088	-4.23	-5.73	5.82	-1.38	1.36
32	3487	3703	3924	-4.20	-5.85	5.95	-1.42	1.39
33	3340	3552	3768	-4.18	-5.97	6.08	-1.46	1.43
34	3199	3407	3618	-4.15	-6.09	6.22	-1.50	1.47
35	3066	3269	3476	-4.13	-6.20	6.35	-1.54	1.50
36	2939	3137	3340	-4.10	-6.32	6.48	-1.58	1.54
37	2817	3011	3210	-4.08	-6.43	6.61	-1.62	1.58
38	2702	2891	3086	-4.06	-6.55	6.74	-1.66	1.61
39	2591	2776	2967	-4.03	-6.66	6.87	-1.70	1.65
40	2486	2667	2853	-4.01	-6.77	7.00	-1.74	1.69
41	2386	2562	2745	-3.99	-6.89	7.13	-1.79	1.73
42	2290	2462	2641	-3.97	-7.00	7.26	-1.83	1.76
43	2199	2367	2541	-3.94	-7.11	7.38	-1.87	1.80
44	2111	2275	2446	-3.92	-7.22	7.51	-1.91	1.84
45	2028	2188	2355	-3.90	-7.33	7.64	-1.96	1.88
46	1948	2105	2268	-3.88	-7.43	7.76	-2.00	1.92
47	1872	2025	2185	-3.86	-7.54	7.89	-2.04	1.96

48	1799	1948	2105	-3.84	-7.65	8.01	-2.09	1.99
49	1730	1875	2028	-3.82	-7.75	8.14	-2.13	2.03
50	1663	1805	1954	-3.79	-7.86	8.26	-2.18	2.07
51	1600	1738	1884	-3.77	-7.96	8.38	-2.22	2.11
52	1539	1674	1816	-3.75	-8.07	8.50	-2.27	2.15
53	1481	1613	1752	-3.73	-8.17	8.63	-2.31	2.19
54	1425	1554	1690	-3.71	-8.27	8.75	-2.36	2.23
55	1372	1497	1630	-3.69	-8.38	8.87	-2.40	2.27
56	1321	1443	1573	-3.67	-8.48	8.99	-2.45	2.31
57	1272	1391	1518	-3.65	-8.58	9.11	-2.49	2.35
58	1225	1341	1465	-3.63	-8.68	9.23	-2.54	2.39
59	1180	1294	1415	-3.61	-8.78	9.35	-2.59	2.43
60	1137	1248	1366	-3.59	-8.87	9.46	-2.63	2.47
61	1096	1204	1319	-3.58	-8.97	9.58	-2.68	2.51
62	1056	1162	1274	-3.56	-9.07	9.70	-2.73	2.55
63	1018	1121	1231	-3.54	-9.17	9.82	-2.77	2.59
64	982	1082	1190	-3.52	-9.26	9.93	-2.82	2.63
65	947	1045	1150	-3.50	-9.36	10.05	-2.87	2.67
66	914	1009	1112	-3.48	-9.45	10.16	-2.92	2.71
67	882	975	1075	-3.46	-9.55	10.28	-2.97	2.76
68	851	942	1039	-3.45	-9.64	10.39	-3.02	2.80
69	821	910	1005	-3.43	-9.73	10.51	-3.06	2.84
70	793	879	973	-3.41	-9.83	10.62	-3.11	2.88
71	766	850	941	-3.39	-9.92	10.73	-3.16	2.92
72	739	822	911	-3.38	-10.01	10.85	-3.21	2.97
73	714	794	881	-3.36	-10.10	10.96	-3.26	3.01
74	690	768	853	-3.34	-10.19	11.07	-3.31	3.05
75	667	743	826	-3.32	-10.28	11.18	-3.36	3.09
76	644	719	800	-3.31	-10.37	11.29	-3.41	3.14
77	623	695	775	-3.29	-10.46	11.40	-3.46	3.18
78	602	673	750	-3.27	-10.55	11.51	-3.52	3.22
79	582	651	727	-3.26	-10.63	11.62	-3.57	3.26
80	563	631	704	-3.24	-10.72	11.73	-3.62	3.31
81	544	610	683	-3.22	-10.81	11.84	-3.67	3.35
82	527	591	662	-3.21	-10.89	11.95	-3.72	3.40
83	510	573	642	-3.19	-10.98	12.05	-3.78	3.44
84	493	555	622	-3.18	-11.06	12.16	-3.83	3.48
85	477	537	603	-3.16	-11.15	12.27	-3.88	3.53
86	462	521	585	-3.15	-11.23	12.37	-3.93	3.57

87	447	505	567	-3.13	-11.32	12.48	-3.99	3.62
88	433	489	551	-3.11	-11.40	12.58	-4.04	3.66
89	420	474	534	-3.10	-11.48	12.69	-4.09	3.70
90	406	460	518	-3.08	-11.56	12.79	-4.15	3.75
91	394	446	503	-3.07	-11.65	12.90	-4.20	3.79
92	382	432	488	-3.05	-11.73	13.00	-4.26	3.84
93	370	419	474	-3.04	-11.81	13.11	-4.31	3.88
94	358	407	460	-3.02	-11.89	13.21	-4.37	3.93
95	347	395	447	-3.01	-11.97	13.31	-4.42	3.98
96	337	383	434	-3.00	-12.05	13.41	-4.48	4.02
97	327	372	422	-2.98	-12.13	13.51	-4.53	4.07
98	317	361	410	-2.97	-12.20	13.62	-4.59	4.11
99	307	350	398	-2.95	-12.28	13.72	-4.65	4.16
100	298	340	387	-2.94	-12.36	13.82	-4.70	4.21
101	289	330	376	-2.92	-12.44	13.92	-4.76	4.25
102	281	321	366	-2.91	-12.51	14.02	-4.82	4.30
103	272	312	356	-2.90	-12.59	14.12	-4.87	4.35
104	264	303	346	-2.88	-12.67	14.22	-4.93	4.39
105	257	294	336	-2.87	-12.74	14.31	-4.99	4.44
106	249	286	327	-2.86	-12.82	14.41	-5.05	4.49
107	242	278	318	-2.84	-12.89	14.51	-5.10	4.53
108	235	270	309	-2.83	-12.96	14.61	-5.16	4.58
109	228	263	301	-2.82	-13.04	14.71	-5.22	4.63
110	222	255	293	-2.80	-13.11	14.80	-5.28	4.68
111	215	248	285	-2.79	-13.18	14.90	-5.34	4.72
112	209	241	278	-2.78	-13.26	14.99	-5.40	4.77
113	203	235	270	-2.77	-13.33	15.09	-5.46	4.82
114	198	228	263	-2.75	-13.40	15.19	-5.52	4.87
115	192	222	256	-2.74	-13.47	15.28	-5.58	4.92
116	187	216	249	-2.73	-13.54	15.37	-5.64	4.97
117	182	210	243	-2.71	-13.61	15.47	-5.70	5.01
118	177	205	237	-2.70	-13.68	15.56	-5.76	5.06
119	172	199	231	-2.69	-13.75	15.66	-5.82	5.11
120	167	194	225	-2.68	-13.82	15.75	-5.88	5.16
121	163	189	219	-2.67	-13.89	15.84	-5.94	5.21
122	158	184	213	-2.65	-13.96	15.93	-6.00	5.26
123	154	179	208	-2.64	-14.03	16.03	-6.07	5.31
124	150	175	203	-2.63	-14.10	16.12	-6.13	5.36
125	146	170	198	-2.62	-14.16	16.21	-6.19	5.41