1) SCOPE

This specifications define ratings, dimension, insulation, climatic sequence and mechanical characteristics for Lead Free MLTS type thermistor.

2) PART NO. : MLTS103F-050-3435

3) RATING

3-1) Rated zero-power resistance R_{25} : 10 KΩ ± 1 % (at 25℃)

3-2) B value. $B_{25/85}$: 3,435 K ± 1 %

*The B value is calculated using the zero-power resistance values measured at 25℃ and 85℃.

3-3) Dissipation factor. :Approx. 0.7 mW/℃(in air)

3-4) Thermal time constant. :Approx. 3.2 s (in air)

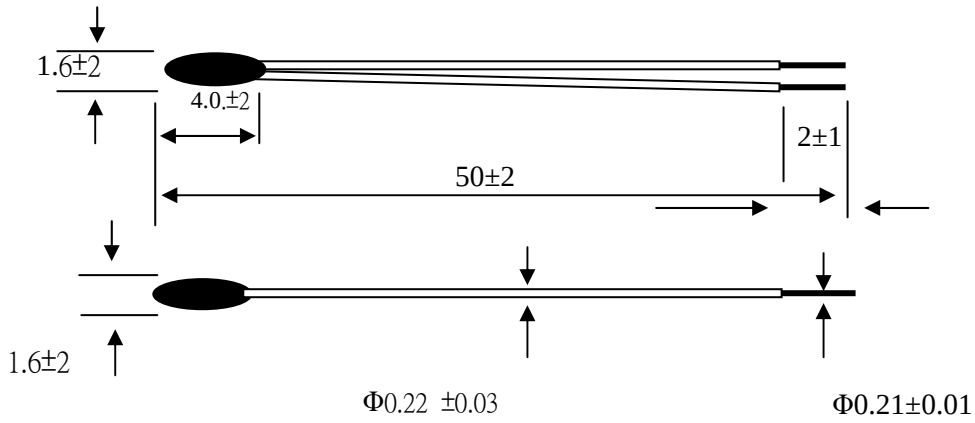
3-5) Maximum power rating. : 3.5 mW (at 25℃)

3-6) Category temperature range : -30 ~ 100 ℃
(=Operating temperature range)

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

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

4) DIMENSIONS UNIT:[mm]



5) Storage conditions:

5-1) Environmental conditions

Parts should be stored in temperature rang of -10℃ to 40℃,humidity lower than 75% RH. In further, it should also avoid temperature rapid change, direct sunlight, dust and any spot with corrosive smell.

5-2) Placement conditions:

Please do not place any heavy stuff on storage carton. It should be stored in the original package.

5-3) Storage duration:

10 years.

6) Insulation

6-1) Insulation resistance

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

7) Climatic test

7-1) Dry Heat

After the test samples were exposed in air at 90 ℃ for 1,000 hours, the change ratio of the rated zero-power resistance shall be within ± 1% of the initial value.

7-2) Damp heat

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

7-3) Load test at high temperature

After DC 0.1mA was flowed to the test samples in air at temperature of 90℃ for 1,000 hours, the change ratio of the rated zero-power resistance shall be within ±1% of the initial value.

7-4) 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 -20℃, for 5 minutes.
.Room ambient temperature, for 3 minutes.
.At + 90℃, for 5 minutes.
.Room ambient temperature, for 1 minutes.

After 5 cycles of change of temperature, the change ratio of the rated zero-power resistance shall be within ±1% of the initial value.

8) Mechanical characteristics

8-1) Terminal strength

Pull 1N static weight in the direction of lead axis, test sample should be no break out and damage after one minutes.

8-2) Resin coating strength

The lead-wire shall be firmly wrapped on the cylinder with the diameter of 3 mm. Then a down word tension shall be applied to the lead wire and increased to 5N.

After the foregoing, there shall be no break out and damage on the coating of the lead-wire.

8-3) Free fall

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

8-4) Resistance to soldering heat

After lead wire of the test samples were dipped on time within 6.0 mm from end of lead wire in solder bath at 260℃ ±5℃ for 10 ±1.0 seconds, the change ratio of the rated zero-power resistance shall be within ±1% of the initial value.

9) R-T characteristics

Part No. : **MLTS103F-050-3435**

R_{25} : 10,000 ohms ± 1%
$B_{25/85}$: 3435 °K ± 1%

Temperature (℃)	Resistance (Ω)			Temp. Coef.	Resist. Tolerance (%)		Temp. Tolerance (℃)	
	MIN.	CENTER	MAX.	(%/℃)	MIN.	MAX.	MIN.	MAX.
-30	107163	110881	114717	-5.08	-3.35	3.46	-0.68	0.66
-29	101925	105408	109000	-5.05	-3.30	3.41	-0.67	0.65
-28	96970	100234	103596	-5.02	-3.26	3.36	-0.67	0.65
-27	92281	95339	98489	-4.99	-3.21	3.30	-0.66	0.64
-26	87844	90709	93659	-4.96	-3.16	3.25	-0.66	0.64
-25	83642	86328	89091	-4.94	-3.11	3.20	-0.65	0.63
-24	79663	82181	84769	-4.91	-3.06	3.15	-0.64	0.62
-23	75894	78254	80680	-4.88	-3.02	3.10	-0.63	0.62
-22	72323	74535	76808	-4.86	-2.97	3.05	-0.63	0.61
-21	68938	71013	73143	-4.83	-2.92	3.00	-0.62	0.61
-20	65729	67674	69671	-4.80	-2.88	2.95	-0.61	0.60
-19	62686	64511	66382	-4.77	-2.83	2.90	-0.61	0.59
-18	59800	61511	63265	-4.75	-2.78	2.85	-0.60	0.59
-17	57061	58666	60311	-4.72	-2.74	2.80	-0.59	0.58
-16	54462	55968	57510	-4.70	-2.69	2.75	-0.59	0.57
-15	51995	53408	54853	-4.67	-2.64	2.71	-0.58	0.57
-14	49653	50978	52333	-4.64	-2.60	2.66	-0.57	0.56
-13	47428	48671	49942	-4.62	-2.55	2.61	-0.57	0.55
-12	45314	46481	47672	-4.59	-2.51	2.56	-0.56	0.55
-11	43306	44400	45518	-4.57	-2.46	2.52	-0.55	0.54
-10	41397	42424	43472	-4.54	-2.42	2.47	-0.54	0.53
-9	39582	40546	41528	-4.52	-2.38	2.42	-0.54	0.53
-8	37856	38760	39682	-4.49	-2.33	2.38	-0.53	0.52
-7	36214	37063	37927	-4.47	-2.29	2.33	-0.52	0.51
-6	34653	35448	36259	-4.44	-2.24	2.29	-0.51	0.51
-5	33166	33913	34673	-4.42	-2.20	2.24	-0.51	0.50
-4	31751	32451	33164	-4.39	-2.16	2.20	-0.50	0.49
-3	30404	31061	31729	-4.37	-2.12	2.15	-0.49	0.48
-2	29121	29737	30363	-4.34	-2.07	2.11	-0.49	0.48
-1	27898	28476	29064	-4.32	-2.03	2.06	-0.48	0.47
0	26733	27276	27826	-4.30	-1.99	2.02	-0.47	0.46
1	25623	26132	26648	-4.27	-1.95	1.97	-0.46	0.46
2	24565	25042	25526	-4.25	-1.90	1.93	-0.45	0.45
3	23556	24003	24457	-4.22	-1.86	1.89	-0.45	0.44
4	22594	23013	23438	-4.20	-1.82	1.85	-0.44	0.43
5	21676	22069	22467	-4.18	-1.78	1.80	-0.43	0.43
6	20800	21168	21541	-4.16	-1.74	1.76	-0.42	0.42
7	19964	20309	20658	-4.13	-1.70	1.72	-0.42	0.41
8	19166	19489	19815	-4.11	-1.66	1.68	-0.41	0.40

9	18403	18706	19012	-4.09	-1.62	1.63	-0.40	0.40
10	17676	17959	18245	-4.07	-1.58	1.59	-0.39	0.39
11	16980	17245	17513	-4.04	-1.54	1.55	-0.38	0.38
12	16316	16564	16814	-4.02	-1.50	1.51	-0.38	0.37
13	15681	15913	16147	-4.00	-1.46	1.47	-0.37	0.36
14	15074	15291	15509	-3.98	-1.42	1.43	-0.36	0.36
15	14493	14696	14900	-3.96	-1.38	1.39	-0.35	0.35
16	13938	14128	14318	-3.93	-1.34	1.35	-0.34	0.34
17	13407	13584	13762	-3.91	-1.30	1.31	-0.33	0.33
18	12899	13064	13230	-3.89	-1.26	1.27	-0.33	0.32
19	12413	12567	12722	-3.87	-1.23	1.23	-0.32	0.32
20	11948	12091	12235	-3.85	-1.19	1.19	-0.31	0.31
21	11502	11636	11770	-3.83	-1.15	1.15	-0.30	0.30
22	11075	11200	11325	-3.81	-1.11	1.11	-0.29	0.29
23	10667	10783	10899	-3.79	-1.07	1.08	-0.28	0.28
24	10275	10383	10491	-3.77	-1.04	1.04	-0.28	0.28
25	9900	10000	10100	-3.75	-1.00	1.00	-0.27	0.27
26	9533	9633	9733	-3.73	-1.04	1.04	-0.28	0.28
27	9182	9282	9382	-3.71	-1.07	1.08	-0.29	0.29
28	8846	8945	9044	-3.69	-1.11	1.11	-0.30	0.30
29	8523	8622	8721	-3.67	-1.15	1.15	-0.31	0.31
30	8214	8312	8411	-3.65	-1.18	1.19	-0.33	0.32
31	7918	8015	8113	-3.63	-1.22	1.22	-0.34	0.34
32	7634	7730	7828	-3.61	-1.25	1.26	-0.35	0.35
33	7361	7457	7554	-3.59	-1.29	1.30	-0.36	0.36
34	7100	7195	7291	-3.57	-1.33	1.33	-0.37	0.37
35	6849	6943	7038	-3.55	-1.36	1.37	-0.39	0.38
36	6608	6702	6796	-3.53	-1.40	1.41	-0.40	0.39
37	6377	6470	6563	-3.51	-1.43	1.44	-0.41	0.41
38	6155	6247	6339	-3.50	-1.46	1.48	-0.42	0.42
39	5942	6033	6124	-3.48	-1.50	1.51	-0.43	0.43
40	5738	5827	5917	-3.46	-1.53	1.55	-0.45	0.44
41	5541	5629	5718	-3.44	-1.57	1.58	-0.46	0.46
42	5352	5439	5527	-3.42	-1.60	1.62	-0.47	0.47
43	5171	5257	5344	-3.41	-1.63	1.65	-0.49	0.48
44	4997	5081	5167	-3.39	-1.67	1.69	-0.50	0.49
45	4829	4913	4997	-3.37	-1.70	1.72	-0.51	0.50
46	4668	4750	4833	-3.35	-1.73	1.75	-0.52	0.52
47	4513	4594	4676	-3.33	-1.77	1.79	-0.54	0.53
48	4364	4444	4525	-3.32	-1.80	1.82	-0.55	0.54
49	4220	4299	4379	-3.30	-1.83	1.86	-0.56	0.56
50	4082	4160	4238	-3.28	-1.86	1.89	-0.58	0.57
51	3949	4026	4103	-3.27	-1.90	1.92	-0.59	0.58
52	3822	3897	3973	-3.25	-1.93	1.96	-0.60	0.59
53	3698	3772	3848	-3.23	-1.96	1.99	-0.62	0.61
54	3580	3653	3727	-3.22	-1.99	2.02	-0.63	0.62

55	3466	3537	3610	-3.20	-2.02	2.06	-0.64	0.63
56	3356	3426	3498	-3.18	-2.05	2.09	-0.66	0.65
57	3250	3319	3390	-3.17	-2.09	2.12	-0.67	0.66
58	3148	3216	3285	-3.15	-2.12	2.15	-0.68	0.67
59	3050	3116	3185	-3.14	-2.15	2.18	-0.70	0.68
60	2955	3021	3087	-3.12	-2.18	2.22	-0.71	0.70
61	2863	2928	2994	-3.10	-2.21	2.25	-0.72	0.71
62	2775	2839	2903	-3.09	-2.24	2.28	-0.74	0.73
63	2690	2753	2816	-3.07	-2.27	2.31	-0.75	0.74
64	2608	2670	2732	-3.06	-2.30	2.34	-0.77	0.75
65	2529	2589	2651	-3.04	-2.33	2.37	-0.78	0.77
66	2453	2512	2572	-3.03	-2.36	2.40	-0.79	0.78
67	2379	2437	2497	-3.01	-2.39	2.44	-0.81	0.79
68	2308	2365	2424	-3.00	-2.42	2.47	-0.82	0.81
69	2239	2296	2353	-2.98	-2.45	2.50	-0.84	0.82
70	2173	2228	2285	-2.97	-2.48	2.53	-0.85	0.83
71	2109	2163	2219	-2.95	-2.50	2.56	-0.87	0.85
72	2047	2101	2155	-2.94	-2.53	2.59	-0.88	0.86
73	1988	2040	2093	-2.92	-2.56	2.62	-0.90	0.88
74	1930	1981	2034	-2.91	-2.59	2.65	-0.91	0.89
75	1874	1925	1976	-2.89	-2.62	2.68	-0.93	0.90
76	1821	1870	1921	-2.88	-2.65	2.71	-0.94	0.92
77	1768	1817	1867	-2.86	-2.67	2.74	-0.96	0.93
78	1718	1766	1815	-2.85	-2.70	2.77	-0.97	0.95
79	1670	1716	1764	-2.84	-2.73	2.80	-0.99	0.96
80	1622	1668	1716	-2.82	-2.76	2.82	-1.00	0.98
81	1577	1622	1668	-2.81	-2.78	2.85	-1.02	0.99
82	1533	1577	1623	-2.80	-2.81	2.88	-1.03	1.01
83	1490	1534	1579	-2.78	-2.84	2.91	-1.05	1.02
84	1449	1492	1536	-2.77	-2.87	2.94	-1.06	1.04
85	1409	1451	1494	-2.75	-2.89	2.97	-1.08	1.05
86	1371	1412	1454	-2.74	-2.92	3.00	-1.09	1.06
87	1333	1374	1415	-2.73	-2.95	3.02	-1.11	1.08
88	1297	1337	1378	-2.71	-2.97	3.05	-1.12	1.09
89	1262	1301	1341	-2.70	-3.00	3.08	-1.14	1.11
90	1228	1267	1306	-2.69	-3.02	3.11	-1.16	1.12
91	1196	1233	1272	-2.68	-3.05	3.14	-1.17	1.14
92	1164	1201	1239	-2.66	-3.08	3.16	-1.19	1.16
93	1133	1169	1207	-2.65	-3.10	3.19	-1.20	1.17
94	1103	1139	1175	-2.64	-3.13	3.22	-1.22	1.19
95	1074	1109	1145	-2.63	-3.15	3.25	-1.24	1.20
96	1046	1080	1116	-2.61	-3.18	3.27	-1.25	1.22
97	1019	1053	1087	-2.60	-3.20	3.30	-1.27	1.23
98	993	1026	1060	-2.59	-3.23	3.33	-1.29	1.25
99	967	1000	1033	-2.58	-3.25	3.35	-1.30	1.26
100	942	974	1007	-2.56	-3.28	3.38	-1.32	1.28

101	918	950	982	-2.55	-3.30	3.41	-1.33	1.29
102	895	926	958	-2.54	-3.33	3.43	-1.35	1.31
103	872	903	934	-2.53	-3.35	3.46	-1.37	1.33
104	850	880	911	-2.52	-3.38	3.48	-1.39	1.34
105	829	858	888	-2.50	-3.40	3.51	-1.40	1.36
106	808	837	867	-2.49	-3.43	3.54	-1.42	1.37
107	788	817	846	-2.48	-3.45	3.56	-1.44	1.39
108	769	797	825	-2.47	-3.47	3.59	-1.45	1.41
109	750	777	805	-2.46	-3.50	3.61	-1.47	1.42
110	732	758	786	-2.45	-3.52	3.64	-1.49	1.44
111	714	740	767	-2.44	-3.54	3.66	-1.50	1.46
112	697	722	749	-2.42	-3.57	3.69	-1.52	1.47
113	680	705	731	-2.41	-3.59	3.71	-1.54	1.49
114	663	688	714	-2.40	-3.61	3.74	-1.56	1.50
115	648	672	697	-2.39	-3.64	3.76	-1.57	1.52
116	632	656	681	-2.38	-3.66	3.79	-1.59	1.54
117	617	641	665	-2.37	-3.68	3.81	-1.61	1.55
118	603	626	650	-2.36	-3.71	3.84	-1.63	1.57
119	588	611	635	-2.35	-3.73	3.86	-1.65	1.59
120	575	597	620	-2.34	-3.75	3.89	-1.66	1.61
121	561	583	606	-2.33	-3.77	3.91	-1.68	1.62
122	548	570	592	-2.32	-3.80	3.94	-1.70	1.64
123	536	557	579	-2.31	-3.82	3.96	-1.72	1.66
124	523	544	566	-2.29	-3.84	3.98	-1.74	1.67
125	511	532	553	-2.28	-3.86	4.01	-1.75	1.69
126	500	520	541	-2.27	-3.88	4.03	-1.77	1.71
127	488	508	529	-2.26	-3.91	4.05	-1.79	1.73
128	477	497	517	-2.25	-3.93	4.08	-1.81	1.74
129	467	486	506	-2.24	-3.95	4.10	-1.83	1.76
130	456	475	495	-2.23	-3.97	4.12	-1.85	1.78
131	446	465	484	-2.22	-3.99	4.15	-1.87	1.80
132	436	454	473	-2.21	-4.01	4.17	-1.88	1.81
133	427	445	463	-2.20	-4.03	4.19	-1.90	1.83
134	417	435	453	-2.19	-4.06	4.22	-1.92	1.85
135	408	425	443	-2.18	-4.08	4.24	-1.94	1.87
136	399	416	434	-2.18	-4.10	4.26	-1.96	1.88
137	391	407	425	-2.17	-4.12	4.29	-1.98	1.90
138	382	399	416	-2.16	-4.14	4.31	-2.00	1.92
139	374	390	407	-2.15	-4.16	4.33	-2.02	1.94
140	366	382	398	-2.14	-4.18	4.35	-2.04	1.96
141	358	374	390	-2.13	-4.20	4.37	-2.06	1.97
142	351	366	382	-2.12	-4.22	4.40	-2.08	1.99
143	343	358	374	-2.11	-4.24	4.42	-2.09	2.01
144	336	351	366	-2.10	-4.26	4.44	-2.11	2.03
145	329	344	359	-2.09	-4.28	4.46	-2.13	2.05
146	322	336	352	-2.08	-4.30	4.48	-2.15	2.07

147	315	330	344	-2.07	-4.32	4.51	-2.17	2.08
148	309	323	337	-2.06	-4.34	4.53	-2.19	2.10
149	302	316	331	-2.06	-4.36	4.55	-2.21	2.12
150	296	310	324	-2.05	-4.38	4.57	-2.23	2.14