

Product Specification

Number: L-KLS6-MF52F-103F3950FA-3M-2P-UL2651

Name: Temperature Sensor

Specification: _____

Customer: D02

Date: 2020-02-28

Customer Signature:



WWW.KLSELE.COM

NINGBO KLS ELECTRONIC CO; LTD

Tel : 0086-574-86828566

Fax : 0086-574-86824882

**ADD : NO. 8-1, RONGXIA RD. XIAPU SHANQIAN
INDUSTRIAL ZONE BEILUN NINGBO ZHEJIANG.**

Compile	Check	Review	Approval
Jenny	Jack.C		

This Specification indicates the properties, test condition, structure and dimension of MFT series temp. sensor.

NINGBO KLS ELECTRONIC CO., LTD. It is sincerely for your company's confirmation.

Any doubt, Please contact with us by 86 574 86828566 or if there isn't any question, please return fax to confirm it.

No return fax will be deemed to be accepted.

Please inform us if you change your usage of the sensor.

Customer:		
Customer Confirmation	Confirmer	
	Checker	
	Approval	

1、ELECTRICAL CHARACTERISTIC

Item	Symbol	Test Condition	Performance	Unit
1.1 Rated resistance	R _{25°C}	+25±0.05°C	10±1%	kΩ
1.2 B value	B _{25/50}	+25±0.05°C、+50±0.05°C	3950±1%	K
1.3 Time constant	τ	In well stirred water	≤15	sec
1.4 Dissipation factor	δ	In still air	≥2.1	mW/°C
1.5 Voltage withstanding	U	AC1500V (Peak value)	No destroy or spark	V
1.6 Insulation resistance	R _i	DC500V	≥100	MΩ
1.7 Max.power	P _{max}	Ambient Temp.+25°C	≤60	mW

2、Reliability test

2.1 Intensity : Fix the probe ,Pull the lead by striped wire end with 5N force for 10±1sec.

No visible damage.

2.2 High Temp.Store (In air)

125±3°C 1000h

ΔR₂₅/R₂₅≤3%

2.3 Low Temp.Store (In air)

-40±3°C 1000h

ΔR₂₅/R₂₅≤3%

2.4 Heat and Humidity Stability

40±2°C 98%RH 1000h

ΔR₂₅/R₂₅≤3%

2.5 Temperature Shift

-40±3°C × 30min $\xrightarrow[2\pm1min]{Nor.Temp.}$ 105±3°C × 30min 5 times

ΔR₂₅/R₂₅≤3%

3、Operation Notice

3.1 Application: Temperature measure and control;

3.2 Operating Temp. Range: -40°C ~ +125°C ;

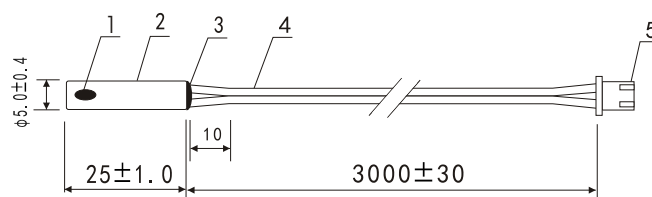
3.3 Avoid measure error caused by self heat when over current pass through.

3.4 Avoid excessive heat shock , The hot air blow should be at least 10mm to the probe in case heat shrink protection tube need to be attached .

3.5 Probe cannot be used in water (with steam), high humidity, electrolysis, salt, acid,alkaline and organic solvents and other corrosive environments

4、RESISTANCE TEMPERATURE TABLE (see accessory P/N:)

5、SIZE DRAWING: (unit:mm)



Item	Name	Material Spec.	Qty.	Remark
1	Component	NTC Thermistor	1	MF5A
2	Tube	φ5*25	1	Cu/Ni
3	Epoxy	Epoxy Potting class		Black
4	Wire	UI2651 24#	1	Black
5	Connector	XH-2Y	1	White

File Number	Version	Date	Compile	Audit
103F3950FA-3M	A	2020-02-28	Wang Run	Yanggui Lin

R-T				TABLE				P/N: J080918-4	
R (25℃)=10kohm±1%				B (25/50)= 3950K±1%					
Temp.	Resistance(kΩ)			resistance tol. (%)		Temp.tol. (℃)			
℃	Rmin	R(t)Normal	Rmax	MIN	MAX	MIN	MAX		
-40	324.37	339.40	355.09	-4.4%	4.6%	-0.64	0.67		
-39	303.73	317.59	332.05	-4.4%	4.6%	-0.63	0.66		
-38	284.54	297.33	310.66	-4.3%	4.5%	-0.63	0.66		
-37	266.67	278.48	290.78	-4.2%	4.4%	-0.63	0.65		
-36	250.05	260.95	272.30	-4.2%	4.3%	-0.62	0.65		
-35	234.56	244.63	255.10	-4.1%	4.3%	-0.62	0.64		
-34	220.14	229.44	239.11	-4.1%	4.2%	-0.61	0.64		
-33	206.68	215.28	224.21	-4.0%	4.1%	-0.61	0.63		
-32	194.14	202.09	210.34	-3.9%	4.1%	-0.60	0.63		
-31	182.44	189.78	197.41	-3.9%	4.0%	-0.60	0.62		
-30	171.51	178.31	185.35	-3.8%	4.0%	-0.59	0.62		
-29	161.31	167.60	174.11	-3.8%	3.9%	-0.59	0.61		
-28	151.78	157.60	163.63	-3.7%	3.8%	-0.58	0.60		
-27	142.87	148.26	153.83	-3.6%	3.8%	-0.58	0.60		
-26	134.54	139.53	144.69	-3.6%	3.7%	-0.57	0.59		
-25	126.74	131.36	136.14	-3.5%	3.6%	-0.57	0.59		
-24	119.45	123.73	128.15	-3.5%	3.6%	-0.56	0.58		
-23	112.61	116.58	120.67	-3.4%	3.5%	-0.56	0.58		
-22	106.21	109.89	113.68	-3.3%	3.5%	-0.55	0.57		
-21	100.21	103.62	107.13	-3.3%	3.4%	-0.55	0.56		
-20	94.59	97.75	101.00	-3.2%	3.3%	-0.54	0.56		
-19	89.31	92.24	95.25	-3.2%	3.3%	-0.54	0.55		
-18	84.36	87.07	89.87	-3.1%	3.2%	-0.53	0.55		
-17	79.71	82.23	84.82	-3.1%	3.2%	-0.52	0.54		
-16	75.34	77.68	80.08	-3.0%	3.1%	-0.52	0.53		
-15	71.24	73.41	75.63	-3.0%	3.0%	-0.51	0.53		
-14	67.39	69.40	71.46	-2.9%	3.0%	-0.51	0.52		
-13	63.76	65.63	67.55	-2.8%	2.9%	-0.50	0.51		
-12	60.36	62.09	63.87	-2.8%	2.9%	-0.50	0.51		
-11	57.15	58.76	60.41	-2.7%	2.8%	-0.49	0.50		
-10	54.14	55.63	57.16	-2.7%	2.7%	-0.48	0.49		
-9	51.30	52.68	54.10	-2.6%	2.7%	-0.48	0.49		
-8	48.62	49.91	51.23	-2.6%	2.6%	-0.47	0.48		
-7	46.10	47.30	48.52	-2.5%	2.6%	-0.46	0.47		
-6	43.73	44.84	45.97	-2.5%	2.5%	-0.46	0.47		
-5	41.49	42.53	43.58	-2.4%	2.5%	-0.45	0.46		
-4	39.39	40.34	41.32	-2.4%	2.4%	-0.45	0.45		
-3	37.40	38.28	39.19	-2.3%	2.4%	-0.44	0.45		
-2	35.52	36.34	37.18	-2.3%	2.3%	-0.43	0.44		
-1	33.74	34.51	35.29	-2.2%	2.3%	-0.43	0.43		
0	32.07	32.78	33.50	-2.2%	2.2%	-0.42	0.43		
1	30.49	31.15	31.82	-2.1%	2.2%	-0.41	0.42		
2	29.00	29.61	30.23	-2.1%	2.1%	-0.40	0.41		

3	27.58	28.15	28.73	-2.0%	2.1%	-0.40	0.40
4	26.25	26.78	27.31	-2.0%	2.0%	-0.39	0.40
5	24.99	25.47	25.97	-1.9%	1.9%	-0.38	0.39
6	23.78	24.24	24.70	-1.9%	1.9%	-0.38	0.38
7	22.65	23.07	23.49	-1.8%	1.8%	-0.37	0.37
8	21.57	21.96	22.36	-1.8%	1.8%	-0.36	0.37
9	20.55	20.91	21.28	-1.7%	1.7%	-0.35	0.36
10	19.59	19.92	20.26	-1.7%	1.7%	-0.35	0.35
11	18.68	18.99	19.30	-1.6%	1.6%	-0.34	0.34
12	17.81	18.10	18.39	-1.6%	1.6%	-0.33	0.34
13	16.99	17.26	17.52	-1.5%	1.6%	-0.32	0.33
14	16.21	16.46	16.71	-1.5%	1.5%	-0.32	0.32
15	15.47	15.70	15.93	-1.4%	1.5%	-0.31	0.31
16	14.78	14.99	15.20	-1.4%	1.4%	-0.30	0.30
17	14.12	14.31	14.51	-1.4%	1.4%	-0.29	0.30
18	13.49	13.67	13.85	-1.3%	1.3%	-0.30	0.31
19	12.90	13.07	13.23	-1.3%	1.3%	-0.28	0.28
20	12.33	12.49	12.64	-1.2%	1.2%	-0.27	0.27
21	11.80	11.94	12.08	-1.2%	1.2%	-0.26	0.26
22	11.29	11.42	11.55	-1.1%	1.1%	-0.25	0.25
23	10.80	10.92	11.04	-1.1%	1.1%	-0.25	0.25
24	10.34	10.45	10.56	-1.0%	1.0%	-0.24	0.24
25	9.900	10.000	10.100	-1.0%	1.0%	-0.24	0.24
26	9.471	9.571	9.671	-1.0%	1.0%	-0.24	0.24
27	9.063	9.163	9.263	-1.1%	1.1%	-0.25	0.25
28	8.675	8.774	8.874	-1.1%	1.1%	-0.26	0.26
29	8.306	8.404	8.503	-1.2%	1.2%	-0.27	0.27
30	7.954	8.051	8.150	-1.2%	1.2%	-0.28	0.29
31	7.618	7.715	7.813	-1.3%	1.3%	-0.30	0.30
32	7.299	7.395	7.492	-1.3%	1.3%	-0.31	0.31
33	6.995	7.090	7.185	-1.3%	1.3%	-0.32	0.32
34	6.704	6.798	6.893	-1.4%	1.4%	-0.33	0.33
35	6.428	6.521	6.614	-1.4%	1.4%	-0.34	0.35
36	6.164	6.256	6.348	-1.5%	1.5%	-0.36	0.36
37	5.912	6.003	6.094	-1.5%	1.5%	-0.37	0.37
38	5.672	5.761	5.851	-1.5%	1.6%	-0.38	0.38
39	5.443	5.531	5.619	-1.6%	1.6%	-0.39	0.40
40	5.225	5.311	5.398	-1.6%	1.6%	-0.40	0.41
41	5.016	5.101	5.186	-1.7%	1.7%	-0.42	0.42
42	4.816	4.900	4.984	-1.7%	1.7%	-0.43	0.43
43	4.626	4.708	4.791	-1.7%	1.8%	-0.44	0.45
44	4.444	4.524	4.606	-1.8%	1.8%	-0.45	0.46
45	4.270	4.349	4.429	-1.8%	1.8%	-0.47	0.47
46	4.104	4.181	4.260	-1.9%	1.9%	-0.48	0.49
47	3.945	4.021	4.098	-1.9%	1.9%	-0.49	0.50
48	3.793	3.867	3.943	-1.9%	2.0%	-0.50	0.51
49	3.647	3.721	3.795	-2.0%	2.0%	-0.52	0.53
50	3.508	3.580	3.653	-2.0%	2.0%	-0.53	0.54
51	3.375	3.446	3.517	-2.0%	2.1%	-0.54	0.55
52	3.248	3.317	3.387	-2.1%	2.1%	-0.56	0.57

53	3.126	3.194	3.263	-2.1%	2.2%	-0.57	0.58
54	3.009	3.075	3.143	-2.2%	2.2%	-0.58	0.59
55	2.897	2.962	3.029	-2.2%	2.2%	-0.60	0.61
56	2.790	2.854	2.919	-2.2%	2.3%	-0.61	0.62
57	2.688	2.750	2.814	-2.3%	2.3%	-0.62	0.63
58	2.589	2.651	2.713	-2.3%	2.4%	-0.64	0.65
59	2.495	2.555	2.616	-2.3%	2.4%	-0.65	0.66
60	2.405	2.464	2.523	-2.4%	2.4%	-0.66	0.68
61	2.318	2.376	2.434	-2.4%	2.5%	-0.68	0.69
62	2.235	2.292	2.349	-2.4%	2.5%	-0.69	0.71
63	2.156	2.211	2.267	-2.5%	2.5%	-0.70	0.72
64	2.079	2.133	2.188	-2.5%	2.6%	-0.72	0.73
65	2.006	2.059	2.112	-2.6%	2.6%	-0.73	0.75
66	1.936	1.987	2.040	-2.6%	2.6%	-0.75	0.76
67	1.868	1.918	1.970	-2.6%	2.7%	-0.76	0.78
68	1.803	1.852	1.903	-2.7%	2.7%	-0.77	0.79
69	1.741	1.789	1.838	-2.7%	2.8%	-0.79	0.81
70	1.681	1.728	1.776	-2.7%	2.8%	-0.80	0.82
71	1.624	1.670	1.717	-2.8%	2.8%	-0.82	0.84
72	1.569	1.614	1.660	-2.8%	2.9%	-0.83	0.85
73	1.515	1.560	1.605	-2.8%	2.9%	-0.85	0.87
74	1.464	1.508	1.552	-2.9%	2.9%	-0.86	0.88
75	1.415	1.458	1.501	-2.9%	3.0%	-0.88	0.90
76	1.368	1.409	1.452	-2.9%	3.0%	-0.89	0.91
77	1.323	1.363	1.405	-3.0%	3.0%	-0.91	0.93
78	1.279	1.319	1.359	-3.0%	3.1%	-0.92	0.94
79	1.237	1.276	1.315	-3.0%	3.1%	-0.93	0.96
80	1.197	1.235	1.273	-3.0%	3.1%	-0.95	0.98
81	1.158	1.195	1.233	-3.1%	3.2%	-0.96	0.99
82	1.121	1.157	1.194	-3.1%	3.2%	-0.98	1.01
83	1.085	1.120	1.156	-3.1%	3.2%	-0.99	1.02
84	1.050	1.084	1.120	-3.2%	3.3%	-1.01	1.04
85	1.016	1.050	1.085	-3.2%	3.3%	-1.03	1.06
86	0.984	1.017	1.051	-3.2%	3.3%	-1.04	1.07
87	0.953	0.985	1.019	-3.3%	3.4%	-1.06	1.09
88	0.923	0.955	0.987	-3.3%	3.4%	-1.07	1.10
89	0.894	0.925	0.957	-3.3%	3.4%	-1.09	1.12
90	0.867	0.897	0.928	-3.4%	3.5%	-1.10	1.14
91	0.840	0.869	0.900	-3.4%	3.5%	-1.12	1.15
92	0.814	0.843	0.872	-3.4%	3.5%	-1.13	1.17
93	0.789	0.817	0.846	-3.4%	3.6%	-1.15	1.19
94	0.765	0.792	0.821	-3.5%	3.6%	-1.17	1.20
95	0.742	0.769	0.797	-3.5%	3.6%	-1.18	1.22
96	0.719	0.746	0.773	-3.5%	3.7%	-1.20	1.24
97	0.698	0.724	0.750	-3.6%	3.7%	-1.21	1.26
98	0.677	0.702	0.728	-3.6%	3.7%	-1.23	1.27
99	0.657	0.681	0.707	-3.6%	3.7%	-1.25	1.29
100	0.637	0.661	0.686	-3.7%	3.8%	-1.26	1.31
101	0.619	0.642	0.667	-3.7%	3.8%	-1.28	1.32
102	0.600	0.624	0.648	-3.7%	3.8%	-1.30	1.34

103	0.583	0.606	0.629	-3.7%	3.9%	-1.31	1.36
104	0.566	0.588	0.611	-3.8%	3.9%	-1.33	1.38
105	0.550	0.571	0.594	-3.8%	3.9%	-1.34	1.39
106	0.534	0.555	0.577	-3.8%	4.0%	-1.36	1.41
107	0.519	0.539	0.561	-3.8%	4.0%	-1.38	1.43
108	0.504	0.524	0.545	-3.9%	4.0%	-1.39	1.45
109	0.490	0.509	0.530	-3.9%	4.1%	-1.41	1.47
110	0.476	0.495	0.515	-3.9%	4.1%	-1.43	1.48
111	0.462	0.482	0.501	-4.0%	4.1%	-1.45	1.50
112	0.450	0.468	0.488	-4.0%	4.1%	-1.46	1.52
113	0.437	0.455	0.474	-4.0%	4.2%	-1.48	1.54
114	0.425	0.443	0.461	-4.0%	4.2%	-1.50	1.56
115	0.413	0.431	0.449	-4.1%	4.2%	-1.51	1.57
116	0.402	0.419	0.437	-4.1%	4.3%	-1.53	1.59
117	0.391	0.408	0.425	-4.1%	4.3%	-1.55	1.61
118	0.380	0.397	0.414	-4.1%	4.3%	-1.57	1.63
119	0.370	0.386	0.403	-4.2%	4.3%	-1.58	1.65
120	0.360	0.376	0.392	-4.2%	4.4%	-1.60	1.67
121	0.350	0.366	0.382	-4.2%	4.4%	-1.62	1.69
122	0.341	0.356	0.372	-4.2%	4.4%	-1.64	1.71
123	0.332	0.347	0.362	-4.3%	4.5%	-1.66	1.72
124	0.323	0.338	0.353	-4.3%	4.5%	-1.67	1.74
125	0.315	0.329	0.344	-4.3%	4.5%	-1.69	1.76
126	0.306	0.320	0.335	-4.3%	4.5%	-1.71	1.78
127	0.298	0.312	0.326	-4.4%	4.6%	-1.73	1.80
128	0.291	0.304	0.318	-4.4%	4.6%	-1.75	1.82
129	0.283	0.296	0.310	-4.4%	4.6%	-1.76	1.84
130	0.276	0.289	0.302	-4.4%	4.6%	-1.78	1.86
131	0.269	0.281	0.295	-4.5%	4.7%	-1.80	1.88
132	0.262	0.274	0.287	-4.5%	4.7%	-1.82	1.90
133	0.255	0.267	0.280	-4.5%	4.7%	-1.84	1.92
134	0.249	0.261	0.273	-4.5%	4.8%	-1.86	1.94
135	0.243	0.254	0.266	-4.6%	4.8%	-1.87	1.96
136	0.236	0.248	0.260	-4.6%	4.8%	-1.89	1.98
137	0.231	0.242	0.253	-4.6%	4.8%	-1.91	2.00
138	0.225	0.236	0.247	-4.6%	4.9%	-1.93	2.02
139	0.219	0.230	0.241	-4.7%	4.9%	-1.95	2.04
140	0.214	0.224	0.235	-4.7%	4.9%	-1.97	2.06
141	0.209	0.219	0.230	-4.7%	4.9%	-1.99	2.08
142	0.203	0.214	0.224	-4.7%	5.0%	-2.01	2.10
143	0.198	0.208	0.219	-4.8%	5.0%	-2.02	2.12
144	0.194	0.203	0.214	-4.8%	5.0%	-2.04	2.14
145	0.189	0.198	0.208	-4.8%	5.0%	-2.06	2.16
146	0.184	0.194	0.204	-4.8%	5.1%	-2.08	2.18
147	0.180	0.189	0.199	-4.9%	5.1%	-2.10	2.20
148	0.176	0.185	0.194	-4.9%	5.1%	-2.12	2.23
149	0.172	0.180	0.190	-4.9%	5.1%	-2.14	2.25
150	0.167	0.176	0.185	-4.9%	5.2%	-2.16	2.27