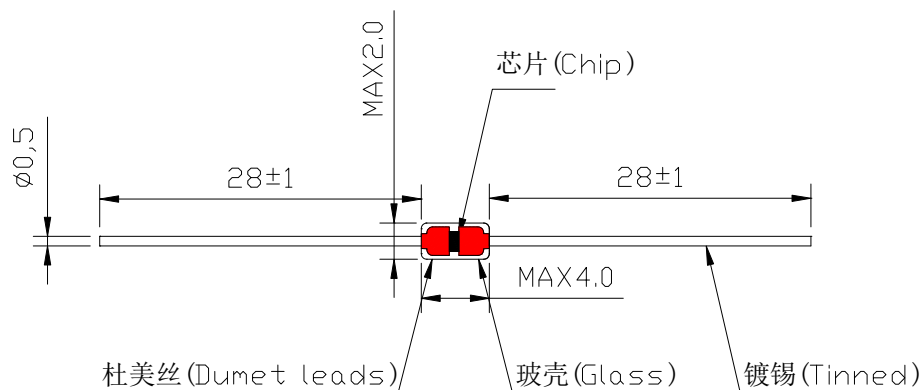


ALTERNATION HISTORY RECORDS 变更记录

Date 日期	Version 版本	Mark 标记	Page 页码	Description 描述	Drafter 制定者	Approver 审批者
2023-10-04	B	/	/	First release 首次发行	Doris Chang	/

1、Size:



2、Part NO. :

MF58	103	F	3977	F	A	RR
NTC thermistor Glass seal Series	Resistors 10K Ω	Tolerance	B Constant	B Constant Tolerance	B constant calculation method	Packing code
		$\pm 1\%$	3977K	$\pm 1\%$	B25/85	Bulk

3、Specification:

No.	Items	Symbol	Test condition	Min.	Spec.	Max.	unit
3-1	25°C Resistors	R25	Ta=25 $\pm$ 0.05°C P _T $\leq$ 0.1mw	9.90	10.00	10.10	K Ω
3-2	85°C Resistors	R85	Ta=85 $\pm$ 0.05°C P _T $\leq$ 0.1mw	/	1.070	/	K Ω
3-3	B Constant	B25/85	$B = LN \frac{R_{T1}}{R_{T2}} / (\frac{1}{T_1} - \frac{1}{T_2})$	3937.23	3977	4016.77	K
3-4	Dissipation Factor	σ	Ta=25 $\pm$ 0.5°C	2	/	/	mw/°C
3-5	Thermal Time Constant	τ	Ta=25 $\pm$ 0.5°C (在空气中)	/	/	12	sec
3-6	Insulation resistance	/	500VDC	50	/	/	M Ω
3-7	Operating ambient temperature	/	/	-40	/	+150	°C

4、Reliability Test:

Items	Requirements	Test Method and Remarks
4-1.Solderability	The solder at the lead out terminal flows freely and infiltrates well, with a soldering area of more than 95%.	After the lead end is dipped in flux, immerse it in a tin bath at $230\pm5^{\circ}\text{C}$, with the tin surface 2-2.5mm away from the lower end of the NTC, and keep it for $2\pm0.5\text{S}$.
4-2.Resistance to Soldering Heat	No visible damage $\Delta R/R25\leq\pm2\%$	Immerse the lead end in a $260\pm5^{\circ}\text{C}$ tin bath, with the tin surface 2-2.5mm away from the lower end of the NTC, for $10\pm1\text{S}$.
4-3.Terminal Strength	No shedding $\Delta R/R25\leq\pm2\%$	Test Ua: tension 10N, lasting 10S; Test Ub: bending 90 degrees, tension 5N, two consecutive times.
4-4. High temperature test	$\Delta R/R25\leq\pm2\%$	$100\pm5^{\circ}\text{C}$, powered on $1000\pm24\text{h}$, DC 0.2mA.
4-5. Low temperature test	$\Delta R/R25\leq\pm2\%$	$-40\pm5^{\circ}\text{C}$, powered on $1000\pm24\text{h}$, DC0.2mA.
4-6. Moisture resistance test	$\Delta R/R25\leq\pm2\%$	Place in an environment of $40\pm2^{\circ}\text{C}$, 90% -95% RH for 1000 ± 24 hours.
4-7. Temperature cycle test	$\Delta R/R25\leq\pm2\%$	$-40^{\circ}\text{C}\times30\text{min}\rightarrow80^{\circ}\text{C}\times5\text{min}\rightarrow200^{\circ}\text{C}\times30\text{min}\rightarrow80^{\circ}\text{C}\times5\text{min}$, 5 cycles.

5、Precautions for Use

5-1、 When cutting the product leads to the required length, please note that the minimum length is $\geq 8\text{mm}$.

5-2、 This resistor is a glass seal high temperature sintering package. When the lead is bent, the bending point should be more than 3mm away from the glass shell end to avoid damaging the glass seal.

6、Storage Condition

6-1、 Storage Temperature: $-10^{\circ}\text{C}\sim+40^{\circ}\text{C}$.

6-2、 Relative Humidity: $\leq 75\%$ RH.

6-3、 Avoid storage in corrosive and light environments.

6-4、 Both the whole package and the loose package must be sealed and stored.

7、Resistance-Temperature Characteristics

R25=10KΩ±1%				B25/85=3977K			
T(°C)	Rmax(KΩ)	Rnom(KΩ)	Rmin(KΩ)	T(°C)	Rmax(KΩ)	Rnom(KΩ)	Rmin(KΩ)
-50	713.87	677.62	643.15	-9	53.596	52.195	50.827
-49	663.65	630.40	598.77	-8	50.760	49.460	48.189
-48	617.31	586.81	557.76	-7	48.091	46.885	45.704
-47	574.53	546.53	519.84	-6	45.578	44.459	43.362
-46	535.01	509.30	484.77	-5	43.212	42.173	41.155
-45	498.49	474.86	452.31	-4	40.983	40.018	39.073
-44	464.70	442.99	422.24	-3	38.882	37.987	37.108
-43	433.45	413.47	394.38	-2	36.901	36.070	35.254
-42	404.50	386.13	368.55	-1	35.033	34.261	33.504
-41	377.69	360.78	344.59	0	33.270	32.554	31.851
-40	352.84	337.27	322.35	1	31.607	30.942	30.289
-39	329.79	315.44	301.70	2	30.036	29.419	28.813
-38	308.40	295.18	282.50	3	28.552	27.980	27.417
-37	288.54	276.36	264.66	4	27.151	26.620	26.097
-36	270.09	258.86	248.06	5	25.826	25.334	24.848
-35	252.95	242.58	232.62	6	24.574	24.117	23.667
-34	237.00	227.44	218.24	7	23.389	22.966	22.548
-33	222.17	213.34	204.84	8	22.269	21.876	21.489
-32	208.37	200.21	192.36	9	21.208	20.844	20.485
-31	195.51	187.98	180.72	10	20.204	19.867	19.534
-30	183.53	176.57	169.85	11	19.253	18.941	18.633
-29	172.36	165.93	159.72	12	18.353	18.064	17.778
-28	161.94	155.99	150.25	13	17.500	17.232	16.967
-27	152.22	146.72	141.40	14	16.691	16.443	16.198
-26	143.15	138.06	133.14	15	15.924	15.695	15.468
-25	134.67	129.96	125.41	16	15.196	14.985	14.775
-24	126.76	122.40	118.18	17	14.506	14.311	14.117
-23	119.35	115.32	111.41	18	13.851	13.671	13.492
-22	112.43	108.69	105.07	19	13.230	13.064	12.898
-21	105.95	102.49	99.13	20	12.639	12.486	12.334
-20	99.89	96.68	93.57	21	12.078	11.938	11.797
-19	94.21	91.24	88.35	22	11.546	11.416	11.287
-18	88.89	86.13	83.46	23	11.039	10.920	10.802
-17	83.90	81.35	78.86	24	10.558	10.449	10.340
-16	79.23	76.86	74.55	25	10.100	10.000	9.900
-15	74.84	72.64	70.50	26	9.673	9.573	9.473
-14	70.72	68.69	66.70	27	9.266	9.167	9.067
-13	66.86	64.97	63.13	28	8.879	8.780	8.681
-12	63.23	61.47	59.76	29	8.510	8.411	8.313
-11	59.82	58.19	56.60	30	8.158	8.060	7.962
-10	56.61	55.10	53.63	31	7.823	7.726	7.629

T(°C)	Rmax(KΩ)	Rnom(KΩ)	Rmin(KΩ)	T(°C)	Rmax(KΩ)	Rnom(KΩ)	Rmin(KΩ)
32	7.503	7.407	7.311	73	1.63	1.58	1.54
33	7.198	7.103	7.008	74	1.58	1.53	1.49
34	6.907	6.813	6.719	75	1.525	1.48	1.44
35	6.630	6.536	6.444	76	1.475	1.433	1.39
36	6.365	6.273	6.181	77	1.428	1.386	1.35
37	6.112	6.021	5.930	78	1.382	1.341	1.301
38	5.870	5.780	5.691	79	1.338	1.298	1.259
39	5.640	5.551	5.463	80	1.295	1.256	1.218
40	5.419	5.332	5.245	81	1.254	1.216	1.179
41	5.208	5.122	5.037	82	1.215	1.178	1.141
42	5.007	4.922	4.839	83	1.177	1.140	1.105
43	4.814	4.731	4.649	84	1.140	1.105	1.070
44	4.630	4.548	4.468	85	1.105	1.070	1.036
45	4.454	4.374	4.294	86	1.071	1.037	1.003
46	4.285	4.206	4.128	87	1.038	1.005	0.972
47	4.124	4.047	3.970	88	1.007	0.974	0.942
48	3.970	3.894	3.818	89	0.976	0.944	0.913
49	3.822	3.747	3.673	90	0.946	0.915	0.884
50	3.680	3.607	3.535	91	0.918	0.887	0.857
51	3.545	3.473	3.402	92	0.891	0.860	0.831
52	3.415	3.344	3.275	93	0.864	0.835	0.806
53	3.290	3.221	3.153	94	0.838	0.810	0.782
54	3.171	3.103	3.036	95	0.814	0.785	0.758
55	3.057	2.990	2.925	96	0.790	0.762	0.735
56	2.947	2.882	2.818	97	0.767	0.740	0.713
57	2.842	2.778	2.715	98	0.744	0.718	0.692
58	2.741	2.678	2.617	99	0.723	0.697	0.672
59	2.644	2.583	2.522	100	0.702	0.677	0.652
60	2.551	2.491	2.432	101	0.682	0.657	0.633
61	2.462	2.403	2.345	102	0.663	0.638	0.615
62	2.376	2.319	2.262	103	0.644	0.620	0.597
63	2.294	2.238	2.182	104	0.626	0.602	0.580
64	2.215	2.160	2.106	105	0.608	0.585	0.563
65	2.139	2.085	2.032	106	0.591	0.569	0.547
66	2.066	2.013	1.962	107	0.575	0.553	0.532
67	1.996	1.944	1.894	108	0.559	0.537	0.516
68	1.929	1.878	1.829	109	0.543	0.522	0.502
69	1.864	1.815	1.766	110	0.528	0.508	0.488
70	1.802	1.753	1.706	111	0.514	0.494	0.474
71	1.742	1.695	1.648	112	0.500	0.480	0.461
72	1.685	1.638	1.593	113	0.486	0.467	0.448

T(°C)	Rmax(KΩ)	Rnom(KΩ)	Rmin(KΩ)	T(°C)	Rmax(KΩ)	Rnom(KΩ)	Rmin(KΩ)
114	0.473	0.454	0.436	160	0.1533	0.146	0.1381
115	0.461	0.442	0.424	161	0.1500	0.1423	0.1350
116	0.448	0.430	0.413	162	0.1467	0.1392	0.1321
117	0.436	0.419	0.401	163	0.1436	0.1362	0.1292
118	0.425	0.407	0.391	164	0.1405	0.1332	0.1263
119	0.414	0.397	0.380	165	0.1375	0.1304	0.1236
120	0.403	0.386	0.370	166	0.1346	0.1276	0.1209
121	0.392	0.376	0.360	167	0.1318	0.1249	0.1183
122	0.382	0.366	0.351	168	0.1290	0.1222	0.1158
123	0.372	0.357	0.341	169	0.1263	0.1196	0.1133
124	0.363	0.347	0.332	170	0.1237	0.1171	0.1109
125	0.353	0.338	0.324	171	0.1211	0.1146	0.1085
126	0.344	0.330	0.315	172	0.1186	0.1123	0.1063
127	0.336	0.321	0.307	173	0.1161	0.1099	0.1040
128	0.327	0.313	0.299	174	0.1138	0.1077	0.1019
129	0.319	0.305	0.292	175	0.1115	0.1054	0.0997
130	0.311	0.297	0.284	176	0.1092	0.1033	0.0977
131	0.303	0.290	0.277	177	0.1070	0.1012	0.0957
132	0.296	0.283	0.270	178	0.1048	0.0991	0.0937
133	0.289	0.276	0.263	179	0.1027	0.0971	0.0918
134	0.281	0.269	0.257	180	0.1007	0.0952	0.0899
135	0.275	0.262	0.250	181	0.0987	0.0932	0.0881
136	0.268	0.256	0.244	182	0.0967	0.0914	0.0863
137	0.261	0.249	0.238	183	0.0948	0.0896	0.0846
138	0.255	0.243	0.232	184	0.0930	0.0878	0.0829
139	0.249	0.238	0.226	185	0.0912	0.0861	0.0813
140	0.243	0.232	0.221	186	0.0894	0.0844	0.0796
141	0.237	0.226	0.216	187	0.0877	0.0827	0.0781
142	0.232	0.221	0.210	188	0.0860	0.0811	0.0765
143	0.226	0.216	0.205	189	0.0843	0.0796	0.0751
144	0.221	0.210	0.200	190	0.0827	0.0780	0.0736
145	0.216	0.205	0.196	191	0.0812	0.0765	0.0722
146	0.211	0.201	0.191	192	0.0796	0.0751	0.0708
147	0.206	0.196	0.187	193	0.0781	0.0737	0.0694
148	0.201	0.191	0.182	194	0.0767	0.0723	0.0681
149	0.197	0.187	0.178	195	0.0752	0.0709	0.0668
150	0.192	0.183	0.174	196	0.0739	0.0696	0.0655
151	0.188	0.179	0.170	197	0.0725	0.0683	0.0643
152	0.183	0.174	0.166	198	0.0712	0.0670	0.0631
153	0.179	0.170	0.162	199	0.0699	0.0658	0.0619
154	0.175	0.167	0.158	200	0.0686	0.0646	0.0608
155	0.171	0.163	0.155				
156	0.168	0.159	0.151				
157	0.164	0.156	0.148				
158	0.1602	0.152	0.145				
159	0.1567	0.149	0.141				