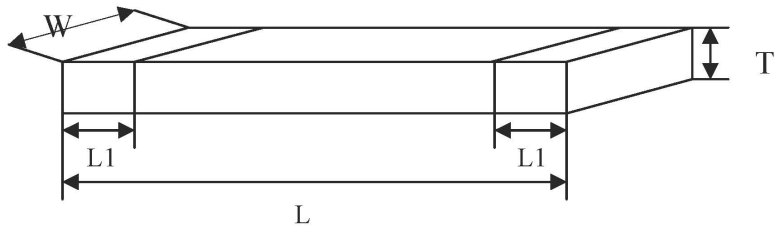
Specification of SMD Chips Thermistor

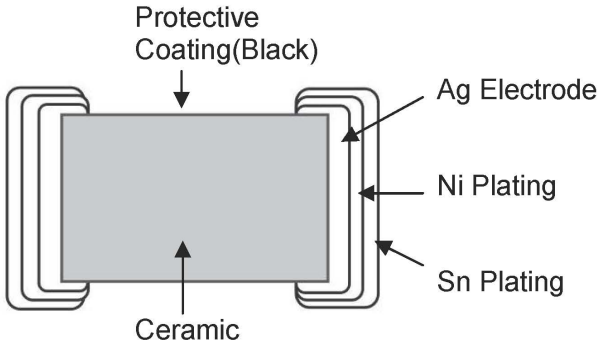
◆ PART NO. : EWTF05-104H4A-N

◆ CHIP DIMENSIONS :



ITEM	L (mm)	W (mm)	T (mm)	L1 (mm)
0805 (2012)	2.00 ± 0.20	1.25 ± 0.20	0.90 ± 0.30	0.20 ~ 0.60

◆ CHIP STRUCTURE

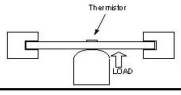
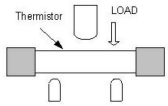
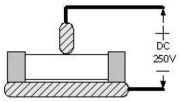


◆ ELECTRICAL CHARACTERISTICS

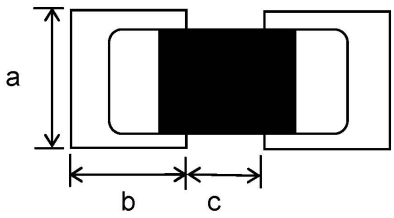
Style	Symbol	Condition	Specification
Resistance at Ta	R_{25}	Ta = 25 ℃	100 K Ω ± 3 %
B Constant	B	25 ℃ / 85 ℃	4000 K ± 1 %
Thermal Time Constant	T	Ta = 25 ℃	Approx. 7.5 seconds
Thermal Dissipation Constant	C	Ta = 25 ℃	Approx. 4 mW/℃
Maximum Power Rating*	P_{max}	Ta = 25 ℃→125 ℃	400 mW
Operating Temp. Range	--	--	- 40 ℃ ~ 125 ℃

*Maximum Power Rating = Thermal Dissipation Constant × (Max. Operating Temp. (125 ℃) – 25 ℃)

♦ RELIABILITY TEST

Performance	Standard	Test Method	△R_{25} / R_{25}
Life	MIL–STD-202F Method 108A	70 ℃, Load Power, 1000 hours.	Max.± 3 %
Humidity	MIL-STD-202F Method 103B	Temperature：40 ℃, Humidity: 95 % RH Load Power, 1000 hours.	Max.± 3 %
Thermal Shock	MIL–STD–202F Method 107	- 40 ℃ to 125 ℃ (30 min) , 10 times.	Max.± 3 %
High Temperature storage	IEC 68-2-2	125 ℃, 1000 hours.	Max. ± 3 %
Solderability	MIL–STD–202F Method 208	Soldering 235 ℃ for 2 seconds.	Min. 95 % coverage
Resistance to Soldering Heat	MIL–R–55342D Para 4.7.7	Soldering 260 ℃ for 10 seconds.	Max.± 3 %
Bending Strength	JIS C 5202 6.1.4	Pressurizing rod at distance 1 mm for 5 seconds. 	No visible damage
Resistance to flexure of Substrate	JIS C 5202 6.2.1	Pressurizing force shall be over 3 Kg . 	Min.3 Kg
Insulation Resistance	MIL–STD–202F Method 302	DC 250 V For 10 seconds. 	Min.1000 MΩ
Dielectric Withstand Voltage	MIL–STD–202F Method 301		Not Short

♦ RECOMMENDED LAND DIMENSIONS



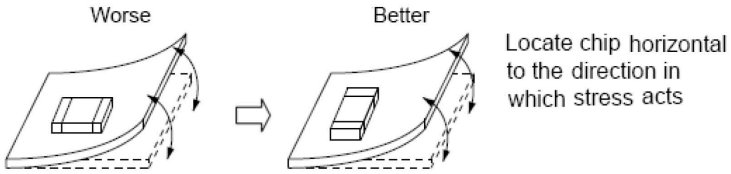
Unit : mm

Type	a	b	c
0402 (1005)	0.6 ~ 0.7	0.8 ~ 0.9	0.4 ~ 0.5
0603 (1608)	0.9 ~ 1.0	1.0 ~ 1.1	0.6 ~ 0.7
0805 (2012)	1.4 ~ 1.5	1.2 ~ 1.3	0.7 ~ 0.8
1206 (3216)	1.7 ~ 1.8	1.5 ~1.6	1.3 ~ 1.4

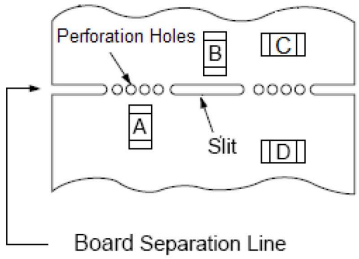
♦ MOUNTING POSITION

Choose a mounting position that minimizes the stress imposed on the chip during flexing or bending of the board.

Component Direction



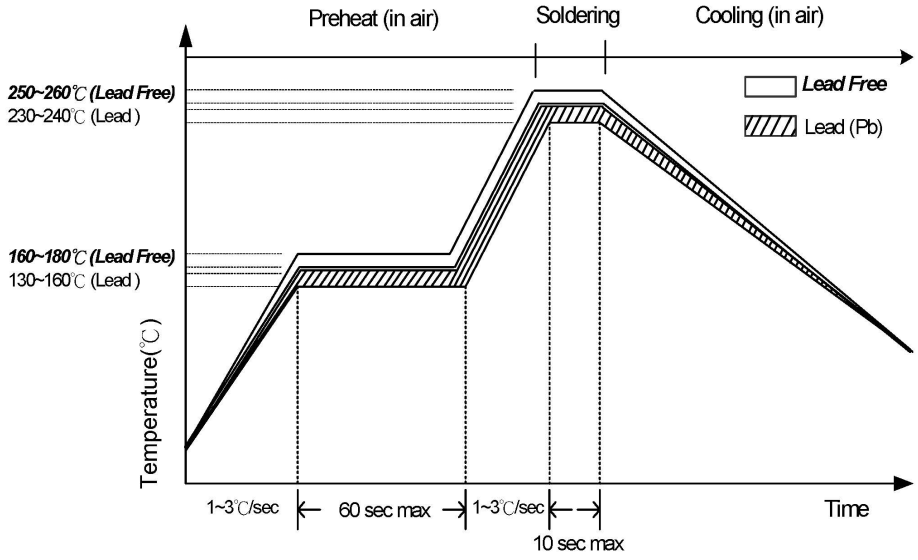
Chip Mounting Close to Board Separation Line



Put this product on the PC Board near the Slit, not near the Perforation Holes.
Keep this product on the PC Board away from the Separation Line.

Worst A-B-C-D Better

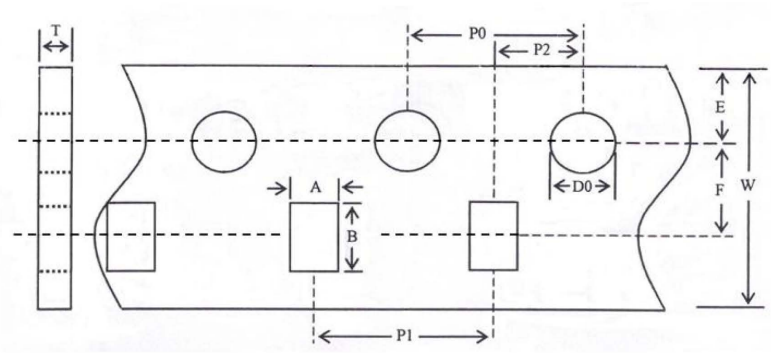
♦ REFLOW SOLDERING PROFILE



♦ HAND SOLDERING IRON

Item	Condition
Temperature of Soldering Iron-tip	360 ℃ Max.
Diameter of Soldering Iron-tip	ø 3 mm Max.
Soldering Iron Wattage	30 W Max.
Soldering Time	5 seconds Max.

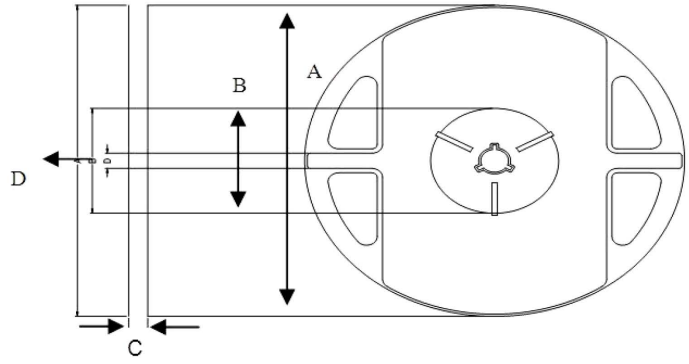
♦ TAPING DIMENSIONS



Unit : mm

Dimension	0402	0603	0805	1206
A	0.65 ± 0.10	1.10 ± 0.10	1.50 ± 0.10	2.00 ± 0.10
B	1.15 ± 0.10	1.90 ± 0.10	2.30 ± 0.10	3.57 ± 0.10
W	8.00 ± 0.20	8.00 ± 0.20	8.00 ± 0.20	8.00 ± 0.20
D0	1.50 ± 0.25	1.50 ± 0.25	1.50 ± 0.25	1.55 ± 0.25
E	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10	1.75 ± 0.10
F	3.50 ± 0.05	3.50 ± 0.05	3.50 ± 0.05	3.50 ± 0.05
P0	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10
P1	2.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10	4.00 ± 0.10
P2	2.00 ± 0.10	2.00 ± 0.10	2.00 ± 0.10	2.00 ± 0.10
T	1.10 Max.	1.10 Max.	1.10 Max.	1.10 Max.

♦ REEL DIMENSIONS



Unit : mm

Item	A	B	C	D
Dimension	178.0 ± 1.0	60.0 ± 1.0	9.0 ± 0.1	13.0 ± 0.1

Item	0402	0603	0805	1206
Qty. / Reel	10000 pcs	4000 pcs	4000 pcs	3000 pcs

♦ STORAGE CONDITIONS

1. Storage Temperature : - 10 ℃ ~ + 40 ℃.
2. Relative humidity : 30 ~ 75 % RH.
3. Thermistor must be kept away from sunshine and stored in a non-corrosive atmosphere.
4. Period of Storage : 1 year.

♦ ORDERING INFORMATION

EWTF ① 05 ② - 104 ③ H ④ 4A ⑤ - N ⑥

1. E WAY SMD Thermistor. (TF - Lead Free ; TH - Lead (Pb))

2. Dimension : 02 (0402) , 03 (0603) , 05 (0805) , 06 (1206).

3. Resistance at 25 ℃ : 104 = 10 x 10^4 = 100,000 (Ω).

4. Tolerance of R : F:±1% ; G:±2% ; H:±3% ; J:±5% ; K:±10%.

5. B value : 4 A = 4000 (4000)

1: 1000	C: 101~150	I: 401~450	O: 701~750
2: 2000	D: 151~200	J: 451~500	P: 751~800
3: 3000	E: 201~250	K: 501~550	Q: 801~850
4: 4000	F: 251~300	L: 551~600	R: 851~900
A: 0~50	G: 301~350	M: 601~650	S: 901~950
B: 51~100	H: 351~400	N: 651~700	T: 951~999

6. Coating Color : N : New Color (Black).

Resistance-Temperature Characteristics

Part No. : EWTF05-104H4A-N

R_{25} : 100,000 Ω ± 3%
$B_{25/85}$: 4000 K ± 1%

Temperature (℃)	Resistance (Ω)			Temp. Coef.	Resist. Tol. (%)		Temp. Tol. (℃)	
	MIN.	CENTER	MAX.	(%/℃)	MIN.	MAX.	MIN.	MAX.
-40	3345999	3575090	3816428	-6.86	-6.41	6.75	-0.98	0.93
-39	3127163	3338988	3561954	-6.81	-6.34	6.68	-0.98	0.93
-38	2924137	3120094	3326186	-6.75	-6.28	6.61	-0.98	0.93
-37	2735677	2917041	3107629	-6.70	-6.22	6.53	-0.97	0.93
-36	2560646	2728583	2904917	-6.65	-6.15	6.46	-0.97	0.93
-35	2397999	2553576	2716798	-6.60	-6.09	6.39	-0.97	0.92
-34	2246781	2390974	2542130	-6.55	-6.03	6.32	-0.96	0.92
-33	2106117	2239819	2379865	-6.51	-5.97	6.25	-0.96	0.92
-32	1975203	2099233	2229043	-6.46	-5.91	6.18	-0.96	0.91
-31	1853302	1968410	2088786	-6.41	-5.85	6.12	-0.95	0.91
-30	1739736	1846611	1958287	-6.36	-5.79	6.05	-0.95	0.91
-29	1633883	1733156	1836806	-6.32	-5.73	5.98	-0.95	0.91
-28	1535172	1627422	1723663	-6.27	-5.67	5.91	-0.94	0.90
-27	1443075	1528835	1618235	-6.23	-5.61	5.85	-0.94	0.90
-26	1357108	1436868	1519947	-6.18	-5.55	5.78	-0.94	0.90
-25	1276826	1351035	1428271	-6.14	-5.49	5.72	-0.93	0.89
-24	1201818	1270890	1342723	-6.09	-5.43	5.65	-0.93	0.89
-23	1131704	1196020	1262854	-6.05	-5.38	5.59	-0.92	0.89
-22	1066136	1126047	1188254	-6.01	-5.32	5.52	-0.92	0.89
-21	1004791	1060619	1118542	-5.96	-5.26	5.46	-0.92	0.88
-20	947370	999414	1053368	-5.92	-5.21	5.40	-0.91	0.88
-19	893601	942134	992410	-5.88	-5.15	5.34	-0.91	0.88
-18	843227	888504	935370	-5.84	-5.10	5.27	-0.90	0.87
-17	796015	838269	881971	-5.80	-5.04	5.21	-0.90	0.87
-16	751746	791193	831960	-5.76	-4.99	5.15	-0.89	0.87
-15	710221	747060	785102	-5.72	-4.93	5.09	-0.89	0.86
-14	671252	705667	741178	-5.68	-4.88	5.03	-0.89	0.86
-13	634666	666828	699989	-5.64	-4.82	4.97	-0.88	0.85
-12	600305	630371	661347	-5.60	-4.77	4.91	-0.88	0.85
-11	568019	596135	625080	-5.57	-4.72	4.86	-0.87	0.85
-10	537671	563972	591027	-5.53	-4.66	4.80	-0.87	0.84
-9	509134	533745	559042	-5.49	-4.61	4.74	-0.86	0.84
-8	482288	505325	528985	-5.45	-4.56	4.68	-0.86	0.84
-7	457024	478594	500731	-5.42	-4.51	4.63	-0.85	0.83
-6	433240	453442	474159	-5.38	-4.46	4.57	-0.85	0.83
-5	410839	429766	449161	-5.34	-4.40	4.51	-0.84	0.82
-4	389734	407472	425633	-5.31	-4.35	4.46	-0.84	0.82
-3	369842	386470	403482	-5.27	-4.30	4.40	-0.83	0.82
-2	351087	366679	382618	-5.24	-4.25	4.35	-0.83	0.81
-1	333396	348021	362960	-5.21	-4.20	4.29	-0.82	0.81

Resistance-Temperature Characteristics

Part No. : EWTF05-104H4A-N

R_{25} : 100,000 Ω ± 3%
$B_{25/85}$: 4000 K ± 1%

Temperature (℃)	Resistance (Ω)			Temp. Coef.	Resist. Tol. (%)		Temp. Tol. (℃)	
	MIN.	CENTER	MAX.	(%/℃)	MIN.	MAX.	MIN.	MAX.
0	316705	330425	344430	-5.17	-4.15	4.24	-0.82	0.80
1	300949	313826	326958	-5.14	-4.10	4.18	-0.81	0.80
2	286073	298160	310478	-5.10	-4.05	4.13	-0.81	0.79
3	272021	283370	294927	-5.07	-4.01	4.08	-0.80	0.79
4	258743	269402	280248	-5.04	-3.96	4.03	-0.80	0.79
5	246193	256206	266387	-5.01	-3.91	3.97	-0.79	0.78
6	234326	243735	253293	-4.97	-3.86	3.92	-0.79	0.78
7	223101	231945	240921	-4.94	-3.81	3.87	-0.78	0.77
8	212481	220794	229227	-4.91	-3.77	3.82	-0.78	0.77
9	202429	210246	218168	-4.88	-3.72	3.77	-0.77	0.76
10	192911	200263	207709	-4.85	-3.67	3.72	-0.77	0.76
11	183897	190813	197812	-4.82	-3.62	3.67	-0.76	0.75
12	175357	181864	188444	-4.79	-3.58	3.62	-0.76	0.75
13	167263	173387	179574	-4.76	-3.53	3.57	-0.75	0.74
14	159589	165355	171174	-4.73	-3.49	3.52	-0.74	0.74
15	152312	157741	163215	-4.70	-3.44	3.47	-0.74	0.73
16	145410	150521	155672	-4.67	-3.40	3.42	-0.73	0.73
17	138859	143674	148521	-4.64	-3.35	3.37	-0.73	0.72
18	132642	137177	141740	-4.61	-3.31	3.33	-0.72	0.72
19	126738	131011	135307	-4.58	-3.26	3.28	-0.72	0.71
20	121131	125158	129202	-4.56	-3.22	3.23	-0.71	0.71
21	115804	119599	123408	-4.53	-3.17	3.18	-0.70	0.70
22	110741	114319	117907	-4.50	-3.13	3.14	-0.70	0.70
23	105929	109302	112681	-4.47	-3.09	3.09	-0.69	0.69
24	101353	104534	107717	-4.45	-3.04	3.05	-0.68	0.68
25	97000	100000	103000	-4.42	-3.00	3.00	-0.68	0.68
26	92777	95688	98603	-4.39	-3.04	3.05	-0.69	0.69
27	88761	91587	94417	-4.37	-3.09	3.09	-0.71	0.71
28	84942	87684	90433	-4.34	-3.13	3.14	-0.72	0.72
29	81308	83969	86640	-4.32	-3.17	3.18	-0.74	0.73
30	77850	80432	83026	-4.29	-3.21	3.22	-0.75	0.75
31	74558	77064	79583	-4.27	-3.25	3.27	-0.77	0.76
32	71423	73856	76302	-4.24	-3.29	3.31	-0.78	0.78
33	68438	70798	73175	-4.22	-3.33	3.36	-0.80	0.79
34	65593	67884	70192	-4.19	-3.38	3.40	-0.81	0.81
35	62883	65106	67348	-4.17	-3.42	3.44	-0.83	0.82
36	60299	62457	64634	-4.14	-3.46	3.49	-0.84	0.83
37	57836	59930	62045	-4.12	-3.50	3.53	-0.86	0.85
38	55486	57519	59573	-4.09	-3.53	3.57	-0.87	0.86
39	53245	55218	57214	-4.07	-3.57	3.61	-0.89	0.88

Resistance-Temperature Characteristics

Part No. : EWTF05-104H4A-N

R_{25} : 100,000 Ω ± 3%
$B_{25/85}$: 4000 K ± 1%

Temperature (℃)	Resistance (Ω)			Temp. Coef.	Resist. Tol. (%)		Temp. Tol. (℃)	
	MIN.	CENTER	MAX.	(%/℃)	MIN.	MAX.	MIN.	MAX.
40	51106	53022	54960	-4.05	-3.61	3.66	-0.90	0.89
41	49065	50925	52808	-4.02	-3.65	3.70	-0.92	0.91
42	47116	48922	50751	-4.00	-3.69	3.74	-0.93	0.92
43	45255	47008	48785	-3.98	-3.73	3.78	-0.95	0.94
44	43478	45180	46907	-3.96	-3.77	3.82	-0.97	0.95
45	41780	43432	45110	-3.93	-3.81	3.86	-0.98	0.97
46	40157	41762	43392	-3.91	-3.84	3.90	-1.00	0.98
47	38606	40164	41748	-3.89	-3.88	3.94	-1.01	1.00
48	37123	38636	40176	-3.87	-3.92	3.98	-1.03	1.01
49	35704	37175	38671	-3.85	-3.96	4.02	-1.05	1.03
50	34348	35776	37230	-3.82	-3.99	4.06	-1.06	1.04
51	33050	34437	35850	-3.80	-4.03	4.10	-1.08	1.06
52	31808	33155	34529	-3.78	-4.06	4.14	-1.10	1.07
53	30619	31928	33264	-3.76	-4.10	4.18	-1.11	1.09
54	29480	30753	32051	-3.74	-4.14	4.22	-1.13	1.11
55	28390	29627	30889	-3.72	-4.17	4.26	-1.15	1.12
56	27346	28548	29775	-3.70	-4.21	4.30	-1.16	1.14
57	26346	27514	28707	-3.68	-4.24	4.34	-1.18	1.15
58	25387	26522	27683	-3.66	-4.28	4.38	-1.20	1.17
59	24469	25572	26701	-3.64	-4.31	4.41	-1.21	1.19
60	23588	24660	25758	-3.62	-4.35	4.45	-1.23	1.20
61	22743	23786	24854	-3.60	-4.38	4.49	-1.25	1.22
62	21933	22947	23986	-3.58	-4.42	4.53	-1.26	1.23
63	21156	22142	23153	-3.56	-4.45	4.56	-1.28	1.25
64	20411	21369	22353	-3.54	-4.49	4.60	-1.30	1.27
65	19695	20627	21584	-3.52	-4.52	4.64	-1.32	1.28
66	19008	19915	20846	-3.51	-4.55	4.68	-1.33	1.30
67	18349	19231	20137	-3.49	-4.59	4.71	-1.35	1.32
68	17716	18574	19456	-3.47	-4.62	4.75	-1.37	1.33
69	17108	17942	18801	-3.45	-4.65	4.78	-1.39	1.35
70	16523	17335	18171	-3.43	-4.69	4.82	-1.40	1.37
71	15962	16752	17566	-3.41	-4.72	4.86	-1.42	1.38
72	15422	16191	16984	-3.40	-4.75	4.89	-1.44	1.40
73	14904	15652	16424	-3.38	-4.78	4.93	-1.46	1.42
74	14405	15134	15885	-3.36	-4.81	4.96	-1.48	1.43
75	13926	14635	15366	-3.34	-4.85	5.00	-1.50	1.45
76	13465	14155	14868	-3.33	-4.88	5.03	-1.51	1.47
77	13021	13693	14387	-3.31	-4.91	5.07	-1.53	1.48
78	12594	13249	13925	-3.29	-4.94	5.10	-1.55	1.50
79	12183	12821	13480	-3.27	-4.97	5.14	-1.57	1.52

Resistance-Temperature Characteristics

Part No. : **EWTF05-104H4A-N**

R_{25} : 100,000 Ω ± 3%
$B_{25/85}$: 4000 K ± 1%

Temperature (℃)	Resistance (Ω)			Temp. Coef.	Resist. Tol. (%)		Temp. Tol. (℃)	
	MIN.	CENTER	MAX.	(%/℃)	MIN.	MAX.	MIN.	MAX.
80	11788	12409	13051	-3.26	-5.00	5.17	-1.59	1.54
81	11408	12012	12638	-3.24	-5.03	5.21	-1.61	1.55
82	11041	11630	12240	-3.22	-5.06	5.24	-1.63	1.57
83	10688	11262	11856	-3.21	-5.10	5.27	-1.64	1.59
84	10348	10907	11486	-3.19	-5.13	5.31	-1.66	1.61
85	10021	10566	11130	-3.18	-5.16	5.34	-1.68	1.62
86	9705	10236	10786	-3.16	-5.19	5.37	-1.70	1.64
87	9401	9919	10455	-3.14	-5.22	5.41	-1.72	1.66
88	9108	9612	10135	-3.13	-5.25	5.44	-1.74	1.68
89	8826	9317	9827	-3.11	-5.28	5.47	-1.76	1.69
90	8553	9032	9530	-3.10	-5.30	5.51	-1.78	1.71
91	8291	8758	9243	-3.08	-5.33	5.54	-1.80	1.73
92	8037	8493	8966	-3.07	-5.36	5.57	-1.82	1.75
93	7793	8237	8698	-3.05	-5.39	5.60	-1.84	1.77
94	7557	7990	8440	-3.04	-5.42	5.64	-1.86	1.79
95	7329	7752	8191	-3.02	-5.45	5.67	-1.88	1.80
96	7110	7522	7950	-3.01	-5.48	5.70	-1.90	1.82
97	6897	7299	7718	-2.99	-5.51	5.73	-1.92	1.84
98	6693	7085	7493	-2.98	-5.53	5.76	-1.94	1.86
99	6495	6878	7276	-2.96	-5.56	5.79	-1.96	1.88
100	6304	6677	7066	-2.95	-5.59	5.83	-1.98	1.90
101	6120	6484	6864	-2.93	-5.62	5.86	-2.00	1.92
102	5941	6297	6668	-2.92	-5.65	5.89	-2.02	1.93
103	5769	6116	6478	-2.90	-5.67	5.92	-2.04	1.95
104	5603	5941	6295	-2.89	-5.70	5.95	-2.06	1.97
105	5442	5773	6118	-2.88	-5.73	5.98	-2.08	1.99
106	5286	5609	5946	-2.86	-5.75	6.01	-2.10	2.01
107	5136	5451	5781	-2.85	-5.78	6.04	-2.12	2.03
108	4991	5299	5620	-2.84	-5.81	6.07	-2.14	2.05
109	4850	5151	5465	-2.82	-5.83	6.10	-2.16	2.07
110	4714	5008	5315	-2.81	-5.86	6.13	-2.18	2.09
111	4583	4869	5169	-2.80	-5.89	6.16	-2.20	2.11
112	4455	4735	5029	-2.78	-5.91	6.19	-2.22	2.13
113	4332	4606	4892	-2.77	-5.94	6.22	-2.25	2.15
114	4213	4480	4760	-2.76	-5.97	6.25	-2.27	2.16
115	4098	4359	4632	-2.74	-5.99	6.28	-2.29	2.18
116	3986	4241	4509	-2.73	-6.02	6.31	-2.31	2.20
117	3878	4127	4389	-2.72	-6.04	6.34	-2.33	2.22
118	3773	4017	4272	-2.70	-6.07	6.36	-2.35	2.24
119	3672	3910	4160	-2.69	-6.09	6.39	-2.37	2.26

Resistance-Temperature Characteristics

Part No. : **EWTF05-104H4A-N**

R_{25} : **100,000** **Ω** **±** **3%**
$B_{25/85}$: **4000** **K** **±** **1%**

Temperature (℃)	Resistance (Ω)			Temp. Coef.	Resist. Tol. (%)		Temp. Tol. (℃)	
	MIN.	CENTER	MAX.	(%/℃)	MIN.	MAX.	MIN.	MAX.
120	3573	3806	4051	-2.68	-6.12	6.42	-2.40	2.28
121	3478	3706	3945	-2.67	-6.14	6.45	-2.42	2.30
122	3386	3608	3842	-2.66	-6.17	6.48	-2.44	2.32
123	3296	3514	3743	-2.64	-6.19	6.51	-2.46	2.34
124	3210	3423	3646	-2.63	-6.22	6.54	-2.48	2.36
125	3126	3334	3553	-2.62	-6.24	6.56	-2.51	2.38