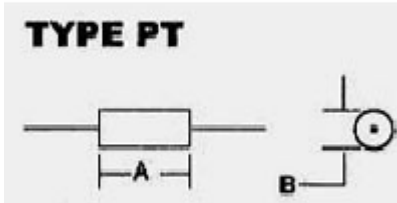


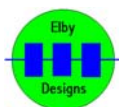
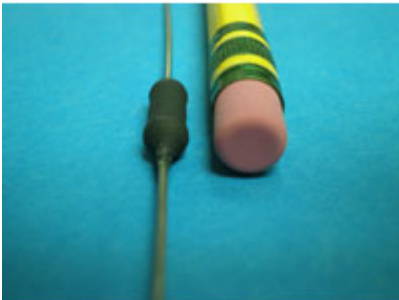
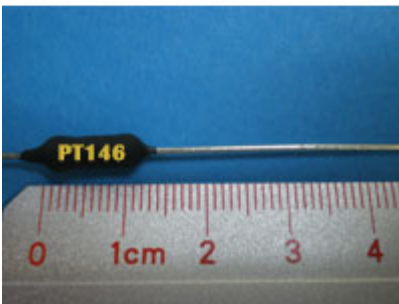
## TEMPCO - Positive Temperature Coefficient (PTC) resistor

# PT146

Resistance value increases linearly with temperature rise.



- Heat dissipation 5mW/°C (0.25W maximum)
- Temperature coefficient 0.3%/°C @ 25°C, 3500ppm/°C
- Time constant 3.0 seconds
- Standard resistance @ 25°C 1Kohm or 2Kohm +/- 1%
- Resistance ratio  $R_{25°C}/R_{125°C} = 1.37$
- Operating temperature range -65°C to +150°C
- High temperature stability 1000 hours @ 125°C, 0.5%  $\Delta R$
- Low temperature stability < 0.01% per year @ 25°C (no load)
- Insulation resistance > 10G $\Omega$
- Dimensions 13.21mm long, 4.75mm diameter
- Lead dimensions 38mm long, 0.71mm diameter
- Protective Seal Conformal silicone or epoxy case.



## Synthesiser Components - TEMPCO

When using the 3500ppm/°C TEMPCO in applications requiring a TCR of 3300ppm/°C (such as the ASM-1 and ASM-2 VCO) we supply a supplemental resistor for series insertion which will bring the TCR close to the desired 3300ppm figure. This value is determined using the formula below:-



$$\text{TCR} = \frac{R1 * \text{TC1} + R2 * \text{TC2}}{R1 + R2}$$

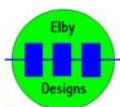
For **R1 = 1K**, TC1 = 3440 @ 25°C, **R2 = 42R2** and TC2 = 15 @ 25°C, we get

$$\frac{1000 * 3440 + 42.2 * 15}{1000 + 42.2} = 3301.32\text{ppm/}^\circ\text{C}$$

For **R1 = 2K**, TC1 = 3440 @ 25°C, **R2 = 84R5** and TC2 = 15 @ 25°C, we get

$$\frac{2000 * 3440 + 84.5 * 15}{2000 + 84.5} = 3301.16\text{ppm/}^\circ\text{C}$$

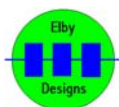
The table below shows the resistance/temperature relationship for the axial 1K TEMPCO described above.



# Synthesiser Components - TEMPCO

## Resistance vs Temperature

°C	Ohms	PPM	Change
0	914.5		
1	917.895	3421	3.4210
2	921.294	3422	3.4219
3	924.693	3423	3.4229
4	928.117	3422	3.4230
5	931.520	3424	3.4240
6	934.924	3425	3.4249
7	938.331	3426	3.4259
8	941.740	3427	3.4270
9	945.167	3427	3.4270
10	948.580	3428	3.4280
11	951.994	3429	3.4290
12	955.409	3430	3.4299
13	958.839	3430	3.4299
14	962.258	3431	3.4309
15	965.679	3432	3.4320
16	969.103	3433	3.4330
17	972.528	3433	3.4340
18	975.961	3434	3.4339
19	979.390	3434	3.4350
20	982.820	3436	3.4360
21	986.252	3437	3.4370
22	989.685	3438	3.4379
23	993.122	3439	3.4390
24	996.559	3441	3.4400
25	1000.000	3440	0.0000
26	1003.440	3439	3.4409
27	1006.883	3441	3.4419
28	1010.328	3442	3.4429
29	1013.771	3442	3.4429
30	1017.219	3443	3.4439
31	1020.669	3444	3.4450
32	1024.121	3445	3.4459
33	1027.567	3445	3.4460
34	1031.022	3446	3.4470
35	1034.479	3447	3.4479
36	1037.938	3448	3.4489
37	1041.400	3450	3.4500
38	1044.849	3449	3.4499
39	1048.313	3450	3.4509
40	1051.780	3452	3.4520
41	1055.248	3452	3.4530
42	1058.700	3452	3.4528
43	1062.171	3453	3.4539
44	1065.645	3455	3.4550
45	1069.119	3455	3.4559
46	1072.597	3457	3.4570
47	1076.075	3457	3.4578
48	1079.557	3458	3.4589
49	1083.015	3458	3.4589



# Synthesiser Components - TEMPCO

## Resistance vs Temperature

°C	Ohms	PPM	Change
50	1086.500	3460	3.4599
51	1089.985	3460	3.4609
52	1093.473	3461	3.4620
53	1096.963	3462	3.4630
54	1100.427	3462	3.4630
55	1103.920	3463	3.4639
56	1107.415	3464	3.4650
57	1110.911	3465	3.4659
58	1114.411	3467	3.4670
59	1117.877	3466	3.4669
60	1121.380	3467	3.4680
61	1124.884	3468	3.4689
62	1128.390	3469	3.4699
63	1131.859	3469	3.4699
64	1135.369	3471	3.4710
65	1138.880	3471	3.4720
66	1142.392	3472	3.4729
67	1145.907	3473	3.4739
68	1149.381	3473	3.4739
69	1152.900	3475	3.4749
70	1156.420	3475	3.4760
71	1159.942	3477	3.4770
72	1163.418	3476	3.4769
73	1166.943	3477	3.4779
74	1170.470	3478	3.4790
75	1174.000	3480	3.4799
76	1177.531	3481	3.4809
77	1181.063	3481	3.4819
78	1184.598	3482	3.4830
79	1188.082	3482	3.4830
80	1191.619	3483	3.4840
81	1195.160	3484	3.4849
82	1198.702	3485	3.4859
83	1202.245	3486	3.4869
84	1205.733	3487	3.4870
85	1209.280	3488	3.4880
86	1212.828	3488	3.4890
87	1216.380	3489	3.4899
88	1219.932	3490	3.4909
89	1223.423	3490	3.4909
90	1226.979	3491	3.4919
91	1230.537	3492	3.4929
92	1234.098	3494	3.4940
93	1237.660	3494	3.4949
94	1241.155	3495	3.4949
95	1244.719	3495	3.4959
96	1248.286	3496	3.4969
97	1251.855	3497	3.4979
98	1255.427	3498	3.4990
99	1258.926	3498	3.4990
100	1262.500	3500	3.5000

