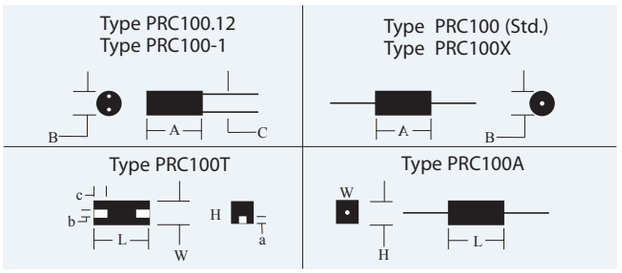
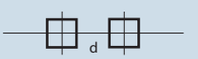
PRC100 SENSORS



What The PRC100 Means To You:

The PRC100 Custom Series is more than a platinum alternative because of its versatility.

The PRC100 (Std. Reference) ..... 100Ω at 0°C. ±0.12% with an average sensitivity of 0.00385 ohm/ohm/°C is in-stock for immediate delivery.

PAD LAYOUT 

RECTANGULAR AXIAL & SMD 100 SENSORS

BODY DIMENSIONS ± .787mm (.031")

PRC Type	Power Rating	Max. Volts	H mm ins.	L mm ins.	W mm ins.	a	b	c	d	e (1"L) ± 0.125"	RESISTANCE & TOL @ 0°C	RTC (0°C to +100°C)
PRC100A PRC100T	0.1W	100V	3.18 .125"	9.14 .360"	3.18 .125"	.075"	.075"	.100"	.260"	.020"	100Ω ±0.12%	+3850 ppm/°C.

PRC100 (STD. REFERENCE) 100 OHMS IN-STOCK

PRC Type	Power Rating	BODY DIMENSIONS ± .787mm (.031") LENGTH A	BODY DIMENSIONS ± .787mm (.031") DIAMETER B	LEADS (Tinned Copper) ± 0.125"	RESISTANCE & TOL @ 0°C	RTC (0°C to +100°C)
PRC100X	0-.04W	.275"	.113"	.023"D x 1.0"L	100Ω ±0.12%	+3850 ppm/°C.
PRC100 (Std.)	0-.25W	.600"	.188"	.029"D x 1.4"L	100Ω ±0.12%	+3850 ppm/°C.
PRC100.12	0-.1W	.450"	.156"	.023"D x .63"L	100Ω ±0.12%	+3850 ppm/°C.
PRC100-1	0-.25W	.600"	.188"	.023"D x .63"L	100Ω ±0.12%	+3850 ppm/°C.

ENGINEERING DATA:

1. RESISTANCE AND TOLERANCE

PRC100 (Std. Reference): 100Ω at 0°C
±0.12% (or ±0.3°C) and 138.50Ω at +100°C
±0.22% (or ±0.8°C) per DIN 43760, Class B.

PRC100 (Custom Series): You can select any value from 50Ω to 5 Kilohms in tolerances from 1/4 DIN (±0.03%) to 2 x DIN (±0.24%).

2. RESISTANCE TEMPERATURE CHARACTERISTIC (Rt)

Rt is defined by IEC Standard, pub. 751:
alpha = 0.00385 ohm/ohm/°C*

... for range -40°C. to 0°C:

$Rt = R_O [1+At+Bt^2 + C(t-100°C)t^3]$

... for range 0°C. to +150°C:

$Rt = R_O (1+At+Bt^2)$

Where the constants are:

$A = 3.79782 \times 10^{-3}$
$B = 6.502 \times 10^{-7}$
$C = 4.3735 \times 10^{-12}$

Fixed points are in degrees Celsius, R_O = 0°C
The other (Ref.) temperature is + 100°C, but any temperature can be used in the equation with respect to Base 0°C. The PRC100 Std. Ref. follows a well-defined theoretical curve and linear slope from Base 0°C proving that most reference points are calculable within very close tolerances (Ratio = Rt/R_O).

3. STABILITY OF CALIBRATION

All PRC100 sensors are closely matched and repeatable part-to-part. They are able to consistently reproduce output readings consecutively at the same temperature reference points ... under the same conditions and in the same direction.

4. STABILITY (R_O) VS. TIME

The change in the original resistance (R_O) at 0° C after 10 cycles to +150°C is less than ±0.1°C or ±0.038% max. Shelf life stability is ± 0.002%/yr. at 25°C (no load).

5. POWER RATINGS VS. AMBIENT TEMPERATURE RANGE

The PRC100 is ideal as a compensator to offset drift or negative self-generating changes in resistance as a result of an excitation of power to 0.25 watt at +125°C to zero power at +150°C.

6. THERMAL TIME CONSTANT

The time required for the PRC100 sensor to indicate 63.2% of a new impressed temperature from a step change of 0°C to +100°C can be customized to < 1 second

* Theoretical curve and slope are based upon values of the International Practical Temperature Scale (IPTS-68 & 90).

7. PRC100 (Std. Ref.) CONSTRUCTION

Wire: Ni, Co, Mn & Fe.
Substrate: Epoxy or ceramic form.
Terminals: Solderable hot-tinned copper.
Protective Seal: Moisture and solvent resistant epoxy.

8. MARKING (Std. Reference)

PRC100X PRC100
PRC100A ±0.12%
PRC100T TC.385%

PRC100.12 PRC100-1
TC.385% ±0.12%
TC.385%

9. CUSTOM APPLICATIONS

PRC100 (Custom) Series Sensors are available in any ohmic value with TCRs from +3000ppm to +4000ppm/°C in 50ppm steps with the same linear tracking characteristics as the Std. Ref.

Custom Marking: e.g:
1K ohms = PRC1000
10K ohms = PRC10000, etc.

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PRC100 CHART

Temp Deg. C.	Value in Ohms	T.C. in PPM	Avg. Ohms Chg/Deg. C.
-40	84.916	3770	-0.3771
-39	85.291	3771	-0.3772
-38	85.665	3772	-0.3773
-37	86.04	3772	-0.3773
-36	86.414	3773	-0.3774
-35	86.789	3774	-0.3775
-34	87.164	3775	-0.3776
-33	87.54	3775	-0.3776
-32	87.915	3776	-0.3777
-31	88.29	3777	-0.3778
-30	88.666	3777	-0.3778
-29	89.042	3778	-0.3779
-28	89.418	3779	-0.378
-27	89.794	3780	-0.3781
-26	90.17	3780	-0.3781
-25	90.546	3781	-0.3782
-24	90.92299	3782	-0.3783
-23	91.3	3782	-0.3783
-22	91.676	3783	-0.3784
-21	92.053	3784	-0.3785
-20	92.43	3784	-0.3785
-19	92.807	3785	-0.3786
-18	93.185	3786	-0.3787
-17	93.56199	3787	-0.3788
-16	93.94	3787	-0.3788
-15	94.318	3787	-0.3788
-14	94.695	3789	--0.379
-13	95.073	3790	-0.3791
-12	95.45201	3789	-0.379
-11	95.83	3790	-0.3791
-10	96.208	3791	-0.3792
-9	96.587	3792	-0.3793
-8	96.96499	3793	-0.3794
-7	97.344	3794	-0.3795
-6	97.723	3795	-0.3796
-5	98.102	3796	-0.3797
-4	98.481	3797	-0.3798
-3	98.861	3796	-0.3797
-2	99.24	3800	-0.3801
-1	99.62	3799	-0.38
0	100		
1	100.379	3789	0.3789
2	100.759	3795	0.3795
3	101.139	3796	0.3796
4	101.52	3799	0.3799
5	101.9	3800	0.38
6	102.281	3801	0.3801
7	102.661	3801	0.3801
8	103.042	3802	0.3802
9	103.423	3803	0.3803
10	103.804	3804	0.3804
11	104.185	3804	0.3804
12	104.566	3805	0.3805
13	104.948	3806	0.3806
14	105.329	3806	0.3806
15	105.711	3807	0.3807
16	106.093	3808	0.3808
17	106.475	3808	0.3808
18	106.857	3809	0.3809
19	107.239	3809	0.3809

Temp Deg. C.	Value in Ohms	T.C. in PPM	Avg. Ohms Chg/Deg. C.
20	107.621	3810	0.381
21	108.004	3811	0.3811
22	108.386	3811	0.3811
23	108.769	3812	0.3812
24	109.152	3813	0.3813
25	109.535	3814	0.3814
26	109.918	3814	0.3814
27	110.301	3815	0.3815
28	110.684	3815	0.3815
29	111.068	3816	0.3816
30	111.451	3816	0.3816
31	111.835	3817	0.3817
32	112.219	3818	0.3818
33	112.603	3819	0.3819
34	112.987	3819	0.3819
35	113.372	3820	0.382
36	113.756	3821	0.3821
37	114.14	3821	0.3821
38	114.525	3822	0.3822
39	114.91	3823	0.3823
40	115.295	3823	0.3823
41	115.68	3824	0.3824
42	116.065	3825	0.3825
43	116.45	3825	0.3825
44	116.836	3826	0.3826
45	117.221	3826	0.3826
46	117.607	3827	0.3827
47	117.993	3828	0.3828
48	118.379	3828	0.3828
49	118.765	3829	0.3829
50	119.151	3830	0.383
51	119.538	3830	0.383
52	119.924	3831	0.3831
53	120.311	3832	0.3832
54	120.697	3832	0.3832
55	121.084	3833	0.3833
56	121.471	3834	0.3834
57	121.858	3834	0.3834
58	122.246	3835	0.3835
59	122.633	3836	0.3836
60	123.02	3836	0.3836
61	123.408	3837	0.3837
62	123.796	3838	0.3838
63	124.184	3838	0.3838
64	124.572	3839	0.3839
65	124.96	3839	0.3839
66	125.348	3840	0.384
67	125.737	3841	0.3841
68	126.125	3841	0.3841
69	126.514	3842	0.3842
70	126.903	3843	0.3843
71	127.292	3843	0.3843
72	127.681	3844	0.3844
73	128.07	3845	0.3845
74	128.459	3845	0.3845
75	128.849	3846	0.3846
76	129.238	3847	0.3847
77	129.628	3847	0.3847
78	130.018	3848	0.3848
79	130.408	3849	0.3849

Temp Deg. C.	Value in Ohms	T.C. in PPM	Avg. Ohms Chg/Deg. C.
80	130.798	3849	0.3849
81	131.188	3850	0.385
82	131.579	3851	0.3851
83	131.969	3851	0.3851
84	132.36	3852	0.3852
85	132.751	3853	0.3853
86	133.142	3853	0.3853
87	133.533	3854	0.3854
88	133.924	3854	0.3854
89	134.315	3855	0.3855
90	134.707	3856	0.3856
91	135.098	3856	0.3856
92	135.49	3857	0.3857
93	135.882	3858	0.3858
94	136.274	3858	0.3858
95	136.666	3859	0.3859
96	137.058	3860	0.386
97	137.45	3860	0.386
98	137.843	3861	0.3861
99	138.235	3862	0.3862
100	138.628	3862	0.3862
101	139.021	3863	0.3863
102	139.414	3864	0.3864
103	139.807	3864	0.3864
104	140.2	3865	0.3865
105	140.593	3866	0.3866
106	140.987	3866	0.3866
107	141.381	3867	0.3867
108	141.774	3867	0.3867
109	142.168	3868	0.3868
110	142.562	3869	0.3869
111	142.956	3869	0.3869
112	143.351	3870	0.387
113	143.745	3871	0.3871
114	144.14	3871	0.3871
115	144.534	3872	0.3872
116	144.929	3873	0.3873
117	145.324	3873	0.3873
118	145.719	3874	0.3874
119	146.114	3875	0.3875
120	146.51	3875	0.3875
121	146.905	3876	0.3876
122	147.301	3877	0.3877
123	147.696	3877	0.3877
124	148.092	3878	0.3878
125	148.488	3879	0.3879
126	148.884	3879	0.3879
127	149.281	3880	0.388
128	149.677	3881	0.3881
129	150.073	3881	0.3881
130	150.47	3882	0.3882
131	150.867	3882	0.3882
132	151.264	3883	0.3883
133	151.661	3884	0.3884
134	152.058	3884	0.3884
135	152.455	3885	0.3885
136	152.852	3886	0.3886
137	153.25	3886	0.3886
138	153.648	3887	0.3887
139	154.045	3888	0.3888
140	154.443	3888	0.3888
141	154.841	3889	0.3889
142	155.24	3890	0.389
143	155.638	3890	0.3890
144	156.036	3891	0.3891
145	156.435	3892	0.3892
146	156.834	3892	0.3892
147	157.232	3893	0.3893
148	157.631	3893	0.3893
149	158.031	3894	0.3894
150	158.43	3895	0.3895

RESISTANCE TEMPERATURE CHARACTERISTIC (Rt)

Rt is defined by IEC standard, pub. 751:
alpha = 0.00385 ohm/ohm/°C.

... For range -40°C to 0°C:
Rt = $R_0[1+At+Bt^2 +C(t-100°C)t^3]$
....For range 0°C to +150°C:
Rt = $R_0(1+At+Bt^2)$
where the constants in these equations are:
A = 3.79782×10^{-3}
B = 6.502×10^{-7}
C = 4.3735×10^{-12}

$Rt = R_0[1+At+Bt^2]$
$Rt = 100 [1+ (3.79782x10^{-3} \times 100) + (6.502x10^{7} \times 100^2)]$
$Rt = 100 [1 + .379782 + .006502]$
$Rt = 100 \times 1.386284$
$Rt = 138.628\Omega$ @ 100°C
$Rt = R_0[1 +At +Bt^2+C(t-100)t^3]$
$Rt = 100[1+ (-.1519128) + (.00104032) + (.00003918656)]$
$Rt = 100 \times .8491667$
$Rt = 100[1 +(3.79782 \times 10^{-3} \times -40) + (6.502x\ 10^{-7} \times -40^2) + (4.3735 x10^{-12} \times (-40-100) \times -40^3)]$
$Rt = 84.916\Omega$ @ -40°C

PRC
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