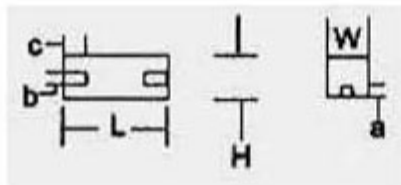


## PRC100T Custom Series with your desired Ohmic value @ 0°C. .1W Wire Wound SMD Sensor



### Electrical & Physical Specifications:

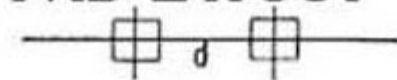
**Height:** 3.18mm (.125")

**Length:** 9.14mm (.360")

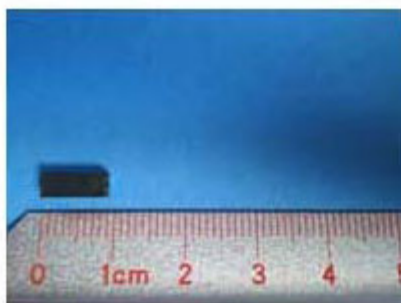
**Width:** 3.18mm (.125")

**Tab dimensions:** a=.075"; b=.075"; c=.100"; d=.260"

### PAD LAYOUT



# PRC100T



### Engineering Attributes:

#### RESISTANCES & TOLERANCES

You can select any value from 50Ω to 5KΩ @ 0°C. in tolerances from ± 0.03% (1/4 Din) to ± 0.24% (DIN x 2)

#### TCR CHARACTERISTICS AVAILABLE:

From +3000ppm/°C. to +4000ppm/°C. (between 0°C. and +100°C.) in 50ppm steps with the same linear tracking characteristics as the PRC100 Std. Ref. Series

#### STABILITY OF CALIBRATION

All PRC100 Sensors are closely matched & repeatable part-to-part. They have the ability to reproduce output readings consistently at the same temperature reference points under the same conditions & in the same direction.

#### STABILITY VS. TIME

The change in the original resistance (Ro) @ 0°C. is less than ±.1°C. or ±.038% after 10 cycles from 0°C. to +150°C..

#### SHELF LIFE

Shelf life stability is ±0.002%/year @ 25°C. with no load.

#### 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 .25W @ +125°C. to zero power @ +125°C.

#### THERMAL TIME CONSTANT

The time required for our 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 your specs, as low as less than 1 second.

#### CONSTRUCTION DETAILS

Wire: Ni (Nickel), Co (Copper), Mn (Manganin) & Fe (Iron)

Substrate: epoxy or ceramic filled

Terminals: solderable hot-tinned copper

Protective Seal: Moisture & solvent resistant epoxy



[Click here for PRC100 Tracking Chart](#)

## **PRC100 Custom Series Overview**

A series of varying resistor styles and sizes available, depending on the desired application. These low-cost sensors track like platinum standards but are much more versatile. They are linear tracking special-purpose temperature sensors with TCR characteristics from +3000 ppm/°C, to 4000 ppm/°C & follow the well-defined curve and linear slope of platinum.

### **RESISTANCE TEMPERATURE CHARACTERISTIC (Rt)**

Rt is defined by IEC standard, pub. 751:  $\alpha = 0.00385 \text{ ohm/ohm/}^\circ\text{C.}^*$

For range **-40°C. to 0°C** :  $RT = Ro[1+At+Bt^2+C(t-100^\circ\text{C.})t^3]$

For range **0°C. to +150°C** :  $RT = Ro(1+At+Bt^2)$

**Constants in this equation:**

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

$Rt = Ro[1+At+Bt^2]$

$Rt = 100[1+(3.79782 \times 10^{-3} \times 100)+(6.502 \times 10^{-7} \times 100^2)]$

$Rt = 100[1+.379782+.006502]$

$Rt = 100 \times 1.386284$

$Rt = 138.628 \text{ ohms at } 100^\circ\text{C.}$

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

$Rt = 100[1+(-.1519128)+(6.502 \times 10^{-7} \times (-40)^2)+(4.3735 \times 10^{-12} \times (-40-100) \times (-40)^3)]$

$Rt = 100 \times .8491667$

$Rt = 100[1+(3.79782 \times 10^{-3} \times -40)+(6.502 \times 10^{-7} \times -40^2)+(4.3735 \times 10^{-12} \times (-40-100) \times -40^3)]$

$Rt = 84.916 \text{ ohms at } -40^\circ\text{C.}$

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

Fixed points are in Degree Celsius (°C.)  $Ro = 0^\circ\text{C.}$  The other reference temperature used in the equation is +100°C however this can be replaced by any temperature desired with respect to the base temperature of 0°C. The PRC100 Std. Ref. follows a well-defined theoretical curve & linear slope from base 0°C, proving that most reference points are calculable within very close tolerances (Ratio=Rt/Ro)

## **Details**

SKU	PRC100 (Custom Value) T
Type	2-tab SMD
Length	9.14mm (.360")
Width	3.18mm (.125")
Tab Dimensions	a=.075"; b=.075"; c=.100"; d=.260"
Height	3.18mm (.125")
TCR Char.	+3000ppm/°C. to +4000ppm/°C. between 0°C. and +100°C.
Temperature	65°C. to +150°C.
Resistance	50Ω to 5KΩ @ 0°C
Tolerance	to ±.03%
Stability	to ±.005%/yr. at +25°C
Max Watts	.1
Lead Free	Yes