

## Specification of Pt Thermal Sensor

### 1. Electrical Characteristics of SA50101528

- 1-1 Resistance value (at 0°C) : 500±0.60 ohm  
 1-2 Maximum applied current : 1mA  
 1-3 Insulation resistance : exceed 100M ohm at 500V DC  
 (@ room temp.)  
 1-4 Thermal response time (90%) : 40 sec. max. (in air, 1m/sec.)  
 1-5 Self heating : 2.5 mW/°C (in air, 1m, sec.)  
 1-6 Operation temperature range : -50°C to 500°C

### 2. Outline Drawings

Please see attached figure.

### 3. Reliability Test

- 3-1 High temperature test  
 keep the Pt sensor in 500°C for 1000 hours.  
 3-2 Low temperature test  
 keep the Pt sensor in -50°C for 1000 hours.  
 3-3 Humidity test  
 keep the Pt sensor in 60°C and 90 to 95% RH for 1000 hours.  
 3-4 Thermal shock test  
 keep the Pt sensor in 0°C ice water for at least 15 sec., then within 10 sec. directly put into 100°C hot water for at least 15 sec.. The above process should be proceeded for at least 10 cycles.

After each item test, valuation of item 1-1 should be within 0.12 % and item 1-3 should exceed 100M ohm at 500V DC.

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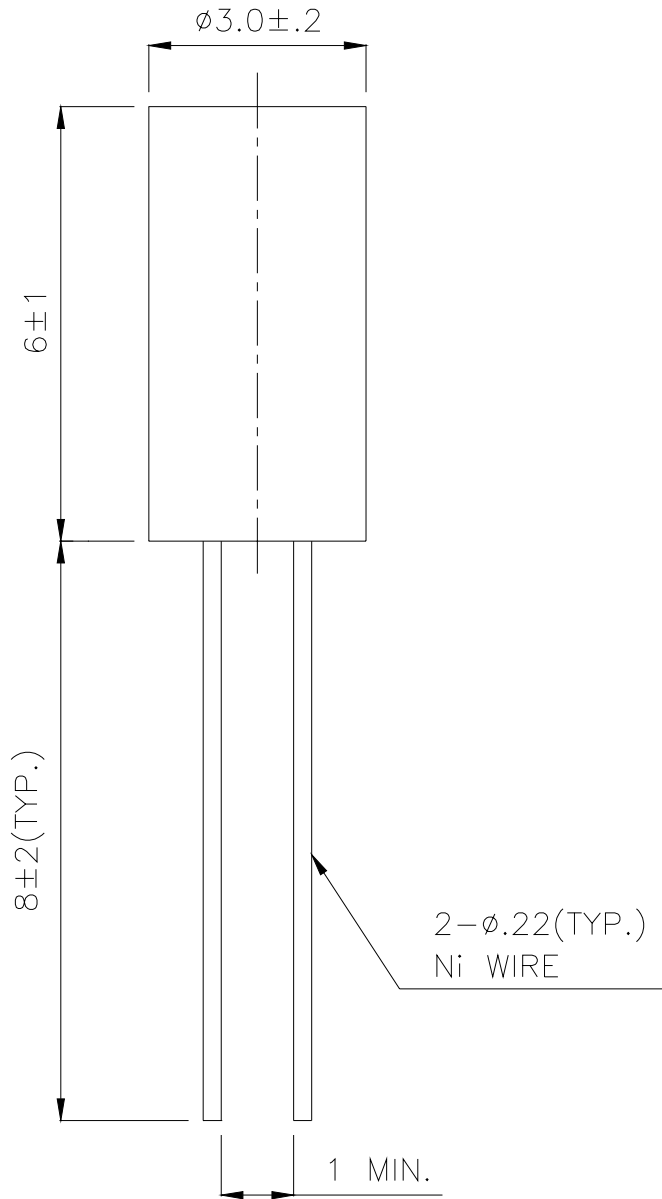
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UNLESS OTHERWISE SPECIFIED TOLERANCES ON :

X = ±

X.X = ±

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ANGLES ± HOLE DIA.±

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Temperature (°C)	Nominal Resistance( $\Omega$ )	Resistance Deviation( $\Omega$ )	Temperature Deviation(°C)
-50	401.53	1.09	0.55
-25	450.96	0.84	0.43
0	500.00	0.60	0.30
25	548.68	0.82	0.43
50	597.00	1.06	0.55
75	644.94	1.29	0.68
100	692.53	1.52	0.80
125	739.76	1.74	0.93
150	786.63	1.96	1.05
175	833.13	2.18	1.18
200	879.28	2.39	1.30
225	925.07	2.60	1.43
250	970.49	2.81	1.55
275	1015.55	3.01	1.68
300	1060.15	3.21	1.80
325	1104.60	3.40	1.93
350	1148.58	3.59	2.05
375	1192.20	3.78	2.18
400	1235.46	3.96	2.30
425	1278.36	4.14	2.43
450	1320.90	4.32	2.55
475	1363.07	4.49	2.68
500	1404.89	4.66	2.80

## (1) Relationship of temperature with resistance

When $t \geq 0^\circ\text{C}$	When $t < 0^\circ\text{C}$
$R_t = R_o (1 + At + Bt^2)$	$R_t = R_o [1 + At + Bt^2 + C(t-100)t^3]$
$A = 3.9083\text{E-}03$	$A = 3.9083\text{E-}03$
$B = -5.7750\text{E-}07$	$B = -5.7750\text{E-}07$
	$C = -4.1830\text{E-}12$
	$R_o = 5.000\text{E+}02$

## (2) Temperature deviation

$$\pm(a + b |t|) ^\circ\text{C}$$

$$a = 0.300$$

$$b = 0.005$$

## (3) Specifications are subject to change without notice

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