

Specification of Pt Thermal Sensor

1. Electrical Characteristics of SA10200542

1-1 Resistance value (at 0°C)	:1000±1.2 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%)	:15 sec. max.(in air, 1m/sec.)
1-5 Self heating	:2 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 500VDC.

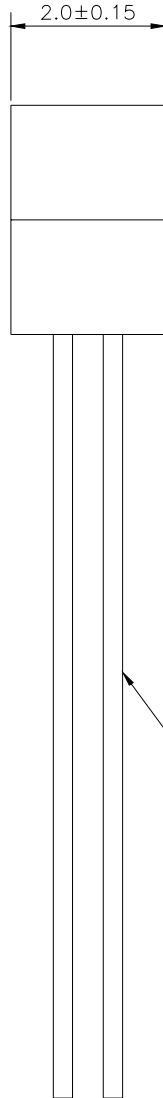
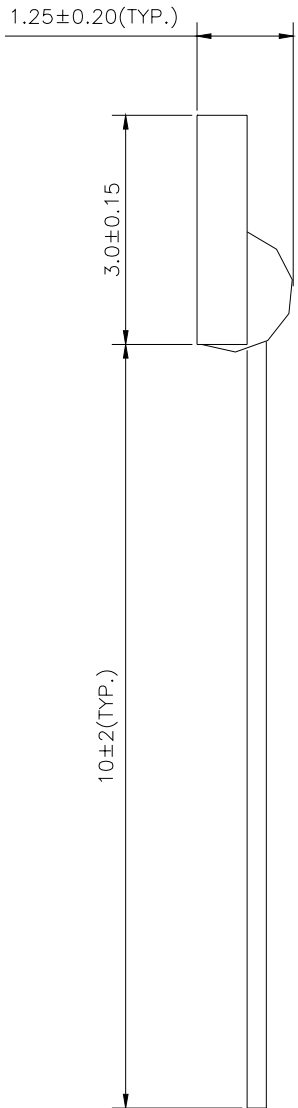
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THE MATERIAL OF WIRE
IS Ni WIRE, $\phi 0.22$ (TYP.)

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Temperature (°C)	Nominal Resistance(Ω)	Resistance Deviation(Ω)	Temperature Deviation(°C)
-50	803.06	2.18	0.55
-25	901.92	1.67	0.43
0	1000.00	1.20	0.30
25	1097.35	1.65	0.43
50	1193.97	2.12	0.55
75	1289.87	2.58	0.68
100	1385.06	3.03	0.80
125	1479.51	3.48	0.93
150	1573.25	3.92	1.05
175	1666.27	4.35	1.18
200	1758.56	4.78	1.30
225	1850.13	5.20	1.43
250	1940.98	5.61	1.55
275	2031.11	6.01	1.68
300	2120.52	6.41	1.80
325	2209.20	6.80	1.93
350	2297.16	7.18	2.05
375	2384.40	7.56	2.18
400	2470.92	7.93	2.30
425	2556.72	8.29	2.43
450	2641.79	8.64	2.55
475	2726.14	8.99	2.68
500	2809.78	9.33	2.80

(1) Relationship of temperature with resistance

When $t \geq 0^\circ\text{C}$

$$R_t = R_o (1 + At + Bt^2)$$

$$A = 3.9083E-03$$

$$B = -5.7750E-07$$

When $t < 0^\circ\text{C}$

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

$$A = 3.9083E-03$$

$$B = -5.7750E-07$$

$$C = -4.1830E-12$$

$$R_o = 1.000E+03$$

(2) Temperature deviation

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

$$a = 0.300$$

$$b = 0.005$$

(3) Specification are subject to change without notice

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