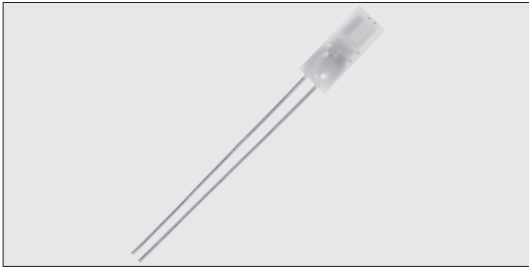
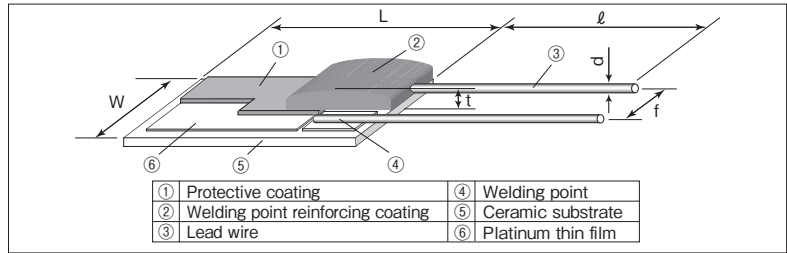


SDT310HCTP ■ Small type Platinum Thin Film Thermal Sensors (Narrow)



Construction



Features

- Characteristics are equivalent to IEC 60751⁻²⁰⁰⁸ · JIS C 1604⁻²⁰¹³.
- The small package (1.2mm×3mm) with a real ability of 100Ω resistance.
- Products meet RoHS requirements. RoHS regulation is not intended for Pb-glass contained in glass.

Applications

- Cold Point compensation for thermocouple temperature controllers and temperature detection probe.
- Temperature compensation and revision for RF circuit of telecommunication equipment.

Reference Standards

IEC 60751⁻²⁰⁰⁸
JIS C 1604⁻²⁰¹³

Dimensions

Type	Dimensions (mm)						Weight (g) (1000pcs)
	W±0.1	L±0.1	t max.	f (Nominal)	d±0.05	ℓ ⁺² ₋₁	
SDT310HCTP	1.2±0.1	3.0±0.1	1.1	0.5	0.15	8	13.3

Type Designation

Example

SDT310	H	CT	P	100	A	3850
Product Code	Style	Operating Temperature	Terminal Surface Material	Nominal Resistance	Class	T.C.R. (×10 ⁻⁶ /K)
	H: H style	CT: -55~400°C	P: Pt clad	100: 100Ω	A: F0.15 B: F0.3	

Ratings

Resistance (Ω at 0°C)	Tolerance Class		Tolerance (°C)	Resistance Tolerance (%)	T.C.R. ^{※2} (×10 ⁻⁶ /K)	Thermal Time ^{※3} constant (s)	Self-heating coefficient ^{※4} (°C/mW)	Specified Current ^{※5} (mA) max.	Temperature Range (°C)
	IEC 60751 ⁻²⁰⁰⁸ JIS C 1604 ⁻²⁰¹³	IEC 60751 ⁻¹⁹⁹⁵ JIS C 1604 ⁻¹⁹⁹⁷							
100	F0.15	Class A	± (0.15 + 0.002 t) ^{※1}	±0.059	3850	2.8	0.09	1	-55~+300
	F0.3	Class B							± (0.3 + 0.005 t) ^{※1}

※1 |t| is a measuring temperature indicated at °C that is not related to marking + · -.

※2 T.C.R. Measuring Temperature: 0°C/+100°C.

※3 Thermal time constant is value measured in stationary air and is typical value, which is value of element and vary with connecting or fixing methods.

※4 Self-heating coefficient expressed in °C/mW is values measured at temperature: 0°C in flowing oil with a velocity >0.2m/s, which is value of elements and vary with connecting or fixing methods.

※5 Specified current is a current value that is used at reliability test under the condition of self heat-generation that can be disregarded. Recommended measuring currents 1mA for 100Ω.

Precautions for Use

- It is difficult to solder SDT310HCTP because of using heat-resistant leads. Make use of welding to connect the leads wire.
- When an operating current is specified current, calculate a rise in temperature by self-heating to confirm an error.
- If SDT310HCTP is used by being molded or placed in a metal protection tube filled with resin, the resistance value may occasionally vary slightly depending on the resin used.

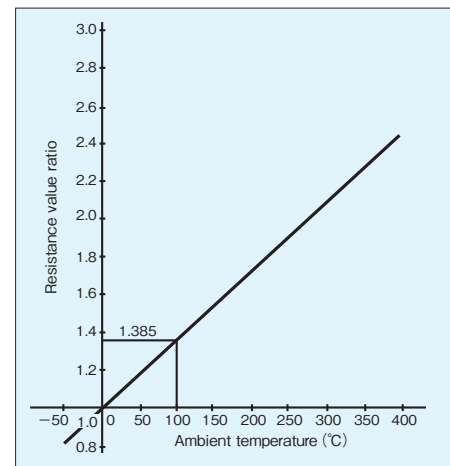
Performance

Test Items	Performance Requirements $\Delta R \pm (\%)$		Test Methods
	Limit	Typical	
Resistance	Within specified tolerance	—	0°C
T.C.R.	Within specified T.C.R.	—	0°C/+100°C
Insulation resistance	100M Ω or more	—	d.c.100V
Dielectric withstanding voltage	0.06	-0.003	a.c.100V 60s~70s
Rapid change of temperature	0.06(F0.15 at 300°C)	-0.002	-55°C (30min)/+25°C (2~3min)/+300 or 400°C (30min)/+25°C (2~3min) 10 cycles
	0.12(F0.3 at 400°C)	0.013	
Moisture resistance	0.06	-0.002	60°C \pm 2°C, 90%~95%RH, 1000h, 1mA 1.5h ON/0.5h OFF cycle
High temperature load life	0.06(F0.15 at 300°C)	-0.016	300 or 400°C, 1000h 1mA Continuous turning on electricity
	0.12(F0.3 at 400°C)	-0.022	
High temperature exposure	0.06(F0.15 at 300°C)	0.004	300 or 400°C, 1000h
	0.12(F0.3 at 400°C)	0.014	
Low temperature exposure	0.06	0.010	-55°C, 1000h

Pt100 Resistance-Temperature Characteristic (JIS C 1604-2013)
 100 Ω at 0°C

Temperature Characteristics

Temperature (°C)	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
-50	80.31	79.91	79.51	79.11	78.72	78.32	—	—	—	—
-40	84.27	83.87	83.48	83.08	82.69	82.29	81.89	81.50	81.10	80.70
-30	88.22	87.83	87.43	87.04	86.64	86.25	85.85	85.46	85.06	84.67
-20	92.16	91.77	91.37	90.98	90.59	90.19	89.80	89.40	89.01	88.62
-10	96.09	95.69	95.30	94.91	94.52	94.12	93.73	93.34	92.95	92.55
0	100.00	99.61	99.22	98.83	98.44	98.04	97.65	97.26	96.87	96.48
0	100.00	100.39	100.78	101.17	101.56	101.95	102.34	102.73	103.12	103.51
10	103.90	104.29	104.68	105.07	105.46	105.85	106.24	106.63	107.02	107.40
20	107.79	108.18	108.57	108.96	109.35	109.73	110.12	110.51	110.90	111.29
30	111.67	112.06	112.45	112.83	113.22	113.61	114.00	114.38	114.77	115.15
40	115.54	115.93	116.31	116.70	117.08	117.47	117.86	118.24	118.63	119.01
50	119.40	119.78	120.17	120.55	120.94	121.32	121.71	122.09	122.47	122.86
60	123.24	123.63	124.01	124.39	124.78	125.16	125.54	125.93	126.31	126.69
70	127.08	127.46	127.84	128.22	128.61	128.99	129.37	129.75	130.13	130.52
80	130.90	131.28	131.66	132.04	132.42	132.80	133.18	133.57	133.95	134.33
90	134.71	135.09	135.47	135.85	136.23	136.61	136.99	137.37	137.75	138.13
100	138.51	138.88	139.26	139.64	140.02	140.40	140.78	141.16	141.54	141.91
110	142.29	142.67	143.05	143.43	143.80	144.18	144.56	144.94	145.31	145.69
120	146.07	146.44	146.82	147.20	147.57	147.95	148.33	148.70	149.08	149.46
130	149.83	150.21	150.58	150.96	151.33	151.71	152.08	152.46	152.83	153.21
140	153.58	153.96	154.33	154.71	155.08	155.46	155.83	156.20	156.58	156.95
150	157.33	157.70	158.07	158.45	158.82	159.19	159.56	159.94	160.31	160.68
160	161.05	161.43	161.80	162.17	162.54	162.91	163.29	163.66	164.03	164.40
170	164.77	165.14	165.51	165.89	166.26	166.63	167.00	167.37	167.74	168.11
180	168.48	168.85	169.22	169.59	169.96	170.33	170.70	171.07	171.43	171.80
190	172.17	172.54	172.91	173.28	173.65	174.02	174.38	174.75	175.12	175.49
200	175.86	176.22	176.59	176.96	177.33	177.69	178.06	178.43	178.79	179.16
210	179.53	179.89	180.26	180.63	180.99	181.36	181.72	182.09	182.46	182.82
220	183.19	183.55	183.92	184.28	184.65	185.01	185.38	185.74	186.11	186.47
230	186.84	187.20	187.56	187.93	188.29	188.66	189.02	189.38	189.75	190.11
240	190.47	190.84	191.20	191.56	191.92	192.29	192.65	193.01	193.37	193.74
250	194.10	194.46	194.82	195.18	195.55	195.91	196.27	196.63	196.99	197.35
260	197.71	198.07	198.43	198.79	199.15	199.51	199.87	200.23	200.59	200.95
270	201.31	201.67	202.03	202.39	202.75	203.11	203.47	203.83	204.19	204.55
280	204.90	205.26	205.62	205.98	206.34	206.70	207.05	207.41	207.77	208.13
290	208.48	208.84	209.20	209.56	209.91	210.27	210.63	210.98	211.34	211.70
300	212.05	212.41	212.76	213.12	213.48	213.83	214.19	214.54	214.90	215.25
310	215.61	215.96	216.32	216.67	217.03	217.38	217.74	218.09	218.44	218.80
320	219.15	219.51	219.86	220.21	220.57	220.92	221.27	221.63	221.98	222.33
330	222.68	223.04	223.39	223.74	224.09	224.45	224.80	225.15	225.50	225.85
340	226.21	226.56	226.91	227.26	227.61	227.96	228.31	228.66	229.02	229.37
350	229.72	230.07	230.42	230.77	231.12	231.47	231.82	232.17	232.52	232.87
360	233.21	233.56	233.91	234.26	234.61	234.96	235.31	235.66	236.00	236.35
370	236.70	237.05	237.40	237.74	238.09	238.44	238.79	239.13	239.48	239.83
380	240.18	240.52	240.87	241.22	241.56	241.91	242.26	242.60	242.95	243.29
390	243.64	243.99	244.33	244.68	245.02	245.37	245.71	246.06	246.40	246.75
400	247.09	247.44	247.78	248.13	248.47	248.81	249.16	249.50	249.85	250.19



Approximate Expression for Resistance-Temperature Characteristics

$$-55^{\circ}\text{C} \sim 0^{\circ}\text{C} : R_t = R_0(1 + C_1 T + C_2 T^2 + C_3 T^3)$$

$$0^{\circ}\text{C} \sim +400^{\circ}\text{C} : R_t = R_0(1 + C_1 T + C_2 T^2)$$

 R_t : Resistance value at $T^{\circ}\text{C}$
 R_0 : Resistance value at 0°C
 T : Ambient temperature ($^{\circ}\text{C}$)

$$\text{Constants } C_1, C_2, C_3 : C_1 = 3.9083 \times 10^{-3} \text{ } ^{\circ}\text{C}^{-1}$$

$$C_2 = -5.775 \times 10^{-7} \text{ } ^{\circ}\text{C}^{-2}$$

$$C_3 = -4.183 \times 10^{-12} \text{ } ^{\circ}\text{C}^{-3}$$

Note:

Desired temperature values are obtained by adding temperatures in the vertical and horizontal axes. When calculating a resistance value of 105°C, read the value in the column where 100°C in the vertical axis and 5°C in the horizontal axis cross. The value will be 140.40 Ω .