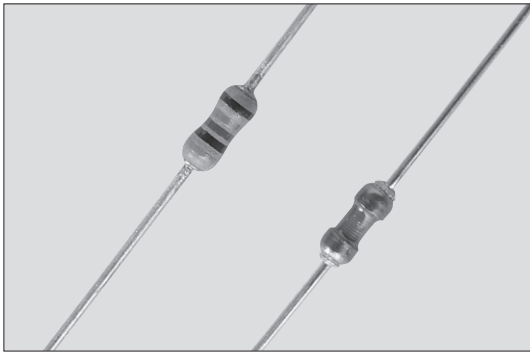


## SDT101 白金薄膜温度传感器 Platinum Thin Film Thermal Sensors

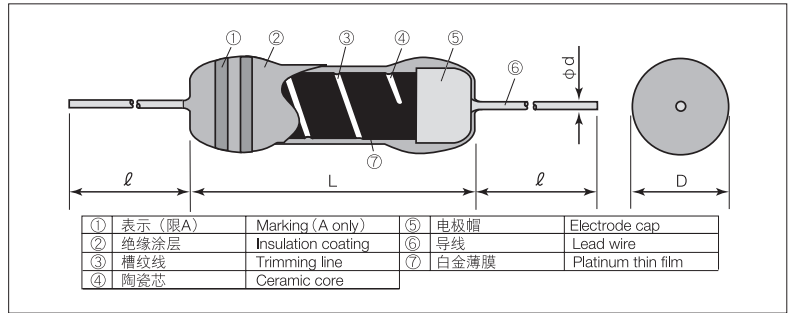


外观颜色: 象牙色 (SDT101A), 透明型的茶色 (SDT101B)  
Coating color: Ivory (SDT101A), Transparent Brown (SDT101B)

### 特点 Features

- 耐环境性优异, 即使长期使用也表示出稳定的特性。
- 对应欧盟RoHS。
- Stable characteristics even in use for a long time with an excellent environment resistance.
- Sensors with real capacity of  $\pm 0.05\%$  resistance change in the temperature cycle test (3,000 cycles).
- Products meet EU-RoHS requirements.

### 结构图 Construction



### 外形尺寸 Dimensions

型号 Type	尺寸 Dimensions (mm)				Weight (g) (1000pcs)
	L $\pm 0.8$	D $\pm 0.2$	d (Nom.) $\pm 0.08$	l $\pm 3$	
SDT101A	4.0	1.6	0.4	30	150
SDT101B		1.5			

### 用途 Applications

- 电子称用测力传感器得温度补偿。
- 空调设备得外部气温、冷却水温度得检测和过滤器阻塞得检测。
- 汽车的电子喷燃料装置的流量测定、进气温度补偿、油温检测。
- 热电偶温度调节器的冷端补偿、测温探头。
- 风速计的热线、各种测定器、分析机的温度补偿。
- Temperature compensation of load cells for Electronic Weighing Instruments.
- Detections of outer air and cooling water temperatures and filter clogging of Air Conditioners.
- Measurement of flow rate of electronic fuel injection systems, correction of intake air temperature and oil temperature detection of Automobiles.
- Cold point compensation and temperature detection probe of Thermocouple Temperature Controllers.
- Temperature compensations of various kinds of Measuring Instruments and Analyzers, Hot wires of Anemeters.

### 品名构成 Type Designation

实例 Example

SDT101	A	X	C	T26	A	100	D	F
品种 Product Code	温度范围 Temperature Range	基准温度 Reference Temperature	端子表面材质 Terminal Surface Material	二次加工 Taping	包装 Packaging	公称电阻值 Nominal Resistance	阻值允许偏差 Resistance Tolerance	电阻温度系数允许偏差 T.C.R. Tolerance
	A: -55°C ~ +150°C B: -55°C ~ +300°C	X: 0°C Y: 25°C *	C: SnCu(A only) N: Ni(B only)	空栏: 散装 Nil: Bulk T26: 26mm Taping(A only) T52: 52mm Taping(A only)	空栏: 散装 Nil: Bulk A: AMMO包装 (限A) A: AMMO(A only)	10: 10Ω 100: 100Ω 500: 500Ω	D: $\pm 0.5\%$ F: $\pm 1\%$	F: $\pm 1\%$ G: $\pm 2\%$

也有在25°C测定电阻值的产品(但电阻温度系数, 应在0°C/100°C测定), 请与本公司商谈。

\* Products of resistances measured at 25°C are also available. (But TCRs will be measured at 0°C/100°C.) Please consult us.

预知关于此产品含有的环境负荷物质详情(除EU-RoHS以外), 请与我们联系。

编带细节请参考卷末附录C。

Contact us when you have control request for environmental hazardous material other than the substance specified by EU-RoHS.

For further information on taping, please refer to APPENDIX C on the back pages.

### 额定值 Ratings

型号 Type	额定功率 Power Rating	热时间常数* Thermal Time Constant	热扩散常数* Thermal Dissipation Constant	电阻值 Resistance Range	阻值允许偏差 Resistance Tolerance	电阻温度系数 T.C.R. ( $\times 10^{-6}/K$ )	电阻温度系数允许偏差 T.C.R. Tolerance ( $\times 10^{-6}/K$ )	额定环境温度 Rated Ambient Temperature	使用温度范围 Operating Temperature Range	编带和包装数/卷 Taping & Qty/Reel (pcs)	
										T26A	T52A
SDT101A	0.125W	6s	2.8mW/°C	10Ω、100Ω	D: $\pm 0.5\%$ F: $\pm 1\%$	3500	F: $\pm 1\%$ G: $\pm 2\%$	+70°C	-55°C ~ +150°C	2,000	2,000
SDT101B		9s	1.8mW/°C	500Ω			+200°C	-55°C ~ +300°C			

\* 热时间常数\*热扩散常数是在静止空气中测定的值, 是为参考值, 也是元件单体的值, 元件单体值会因连接方法和固定方法的不同而变化。

\* Thermal time constant and thermal dissipation constant are reference values, which are values of elements and vary with connecting or fixing methods.

T.C.R.测定温度 T.C.R. Measuring Temperature: 0°C/+100°C

### 使用注意事项 Precautions for Use

- SDT101B, 由于采用了耐热性导线, 软钎焊困难, 导线的连接应使用电焊。
- 使用电流超过1mA时, 应计算因自动发热的温度上升, 确认误差。
- 把SDT101模压加工, 在金属保护管内充填树脂后使用时, 因使用树脂不同, 有时会带来很少的电阻值变化。
- 在本产品和安装的印刷电路板上由于焊剂等附着了离子性杂质时, 耐湿性、耐腐蚀性等方面就不理想。在焊剂内, 有时含有氯、酸等的离子性物质。为除去这类离子性物质, 应进行清洗。特别是使用无铅焊剂时, 由于提高了湿润性, 有时会含有大量离子性物质。使用RMA系的焊锡或焊剂时, 应进行充分清洗。还有, 由于保管环境和安装条件\*环境等, 附着了汗、盐等离子性物质时, 耐湿性、耐腐蚀性等方面会不理想。对于这种污染, 为除去这类离子性物质, 应当进行清洗。
- 产品受到含有人的汗和唾液等的钠、氯等离子性杂质污染时, 已证实会引起电阻变化。因此, 在保管\*装载或使用时要防止污染。在已经被确认污染时, 应当用纯水等清洗干燥, 不使离子性物质残留。
- It is difficult to solder SDT101B because of using heat-resistant leads. Make use of welding to connect the lead wires.
- When an operating current is 1mA or more, calculate a rise in temperature by self-heating to confirm an error.
- If SDT101 is used by being molded or placed in a metal protection tube filling with resin, the resistance value may occasionally vary slightly depending on the resin used.
- Ionic impurities such as flux etc. that are attached to these products or those mounted onto a PCB, negatively affect their moisture resistance, corrosion resistance, etc. The flux may contain ionic substances like chlorine, acid, etc. Please wash them to get rid of these ionic substances especially when using lead-free solder that may contain much of the said substances for improving a wetting characteristic. Using RMA solder or RMA flux, or well-washing is needed. Also, attaching ionic substances such as perspiration, salt etc. by storage environments or mounting conditions\*environments negatively affects their moisture resistance, corrosion resistance etc. Please wash them to remove the ionic substances when they are polluted.
- When the components are polluted by ionic impurities like sodium(Na<sup>+</sup>), chlorine(Cl<sup>-</sup>) etc. included in perspiration and saliva, resistance may be changed. Avoid the pollution when storage, mounting and using. Consider not to remain ionic substances on the components. Wash by pure water etc. and dry them when you find pollution.

本样本手册中记载的产品规格如有变更, 恕不一一奉告。订购以及使用之前, 请仔细确认规格表的內容。

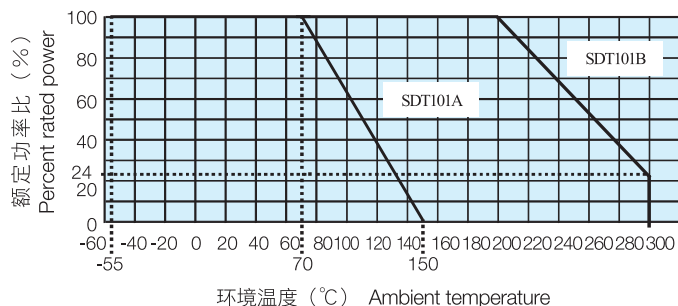
用于车载设备、医疗设备、航空设备以及其它涉及人身安全、或可能引起重大损失的设备上时, 请务必事先与我司联系。这些产品在这类用途中出现故障或失灵可能导致人身事故或严重损坏。

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

Contact our sales representatives before you use our products for applications including automobiles, medical equipment and aerospace equipment.

Malfunction or failure of the products in such applications may cause loss of human life or serious damage.

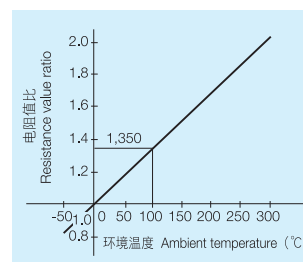
### ■ 负荷特性曲线 Derating Curve



超过额定环境温度使用时，应按照上图的负荷特性曲线，减小额定功率。

For sensors operated at an ambient temperature or above, a power rating shall be derated in accordance with the above derating curve.

### ■ 电阻温度特性例 Example of Temperature Characteristics of Resistance



电阻温度特性近似式

Approximate Expression for Resistance-Temperature Characteristics

(是代表值不是保证值 Values are not guaranteed values but typical ones.)

$$R_T = R_0 (1 + C_1 T + C_2 T^2)$$

$R_T$ : T°C时的电阻值  $R_T$ : Resistance value at T°C

$R_0$ : 0°C时的电阻值  $R_0$ : Resistance value at 0°C

T: 环境温度 (°C) T: Ambient temperature (°C)

$C_1, C_2$ : 常数 Constants  $C_1, C_2$ :  $C_1=0.356297 \times 10^{-2}$   $C_2=-0.617945 \times 10^{-6}$

### ■ 性能 Performance

试验项目 Test Items	标准值 Performance Requirements $\Delta R \pm$ (%+0.05 $\Omega$ )		试验方法 Test Methods
	保证值 Limit	代表值 Typical	
电阻值 Resistance	在规定的允许偏差内 Within specified tolerance	—	0°C
电阻温度系数 T.C.R.	在规定值以内 Within specified T.C.R.	—	0°C/+100°C
过载 (短时间) Overload (Short time)	0.5	0.2	额定电压的2.5倍施加5秒钟。 Rated Voltage $\times$ 2.5 for 5s.
耐焊接热 Resistance to soldering heat	0.3	0.1	350°C, 1s (SDT101A)
温度突变 Rapid change of temperature	0.5	0.2	-55°C (30min)/+25°C (10min) /+150°C (30min) /+25°C (10min) 5 cycles
耐湿负荷 Moisture resistance	1	0.3	80°C $\pm$ 2°C, 90%~95%RH, 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
在70°C时的耐久性 Endurance at 70°C	1	0.2	70°C $\pm$ 3°C(SDT101A), 200°C $\pm$ 3°C(SDT101B), 1000h 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
高温放置 High temperature exposure	1	0.7	+150°C(SDT101A),+300°C(SDT101B),1000 h
长期变化 Shelf Life	0.3	0.1	一年自然放置 Left for 1year on shelf in natural condition

### ■ 电阻—温度特性 (代表值) Resistance-Temperature Characteristic Table (Typical Value)

100 $\Omega$  at 0°C

温度 (°C) Temperature	0	-1	-2	-3	-4	-5	-6	-7	-8	-9
-50	82.04	81.67	81.31	80.94	80.58	80.22	—	—	—	—
-40	85.66	85.29	84.93	84.57	84.21	83.85	83.49	83.12	82.76	82.40
-30	89.26	88.90	88.54	88.18	87.82	87.46	87.10	86.74	86.38	86.02
-20	92.85	92.49	92.13	91.77	91.41	91.05	90.70	90.34	89.98	89.62
-10	96.43	96.07	95.71	95.35	94.99	94.63	94.27	93.91	93.55	93.19
0	100.00	99.64	99.29	98.93	98.57	98.22	97.86	97.50	97.15	96.79
0	0	1	2	3	4	5	6	7	8	9
0	100.00	100.36	100.71	101.07	101.42	101.78	102.13	102.49	102.85	103.20
10	103.56	103.91	104.26	104.62	104.97	105.33	105.68	106.04	106.39	106.74
20	107.10	107.45	107.81	108.16	108.51	108.87	109.22	109.57	109.92	110.28
30	110.63	110.98	111.33	111.69	112.04	112.39	112.74	113.09	113.44	113.80
40	114.15	114.50	114.85	115.20	115.55	115.90	116.25	116.60	116.95	117.30
50	117.65	118.00	118.35	118.70	119.05	119.40	119.75	120.10	120.45	120.80
60	121.15	121.50	121.84	122.19	122.54	122.89	123.24	123.59	123.93	124.28
70	124.63	124.98	125.32	125.67	126.02	126.37	126.71	127.06	127.41	127.75
80	128.10	128.44	128.79	129.14	129.48	129.83	130.17	130.52	130.86	131.21
90	131.56	131.90	132.25	132.59	132.93	133.28	133.62	133.97	134.31	134.66
100	135.00	135.34	135.69	136.03	136.37	136.72	137.06	137.40	137.75	138.09
110	138.43	138.77	139.12	139.46	139.80	140.14	140.49	140.83	141.17	141.51
120	141.85	142.19	142.53	142.88	143.22	143.56	143.90	144.24	144.58	144.92
130	145.26	145.60	145.94	146.28	146.62	146.96	147.30	147.64	147.98	148.32
140	148.65	148.99	149.33	149.67	150.01	150.35	150.69	151.03	151.37	151.71
150	152.04	152.38	152.71	153.05	153.39	153.72	154.06	154.40	154.74	155.07
160	155.41	155.74	156.08	156.42	156.75	157.09	157.43	157.77	158.10	158.43
170	158.77	159.10	159.44	159.77	160.11	160.44	160.78	161.11	161.44	161.78
180	162.11	162.45	162.78	163.11	163.45	163.78	164.11	164.45	164.78	165.11
190	165.45	165.78	166.11	166.44	166.78	167.11	167.44	167.77	168.10	168.44
200	168.77	169.10	169.43	169.76	170.09	170.42	170.76	171.09	171.42	171.75
210	172.08	172.41	172.74	173.07	173.40	173.73	174.06	174.39	174.72	175.05
220	175.37	175.70	176.03	176.36	176.69	177.02	177.35	177.67	178.00	178.33
230	178.66	178.99	179.31	179.64	179.97	180.30	180.62	180.95	181.28	181.60
240	181.93	182.26	182.58	182.91	183.24	183.56	183.89	184.21	184.54	184.87
250	185.19	185.52	185.84	186.17	186.49	186.82	187.14	187.47	187.79	188.11
260	188.44	188.77	189.09	189.41	189.73	190.06	190.38	190.70	191.03	191.35
270	191.67	192.00	192.32	192.64	192.96	193.29	193.61	193.93	194.25	194.57
280	194.90	195.22	195.54	195.86	196.18	196.50	196.82	197.14	197.47	197.79
290	198.11	198.43	198.75	199.07	199.39	199.71	200.03	200.35	200.67	200.99
300	201.31	—	—	—	—	—	—	—	—	—

注意:

横轴温度+纵轴温度是所要求的温度。求105°C的电阻值时，把纵轴100°C和横轴5°C相交栏的数字读出，即136.72 $\Omega$ 。0°C 500 $\Omega$ 时成为把本表电阻值乘5倍的值。而0°C、10 $\Omega$ 时，为1/10倍的值。

Note:

Desired temperature values are obtained by adding temperatures in the vertical and horizontal axes. When calculating 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 136.72 $\Omega$ . The value for 500 $\Omega$  at 0°C will be the value obtained by multiplying resistance value in this table by 5. Similarly, the value for 10 $\Omega$  at 0°C will be the value obtained by dividing the resistance value by 10.