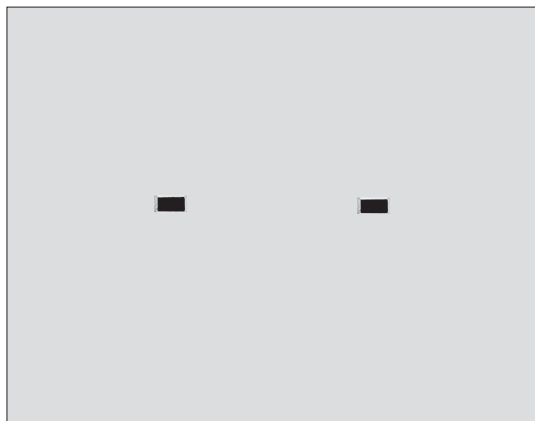


THERMAL SENSORS

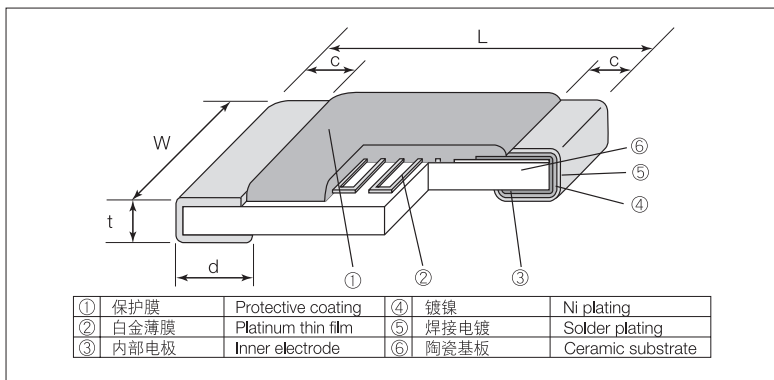


SDT73H 矩形片式白金薄膜温度传感器 Platinum Thin Film Thermal Chip Sensors

温度传感器
Thermal Sensors



■ 结构图 Construction



■ 特点 Features

- 是表面安装的白金薄膜温度传感器。
- 电阻温度特性 (T.C.R) 根据JIS•DIN标准。
- 适用于各种工业设备的温度控制。
- 对应回流焊、波峰焊接。
- 对应欧盟RoHS。
- SMD platinum thin film thermal sensors.
- T.C.R. is in accordance with JIS • DIN standards.
- Suitable for temperature control in various industrial equipment.
- Suitable for both flow and reflow solderings.
- Products meet EU-RoHS requirements.

■ 用途 Applications

- 各种传感器传动电路的温度补偿。
- 通信、计量测量设备的温度补偿。
- 混合集成电路的温度补偿。
- Temperature compensation for various kinds of sensor drive circuits.
- Temperature compensation for telecommunication and measuring equipment.
- Temperature compensation for Hybrid ICs.

■ 外形尺寸 Dimensions

型号 Type (Inch Size Code)	尺寸 Dimensions (mm)					Weight (g) (1000pcs)
	L	W	c	d	t	
2B (1206)	3.2±0.2	1.6±0.2	0.5±0.3	0.5±0.3	0.5±0.15	9.0

■ 品名构成 Type Designation

实例 Example	SDT73H	2B	T	TE	100	F	385
品种 Product Code	SDT73H	2B	T	TE	100	F	385
尺寸 Size	2B: 3.2x1.6mm						
端子表面材质 Terminal Surface Material			T: Sn				
二次加工 Taping				TEK: 4mm pitch plastic embossed (1,000pcs) TE: 4mm pitch plastic embossed (5,000pcs) BK: 散装 BK: Bulk			
公称电阻值 Nominal Resistance					100: 100Ω 500: 500Ω		
阻值允许偏差 Resistance Tolerance					C: ±0.2% F: ±1%		
电阻温度系数 T.C.R. (×10 ⁻³ /K)							385: 3850

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.

■ 参考标准 Reference Standards

IEC 60751-1995 JIS C 1604-1997

■ 额定值 Ratings

型号 Type	电阻值 Resistance at 0°C	阻值允许偏差※1 Resistance Tolerance	热时间常数※2 Thermal Time Constant	热扩散常数※2 Thermal Dissipation Constant	电阻温度系数 T.C.R. (×10 ⁻³ /K)	电阻温度系数允许偏差 T.C.R. Tolerance (×10 ⁻³ /K)	使用温度范围 Operating Temperature Range	额定功率※3 Specified Current	编带和包装数/卷 Taping & Qty/Reel (pcs)	
									TEK	TE
SDT73H 2B	100Ω 500Ω	C: ±0.2% F: ±1%	6.5s	2.4mW/°C	3850	±50	-55°C~+155°C	1mA max.: 100Ω 0.1mA max.: 500Ω	1,000	5,000

※1 对于相当JIS B级的产品, 请商谈。

※2 热时间常数•热扩散常数是在静止空气中测定的值, 是参考值。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。
在表面安装状态, 热扩散常数为约4mW/°C。

※3 在元件中流动的电流因自动发热而温度上升的, 在可以不计的范围。通常, 测定电流, 在100Ω建议1mA, 在500Ω, 0.1mA。

※1 Please consult with us about the products equivalent to class B of JIS.

※2 Thermal time constant and thermal dissipation constant are reference values, which are values of elements and vary with connecting or fixing methods.
Thermal dissipation constant is approx. 4mW/°C under the surface mounting condition.

※3 Specified current is a current value that is used at reliability test under the condition of self heat-generation that can be disregarded.
Ordinarily recommended measuring currents are 1mA for 100Ω and 0.1mA for 500Ω.

■ 使用注意事项 Precautions for Use

- 测定电流超过建议值 (100Ω: 1mA, 500Ω: 0.1mA) 时, 请计算自动发热时的温度上升, 并确认误差。
- 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, 有时会含有氯•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•耐腐蚀性等方面就不理想。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, 已确认会引起电蚀。因此, 在保管•装载或使用时请注意要防止污染。在已经被确认产品被污染时, 应当用纯水等清洗干燥, 不残留离子性物质。
- 注意烙铁不要直接接触产品, 有发生电阻值变化的危险。还有, 手指直接接触保护涂层时, 有马上炭化的危险, 对电蚀的耐候性和保护涂层的绝缘性也降低了, 应注意。再有, 烙铁温度非常高时, 同样可造成保护涂层的老化, 应注意。
- 这一产品的保管, 要避免阳光直射、高温、多湿。阳光直射, 会引起编带变质, 难以保持适当的拉伸强度, 应注意。在5~35°C/35~75%RH以下时, 交货后12个月内, 焊接性虽然不会降低, 但由于结露、有毒气体(硫化氢、二氧化硫、氯化氢等)、灰尘, 焊接性会降低, 因此, 在保管上要充分注意。

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内容。

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, 请务必事先与我公司联系。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.

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- When measuring current higher than rated current ($100\Omega : 1\text{mA}$, $500\Omega : 0.1\text{mA}$) is used, calculate a rise in temperature by self-heating and confirm the error range.
- 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^+), chlorine(Cl^-) etc. included in perspiration and saliva, it leads to electric erosion. 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.
- Please pay attention that the top of an iron does not direct touch to the components. There is a risk that may cause a change in resistance. Take care that another risk may happen that the protecting coat is carbonized in an instant when touched directly by the top of the iron, also climatic-proof for electric corrosion or insulation of protecting coat may be dropped down. Be sure not to give high temperature on the top of the iron as it will degrade the protecting coat.
- Avoid storing components under direct sun rays, high temperature/humidity. Direct sun rays will cause quality change of taping and difficulty of keeping appropriate peeling strength. $5\sim 35^\circ\text{C}/35\sim 75\%\text{RH}$, there is no deterioration of solderability for 12 months, but take special care for storing, because condensation, dust, and toxic gas like hydrogen sulfide, sulfurous acid gas, hydrogen chloride, etc. may drop solderability.

■ 性能 Performance

试验项目 Test Items	标准值 Performance Requirements $\Delta R \pm (\% + 0.05 \%)$		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.	3850 ± 10	$0^\circ\text{C}/+100^\circ\text{C}$
绝缘电阻 Insulation resistance	$100\text{M}\Omega$ 以上 $100\text{M}\Omega$ or more	—	d.c. 100V
耐焊接热 Dielectric withstanding voltage	0.5	-0.019	a.c. 100V 60s~70s
耐电压 Resistance to soldering heat	0.5	-0.004	260°C , 10s
温度突变 Rapid change of temperature	0.5	-0.033	-55°C (30min) / $+25^\circ\text{C}$ (2~3min) / $+155^\circ\text{C}$ (30min) / $+25^\circ\text{C}$ (2~3min) 10 cycles
耐湿负荷 Moisture resistance	0.5	-0.016	40°C , 90%~95%RH, 1000h, 1mA 1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle
常温负荷 Normal temperature load life	0.5	-0.010	$20^\circ\text{C} \pm 10^\circ\text{C}$, 1000h 1mA连续通电 1mA Continuous turning on electricity
高温负荷 High temperature load life	0.5	-0.017	155°C , 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	0.5	-0.022	$+155^\circ\text{C}$, 1000h
低温放置 Low temperature exposure	0.5	-0.029	-55°C , 1000h

■ 电阻—温度特性 (JIS C1604⁻¹⁹⁹⁷) 摘录

Pt100 Resistance-Temperature Characteristic (JIS C 1604⁻¹⁹⁹⁷) 100 Ω at 0°C

温度($^\circ\text{C}$) Temperature	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	138.89	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	—	—	—	—

注意:

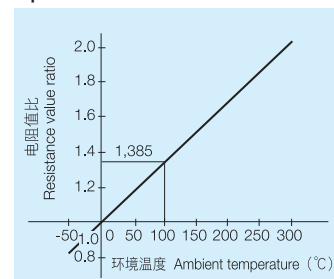
横轴温度+纵轴温度是所要求的温度。求 105°C 的电阻值时,把纵轴 100°C 和横轴 5°C 相交栏的数字读出,即 140.40Ω 。 0°C 500Ω 时将本表电阻值乘以5倍的值。

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 140.40Ω . The value for 500Ω at 0°C will be the value obtained by multiplying the resistance value in this table by 5.

■ 电阻温度特性

Temperature Characteristics



电阻温度特性近似式

Approximate Expression for Resistance-Temperature Characteristics

$-55^\circ\text{C} \sim 0^\circ\text{C}$: $R_T = R_0 \{1 + C_1 T + C_2 T^2 + C_3 (T - 100) T^3\}$

$0^\circ\text{C} \sim +125^\circ\text{C}$: $R_T = R_0 (1 + C_1 T + C_2 T^2)$

R_T : $T^\circ\text{C}$ 时的电阻值 R_T : Resistance value at $T^\circ\text{C}$

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

T : 环境温度 ($^\circ\text{C}$) T : Ambient temperature ($^\circ\text{C}$)

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

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

$C_3 = -4.183 \times 10^{-12} ^\circ\text{C}^{-4}$