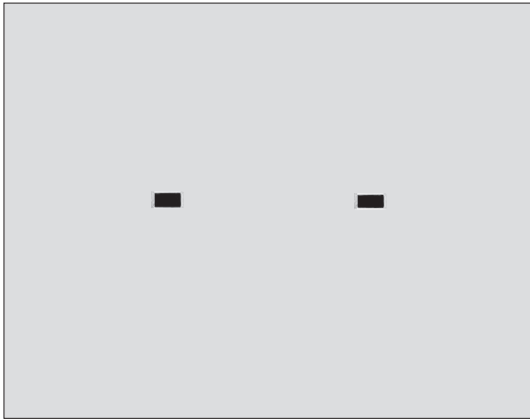
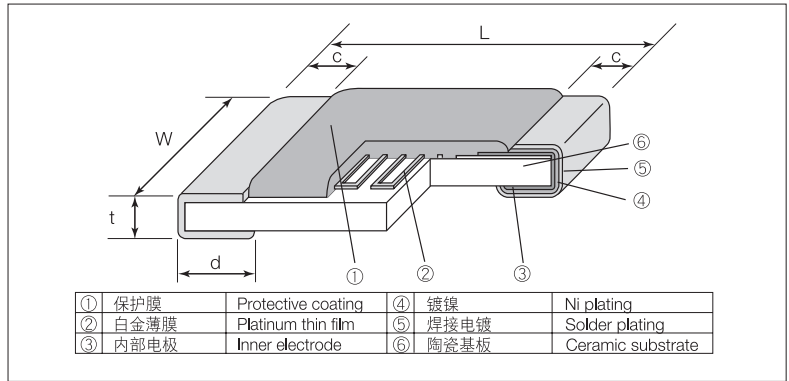


## SDT73V 矩形片式白金薄膜温度传感器 (车载用) Platinum Thin Film Thermal Chip Sensors (For Automotive)



### ■ 结构图 Construction



### ■ 特点 Features

- 是表面安装型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。
- 已经按AEC-Q200标准做出评估。
- 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.
- The evaluation based on AEC-Q200 has been examined.
- Suitable for both flow and reflow solderings.
- Products meet EU-RoHS requirements.

### ■ 用途 Applications

- 汽车用电子组件的温度补偿。
- 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。
- Temperature compensation of the electronic component for automotive.
- Temperature compensation for various kinds of sensor drive circuits.
- Temperature compensation for telecommunication and measuring equipment.

### ■ 额定值 Ratings

| 型号<br>Type | 电阻值<br>Resistance<br>at 0°C | 阻值允许偏差*1<br>Resistance<br>Tolerance | 热时间常数*2<br>Thermal Time<br>Constant | 热扩散常数*2<br>Thermal Dissipation<br>Constant | 电阻温度系数<br>T.C.R.<br>(×10 <sup>-6</sup> /K) | 电阻温度系数允许偏差<br>T.C.R. Tolerance<br>(×10 <sup>-6</sup> /K) | 使用温度范围<br>Operating<br>Temperature Range | 额定功率*3<br>Specified<br>Current     | 编带和包装数/卷<br>Taping & Q'ty/Reel (pcs) |       |
|------------|-----------------------------|-------------------------------------|-------------------------------------|--|--|--|--|------------------------------------|--------------------------------------|-------|
|            |                             |                                     |                                     |  |  |  |  |                                    | TEK                                  | TE    |
| SDT73V 2B  | 100Ω<br>500Ω                | C: ±0.2%<br>F: ±1%                  | 6.5s                                | 2.4mW/°C                                   | 3850                                       | ±50  | -55°C~+155°C                             | 100Ω: 1mA max.<br>500Ω: 0.1mA max. | 1,000                                | 5,000 |

\*1 对于相当JIS B级的产品，请咨询。

\*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，应计算因自动发热的温度上升，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，会引起电蚀的事已得到确认。因此，在保管•装载或使用时要防止污染。特别是涂上防湿涂层材料时，在产品和防湿涂层之间残留了上述杂质时，已确认会进一步引起电蚀。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。
- 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。

### ■ 外形尺寸 Dimensions

| 型号 Type<br>(Inch Size Code) | 尺寸 Dimensions (mm) |         |         |         |          | Weight (g)<br>(1000pcs) |
|-----------------------------|--------------------|---------|---------|---------|----------|-------------------------|
|                             | L                  | W       | c       | d       | t        |                         |
| 2B<br>(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            |               | TEK                                    |   | TE                             |                                   | 100  |  | F  |  | 385  |  | 385  |  |
|-----------------------|---------------|--|---|--------------------------------|-----------------------------------|--|--|--|--|--|--|--|--|
| 品种<br>Product<br>Code | 尺寸<br>Size    | 端子表面材质<br>Terminal<br>Surface Material | 二次加工<br>Taping  | 公称电阻值<br>Nominal<br>Resistance | 阻值允许偏差<br>Resistance<br>Tolerance | 电阻温度系数<br>T.C.R.<br>(×10 <sup>-6</sup> /K) | 电阻温度系数<br>T.C.R.<br>(×10 <sup>-6</sup> /K) | 电阻温度系数<br>T.C.R.<br>(×10 <sup>-6</sup> /K) | 电阻温度系数<br>T.C.R.<br>(×10 <sup>-6</sup> /K) | 电阻温度系数<br>T.C.R.<br>(×10 <sup>-6</sup> /K) | 电阻温度系数<br>T.C.R.<br>(×10 <sup>-6</sup> /K) | 电阻温度系数<br>T.C.R.<br>(×10 <sup>-6</sup> /K) | 电阻温度系数<br>T.C.R.<br>(×10 <sup>-6</sup> /K) |
| SDT73V                | 2B: 3.2x1.6mm | T: Sn                                  | TEK 4mm pitch<br>plastic embossed<br>(1,000pcs)<br>TE 4mm pitch<br>plastic embossed<br>(5,000pcs)<br>BK 散装<br>BK Bulk | 100: 100Ω<br>500: 500Ω         | C: ±0.2%<br>F: ±1%                | 385  | 385  | 385  | 385  | 385  | 385  | 385  | 385  |

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

- When measuring current higher than rated current (100Ω : 1mA, 500Ω : 0.1mA) 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<sup>+</sup>), chlorine(Cl<sup>-</sup>) 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. 5~35°C/35~75%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<br>Test Items                      | 标准值 Performance Requirements<br>ΔR± (%+0.05 Ω) |             | 试验方法<br>Test Methods  |
|---|--|-------------|---|
|   | 保证值 Limit                                      | 代表值 Typical |   |
| 高温放置<br>High temperature exposure       | 0.5  | -0.022      | +155°C, 1000h   |
| 温度突变<br>Rapid change of temperature     | 0.5  | -0.058      | -55°C (30min) / +25°C (2~3min) / +155°C (30min) / +25°C (2~3min) 1000 cycles                          |
| 耐湿周期<br>Moisture cycle                  | 0.5  | -0.041      | 25°C-65°C(90%~100%RH) t=24时/周期, 无负荷, 10周期<br>t=24 hours/cycle. Unpowered. It is carried out 10 times. |
| 耐湿负荷<br>Moisture resistance             | 0.5  | -0.016      | 85°C, 85%RH, 1000h, 1mA<br>1.5小时ON、0.5小时OFF的周期 1.5h ON/0.5h OFF cycle                                 |
| 高温负荷<br>High temperature load life      | 0.5  | -0.017      | 155°C, 1000h1mA连续通电<br>1mA Continuous turning on electricity  |
| 机械冲击<br>Mechanical Shock                | 0.5  | -0.001      | 最大值100gs, 标准时间6Dms, 速度12.3ft/秒<br>100gs maximum, 6Dms(Standard), 12.3ft/s                             |
| 振动<br>Vibration                         | 0.5  | -0.009      | 测检10-2000H 5g, 20分12周期, 3方向<br>Test from 10-2000Hz 5g's for 20 min. 12 cycles each of 3 orientations. |
| 耐焊接热<br>Dielectric withstanding voltage | 0.5  | -0.004      | 260°C, 10s  |
| 温度冲击<br>Thermal Shock                   | 0.5  | -0.032      | -55°C(15min)/+125°C(15min) 300cycles  |
| 焊接性<br>Solderability                    | 覆盖95%以上<br>95% coverage min.                   | -           | 235°C±5°C, 3s±0.5s  |
| 端子强度<br>Terminal Strength               | 0.5  | -0.011      | 1.8kg外力负荷连续60秒<br>1.8kg force is kept on the samples for 60 seconds.                                  |

## 电阻-温度特性 (JIS C1604<sup>-1997</sup>) 摘录

### Pt100 Resistance-Temperature Characteristic (JIS C 1604<sup>-1997</sup>) 100Ω at 0°C

| 温度(°C)<br>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 | 138.88 | 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 | -      | -      | -      | -      |

注意:

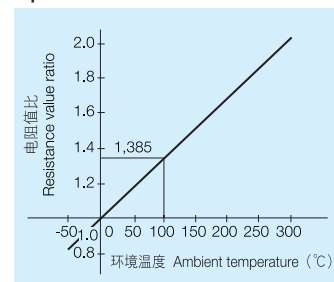
横轴温度+纵轴温度是所要求的温度。求105°C的电阻值时,把纵轴100°C和横轴5°C相交栏的数字读出,即140.40Ω。0°C 500Ω时将本表电阻值乘以5倍的值。

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°C~0°C:  $R_T = R_0 \{1 + C_1 T + C_2 T^2 + C_3 (T-100) T^3\}$

0°C~+125°C:  $R_T = R_0 (1 + C_1 T + C_2 T^2)$

R<sub>T</sub>: T°C时的电阻值 R<sub>r</sub>: Resistance value at T°C

R<sub>0</sub>: 0°C时的电阻值 R<sub>0</sub>: Resistance value at 0°C

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

C<sub>1</sub>、C<sub>2</sub>、C<sub>3</sub>: 常数 Constants C<sub>1</sub>, C<sub>2</sub>, C<sub>3</sub>: C<sub>1</sub>=3.9083×10<sup>-3</sup>°C<sup>-1</sup>

C<sub>2</sub>=-5.775×10<sup>-7</sup>°C<sup>-2</sup>

C<sub>3</sub>=-4.183×10<sup>-12</sup>°C<sup>-4</sup>