THERMAL SENSORS

SDT310VASP
Small type Platinum Thin Film Thermal Sensors (Small Heater Element)

■ Features
- Small as quarter volume of conventional type.
- Excellent heat-resistance.
- Applies axial lead type suitable to use as heater element.
- AEC-Q200 qualified.
- Products meet EU-RoHS requirements.

■ Applications
- Heater elements for thermal flowmeters of Industrial equipment, measuring instruments and automotive.
- Ultra-small thermal sensor of industrial equipment and measuring instrument.

■ Reference Standards
IEC 60751-2008
JIS C 1604-2013

■ Ratings

<table>
<thead>
<tr>
<th>Resistance (Ω at 0℃)</th>
<th>Resistance Tolerance (%)</th>
<th>T.C.R※1 (×10⁶/K)</th>
<th>Thermal Time Constant※2 (s)</th>
<th>Maximum Current (mA)</th>
<th>Power Rating (W)</th>
<th>Temperature Range※3 (℃)</th>
<th>Tray (pcs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>±1</td>
<td>3850±25</td>
<td>3.2</td>
<td>90</td>
<td>0.5</td>
<td>−55~+600</td>
<td>50</td>
</tr>
</tbody>
</table>

※1 T.C.R: Measuring Temperature:0℃/+100℃
※2 Thermal time constant is value measured in stationary air and is typical value, which are values of elements and vary with connecting or fixing methods.
※3 Temperature of the device including a self-heating.

■ Precautions for Use
- It is difficult to solder SDT310VASP because of using heat-resistant leads. Make use of welding to connect the leads wire.
- The sense warm part be careful of the treatment because there is fear to damage when giving a strong mechanical impact because it is using the glass courting.
- If SDT310VASP 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.
- When forming a lead line, fix a lead line root and the load make not depend on the lead line root part.
- Part is intended to measure Air Flow Only - Not intended for Liquid Measurement.
Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

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### Performance

- **Pt20 Resistance-Temperature Characteristic**

<table>
<thead>
<tr>
<th>Temperature (℃)</th>
<th>R0</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>R1</th>
</tr>
</thead>
<tbody>
<tr>
<td>-55</td>
<td>466.1</td>
<td>3.9083×10⁻³</td>
<td>-5.775×10⁻⁷</td>
<td>-4.698</td>
<td>995.2</td>
</tr>
<tr>
<td>-40</td>
<td>466.1</td>
<td>3.9083×10⁻³</td>
<td>-5.775×10⁻⁷</td>
<td>-4.698</td>
<td>995.2</td>
</tr>
<tr>
<td>-30</td>
<td>466.1</td>
<td>3.9083×10⁻³</td>
<td>-5.775×10⁻⁷</td>
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**Note:**
- **Resistors** are obtained by adding resistance values shown in the vertical column where 100℃ is indicated, and resistance values shown in the horizontal row where R0 is indicated, and subtracting R1 from the sum. The value will be 25.0 Ohms.

**Approximate Equation for Resistance-Temperature Characteristic**

\[ R = R0 + C1 \cdot T + C2 \cdot T^2 + C3 \cdot T^3 \]

Where:
- \( R \) = Resistance at T℃
- \( R0 \) = Resistance at 0℃
- \( T \) = Ambient temperature (℃)
- \( C1 \), \( C2 \), \( C3 \) are constants determined by the above equation.

**Resistance Characteristic:**

- **Pt20 Resistance-Temperature Characteristic**
- **Pt100 Resistance-Temperature Characteristic**

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**Derating Curve**

For sensors operated at an element part temperature of 25℃ or more, the power limit be derated in accordance with the derating curve on the P/N.