SMD 1206 sinterable, Pt Temperature Sensor according to DIN EN 60751

Temperature range -50 °C to +200 °C

Power electronics represent the main application focus of the sinterable temperature sensor. Mass production, precision, long-term stability and low costs were in the foreground of its design. The design allows a potential free positioning direct to the heat source/die. The topside metallization is adapted for thick wire bonding and the backside is designed for silver sinter processes. Both sides (metallization) are electrically isolated from each other.

<table>
<thead>
<tr>
<th>Nominal Resistance $R_0$</th>
<th>Tolerance</th>
<th>Order Number</th>
<th>Packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 Ohm at 0 °C</td>
<td>F 0.6 (Class 2B)</td>
<td>51 00 386</td>
<td>1 substrate on wafer frame in plastic bag</td>
</tr>
<tr>
<td>1000 Ohm at 0 °C</td>
<td>F 0.6 (Class 2B)</td>
<td>50 333 44</td>
<td>4 substrates on wafer frame in plastic bag</td>
</tr>
</tbody>
</table>

Temperature and tolerance range

Tolerance class F 0.6 (2B): -50 °C to +200 °C
(continuous operation)

Temperature coefficient

$TCR = 3850 \text{ ppm/K}$

Measuring current

1000 $\Omega$: 0.1 to 0.3 mA
(self-heating has to be considered)

Long-term stability

Max. $R_0$-Drift $\leq 0.23 \%$ after each:
1000 hours at +200 °C, $\geq 0.1$ mA
1000 hours at +85 °C, 85 % Hrel.
1000 cycles at +150 °C/-40 °C

Self-heating

$< 0.4 \text{ K/mW}$ (unassembled)

Isolation resistance

$> 1000 \text{ M$\Omega$}$ at 20 °C

Top side metallization (Bonding)

AgPt surface in thick film technology for thick wire ultrasonic bonding process.
Recommendation:
Heraeus Al H11 thick wires ($\phi$ 300 $\mu$m)
All tests were done with recommended wire (see above).

Back side metallization (Sintering)

AgPd surface in thick film technology for silver sintering process.
Recommendation:
Heraeus sinter paste (ASP 338 and 043 series)
All tests were done with recommended paste (see above).

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Temperature range -50 °C to +200 °C

Connection technology
Suitable for sintering on backside, for optimized heat transfer and on topside for ultrasonic wire bonding

Shear Test backside/sinter
> 10 N/mm² (single value)
> 20 N/mm² (mean value)

Pull Test topside / bonding
> 210 cN (equals 75% wire load limit of Al H11 thick wires Ø = 300 µm)

Packaging
On water frame in aluminized vacuum bag

Storage life
In unopened in original packing (minimum half a year)

Note
Other tolerances and values of resistance are available on request.

California Proposition 65

![WARNING: This product can expose you to chemicals including nickel, which is known to the State of California to cause cancer. For more information go to www.p65warnings.ca.gov.](RoHS_conform.png)