

## SMD 0603 (V), Platinum Temperature Sensor according to DIN EN 60751

### Temperature range -50 °C to +130 °C

The PRTD SMD 0603 is designed for automatic mounting in large volume applications on printed circuit boards where long time stability, interchangeability combined with low costs are important. The products are typically used in energy management, medical and industrial equipment. In principle, the products can also be used in automotive applications; in this case Heraeus will check upon the request of the customer, whether additional requirements can be met (e.g. IMDS, PPAP).

Nominal Resistance $R_0$	Tolerance	Order Number	Packaging
1000 Ohm at 0 °C	F 0.3 (Class B) F 0.6 (Class 2B)	32 207 638 32 207 637	Blister reel "Face-up" 4000 pcs / reel

#### Temperature and tolerance range

Tolerance class F 0.6 (2B): -50 °C to +130 °C  
 Tolerance class F 0.3 (B): -50 °C to +130 °C  
 (With the use of expansion-matched circuit board materials  
 Temperatures up to +150 °C are possible)

#### Temperature coefficient

TCR = 3850 ppm/K

#### Response time

Water current ( $v= 0,4\text{m/s}$ ):  $t_{0.5} = 0.10\text{ s}$   
 $t_{0.9} = 0.25\text{ s}$   
 Air stream ( $v= 2\text{m/s}$ ):  $t_{0.5} = 2.50\text{ s}$   
 $t_{0.9} = 8.00\text{ s}$

#### Measuring current

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

#### Long-term stability

$R_0$ -Drift 0.06 % after 250 hours at +150 °C

#### Self-heating

0.8 K/mW at 0 °C

#### Soldering connection

End-termination galvanic tin plated with Ni-barrier layer

#### Connection technology

Face up-mounting: reflow soldering or wave soldering,  
 e. g. double wave  $\leq 8\text{ s}$  / +235 °C

#### Note

Other tolerances, values of resistance and wire lengths are available on request.

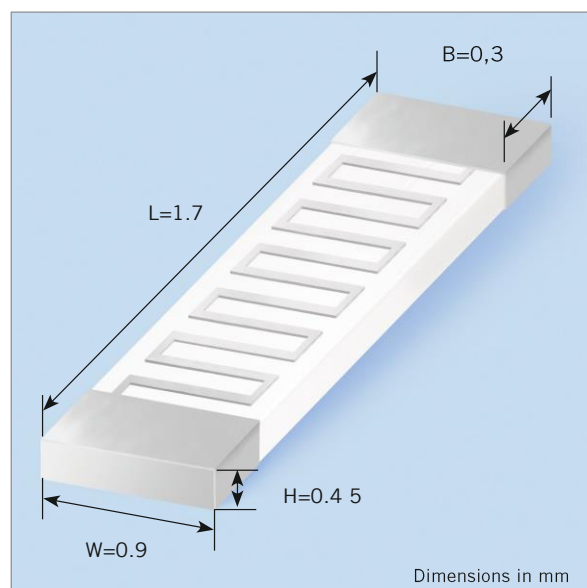


Image for illustration purposes only

#### Storage life

At least 9 months (after manufacture), when stored under the recommended conditions. Longer shelf life may be possible, depending upon actual storage conditions, after requalification by customer. Nitrogen atmosphere recommended

#### Packaging

Alternative packaging forms 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](http://www.p65warnings.ca.gov).

The information provided in this data sheet describes certain technical characteristics of the product, but shall not be qualified or construed as quality guarantee (Beschaffenheitsgarantie) in the meaning of sections 443 and 444 German Civil Code. The information provided in this data sheet regarding measurement values (including, but not limited to, response time, long-term stability, vibration and shock resistance, insulation resistance and self-heating) are average values that have been obtained under laboratory conditions in tests of large numbers of the product. Product results or measurements achieved by customer or any other person in any production, test, or other environment may vary depending on the specific conditions of use. The customer is solely responsible to determine whether the product is suited for the customer's intended use; in this respect Heraeus cannot assume any liability. The sale of any products by Heraeus is exclusively subject to the General Terms of Sale and Delivery of Heraeus in their current version at the time of purchase, which is available under [www.heraeus.com/gtc](http://www.heraeus.com/gtc) or may be furnished upon request. This data sheet is subject to changes without prior notice.

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### Mounting:

Layout of the circuit board: Benchmark II 150Qm  
(Material FR4 35Qm Cu, size 190.5 x 127 x 1.5mm)

Circuit board surfaces:

chem. Ag, Cu OSP, NiAu, chem. Sn

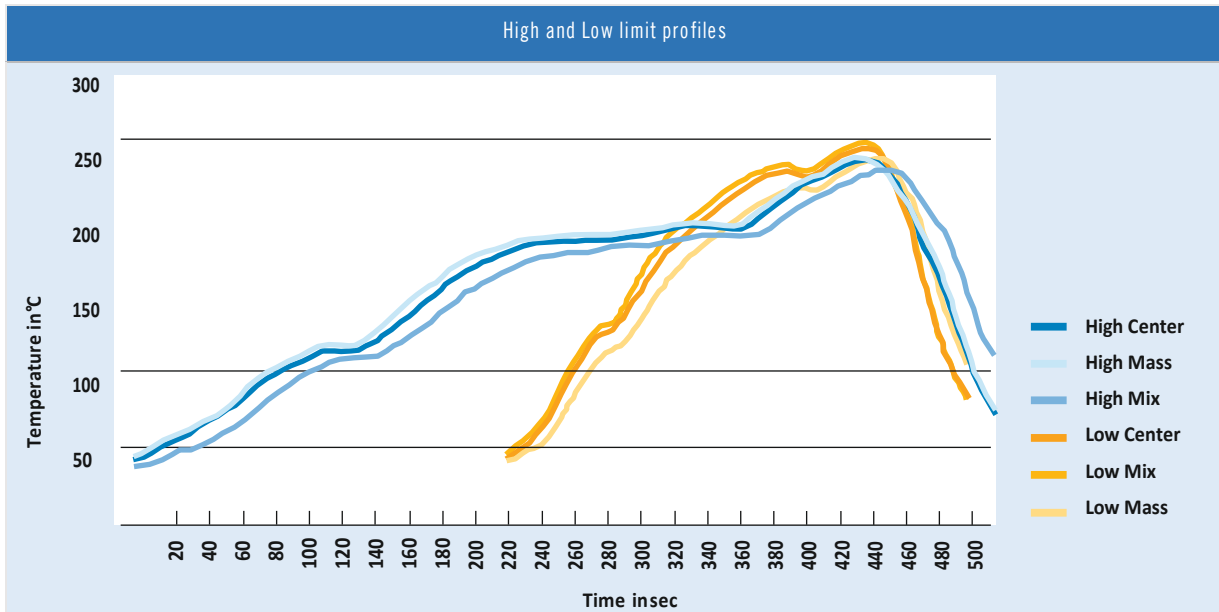
Soldering paste: F640 SA30C5-89 M30  
(Material SnAgCu 96.5/3.0/0.5)

### Types:

Pt 1000 SMD- V 0603  
Pt 1000 SMD- V 0805  
Pt 1000 SMD- V 1206

### Soldering conditions:

Limit profiles: High and Low  
Atmosphere: Nitrogen and air



	Peak (max. temperature)		Time over 217 °C in sec.	
	High	Low	High	Low
Center <sup>1</sup>	+237 °C	+245 °C	60	92
Mass <sup>2</sup>	+231 °C	+238 °C	49	68
Mix <sup>3</sup>	+238 °C	+248 °C	65	103

<sup>1</sup>Center: Position of temperature sensor in the center of the circuit board

<sup>2</sup>Mass: Position of the temperature sensor on a large mass on the Circuit board

<sup>3</sup>Mix: Position of temperature sensor left and right on the circuit board

**High limit profile:** Total throughput time 520 sec

**Low limit profile:** Total throughput time 280 sec



### Result

All tested samples showed a sufficient wetting under the described profiles High and Low, based on a visual soldering point inspection. All given data should not be constructed as guaranteeing specific properties of the product or its suitability for a specific particular application. The data are an extract from a test report with status from July 2010.

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