

## Technical data

Resistance at 0°C	100 Ω	
Temperature coefficient (0 °C up to +100 °C)	$3.85 \cdot 10^{-3} \text{ K}^{-1}$	
Tolerance class according to DIN EN 60751	F 0,3 (-50°C - +500°C) F 0,6 (-50°C - +600°C) (sensor element)	
Operating temperature range	-50 °C up to +850 °C	
Measurement current (DC) at 25 °C	1.0 mA	
Insulation resistance	> 10 MΩ	
Self-heating at 0 °C	< 0.2 K/mW	
Thermal response time		
Flowing air	$T_{0,5} \leq 5 \text{ s}, T_{0,9} \leq 9 \text{ s}$	
Resistance values of Platinum temperature sensor element (each resistance value plus lead resistance)		
	F 0,3 [Ω]	F 0,6 [Ω]
0 °C	$100 \pm 0.12$	$100 \pm 0.24$
+100 °C	$138.51 \pm 0.3$	$138.51 \pm 0.61$
Leads		
Material	NiSi	
Ø d	0.3 mm	
Resistivity at 20°C	$34 \mu\Omega \cdot \text{cm}$	
(Source: Product information of the lead manufacturer)		

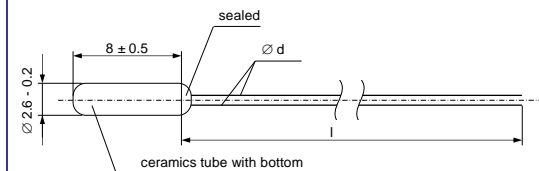
**Operating conditions:** Unprotected application only in dry environments without any contamination. Any compressive and tensile stresses of the leads have to be avoided.

**Remark:** For high temperature applications the sensor element has to be protected applicable against contaminations of substances (heavy metals, Si, P, Cl, Na, K etc.) which could destroy for example the pattern structure caused by chemical or electro-chemical reactions.

**Technology:** Chip - advanced thin-film-technology (ceramic carrier with a structured platinum layer, covered with a passivation layer), assembled in a sealed ceramic protective tube

**Conformity:** 2011/65/EU: Restriction of the use of Hazardous Substances Directive (RoHS)

Dimensions [mm]



Ø d: 0.3 mm,

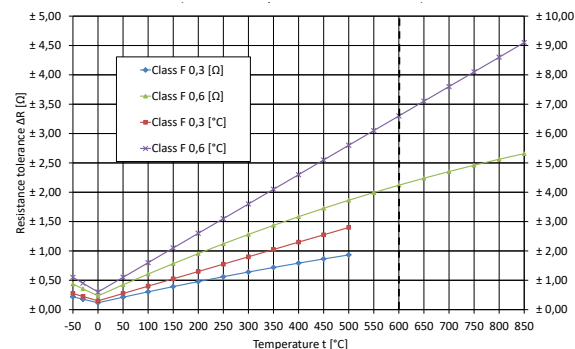
l: 300 mm ± 1 mm

## Functional performance

(Platinum temperature sensor element)

from -50 °C up to 850 °C

(according to DIN EN 60751 from -50 °C up to 600 °C)



Picture 1: Resistance and temperature tolerances of HTS Pt100 HT850°C Ø2.6x8 (Platinum temperature sensor element)

Temperature range from -50 °C up to 0 °C:

$$R_t = R_0 \cdot (1 + A \cdot t + B \cdot t^2 + C \cdot (t - 100 \text{ °C}) \cdot t^3)$$

Temperature range from 0 °C up to +850 °C:

$$R_t = R_0 \cdot (1 + A \cdot t + B \cdot t^2)$$

Tolerance classes (according to DIN EN 60751 from -50 °C up to 600 °C):

Class F 0,3 (-50°C - +500°C):  $\Delta t = \pm (0.3 + 0.005 \cdot |t|)$

Class F 0,6: (-50°C - +600°C/+850°C):

$$\Delta t = \pm (0.6 + 0.01 \cdot |t|)$$

whereby:

$R_t$  ... Resistance [Ω] at temperature t

$R_0$  ... Resistance [Ω] at 0 °C

t ... Temperature [°C]

$\Delta t$  ... Permissible temperature deviation at t [°C]

$$A = 3.9083 \cdot 10^{-3} \text{ °C}^{-1}$$

$$B = -5.775 \cdot 10^{-7} \text{ °C}^{-2}$$

$$C = -4.183 \cdot 10^{-12} \text{ °C}^{-4}$$

## Fields of application

- Automotive electronics
- Industrial electronics
- Building automation
- Energy and environmental engineering
- Safety and medical engineering

## Ordering example

Please use the following code/article description:

*HTS Pt100, HT850°C, class F0,3 up to 500°C, F 0,6 up to 850°C, ceramics tube with bottom/sealed (ctbs)*

*Ø2.6x8 mm, Leads NiSi Ø0,3 mm, variant l=300 mm*

(Other wire lengths are available on request.)