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# P\_K\_.0805.2ST.\_

## Platinum thin film RTD

### For the automatic assembling on PCBs





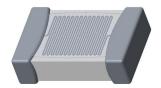




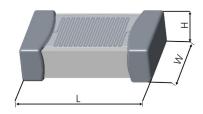
#### Benefits & Characteristics

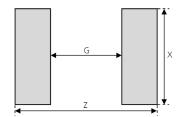
### Product image

- Excellent long-term stability and thermal cycling
- Low self-heating
- Automatic assembly in large-volume applications



#### Illustration<sup>1)</sup>





#### **Dimensions**

Dimensions in mm	L	W	Н
	$2.0 \pm 0.15$	$1.25 \pm 0.15$	$0.5 \pm 0.1$
Land pattern in mm	Z	G	X
	2.70	1.10	1.40

#### Technical Data

#### **Electrical Specifications**

Temperature range	-50 °C to +150 °C (see general notes 1.1)		
Nominal resistance	100 $\Omega$ at 0 °C, 500 $\Omega$ at 0 °C, 1000 $\Omega$ at 0 °C		
Characteristic	IEC 60751		
Tolerance class (dependent on temperature range)		IST AG reference	
	IEC 60751 F0.15	А	
	IEC 60751 F0.3	В	
	IEC 60751 F0.6	C	
Temperature coefficient	3850 ppm/K		
Temperature dependence of resistivity	according to IEC 60751:		
	$-50 ^{\circ}\text{C}$ to $0 ^{\circ}\text{C}$ R(T) = R <sub>0</sub> x (1+A 0 to +150 $^{\circ}\text{C}$ R(T) = R <sub>0</sub> x (1+A	$AxT + BxT^{2} + Cx[T-100] \times T^{3}$ $AxT + BxT^{2}$	
	$\Lambda = 2.0002 \times 10^{-3} \times {}^{9}\text{C}^{-1}$		

 $A = 3.9083 \times 10^{-3} \times {}^{\circ}\text{C}^{-1}$   $B = -5.775 \times 10^{-7} \times {}^{\circ}\text{C}^{-2}$   $C = -4.183 \times 10^{-12} \times {}^{\circ}\text{C}^{-4}$ 

 $R_0$  = resistance value in  $\Omega$  at 0°C T = temperature in accordance with ITS90

DTP\_K\_.0805.2ST\_2.3.2 1/4



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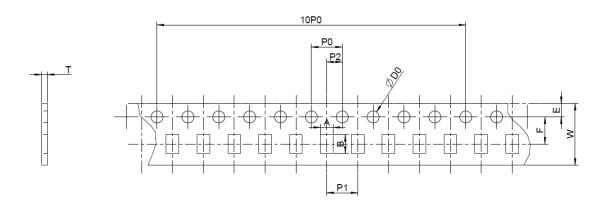


#### **General Specifications**

Pads (soldering connection)	Soft-Termination galvanic tin plated with nickel barrier layer		
Soldering (according to J-STD-002E) see general notes 1.3	<ol> <li>Solderability: Test A and A1</li> <li>Resistance to soldering heat: Test A and A1</li> </ol>		
Measuring current	Pt 100	Pt 500	Pt 1000
(Self-heating has to be considered)	1 mA	0.5 mA	0.3 mA
Long-term stability:	< 0.04 % at 1000 h at 130 °C		
Taping & Packaging	EIA-481 (for dimensions see general notes 1.2)		
Storage Property	12 months (original packaging and dry conditions)		
REACH + RoHs Compliance	Yes		
Special	Use in dry environment only		

#### General notes

- 1.1 The thermal coefficient of expansion of the circuit board has to be considered
- 1.2 Taping and Packaging:



Item	A	В	w	E	F	PO	P1	P2	D0	Т	10P0
Dimension	1.65	2.4	8.0	1.75	3.5	4.0	4.0	2.0	1.55	0.75	40.0
min. Tol.	-0.05	-0.05	-0.1	-0.05	-0.05	-0.1	-0.1	-0.05	-0.05	-0.03	-0.1
max. Tol.	0.05	0.05	0.1	0.05	0.05	0.1	0.1	0.05	0.05	0.03	0.1

#### Dimensions in mm.

Packaging unit in tape and reel, special variants, small quantities or other packaging unit are available on request.

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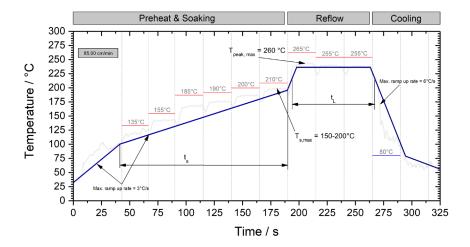


#### 1.3 Soldering and Reflow profile

For soldering IST AG recommends lead-free solder paste (Material: SnAgCu 96.5/3.0/0.5) and a temperature characteristic (reflow profile) for reflow soldering according to JEDEC J-STD-002E. The solderability was tested with following assembly conditions:

PCB Material: FR4 (PCB Layer: 2)
PCB thickness: 1.6 mm
Dimensions: 72 x 32 mm

Solder Paste: KOKI "S3X58-M406" (Pb-free assembly)



Profile parameter	Temperature range / °C	Heating rate / °C / s	Time / s
Ramp to preheat	RT to 150	1.9 - 3	
Preaheat /Soak	$T_{s,min} = 100, T_{s,max} = 200$	1.9 - 3	$t_{s, min} = 60, t_{s, max} = 160$
Ramp to Peak	180 - 255	0.6	
Reflow	$250 \pm 5$ , $T_{peak, max} = 260$		60 to 120, $t_{peak, max} = 30$
Cooling	255 - RT	1.6 - 3	

#### 1.4 Important notes:

- The solder or additional fluxes should be halogen-free, mild, and non-activated.
- After soldering, a thorough cleaning with pH-neutral defluxing material is recommended.
- The profile has a significant impact on the solder joint performance, i.e. solderability, wettability and strength.
- The soak profile and all other data serve as a guideline and cannot be regarded as binding statements or guaranteed values. They serve as a starting point for process development. Specifically, a high mix of components or large board sizes might require the development of a different soldering profile.
- Long-term stability in the application and chemical resistance need to be approved by the customer.
- The customer must test and approve the suitability of IST AG sensors in the customer's application.

DTP\_K\_.0805.2ST\_2.3.2 3/4