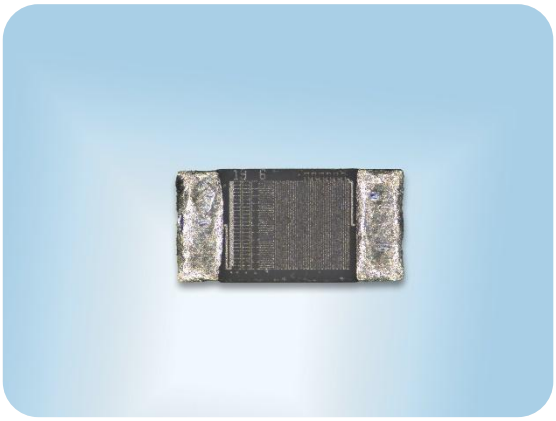
SMD P_K_.0805.2ST

Platinum thin film RTD

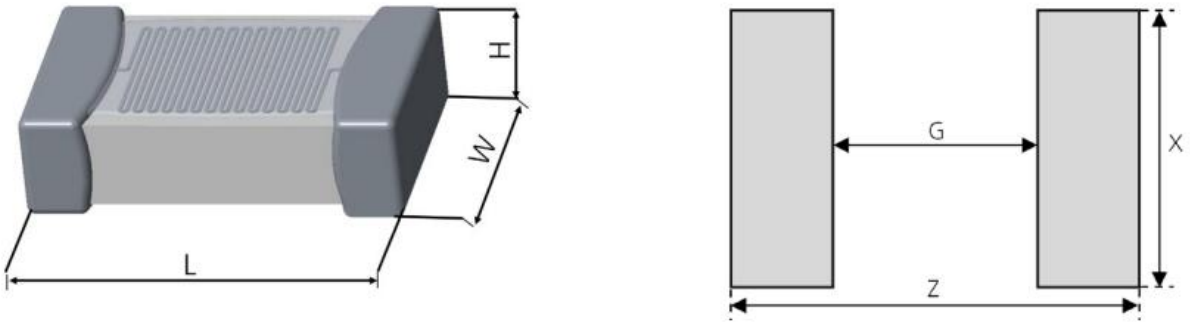
For the automatic assembling on PCBs



Benefits & characteristics

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

Illustration



Dimensions

Dimensions in mm	L	W	H
	2.0 ± 0.15	1.25 ± 0.15	0.5 ±0.1
Land pattern in mm	**Z**	**G**	**X**
	2.70	1.10	1.40

Technical data

Electrical specifications

Operating temperature range:	-50 °C to +150 °C (see general notes 1.1)	
Nominal resistance: *	100 Ω at 0 °C 500 Ω at 0 °C 1000 Ω at 0 °C	
Temperature coefficient:	3850 ppm/K	
Tolerance class: (dependent on temperature range, see general notes 1.2)		**iST reference**
	IEC 60751 F0.15	A
	IEC 60751 F0.3	B
	IEC 60751 F0.6	C
Temperature dependence of resistivity:	According to IE 60751:	
	-50 °C to 0 °C $R(T) = R_0 \times (1+AxT + BxT^2 + Cx[T-100] \times T^3$	
	0 °C to +150 °C $R(T) = R_0 \times (1+AxT + BxT^2)$	
	$A = 3.9083 \times 10^{-3} \times °C^{-1}$	
	$B = -5.775 \times 10^{-7} \times °C^{-2}$	
	$C = -4.183 \times 10^{-12} \times °C^{-4}$	
	R_0 = resistance value in Ω at 0°C	
	T = temperature in accordance with ITS90	

General Specifications

Pads:	Soft-termination galvanic tin plated with nickel barrier layer		
Soldering (according to J-STD-002E) see general notes 1.4	1. Solderability: Test A and A1 2. Resistance to soldering heat: Test A and A1		
Measuring current:	Pt100	Pt500	Pt1000
(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 1.3)		
Storage Property:	12 months (original packaging and dry conditions)		
REACH + RoHs Compliance:	Yes		
Special:	Use in dry environment only		

General notes

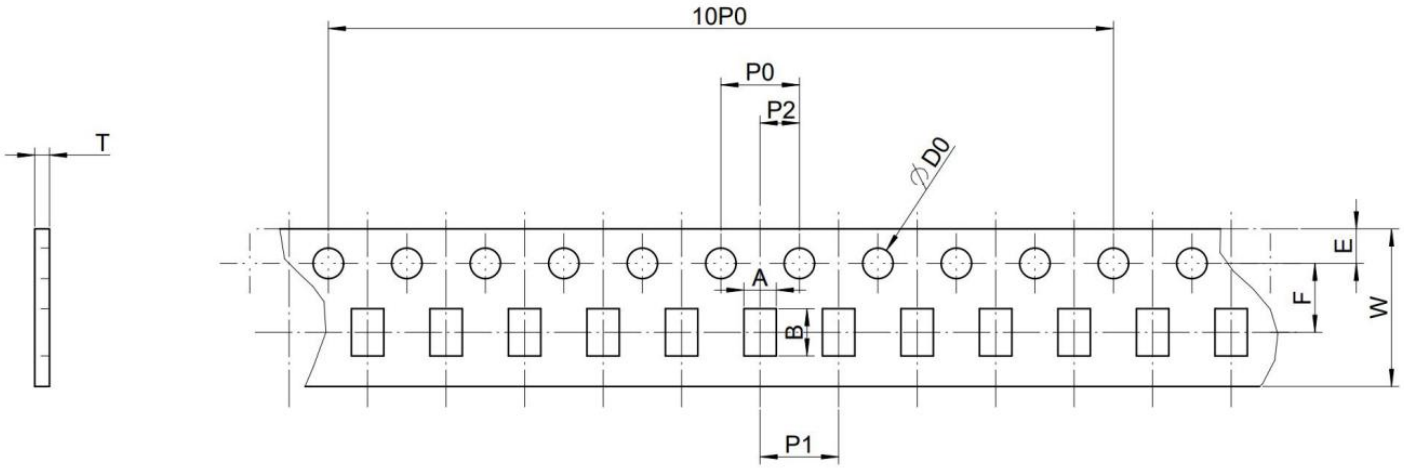
1.1 The thermal coefficient of expansion of the circuit board has to be considered

1.2 IEC60751 tolerances (F0.15, F0.3 and F0.6) are classified by one temperature measurement. Temperature coefficient of SMD sensor is random sample determined in the measuring bath while the sensors were face-up soldered on a PCB board.

Accuracy, self-heating and response time might vary depending on the mounting method (e.g. face-down soldering or wire bonding), and the measuring conditions.

Furthermore, thermal expansion coefficient of the PCB must be considered within the operation temperature range, since it influences the accuracy level.

1.3 Taping and Packaging:



Item	A	B	W	E	F	P0	P1	P2	D0	T	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

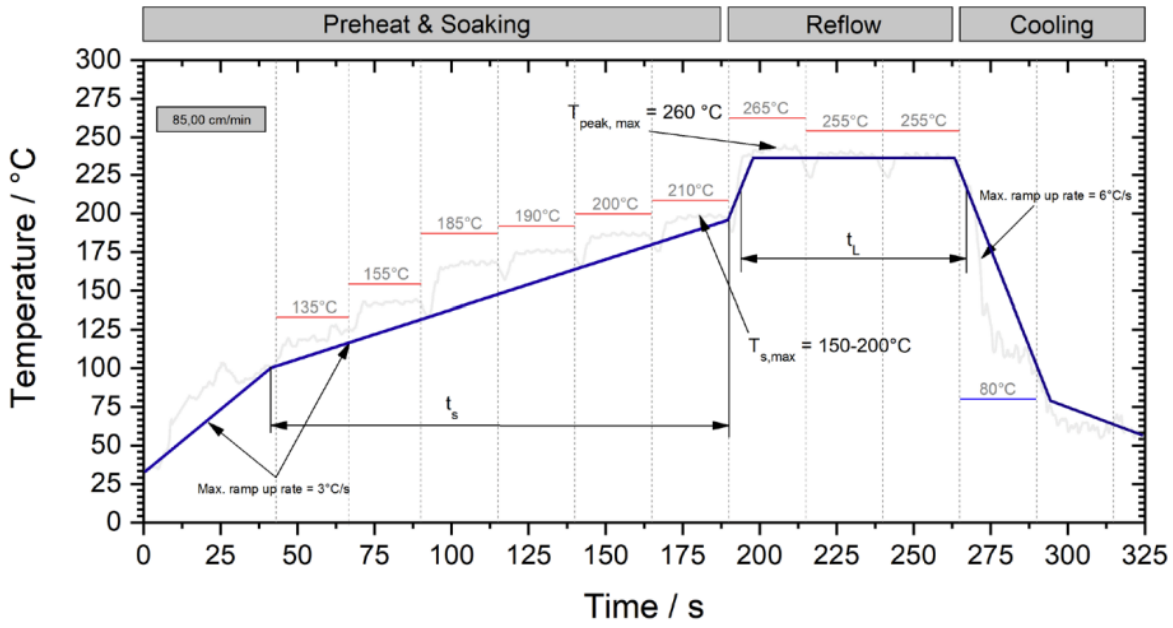
Dimensions in mm.

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

1.4 Soldering and reflow profile

For soldering iST 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 ± 5, $T_{peak,max}$ = 260		60 to 120, $t_{peak,max}$ = 30
Cooling	255 - RT	1.6 - 3	

1.5 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 sensors in the customer's application

Order Information

Nominal Resistance	Size	Dimensions (L x W x H in mm)	Class IEC 60751	Order code	Product name (secondary reference)	Packaging type
Nominal resistance 100 Ω at 0 °C						
100 Ω	0805	2.0 x 1.25 x 0.5	F0.15 (class A)	156779	P0K1.0805.2ST.A.S	Taped only, sensor side up, no reel
100 Ω	0805	2.0 x 1.25 x 0.5	F0.15 (class A)	150043	P0K1.0805.2ST.A	Packed in bags
100 Ω	0805	2.0 x 1.25 x 0.5	F0.15 (class A)	150034	P0K1.0805.2ST.A.S	Taped on reel, sensor side up
100 Ω	0805	2.0 x 1.25 x 0.5	F0.15 (class A)	150044	P0K1.0805.2ST.A.S	Taped on reel, sensor side down
100 Ω	0805	2.0 x 1.25 x 0.5	F0.3 (class B)	152441	P0K1.0805.2ST.B	Packed in bags
100 Ω	0805	2.0 x 1.25 x 0.5	F0.3 (class B)	150035	P0K1.0805.2ST.B.S	Taped on reel, sensor side up
100 Ω	0805	2.0 x 1.25 x 0.5	F0.3 (class B)	152446	P0K1.0805.2ST.B.S	Taped on reel, sensor side down
100 Ω	0805	2.0 x 1.25 x 0.5	F0.6 (class C)	152445	P0K1.0805.2ST.C	Packed in bags
100 Ω	0805	2.0 x 1.25 x 0.5	F0.6 (class C)	150036	P0K1.0805.2ST.C.S	Taped on reel, sensor side up
100 Ω	0805	2.0 x 1.25 x 0.5	F0.6 (class C)	102022	P0K1.0805.2ST.C.S	Taped on reel, sensor side down
Nominal resistance 500 Ω at 0 °C						
500 Ω	0805	2.0 x 1.25 x 0.5	F0.15 (class A)	156780	P0K5.0805.2ST.A.S	Taped only, sensor side up, no reel
500 Ω	0805	2.0 x 1.25 x 0.5	F0.15 (class A)	150045	P0K5.0805.2ST.A	Packed in bags
500 Ω	0805	2.0 x 1.25 x 0.5	F0.15 (class A)	150040	P0K5.0805.2ST.A.S	Taped on reel, sensor side up
500 Ω	0805	2.0 x 1.25 x 0.5	F0.15 (class A)	150048	P0K5.0805.2ST.A.S	Taped on reel, sensor side down
500 Ω	0805	2.0 x 1.25 x 0.5	F0.3 (class B)	150046	P0K5.0805.2ST.B	Packed in bags
500 Ω	0805	2.0 x 1.25 x 0.5	F0.3 (class B)	150041	P0K5.0805.2ST.B.S	Taped on reel, sensor side up
500 Ω	0805	2.0 x 1.25 x 0.5	F0.3 (class B)	150049	P0K50805.2ST.B.S	Taped on reel, sensor side down
500 Ω	0805	2.0 x 1.25 x 0.5	F0.6 (class C)	150047	P0K5.0805.2ST.C	Packed in bags
500 Ω	0805	2.0 x 1.25 x 0.5	F0.6 (class C)	150042	P0K5.0805.2ST.C.S	Taped on reel, sensor side up
500 Ω	0805	2.0 x 1.25 x 0.5	F0.6 (class C)	150050	P0K5.0805.2ST.C.S	Taped on reel, sensor side down
Nominal resistance 1000 Ω at 0 °C						
1000 Ω	0805	2.0 x 1.25 x 0.5	F0.15 (class A)	156781	P1K0.0805.2ST.A.S	Taped only, sensor side up, no reel
1000 Ω	0805	2.0 x 1.25 x 0.5	F0.15 (class A)	150028	P1K0.0805.2ST.A	Packed in bags
1000 Ω	0805	2.0 x 1.25 x 0.5	F0.15 (class A)	150037	P1K0.0805.2ST.A.S	Taped on reel, sensor side up
1000 Ω	0805	2.0 x 1.25 x 0.5	F0.15 (class A)	150029	P1K0.0805.2ST.A.S	Taped on reel, sensor side down
1000 Ω	0805	2.0 x 1.25 x 0.5	F0.3 (class B)	101865	P1K0.0805.2ST.B	Packed in bags
1000 Ω	0805	2.0 x 1.25 x 0.5	F0.3 (class B)	150038	P1K0.0805.2ST.B.S	Taped on reel, sensor side up

1000 Ω	0805	2.0 x 1.25 x 0.5	F0.3 (class B)	102023	P1K0.0805.2ST.B.S	Taped on reel, sensor side down
1000 Ω	0805	2.0 x 1.25 x 0.5	F0.3 (class B)	150078	P1K0.0805.2ST.B.S	Taped only, sensor side up
1000 Ω	0805	2.0 x 1.25 x 0.5	F0.6 (class C)	102020	P1K0.0805.2ST.C	Packed in bags
1000 Ω	0805	2.0 x 1.25 x 0.5	F0.6 (class C)	150039	P1K0.0805.2ST.C.S	Taped on reel, sensor side up
1000 Ω	0805	2.0 x 1.25 x 0.5	F0.6 (class C)	102024	P1K0.0805.2ST.C.S	Taped on reel, sensor side down

Additional Documents

Application Note	Document name: ATP_E

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