



SMD P_0603.2ST



Platinum thin film RTD

For the automatic assembling on PCBs



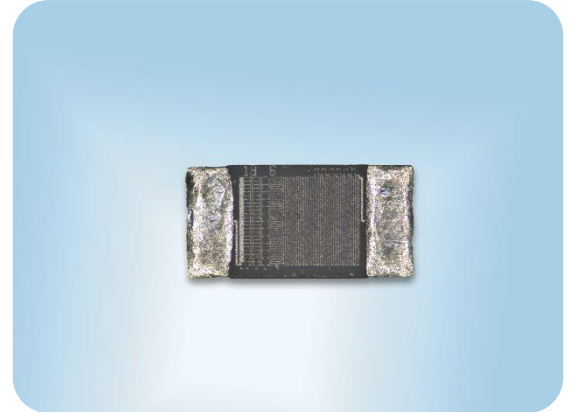
Benefits & characteristics

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

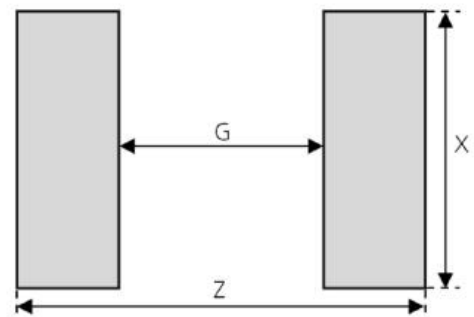
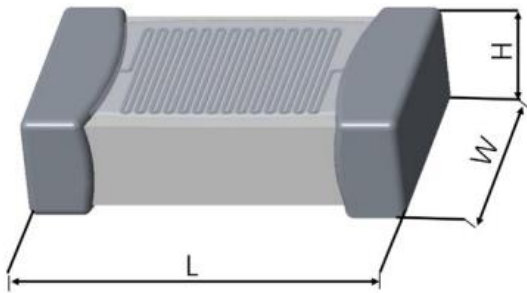


innovative
Sensor
Technology

physical · chemical · biological



Illustration



Dimensions

Dimensions in mm	L	W	H
	1.6 ±0.15	0.8 ±0.15	0.5 ±0.1
Land pattern in mm	Z	G	X
	2.30	0.80	0.93



Technical data



Electrical specifications



Operating temperature range: -50 °C to +150 °C (see general notes 1.1)



Nominal resistance:*
100 Ω at 0 °C
1000 Ω at 0 °C



Temperature coefficient 3850 ppm/K



Tolerance class: **IST reference**
(dependent on temperature range)

IEC 60751 F0.15 A

IEC 60751 F0.3 B

IEC 60751 F0.6 C



Temperature dependence of resistivity According to IEC 60751:
-50 °C to 0 °C $R(T) = R_0 \times (1 + A \times T + B \times T^2 + C \times [T - 100] \times T^3)$
0 °C to +150 °C $R(T) = R_0 \times (1 + A \times T + B \times T^2)$
 $A = 3.9083 \times 10^{-3} \times \text{°C}^{-1}$
 $B = -5.775 \times 10^{-7} \times \text{°C}^{-2}$
 $C = -4.183 \times 10^{-12} \times \text{°C}^{-4}$
 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 1.3
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 1.2)

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 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.



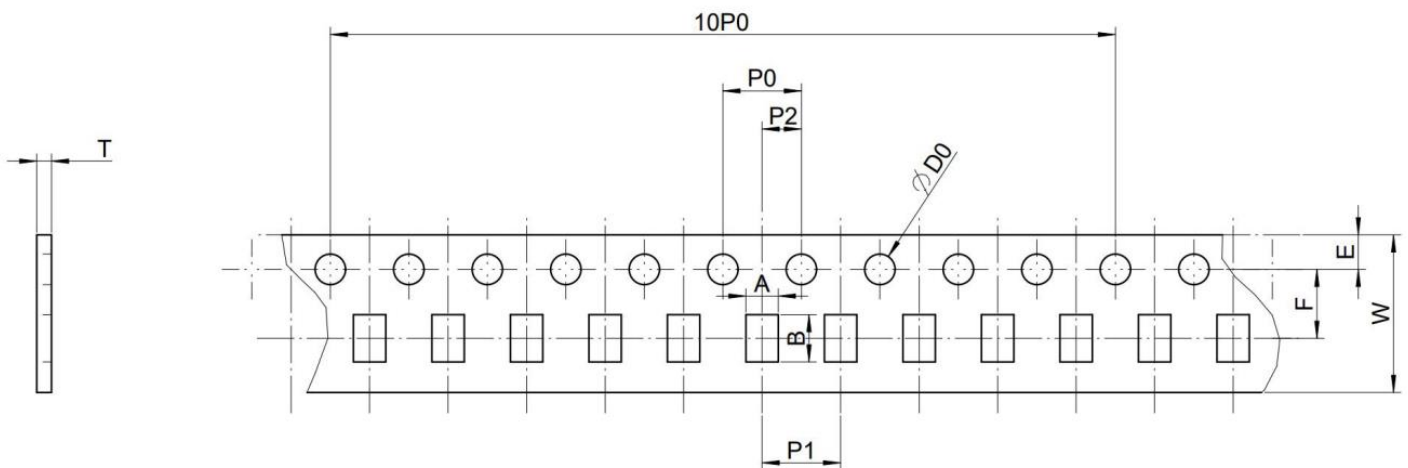
Accuracy, self-heating and response time might vary depending on the mounting method (e.g. face-down soldering or wire bonding), and the measuring conditions.



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	1.070	1.78	8.0	1.75	3.5	4.0	4.0	2.0	1.55	0.6	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.

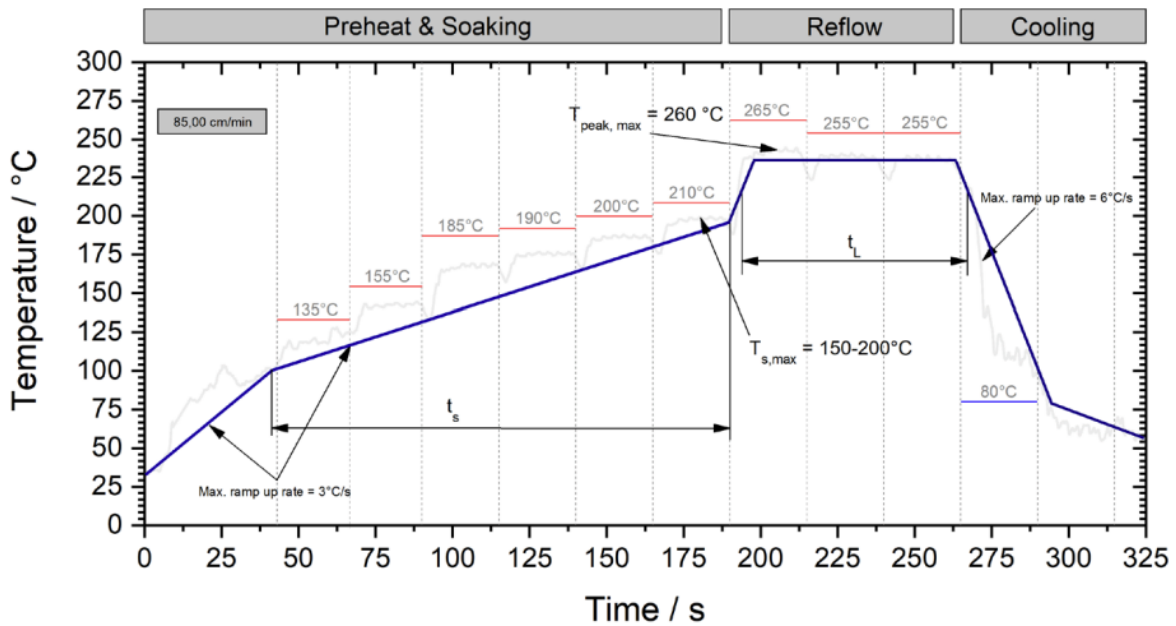
Packaging unit in tape and reel, special variants, small quantities or other packaging unit are available on request.



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	$250 \pm 5, T_{peak,max} = 260$		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
100 Ω	603	1.6 x 0.8 x 0.5	F0.15 (class A)	156783	P0K1.0603.2ST.A.S	Taped only, sensor side up, no reel
100 Ω	603	1.6 x 0.8 x 0.5	F0.15 (class A)	151139	P0K1.0603.2ST.A	Packed in bags
100 Ω	603	1.6 x 0.8 x 0.5	F0.15 (class A)	151140	P0K1.0603.2ST.A.S	Taped on reel, sensor side up
100 Ω	603	1.6 x 0.8 x 0.5	F0.15 (class A)	151141	P0K1.0603.2ST.A.S	Taped on reel, sensor side down
100 Ω	603	1.6 x 0.8 x 0.5	F0.3 (class B)	151133	P0K1.0603.2ST.B	Packed in bags
100 Ω	603	1.6 x 0.8 x 0.5	F0.3 (class B)	151132	P0K1.0603.2ST.B.S	Taped on reel, sensor side up
100 Ω	603	1.6 x 0.8 x 0.5	F0.3 (class B)	151138	P0K1.0603.2ST.B.S	Taped on reel, sensor side down
100 Ω	603	1.6 x 0.8 x 0.5	F0.6 (class C)	151127	P0K1.0603.2ST.C	Packed in bags
100 Ω	603	1.6 x 0.8 x 0.5	F0.6 (class C)	151126	P0K1.0603.2ST.C.S	Taped on reel, sensor side up
100 Ω	603	1.6 x 0.8 x 0.5	F0.6 (class C)	151130	P0K1.0603.2ST.C.S	Taped on reel, sensor side down
1000 Ω	603	1.6 x 0.8 x 0.5	F0.15 (class A)	156782	P1K0.0603.2ST.A.S	Taped only, sensor side up, no reel
1000 Ω	603	1.6 x 0.8 x 0.5	F0.15 (class A)	152524	P1K0.0603.2ST.A	Packed in bags
1000 Ω	603	1.6 x 0.8 x 0.5	F0.15 (class A)	152525	P1K0.0603.2ST.A.S	Taped on reel, sensor side up
1000 Ω	603	1.6 x 0.8 x 0.5	F0.15 (class A)	152527	P1K0.0603.2ST.A.S	Taped on reel, sensor side down
1000 Ω	603	1.6 x 0.8 x 0.5	F0.3 (class B)	152534	P1K0.0603.2ST.B	Packed in bags
1000 Ω	603	1.6 x 0.8 x 0.5	F0.3 (class B)	152535	P1K0.0603.2ST.B.S	Taped on reel, sensor side up
1000 Ω	603	1.6 x 0.8 x 0.5	F0.3 (class B)	152536	P1K0.0603.2ST.B.S	Taped on reel, sensor side down
1000 Ω	603	1.6 x 0.8 x 0.5	F0.6 (class C)	152537	P1K0.0603.2ST.C	Packed in bags
1000 Ω	603	1.6 x 0.8 x 0.5	F0.6 (class C)	152538	P1K0.0603.2ST.C.S	Taped on reel, sensor side up
1000 Ω	603	1.6 x 0.8 x 0.5	F0.6 (class C)	152539	P1K0.0603.2ST.C.S	Taped on reel, sensor side down

Additional Documents

Application Note

Document name: ATP_E



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