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SMD-L-AuNi

Platinum-chip temperature sensors in SMD design type

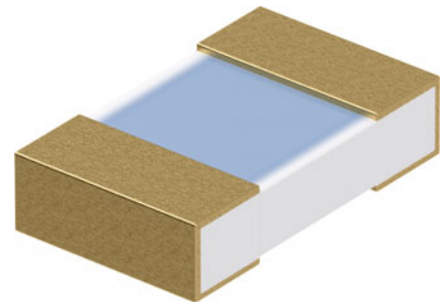
according to DIN EN IEC 60751

Areas of application

- Heating, air conditioning, and ventilation technology
- Industrial measurement technology
- Medical and laboratory technology
- White goods
- Motor and commercial vehicles
- Mechanical engineering
- Electromobility

Special features

- Version as SMD with wrap-around contact
- Gold-plated nickel solder contact
- Highly-purified and even contact layer for a better solder connection
- High long-term stability
- High temperature cycle stability
- High measuring accuracy
- Long operating life
- Qualified according to AEC-Q200, Rev. D for selected sensors



Type 906141

Description

Platinum-chip temperature sensors belong to the category of temperature sensors that are made using thin film technology. Because they are mounted on surfaces (SMT, surface-mount technology), the SMD sensors are suitable for surface or ambient temperature measurements on circuit boards.

They are the preferred option for temperature monitoring or compensation circuits and have numerous applications in temperature probes. The sensors can also be operated as a heated resistor for calorimetric measurements.

JUMO platinum-chip temperature sensors are available in different versions. You can find a summary and further information on our website.

⇒ [Platinum-chip temperature sensors](#)

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Technical data

Temperature range For platinum-chip temperature sensor On circuit board	-70 to +250 °C -50 to +150 °C Use circuit board with adapted thermal expansion coefficient.
Temperature coefficient	$\alpha = 3.851 \times 10^{-3} \text{ }^{\circ}\text{C}^{-1}$ (between 0 and 100 °C)
Temperature range of validity ^a Class F 0.1 Class F 0.15 Class F 0.3 Class F 0.6	0 to 150 °C -30 to +150 °C -50 to +250 °C -70 to +250 °C
Measuring current Pt100 Pt500 Pt1000	Recommended 1.0 mA, maximum 7.0 mA Recommended 0.7 mA, maximum 3.0 mA Recommended 0.1 mA, maximum 1.0 mA
Operating conditions	Do not use platinum-chip temperature sensors unprotected in a humid environment or in aggressive atmospheres. Direct immersion into liquids is not admissible. Refer to the installation instructions "Application notes for platinum-chip temperature sensors", which can be found on the website.
Self-heating	$\Delta t = I^2 \times R \times E$ Δt : Self-heating or measurement error I: Measuring current E: Self-heating coefficient, see the table "Self-heating and response times" for values
Stability at maximum temperature	1000 h at 160 °C in air Drift des Messwerts $\Delta T_0 < 100 \text{ mK}$
Long-term stability	Max. R_0 drift of 0.05 % per year
Solder connections Nickel layer thickness Gold layer thickness	Gold-plated nickel solder contact $\geq 1 \text{ } \mu\text{m}$ $\geq 40 \text{ nm}$
Solderability	According to IEC/DIN EN 60068-2-58 Group 3 soldering process "Higher temperatures", solder Sn96.5Ag3.0Cu0.5
Resistance to dissolution	According to IEC/DIN EN 60068-2-58 Group 3 soldering process "Higher temperatures", solder Sn96.5Ag3.0Cu0.5
ESD	According to AEC-Q200-002 Level 2 Typically $\geq 2 \text{ kV}$ HBM (direct contact) Soldered onto circuit board as a module (see data sheet 906143).
Storage	Can be stored for at least 5 years after delivery in the original packaging.
Packaging	According to IEC 60286-3 (standard) Sensor surface at top (outside).
Compliant with RoHS 2011/65/EU and RoHS 2015/863/EU	Yes
Compliant with REACH 1907/2006	Yes

^a Note on accuracy class F 0.1 and F 0.15: Contrary to the standard DIN EN IEC 60751, the routine testing of the limit deviation only takes place at one temperature. The temperature coefficient of the relevant batch is also checked on a random sample basis.

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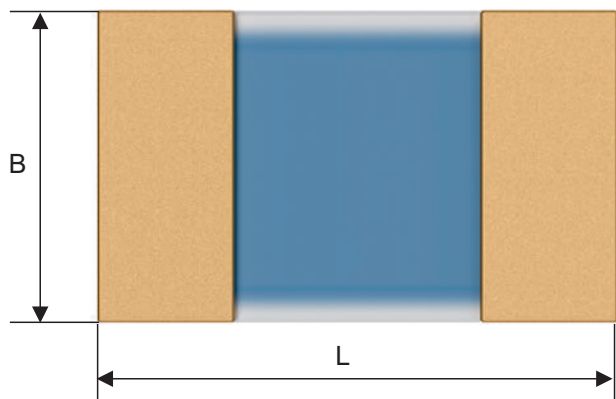


Self-heating and response times

Type	Self-heating coefficient E in °C/mW in air ($v = 3 \text{ m/s}$, $t = 22 \text{ °C}$)	Response times in s in air ($v = 3 \text{ m/s}$)	
		$t_{0.5}$	$t_{0.9}$
SMD 0805	0.3	8	17
SMD 1206	0.3	9	20

Constructed as JUMO measuring insert PCB-B-Au (see data sheet 906143)

Dimensions



B Width (tolerance $+0.2/-0.1 \text{ mm}$)

H Height (tolerance $\pm 0.05 \text{ mm}$)

L Length (tolerance $+0.2/-0.1 \text{ mm}$)

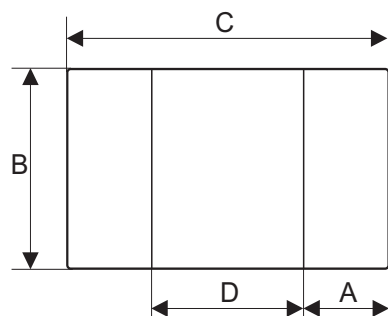
L1 Connection length (tolerance $\pm 0.2 \text{ mm}$)



Processing

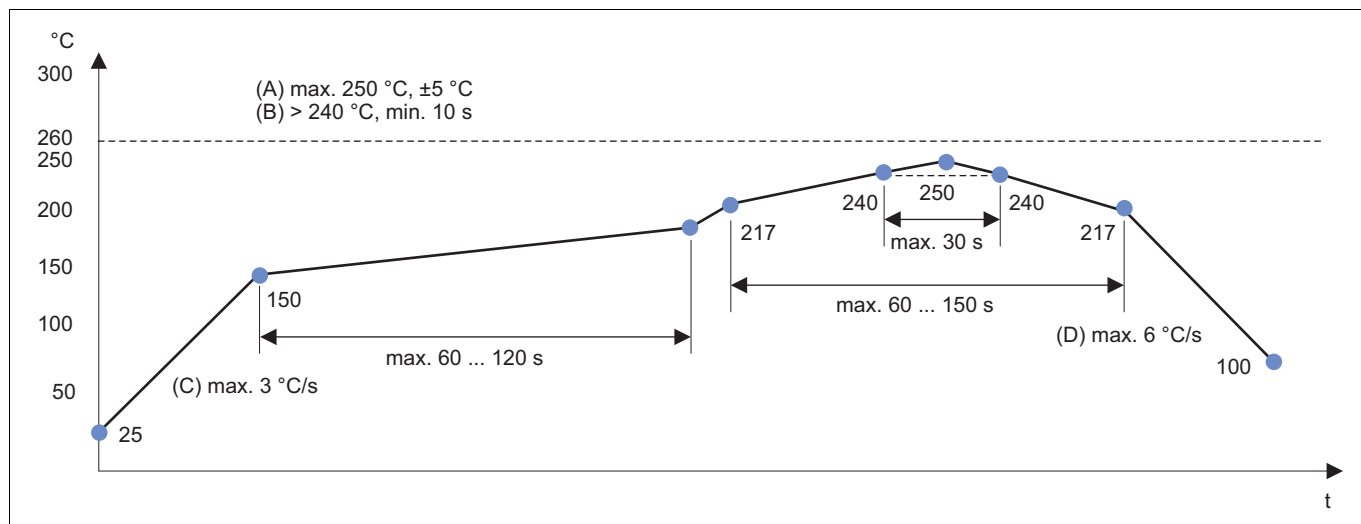
The temperature sensors are optimized for soft-soldering in a reflow method. The temperature sensors could be damaged when soldering with a soldering iron. The soldering temperature may be raised slightly in comparison with tin-plated components.

Recommended pad dimensions on the circuit board



SMD size	A in mm	B in mm	C in mm	D in mm
0805	0.8	1.25	2.6	1.0
1206	0.8	1.50	3.6	2.0

Recommended soldering profile for lead-free solder, type SAC 305/405



(A) Reflow soldering profile
 (B) Solder point temperature

(C) Heat-up rate
 (D) Cooling rate

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Stock versions

SMD size 0805, dimensions 1.25 × 2.0 mm (B × L)

Order code	Size H in mm	Connection length L1 in mm	Nomi- nal value R ₀ in Ω	Packaging unit in pieces	Tolerance class	Part no.
906141/0-0805-0.4-100-5000-030	0.4	0.4	100	5000	F 0.3	00585849
906141/0-0805-0.4-100-5000-015	0.4	0.4	100	5000	F 0.15	00659407
906141/0-0805-0.4-100-5000-010	0.4	0.4	100	5000	F 0.1	00647797
906141/0-0805-0.4-500-5000-030	0.4	0.4	500	5000	F 0.3	00649601
906141/0-0805-0.4-500-20000-030	0.4	0.4	500	20000	F 0.3	00585853
906141/0-0805-0.4-500-20000-015	0.4	0.4	500	20000	F 0.15	00628428
906141/0-0805-0.4-1000-5000-060 ^a	0.4	0.4	1000	5000	F 0.6	00695344
906141/0-0805-0.4-1000-5000-030 ^a	0.4	0.4	1000	5000	F 0.3	00649602
906141/0-0805-0.4-1000-5000-015 ^a	0.4	0.4	1000	5000	F 0.15	00647798
906141/0-0805-0.4-1000-5000-010 ^a	0.4	0.4	1000	5000	F 0.1	00647795
906141/0-0805-0.4-1000-20000-030 ^a	0.4	0.4	1000	20000	F 0.3	00585854

^a Qualified according to AEC-Q200, Rev. D

SMD size 1206, dimensions 1.5 × 3.0 mm (B × L)

Order code	Size H in mm	Connection length L1 in mm	Nomi- nal value R ₀ in Ω	Packaging unit in pieces	Tolerance class	Part no.
906141/0-1206-0.4-100-5000-030	0.4	0.4	100	5000	F 0.3	00585846
906141/0-1206-0.4-100-5000-015	0.4	0.4	100	5000	F 0.15	00700543
906141/0-1206-0.4-100-5000-010	0.4	0.4	100	5000	F 0.1	00647835
906141/0-1206-0.4-500-5000-030	0.4	0.4	500	5000	F 0.3	00649603
906141/0-1206-0.4-500-20000-030	0.4	0.4	500	20000	F 0.3	00585847
906141/0-1206-0.4-1000-5000-030	0.4	0.4	1000	5000	F 0.3	00649605
906141/0-1206-0.4-1000-5000-015	0.4	0.4	1000	5000	F 0.15	00647834
906141/0-1206-0.4-1000-5000-010	0.4	0.4	1000	5000	F 0.1	00686986
906141/0-1206-0.4-1000-20000-030	0.4	0.4	1000	20000	F 0.3	00585848

Tanpoquier Electrical Equipment

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PCA1.2005.10M	S01.165.05.0050.0050	