

JUMO GmbH & Co. KG
Delivery address: Mackenrodtstraße 14
36039 Fulda, Germany
Postal address: 36035 Fulda, Germany
Phone: +49 661 6003-0
Fax: +49 661 6003-607
Email: mail@jumo.net
Internet: www.jumo.net

JUMO UK LTD
JUMO House
Temple Bank, Riverway
Harlow, Essex, CM20 2DY, UK
Phone: +44 1279 63 55 33
Fax: +44 1279 62 50 29
Email: sales@jumo.co.uk
Internet: www.jumo.co.uk

JUMO Process Control, Inc.
6724 Joy Road
East Syracuse, NY 13057, USA
Phone: +1 315 437 5866
Fax: +1 315 437 5860
Email: info.us@jumo.net
Internet: www.jumousa.com



SMDFCB-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
- Motor and commercial vehicles
- Mechanical engineering

Special features

- Version as an SMD with one-sided contact (flip chip) and solderable back cover
- Gold-plated nickel solder contact
- Highly-purified and even contact layer for a better solder connection
- High temperature cycle stability
- High measuring accuracy
- Long operating life

Description

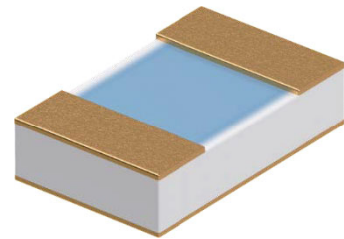
Platinum-chip temperature sensors belong to the category of temperature sensors that are made using thin film technology. Because they are mounted on surfaces (SMT, surface-mount technology), SMD sensors are suitable for surface or ambient temperature measurements on circuit boards.

They are the preferred option for temperature monitoring or compensation circuits and have numerous applications in temperature probes.

The SMDFCB-L-AuNi design type is equipped with solderable nickel-gold metallization on the entire back cover. The result is that a soldered connection can be used to establish direct thermal contact with another body.

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](#)



Type 906146 Front cover



Type 906146 Back cover

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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 Class F 0.3 Class F 0.6	-50 to +250 °C -70 to +250 °C
Measuring current and maximum current Pt1000	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
Metallized back cover	Nickel/gold Optimized for soft-soldering
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 bottom (inside).
Compliant with RoHS 2011/65/EU and RoHS 2015/863/EU	Yes
Compliant with REACH 1907/2006	Yes

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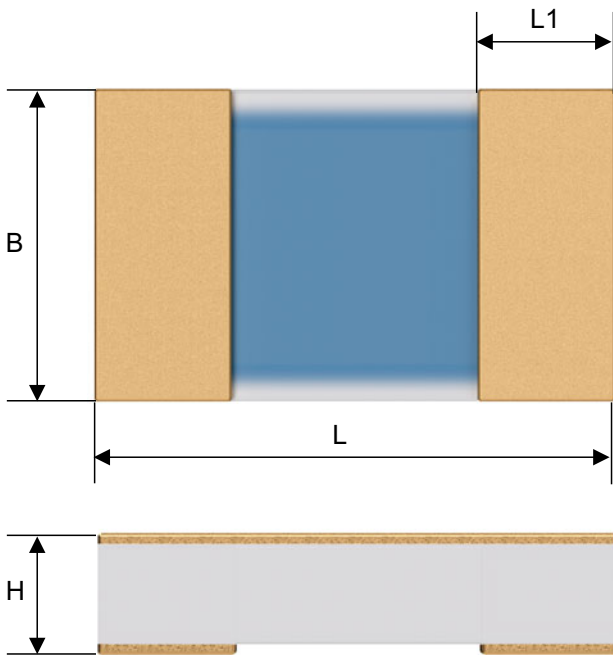


Self-heating and response times

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

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

Dimensions



B Width (tolerance +0.2/-0.1 mm)
 H Height (tolerance ±0.05 mm)

L Length (tolerance +0.2/-0.1 mm)
 L1 Connection length (tolerance ±0.2 mm)

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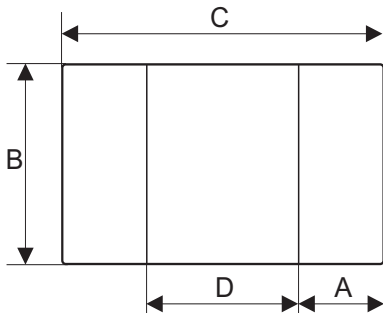
Processing

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.

Depending on the solder used, it may be necessary to adapt the printed solder quantity compared to a sensor/component with wrap-around contact.

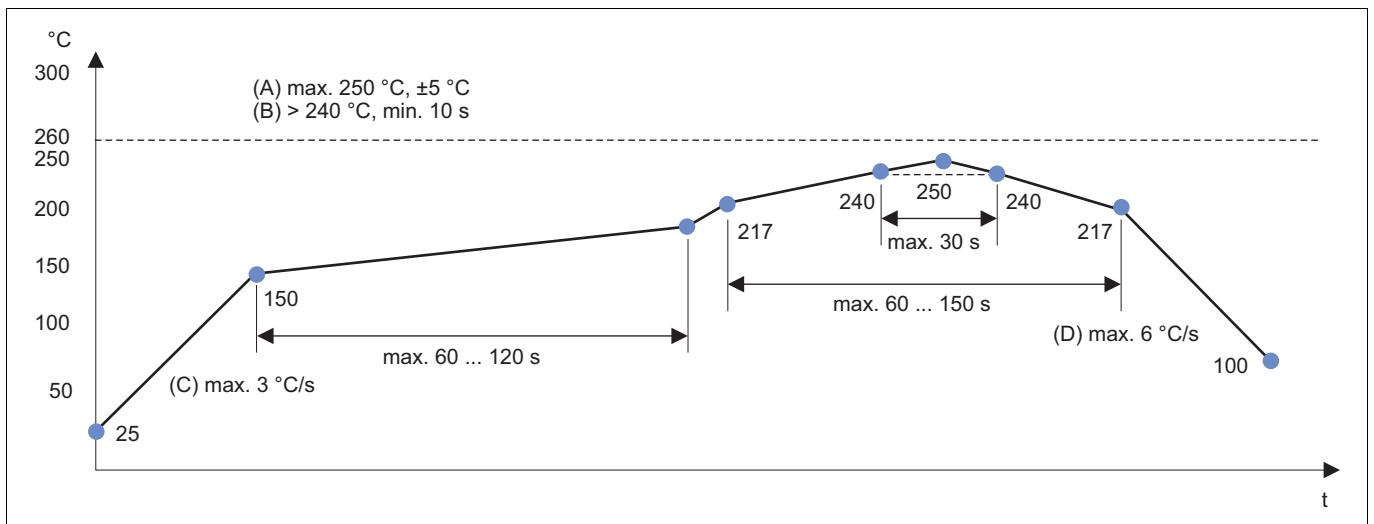
Application of the metallized top side: optimized for soft-soldering

Recommended pad dimensions on the circuit board



SMD size	A in mm	B in mm	C in mm	D in mm
0805	0.65	1.25	2.2	0.9

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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Order details

	(1) Basic type
906146	SMDFCB-L-AuNi – platinum-chip temperature sensors in SMD design type
	(2) Version
0	Standard
	(3) SMD size
0805	0805 (imperial), 2012 (metric)
	(4) Height H
0.4	0.4 mm
	(5) Nominal value of resistance R₀
1000	1000 Ω (Pt1000)
	(6) Processing
0	Soldering
1	Bonding
	(7) Packaging unit
5000	5000 pieces, 8-mm belt on a 7" plastic reel with roll feed line
20000	20000 pieces, 8-mm belt on a 330-mm plastic reel with roll feed line
	Small quantities upon request, without roll feed line
	(8) Tolerance class
030	F 0.3
060	F 0.6

Order code (1) (2) (3) (4) (5) (6) (7) (8)
 Order example 906146 / 0 - 0805 - 0.4 - 1000 - 0 - 5000 - 030

Stock versions

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

Order code	Size	Connection length	Nominal value	Packaging unit	Tolerance class	Part no.
	H in mm	L1 in mm	R ₀ in Ω	in pieces		
906146/0-0805-0.4-1000-0-5000-030	0.4	0.5	1000	5000	F 0.3	00713969
906146/0-0805-0.4-1000-0-5000-060	0.4	0.5	1000	5000	F 0.6	00714764