

LSF-SMT 3.50/20/180 3.5SN BK TU

Weidmüller Interface GmbH & Co. KG

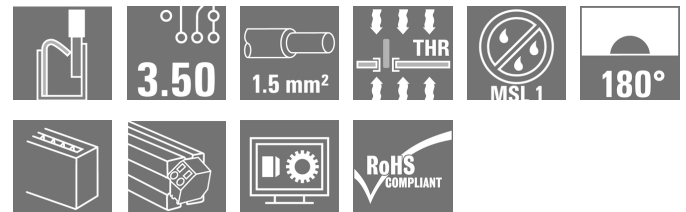
Klingenbergstraße 26

D-32758 Detmold

Germany

www.weidmueller.com

Product image



PCB terminal for fully automatic assembly in reflow soldering (SMT), with PUSH IN conductor connection system. Conductor inserted and slider operated in same direction (TOP). Packed in box or as tape on reel. Pin lengths optimised at 1.5 mm or 3.5 mm.

General ordering data

Version	Printed circuit board terminals, 3.50 mm, Number of poles: 20, 180°, Solder pin length (l): 3.5 mm, black, PUSH IN with actuator, Clamping range, max.: 1.5 mm ² , Tube
Order No.	1870570000
Type	LSF-SMT 3.50/20/180 3.5SN BK TU
GTIN (EAN)	4032248447961
Qty.	7 pc(s).
Product data	IEC: 320 V / 17.5 A / 0.2 - 1.5 mm ² UL: 300 V / 12 A / AWG 28 - AWG 14
Packaging	Tube

Creation date September 16, 2022 7:54:49 PM CEST

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Technical data
Dimensions and weights

Depth	7.8 mm	Depth (inches)	0.307 inch
Height	17.5 mm	Height (inches)	0.689 inch
Height of lowest version	14 mm	Width	70.7 mm
Width (inches)	2.783 inch	Net weight	15 g

Temperatures

Continuous operating temp., max.	120 °C
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System parameters

Product family	OMNIMATE Signal - series LSF	Wire connection method	PUSH IN with actuator
Mounting onto the PCB	THT/THR solder connection	Conductor outlet direction	180°
Pitch in mm (P)	3.5 mm	Pitch in inches (P)	0.138 inch
Number of poles	20	Pin series quantity	1
Fitted by customer	No	Solder pin length (l)	3.5 mm
Solder pin length tolerance	+0.1 / -0.3	Solder pin dimensions	0.35 x 0.8 mm
Solder pin dimensions = d tolerance	0 / -0.1 mm	Solder eyelet hole diameter (D)	1.1 mm
Solder eyelet hole diameter tolerance (D)	+ 0,1 mm	Number of solder pins per pole	2
Stripping length	8 mm	L1 in mm	66.5 mm
L1 in inches	2.618 inch	Touch-safe protection acc. to DIN VDE 0470	IP 20
Touch-safe protection acc. to DIN VDE 57 106	Safe from finger touch	Protection degree	IP20
Volume resistance	1.60 mΩ		

Material data

Insulating material	LCP GF	Colour	black
Colour chart (similar)	RAL 9011	Insulating material group	IIIa
Comparative Tracking Index (CTI)	≥ 175	Moisture Level (MSL)	1
UL 94 flammability rating	V-0	Contact material	Copper alloy
Layer structure of solder connection	4...6 µm Sn matt	Storage temperature, min.	-40 °C
Storage temperature, max.	70 °C	Operating temperature, min.	-50 °C
Operating temperature, max.	120 °C	Temperature range, installation, min.	-30 °C
Temperature range, installation, max.	120 °C		

Conductors suitable for connection

Clamping range, min.	0.13 mm ²
Clamping range, max.	1.5 mm ²
Wire connection cross section AWG, min.	AWG 28
Wire connection cross section AWG, max.	AWG 14
Solid, min. H05(07) V-U	0.2 mm ²
Solid, max. H05(07) V-U	1.5 mm ²
Flexible, min. H05(07) V-K	0.2 mm ²
Flexible, max. H05(07) V-K	1.5 mm ²
w. plastic collar ferrule, DIN 46228 pt 4, min.	0.25 mm ²
w. plastic collar ferrule, DIN 46228 pt 4, max.	0.75 mm ²

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Catalogue status 09.09.2022 / We reserve the right to make technical changes.

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w. wire end ferrule, DIN 46228 pt 1, min. 0.25 mm²

w. wire end ferrule, DIN 46228 pt 1, max. 1.5 mm²

Clampable conductor	Cross-section for conductor connection	Type	fine-wired
	nominal	0.25 mm ²	
wire end ferrule	Stripping length	nominal	10 mm
	Recommended wire-end ferrule	H0.25/12 HBL	
Clampable conductor	Cross-section for conductor connection	Type	fine-wired
	nominal	0.34 mm ²	
wire end ferrule	Stripping length	nominal	10 mm
	Recommended wire-end ferrule	H0.34/12 TK	
Clampable conductor	Cross-section for conductor connection	Type	fine-wired
	nominal	0.5 mm ²	
wire end ferrule	Stripping length	nominal	10 mm
	Recommended wire-end ferrule	H0.5/14 OR	
Clampable conductor	Cross-section for conductor connection	Type	fine-wired
	nominal	0.75 mm ²	
wire end ferrule	Stripping length	nominal	10 mm
	Recommended wire-end ferrule	H0.75/14T HBL	

Reference text Length of ferrules is to be chosen depending on the product and the rated voltage., The outside diameter of the plastic collar should not be larger than the pitch (P)

Rated data acc. to IEC

tested acc. to standard	IEC 60664-1, IEC 61984	Rated current, min. number of poles (Tu=20°C)	17.5 A
Rated current, max. number of poles (Tu=20°C)	16 A	Rated current, min. number of poles (Tu=40°C)	17.5 A
Rated current, max. number of poles (Tu=40°C)	14 A	Rated voltage for surge voltage class / pollution degree II/2	320 V
Rated voltage for surge voltage class / pollution degree III/2	160 V	Rated voltage for surge voltage class / pollution degree III/3	160 V
Rated impulse voltage for surge voltage class/ pollution degree II/2	2.5 kV	Rated impulse voltage for surge voltage class/ pollution degree III/2	2.5 kV
Rated impulse voltage for surge voltage class/ contamination degree III/3	2.5 kV	Short-time withstand current resistance	3 x 1s with 80 A

Rated data acc. to CSA

Institute (CSA)		Certificate No. (CSA)	200039-1664286
Rated voltage (Use group B / CSA)	300 V	Rated voltage (Use group D / CSA)	300 V
Rated current (Use group B / CSA)	10 A	Rated current (Use group D / CSA)	10 A
Wire cross-section, AWG, min.	AWG 28	Wire cross-section, AWG, max.	AWG 14
Reference to approval values	Specifications are maximum values, details - see approval certificate.		

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Technical data

Rated data acc. to UL 1059

Institute (cURus)



Certificate No. (cURus)

E60693

Rated voltage (Use group B / UL 1059) 300 V

Rated voltage (Use group D / UL 1059) 300 V

Rated current (Use group B / UL 1059) 12 A

Rated current (Use group D / UL 1059) 10 A

Wire cross-section, AWG, min. AWG 28

Wire cross-section, AWG, max. AWG 14

Reference to approval values

Specifications are maximum values, details - see approval certificate.

Packing

Packaging Tube

VPE length 10 mm

VPE width 20 mm

VPE height 255 mm

Surface resistance $R_s = 10^9 - 10^{12} \Omega$

Classifications

ETIM 6.0 EC002643

ETIM 7.0 EC002643

ETIM 8.0 EC002643

ECLASS 9.0 27-44-04-01

ECLASS 9.1 27-44-04-01

ECLASS 10.0 27-44-04-01

ECLASS 11.0 27-46-01-01

ECLASS 12.0 27-46-01-01

Important note

IPC conformity

Conformity: The products are developed, manufactured and delivered according international recognized standards and norms and comply with the assured properties in the data sheet resp. fulfill decorative properties in accordance with IPC-A-610 "Class 2". Further claims on the products can be evaluated on request.

Notes

- Additional push button colours on request
- Operating force of slider max. 40 N
- Rated current related to rated cross-section & min. No. of poles.
- Wire end ferrule with plastic collar to DIN 46228/4
- Wire end ferrule without plastic collar to DIN 46228/1
- P on drawing = pitch
- Rated data refer only to the component itself. Clearance and creepage distances to other components are to be designed in accordance with the relevant application standards.
- Crimping shape "A" for wire end ferrules with PZ 6/5 crimping tool recommended.
- Long term storage of the product with average temperature of 50 °C and average humidity 70%, 36 months

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Technical data

Approvals

Approvals



ROHS Conform

UL File Number Search UL Website

Certificate No. (cURus) E60693

Downloads

Approval/Certificate/Document of Conformity [Declaration of the Manufacturer](#)Engineering Data [CAD data – STEP](#)Engineering Data [EPLAN, WSCAD](#)Catalogues [Catalogues in PDF-format](#)
 Brochures
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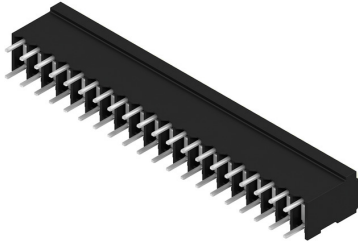
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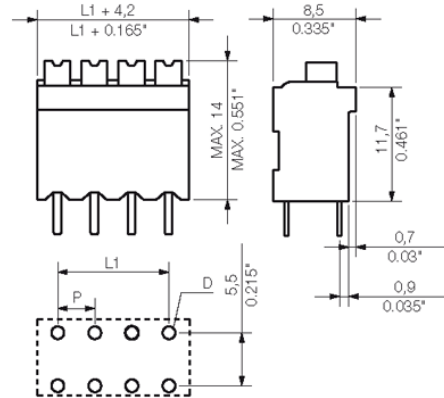
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Drawings

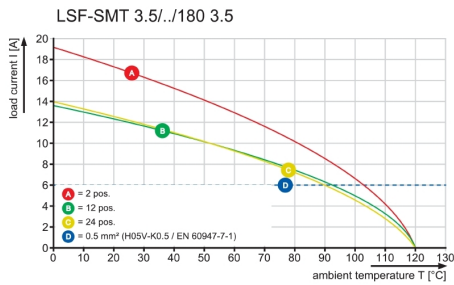
Product image



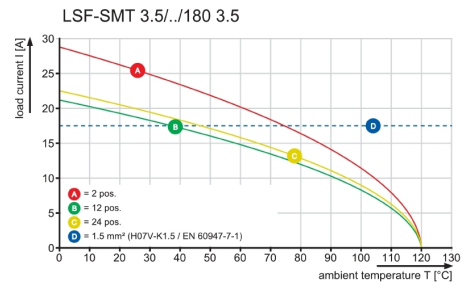
Dimensional drawing



Graph



Graph



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$$\frac{L1 + 4.2 \pm 0.15}{L1 + 0.165" \pm 0.0059"}$$

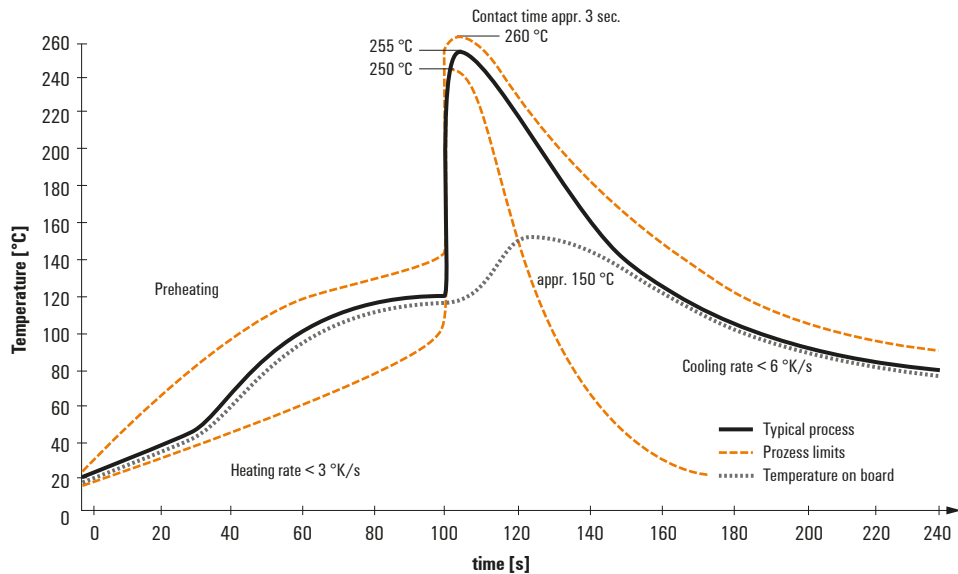
For the mounting on PCBs, it should be noted that the rated data relates only to the PCB component alone. The necessary creepage and clearance path should be observed in the relevant equipment standards in accordance with IEC 664 / VDE 0110. The current-carrying capacity and pitch tolerance should be determined according to DIN IEC 326 part 1.

Weidmüller PCB components are rated in accordance with the DIN EN 61984 standard, and are valid for the application. If the components are used in accordance with the intended purpose, the components will meet all requirements with respect to the occurrence of electrical, mechanical and corrosive stress.

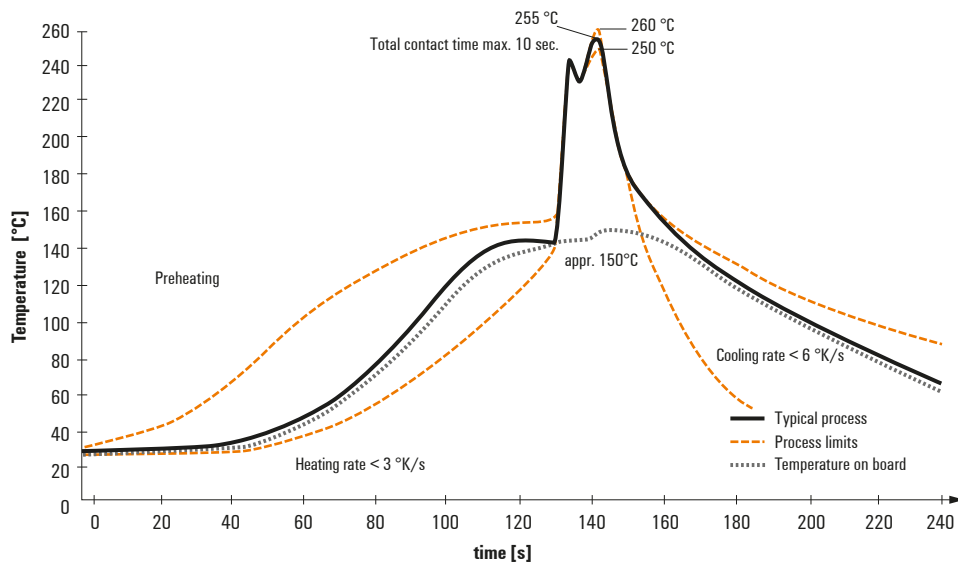
Recommended wave soldering profiles

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Single Wave:



Double Wave:



Wave soldering profiles

Wired connection elements should be processed in accordance with the DIN EN 61760-1 standard. We have included two recommendations for practical wave soldering profiles, with which Weidmüller PCB terminals and connectors are qualified.

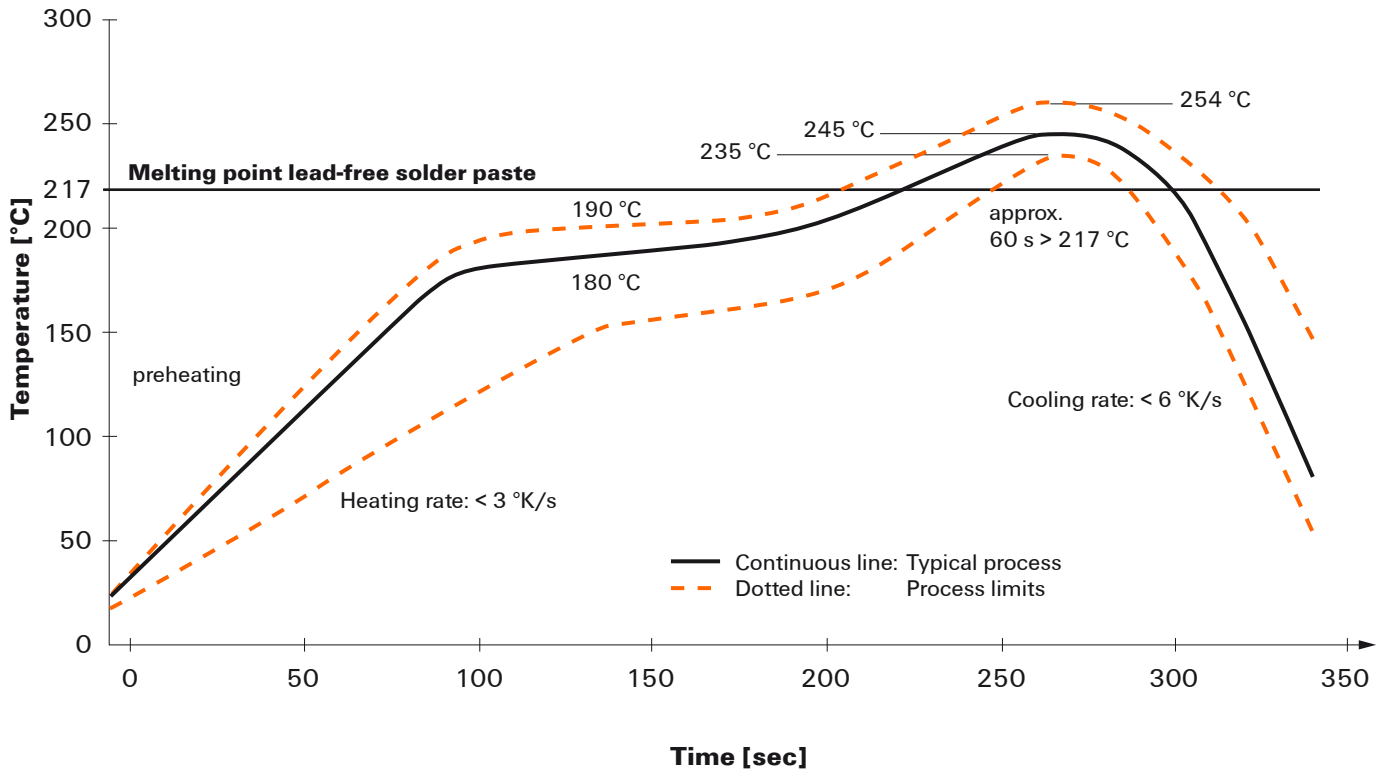
When choosing a suitable profile for your application, the following factors also need to be considered:

- PCB thickness
- Proportion of Cu in the layers
- Single/double-sided assembly
- Product range
- Heating and cooling rates

The single and double wave profiles each indicate the recommended operating range, including the maximum soldering temperature of 260°C. In practice, the maximum soldering temperature is quite often well below the above maximum profile.

Recommended reflow soldering profile

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Reflow soldering profile

The perfect soldering profile for SMT Surface Mount Technology is one the most exiting question in SMT production. But there are more than one correct answer: The diagram of temperature-on-time is related to processing features of solder paste and to maximum load of components.

We have to consider the following parameters:

- Time for pre heating
- Maximum temperature
- Time above melting point
- Time for cooling
- Maximum heating rate
- Maximum cooling rate

We recommend a typical solder profile with associated process limits. With preheating components and board are prepared smoothly for the solder phase. Heating rate is typically $\leq +3\text{K/s}$. In parallel the solder paste is ‚activated‘. The time above melting point of 217°C the paste gets liquid and components and boards begin to connect. The maximum temperature of 245°C to 254°C should stay between 10 and 40 seconds. In the cooling phase at $\geq -6\text{K/s}$ solder is cured. Board and components cool down while avoiding cold cracks.

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