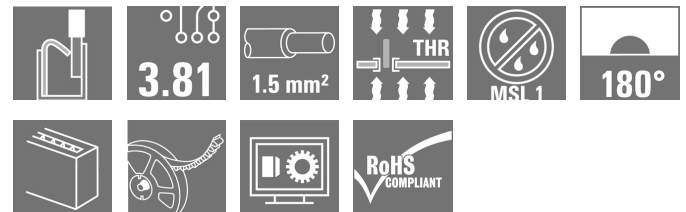


## LSF-SMT 3.81/11/180 1.5SN BK RL

**Weidmüller Interface GmbH & Co. KG**  
 Klingenbergstraße 26  
 D-32758 Detmold  
 Germany

www.weidmueller.com

### Product image



Similar to illustration

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, 3.81 mm, Number of poles: 11, 180°, Solder pin length (l): 1.5 mm, black, PUSH IN, Clamping range, max. : 1.5 mm², Tape
Order No.	<a href="#">1875410000</a>
Type	LSF-SMT 3.81/11/180 1.5SN BK RL
GTIN (EAN)	4032248465422
Qty.	175 pc(s).
Product data	IEC: 320 V / 17.5 A / 0.2 - 1.5 mm² UL: 300 V / 12 A / AWG 28 - AWG 14
Packaging	Tape

Creation date March 26, 2021 1:14:21 AM CET

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**Technical data**
**Dimensions and weights**

Depth	7.8 mm	Depth (inches)	0.307 inch
Height	15.5 mm	Height (inches)	0.61 inch
Height of lowest version	14 mm	Net weight	8.725 g
Width	42.3 mm	Width (inches)	1.665 inch

**Temperatures**

Continuous operating temp., max.	120 °C
----------------------------------	--------

**System parameters**

Product family	OMNIMATE Signal - series LSF	Wire connection method	PUSH IN
Mounting onto the PCB	THT/THR solder connection	Conductor outlet direction	180°
Pitch in mm (P)	3.81 mm	Pitch in inches (P)	0.15 inch
Number of poles	11	Pin series quantity	1
Fitted by customer	No	Solder pin length (l)	1.5 mm
Solder pin length tolerance	+0.1 / -0.3 mm	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	38.1 mm
L1 in inches	1.5 inch	Touch-safe protection acc. to DIN VDE 0470	IP 20
Touch-safe protection acc. to DIN VDE 57 106	Safe from finger touch	Volume resistance	1.60 mΩ

**Material data**

Insulating material	LCP GF	Colour	black
Colour chart (similar)	RAL 9011	Insulating material group	Illa
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 <sup>2</sup>
Clamping range, max.	1.5 mm <sup>2</sup>
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 <sup>2</sup>
Solid, max. H05(07) V-U	1.5 mm <sup>2</sup>
Flexible, min. H05(07) V-K	0.2 mm <sup>2</sup>
Flexible, max. H05(07) V-K	1.5 mm <sup>2</sup>
w. plastic collar ferrule, DIN 46228 pt 4, min.	0.25 mm <sup>2</sup>
w. plastic collar ferrule, DIN 46228 pt 4, max.	0.75 mm <sup>2</sup>
w. wire end ferrule, DIN 46228 pt 1, min.	0.25 mm <sup>2</sup>

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## Technical data

w. wire end ferrule, DIN 46228 pt 1, 1.5 mm<sup>2</sup>  
 max.

Clampable conductor	Cross-section for conductor connection	Type	fine-wired
		nominal	0.25 mm <sup>2</sup>
wire end ferrule		Stripping length	nominal 10 mm
		Recommended wire-end ferrule	<a href="#">HO.25/12 HBL</a>
Clampable conductor	Cross-section for conductor connection	Type	fine-wired
		nominal	0.34 mm <sup>2</sup>
wire end ferrule		Stripping length	nominal 10 mm
		Recommended wire-end ferrule	<a href="#">HO.34/12 TK</a>
Clampable conductor	Cross-section for conductor connection	Type	fine-wired
		nominal	0.5 mm <sup>2</sup>
wire end ferrule		Stripping length	nominal 10 mm
		Recommended wire-end ferrule	<a href="#">HO.5/14 OR</a>
Clampable conductor	Cross-section for conductor connection	Type	fine-wired
		nominal	0.75 mm <sup>2</sup>
wire end ferrule		Stripping length	nominal 10 mm
		Recommended wire-end ferrule	<a href="#">HO.75/14T HBL</a>
Clampable conductor	Cross-section for conductor connection	Type	fine-wired
		nominal	1.5 mm <sup>2</sup>
wire end ferrule		Stripping length	nominal 7 mm
		Recommended wire-end ferrule	<a href="#">H1.5/7</a>

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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## LSF-SMT 3.81/11/180 1.5SN BK RL

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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 current (Use group B / UL 1059)	12 A
Wire cross-section, AWG, min.	AWG 28
Reference to approval values	Specifications are maximum values, details - see approval certificate.

Rated voltage (Use group D / UL 1059)	300 V
Rated current (Use group D / UL 1059)	10 A
Wire cross-section, AWG, max.	AWG 14

## Packing

Packaging	Tape	VPE length	0
VPE width	0	VPE height	0
Tape depth (T2)	20 mm	Tape width (W)	56 mm
Tape pocket depth (K0)	19.5 mm	Tape pocket height (A0)	8.05 mm
Tape pocket width (B0)	42.6 mm	Tape pocket separation (P1)	20 mm
Tape hole separation (E)	1.75 mm	Tape pocket separation (F)	26.2 mm
Tape reel diameter $\varnothing$ (A)	330 mm	Surface resistance	$R_s = 10^9 - 10^{12} \Omega$
Width Pick & Place Pad ( $W_{PPP}$ )	7.5 mm	Length Pick & Place Pad ( $L_{PPP}$ )	8.5 mm
Diameter of the withdrawal surface ( $\varnothing D_{max}$ )	9 mm		

## Classifications

ETIM 6.0	EC002643	ETIM 7.0	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

## 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	<ul style="list-style-type: none"> <li>• Additional push button colours on request</li> <li>• Operating force of slider max. 40 N</li> <li>• Rated current related to rated cross-section &amp; min. No. of poles.</li> <li>• Wire end ferrule with plastic collar to DIN 46228/4</li> <li>• Wire end ferrule without plastic collar to DIN 46228/1</li> <li>• P on drawing = pitch</li> <li>• 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.</li> <li>• Crimping shape "A" for wire end ferrules with PZ 6/5 crimping tool recommended.</li> <li>• Long term storage of the product with average temperature of 50 °C and average humidity 70%, 36 months</li> </ul>

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Catalogue status 12.03.2021 / We reserve the right to make technical changes.

4

**Data sheet****LSF-SMT 3.81/11/180 1.5SN BK RL**

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**Technical data****Approvals**

Approvals



ROHS	Conform
UL File Number Search	E60693

**Downloads**

Approval/Certificate/Document of Conformity	<a href="#">Declaration of the Manufacturer</a>
Engineering Data	<a href="#">STEP</a>
Engineering Data	<a href="#">EPLAN, WSCAD</a>

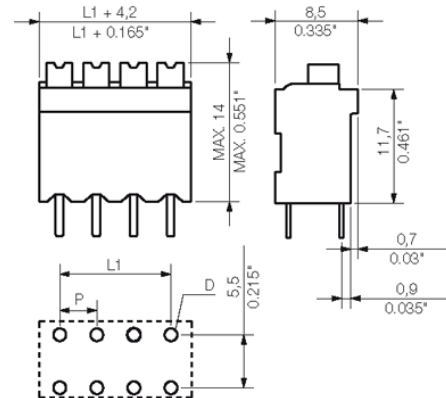
**LSF-SMT 3.81/11/180 1.5SN BK RL**

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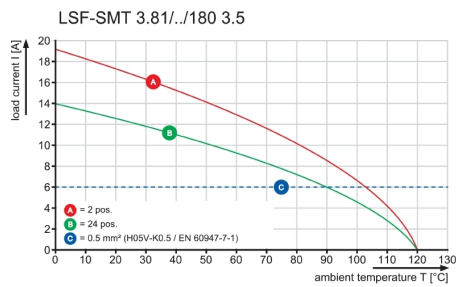
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Drawings

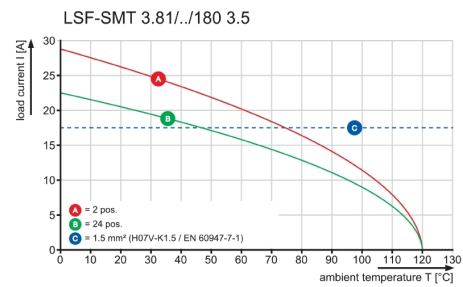
Dimensional drawing



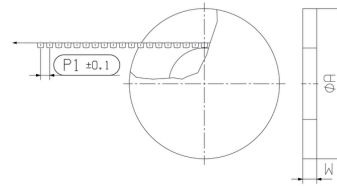
Graph



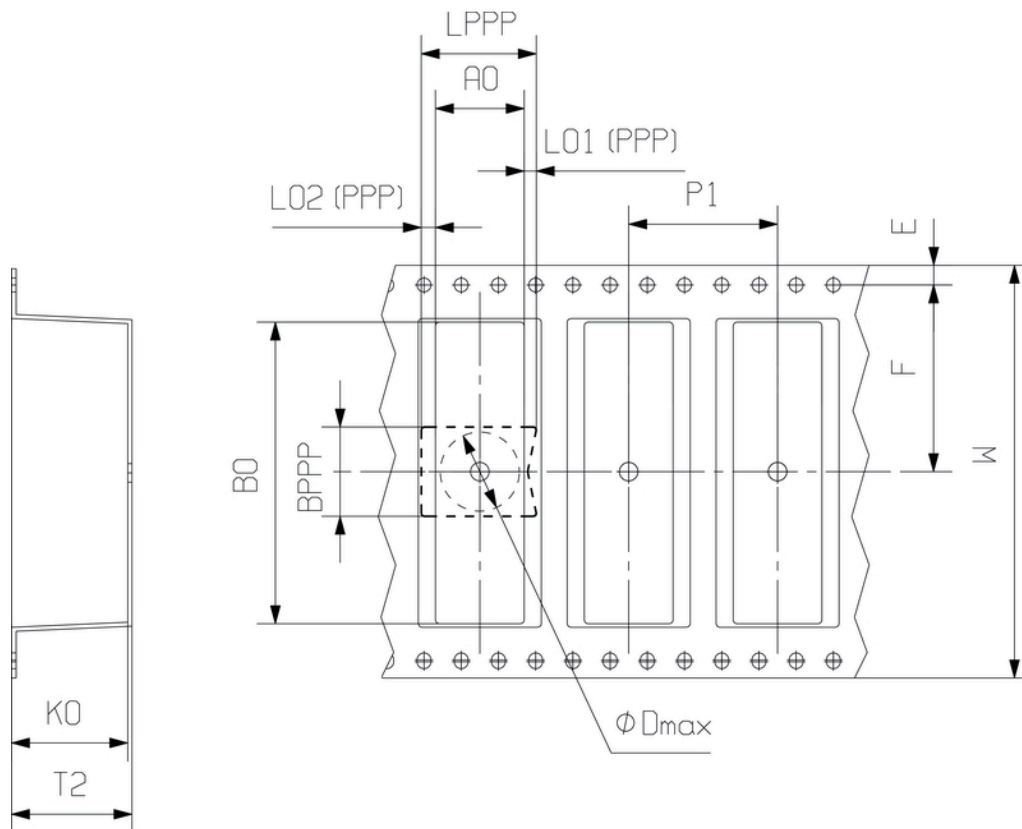
Graph



**Dimensional drawing**



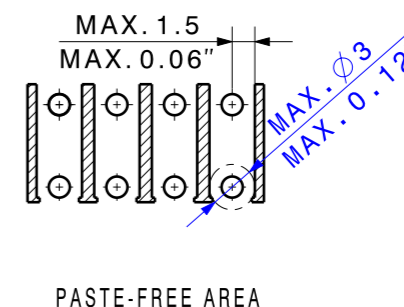
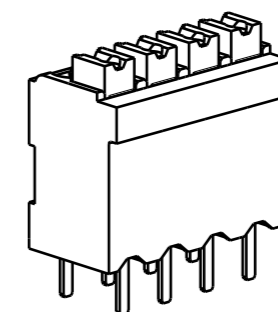
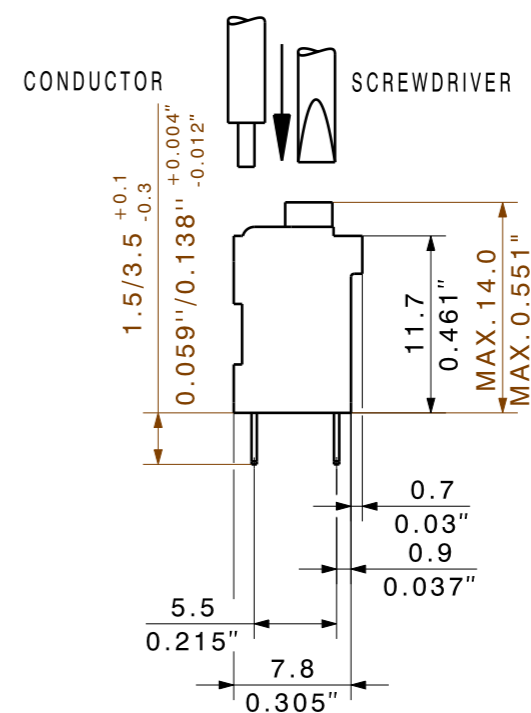
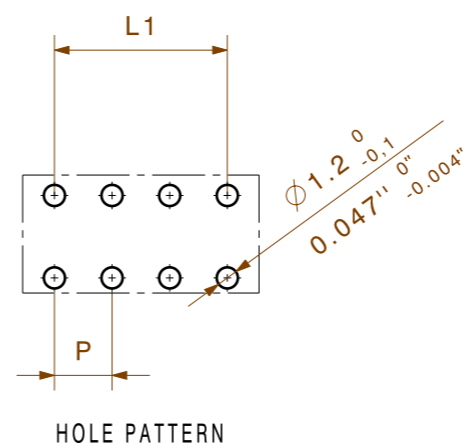
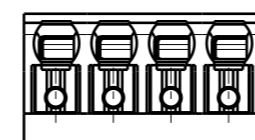
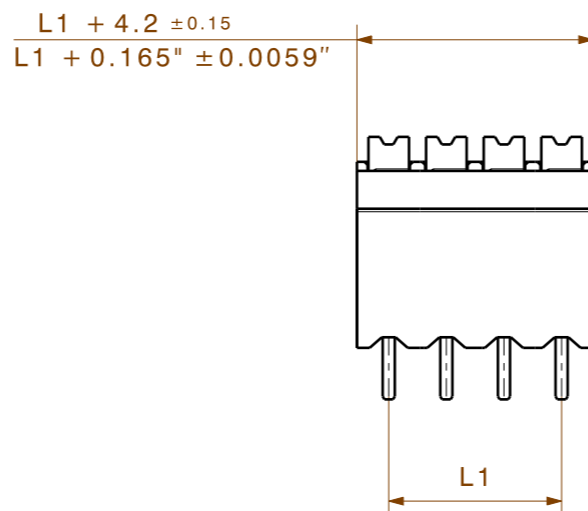
**Dimensional drawing**



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24	87,63	3,529
23	83,82	3,375
22	80,01	3,221
21	76,2	3,067
20	72,39	2,913
19	68,58	2,759
18	64,77	2,605
17	60,96	2,451
16	57,15	2,297
15	53,34	2,143
14	49,53	1,989
13	45,72	1,835
12	41,91	1,681
11	38,1	1,527
10	34,29	1,373
9	30,48	1,219
8	26,67	1,065
7	22,86	0,911
6	19,05	0,757
5	15,24	0,603
4	11,43	0,449
3	7,62	0,300
2	3,81	0,150
n	L1 [mm]	L1 [Inch]

P=3.81

SHOWN: LSF-SMT 3.81/04/180

For the mounting on PCBs, it should be noted that the rated data relates only to the PCB components alone. The necessary creepage and clearance paths must be observed in the relevant equipment standards in accordance with IEC 664 / VDE 0110. The current-carrying capacity and pitch tolerance is to be determined according to DIN IEC 326 part 3.

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

	DIN ISO 2768-m	98688/5 23.10.17 HELIS_MA 01			Cat.no.: .
	Modification	Date Name			<b>3 34084</b> <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">15</span> Drawing no. Issue no. Sheet 02 of 07 sheets
	Scale: 5/1	Drawn	22.06.2004 SEIDEL_T	<b>LSF-SMT .../.../180...TU</b> LEITERPLATTENKLEMME PCB TERMINAL	Product file: LSF-SMT 7358
Supersedes: .	Responsible	Checked	01.11.2017 HELIS_MA		
	Approved	HECKERT_M			

## Recommended wave soldering profiles

**Weidmüller Interface GmbH & Co. KG**  
 Klängenbergstraße 16  
 D-32758 Detmold  
 Germany  
 Fon: +49 5231 14-0  
 Fax: +49 5231 14-292083  
 www.weidmueller.com

### 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

**Weidmüller Interface GmbH & Co. KG**  
 Klingenbergstraße 16  
 D-32758 Detmold  
 Germany  
 Fon: +49 5231 14-0  
 Fax: +49 5231 14-292083  
 www.weidmueller.com



### 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  $\leq +3K/s$ . 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  $\geq -6K/s$  solder is cured. Board and components cool down while avoiding cold cracks.

