

OMNIMATE Signal - series LSF LSF-SMD 3.50/10/90 SN BK RL

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The innovative quick connector - simple, safe and economical:

PCB terminals with spring connection and direct PUSH IN technology. A milestone in connection technology.

Amazingly simple and simply amazing in practice:

- Connect and easily detach solid wires or wires with wire-end ferrules without using tools
- Processed automatically in the reflow or vapour phase
- Potentials and clamping points marked clearly by coloured push buttons

World-class design-in and processing phases, and suitable for a vast range of applications.

PCB terminal for fully automatic assembly using reflow soldering (SMD), with PUSH IN wire connections. Conductor insertion and slider operation from the same direction (TOP).

- **Solid & flexible conductors with wire-end ferrules need only to be inserted and they are ready.**
- **When connecting stranded wires without wire-end ferrules the actuating element is used to open the terminal point**
- **Intuitive handling – since the wire-entry area and handling area are clearly separated.**
- **Packaged in tape-on-reel**
- **Conductor outlet direction 90°**

General ordering data

| | |
|--------------|--|
| Type | LSF-SMD 3.50/10/90 SN BK RL |
| Order No. | 1473590000 |
| Version | PCB terminal, 3.50 mm, No. of poles: 10, 90°, Black, PUSH IN, Clamping range, rated connection, max.: 1.5 mm ² , Tape (Ø 330 mm); Rs = 10 ⁹ - 10 ¹² Ω |
| GTIN (EAN) | 4050118280258 |
| Qty. | 320 pc(s). |
| Product data | IEC: 320 V / 17.5 A / 0.2 - 1.5 mm ² UL: 300 V / 12 A / AWG 24 - AWG 16 |
| Packaging | Tape (Ø 330 mm); Rs = 10 ⁹ - 10 ¹² Ω |

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Technical data**Dimensions and weights**

| | |
|------------|--------|
| Net weight | 6.41 g |
|------------|--------|

System parameters

| | | | |
|--|------------------------------|--|------------|
| Product family | OMNIMATE Signal - series LSF | Wire connection method | PUSH IN |
| Mounting onto the PCB | SMD solder connection | Conductor outlet direction | 90° |
| Pitch in mm (P) | 3.5 mm | Pitch in inches (P) | 0.138 inch |
| No. of poles | 10 | Fitted by customer | No |
| Coplanarity: | 100 µm | Number of solder pins per pole | 2 |
| Stripping length | 8 mm | L1 in mm | 31.5 mm |
| L1 in inches | 1.242 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 | IIIa |
| CTI | ≥ 175 | Insulation resistance | ≥ 10 ⁸ Ω |
| 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. | -25 °C | Storage temperature, max. | 55 °C |
| Max. relative humidity during storage | 80 % | 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, rated connection, min. | 0.13 mm ² | Clamping range, rated connection, max. | 1.5 mm ² |
| Wire connection cross section AWG, min. | AWG 24 | Wire connection cross section AWG, max. | AWG 16 |
| 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 |
| w. wire end ferrule, DIN 46228 pt 1, min. | 0.25 mm ² | w. wire end ferrule, DIN 46228 pt 1, max. | 1.5 mm ² |


Rated data acc. to IEC

| | | | |
|---|------------------------|---|------------------|
| tested acc. to standard | IEC 60664-1, IEC 61984 | Rated current, min. no. of poles (Ta = 20°C) | 17.5 A |
| Rated current, max. no. of poles (Ta = 20°C) | 16 A | Rated current, min. no. of poles (Ta = 40°C) | 17.5 A |
| Rated current, max. no. of poles (Ta = 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 |


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Technical data**Rated data acc. to CSA**

| | | | |
|-------------------------------|---|-------------------------------|----------------|
| Institute (CSA) |  | Certificate No. (CSA) | 200039-1664286 |
| Rated voltage (Use group B) | 300 V | Rated voltage (use group D) | 300 V |
| Rated current (use group B) | 10 A | Rated current (use group D) | 10 A |
| Wire cross-section, AWG, min. | AWG 24 | Wire cross-section, AWG, max. | AWG 16 |
| Reference to approval values | Specifications are maximum values, details - see approval certificate. | | |

Rated data acc. to UL 1059

| | | | |
|-------------------------------|---|-------------------------------|--------|
| Institute (cURus) |  | Certificate No. (cURus) | E60693 |
| Rated voltage (use group B) | 300 V | Rated voltage (use group D) | 300 V |
| Rated current (use group B) | 12 A | Rated current (use group D) | 10 A |
| Wire cross-section, AWG, min. | AWG 24 | Wire cross-section, AWG, max. | AWG 16 |
| Reference to approval values | Specifications are maximum values, details - see approval certificate. | | |

Classifications

| | | | |
|------------|-------------|------------|-------------|
| ETIM 3.0 | EC001284 | ETIM 4.0 | EC002643 |
| ETIM 5.0 | EC002643 | ETIM 6.0 | EC002643 |
| eClass 6.2 | 27-26-11-01 | eClass 7.1 | 27-44-04-01 |
| eClass 8.1 | 27-44-04-01 | eClass 9.0 | 27-44-04-01 |
| eClass 9.1 | 27-44-04-01 | | |

Notes

| | |
|----------------|--|
| Notes | <ul style="list-style-type: none"> • 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 are recommended for the largest cable sizes. |
| IPC conformity | The products are developed, manufactured and delivered according to the internationally recognised IPC-A-610 standard, category "permissible". More extensive demands on the products can be evaluated on request. |

Data sheet

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Technical data

Approvals

Approvals



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Approval/Certificate/Document of
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[Declaration of the Manufacturer](#)

Brochure/Catalogue

- [FL DRIVES EN](#)
- [PI OMNIMATE LSF SMD EN](#)
- [FL ANALO.SIGN.CONV. EN](#)
- [MB DEVICE MANUF. EN](#)
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- [FL ELEVATOR EN](#)
- [FL POWER SUPPLY EN](#)
- [FL 72H SAMPLE SER EN](#)
- [PO OMNIMATE EN](#)

Engineering Data

[EPLAN, WSCAD](#)

SMT white paper

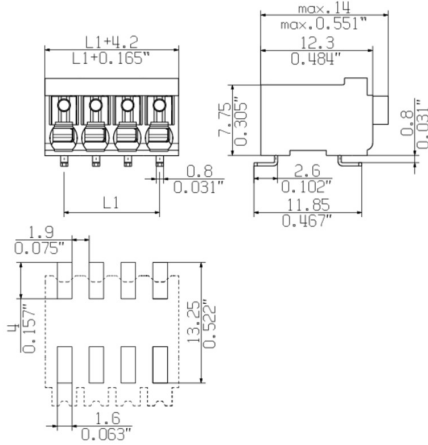
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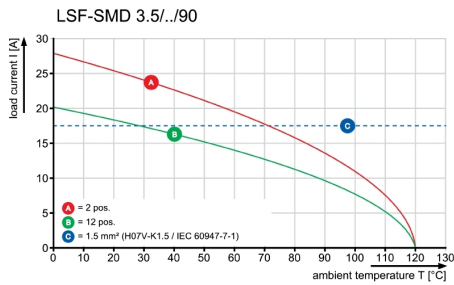
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Drawings

Dimensional drawing

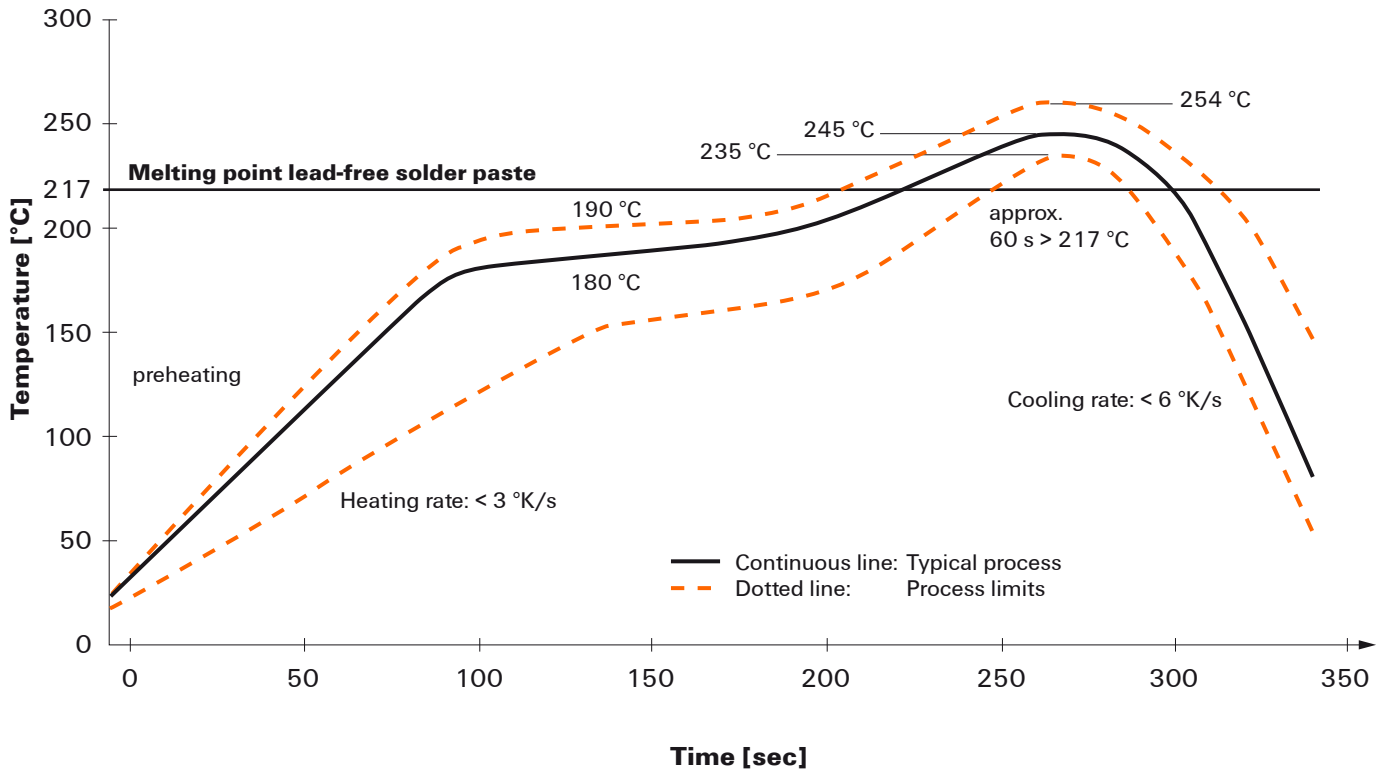


Graph



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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