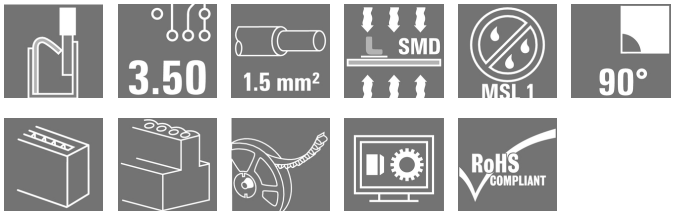
# OMNIMATE Signal - series LSF
# LSF-SMD 3.50/04/90 SN BK RL

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

## Product image



Similar to illustration




**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 3.50/04/90 SN BK RL |
| Order No. | 1473510000 |
| Version | Printed circuit board terminals, 3.50 mm, No. of poles: 4, 90°, black, PUSH IN, Clamping range, max. : 1.5 mm², Tape |
| GTIN (EAN) | 4050118280029 |
| Qty. | 320 pc(s). |
| Product data | IEC: 320 V / 17.5 A / 0.2 - 1.5 mm²<br>UL: 300 V / 12 A / AWG 28 - AWG 14 |
| Packaging | Tape |

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## Technical data

### Dimensions and weights

| | | | |
|---|---|---|---|
| Width | 14.7 mm | Width (inches) | 0.579 inch |
| Height | 9.65 mm | Height (inches) | 0.38 inch |
| Height of lowest version | 9.65 mm | Depth | 14.75 mm |
| Depth (inches) | 0.581 inch | Net weight | 3.212 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 | 4 | Fitted by customer | No |
| Coplanarity: | 100 µm | Number of solder pins per pole | 2 |
| Stripping length | 8 mm | L1 in mm | 10.5 mm |
| L1 in inches | 0.414 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 of operational elements | white | Material of operational elements | PPA GF |
| Colour chart (similar) | RAL 9011 | Insulating material group | IIIa |
| CTI | ≥ 175 | Insulation strength | ≥ $10^8$ 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, min. | 0.13 mm² |
| Clamping range, max. | 1.5 mm² |
| Wire connection cross section AWG, min. | AWG 28 |
| Wire connection cross section AWG, max. | AWG 14 |
| Solid, min. H05(07) V-U | 0.2 mm² |
| Solid, max. H05(07) V-U | 1.5 mm² |
| Flexible, min. H05(07) V-K | 0.2 mm² |
| Flexible, max. H05(07) V-K | 1.5 mm² |
| w. plastic collar ferrule, DIN 46228 pt 4, min. | 0.25 mm² |
| w. plastic collar ferrule, DIN 46228 pt 4, max. | 0.75 mm² |
| w. wire end ferrule, DIN 46228 pt 1, min | 0.25 mm² |
| w. wire end ferrule, DIN 46228 pt 1, max. | 1.5 mm² |

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## Technical data

| | | | | |
|---|---|---|---|---|
| Clampable conductor | Cross-section for conductor connection | Type | fine-wired | |
| | | nominal | 0.25 mm² | |
| | AEH | Stripping length | nominal | 10 mm |
| | Cross-section for conductor connection | Type | fine-wired | |
| | | nominal | 0.34 mm² | |
| | AEH | Stripping length | nominal | 10 mm |
| | Cross-section for conductor connection | Type | fine-wired | |
| | | nominal | 0.5 mm² | |
| | AEH | Stripping length | nominal | 10 mm |
| | Cross-section for conductor connection | Type | fine-wired | |
| | | nominal | 0.75 mm² | |
| | AEH | Stripping length | nominal | 10 mm |
| | Cross-section for conductor connection | Type | fine-wired | |
| | | nominal | 1.5 mm² | |
| | AEH | Stripping length | nominal | 7 mm |
| Max. clamping range | 1.5 mm² | | | |

### Rated data acc. to IEC

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

### 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. | | |

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## Technical data

### Packing

| | | | |
|---|---|---|---|
| Packaging | Tape | VPE length | 35 mm |
| VPE width | 330 mm | VPE height | 330 mm |
| Tape depth (T2) | 10.9 mm | Tape width (W) | 32 mm |
| Tape pocket depth (K0) | 10.4 mm | Tape pocket height (A0) | 15.1 mm |
| Tape pocket width (B0) | 16.5 mm | Tape pocket separation (P1) | 20 mm |
| Tape hole separation (E) | 1.75 mm | Tape pocket separation (F) | 14.2 mm |
| Tape reel diameter ⌀ (A) | 330 mm | Surface resistance | Rs = $10^9$ - $10^{12}$ Ω |

### 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 | • Additional push button colours on request<br>• Operating force of slider max. 40 N<br>• Rated current related to rated cross-section & min. No. of poles.<br>• Wire end ferrule with plastic collar to DIN 46228/4<br>• Wire end ferrule without plastic collar to DIN 46228/1<br>• P on drawing = pitch<br>• 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.<br>• Crimping shape "A" for wire end ferrules with PZ 6/5 crimping tool are recommended for the largest cable sizes. |
| 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. |

### Approvals

| | |
|---|---|
| Approvals | |
| ROHS | Conform |

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## Technical data

### Downloads

| | |
|---|---|
| Approval/Certificate/Document of Conformity | Declaration of the Manufacturer |
| Brochure/Catalogue | FL DRIVES EN<br>PI OMNIMATE LSF SMD EN<br>FL ANALO.SIGN.CONV. EN<br>MB DEVICE MANUF. EN<br>FL DRIVES DE<br>FL BUILDING SAFETY EN<br>FL APPL LED LIGHTING EN<br>FL INDUSTR.CONTROLS EN<br>FL MACHINE SAFETY EN<br>FL HEATING ELECTR EN<br>FL APPL_INVERTER EN<br>FL_BASE_STATION_EN<br>FL ELEVATOR EN<br>FL POWER SUPPLY EN<br>FL 72H SAMPLE SER EN<br>PO OMNIMATE EN |
| Engineering Data | EPLAN, WSCAD |
| SMT white paper | Download Whitepaper |

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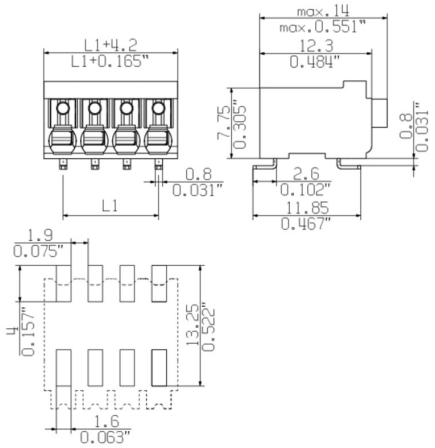
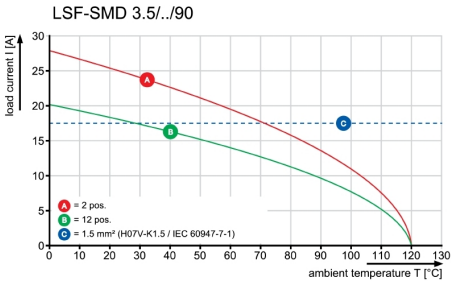
## Drawings

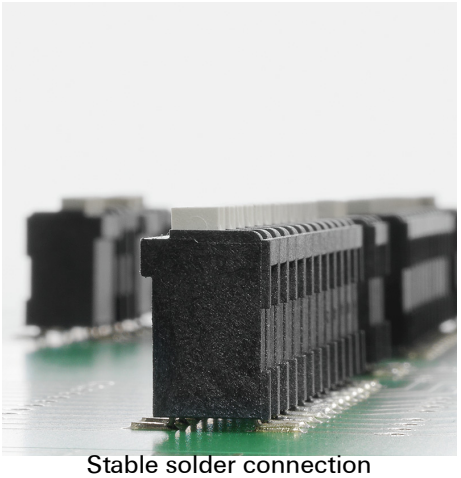
### Dimensional drawing




### Graph

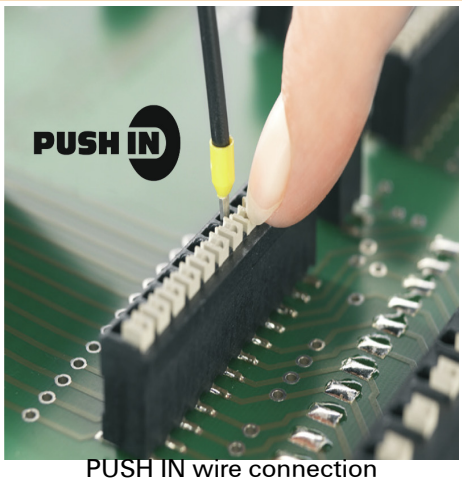



### Product benefits



Stable solder connection

### Product benefits




PUSH IN wire connection

### Product benefits



Packaged in tape-on-reel

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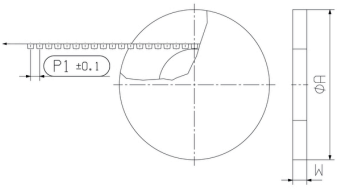
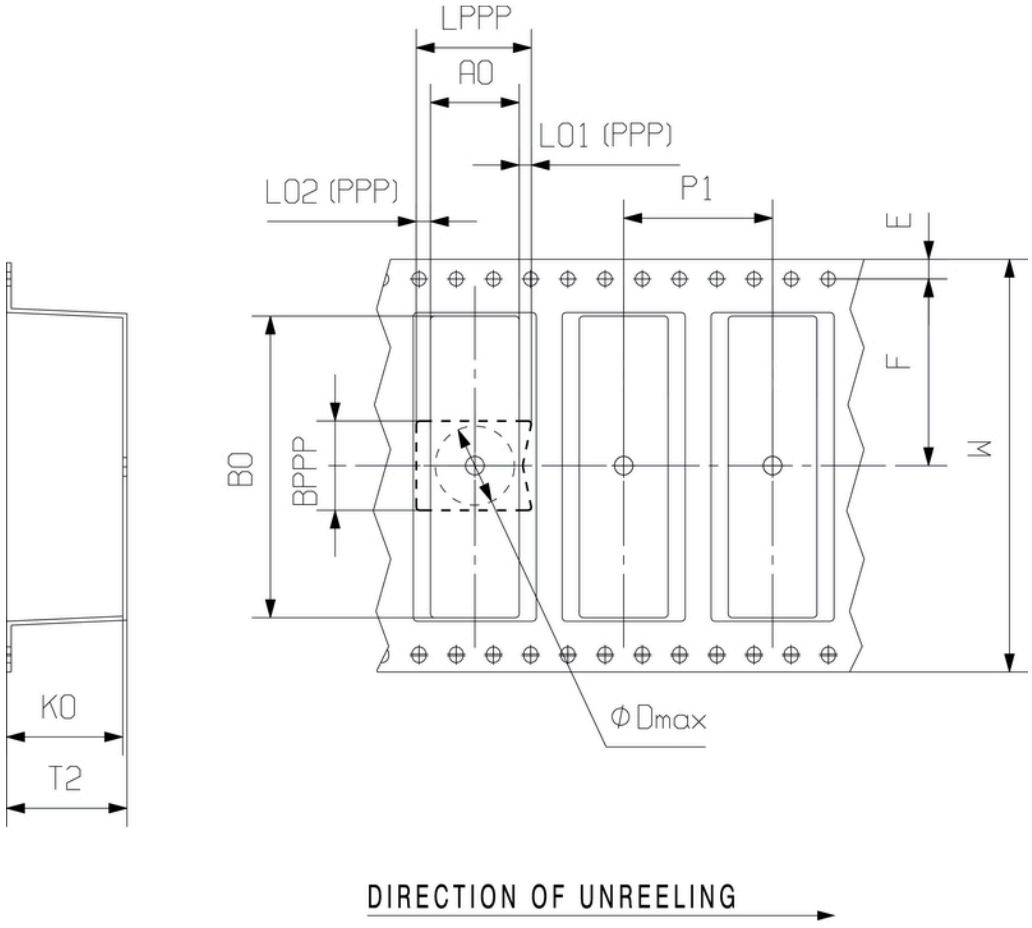
### Dimensional drawing




### Dimensional drawing



MASSE OHNE TOLERANZ SIND KEINE PRUEFMASSE
DIMS. WITHOUT TOLERANCE ARE NOT CONTROL DIMS.

DIE DEUTSCHE VERSION IST VERBINDLICH
THE GERMAN VERSION IS BINDING

WEITERGABE SOWIE VERVIELFAELTIGUNG DIESES DOKUMENTS, VERWERTUNG UND MITTEILUNG SEINES INHALTS SIND VERBOTEN, SOWEIT NICHT AUSDRUECKLICH GESTATTET.
ZUWIDERHANDLUNGEN VERPFLICHTEN ZU SCHADENERSATZ. ALLE RECHTE FUER DEN FALL DER PATENT-, GEBRAUCHSMUSTER- ODER GESCHMACKSMUSTEREINTRAGUNG VORBEHALTEN.
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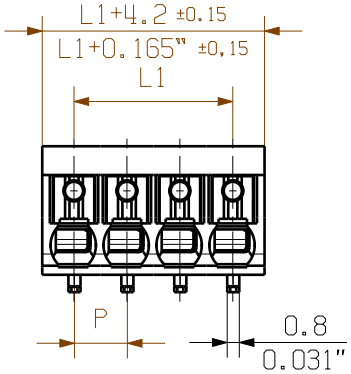
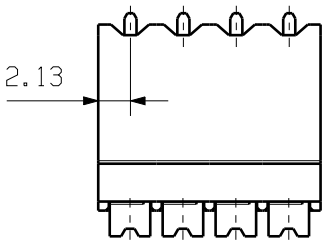
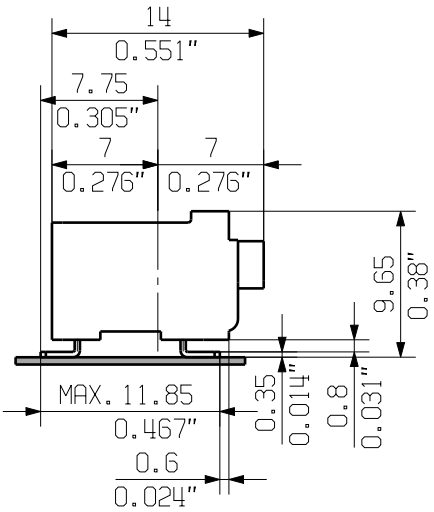
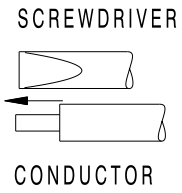
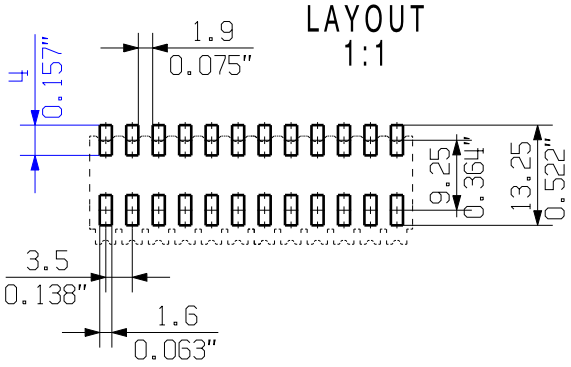



LAYOUT
1:1



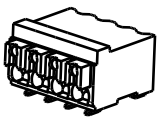

P = PITCH
n = NO OF POLES

For the mounting of PCBs, it should be noted that the rated data relates only to the PCB components alone.
The neccessary creepage and clearance paths must be observed in connection with the respective applicant in accordance to IEC 664 / VDE 0110.
The current-carrying capacity and pitch tolerance is to be determined according to DIN IEC 326 part 3 very fine.

Weidmüller PCB components are tested to the DIN EN 61984 standard, and are valid for its field of application. Provided that the components are used to the intended purpose, all requirements with respect to the occuring of electrical, mechanical, thermic and corrosive stress will be satisfied.

SHOWN: LSF-SMD 3.50/04/90

1:1



| n | L1 [mm] | L1 [Inch] |
|---|---|---|
| 12 | 38,5 | 1,516 |
| 11 | 35,0 | 1,378 |
| 10 | 31,5 | 1,240 |
| 9 | 28,0 | 1,102 |
| 8 | 24,5 | 0,965 |
| 7 | 21,0 | 0,827 |
| 6 | 17,5 | 0,689 |
| 5 | 14,0 | 0,551 |
| 4 | 10,5 | 0,413 |
| 3 | 7,0 | 0,276 |
| 2 | 3,5 | 0,138 |

RoHS COMPLIANT

ISO 2768-m

78005/5
09.09.14 HELIS_MA 00

MODIFICATION

CAT.NO.: .

Weidmüller

C 56872 05
DRAWING NO. ISSUE NO.

SHEET 01 OF 03 SHEETS

| | DATE | NAME |
|---|---|---|
| DRAWN | 11.02.2014 | HELIS_MA |
| RESPONSIBLE | | KRUG_M |
| CHECKED | 01.10.2014 | HELIS_MA |
| APPROVED | | LANG_T |

SCALE: 1:1

SUPERSEDES: .

# LSF-SMD 3.50/../90...RL

LEITERPLATTENKLEMME
PCB TERMINAL

PRODUCT FILE: LSF-SMD 7401

# Reflow Solder Profile

## Recommended reflow soldering profile

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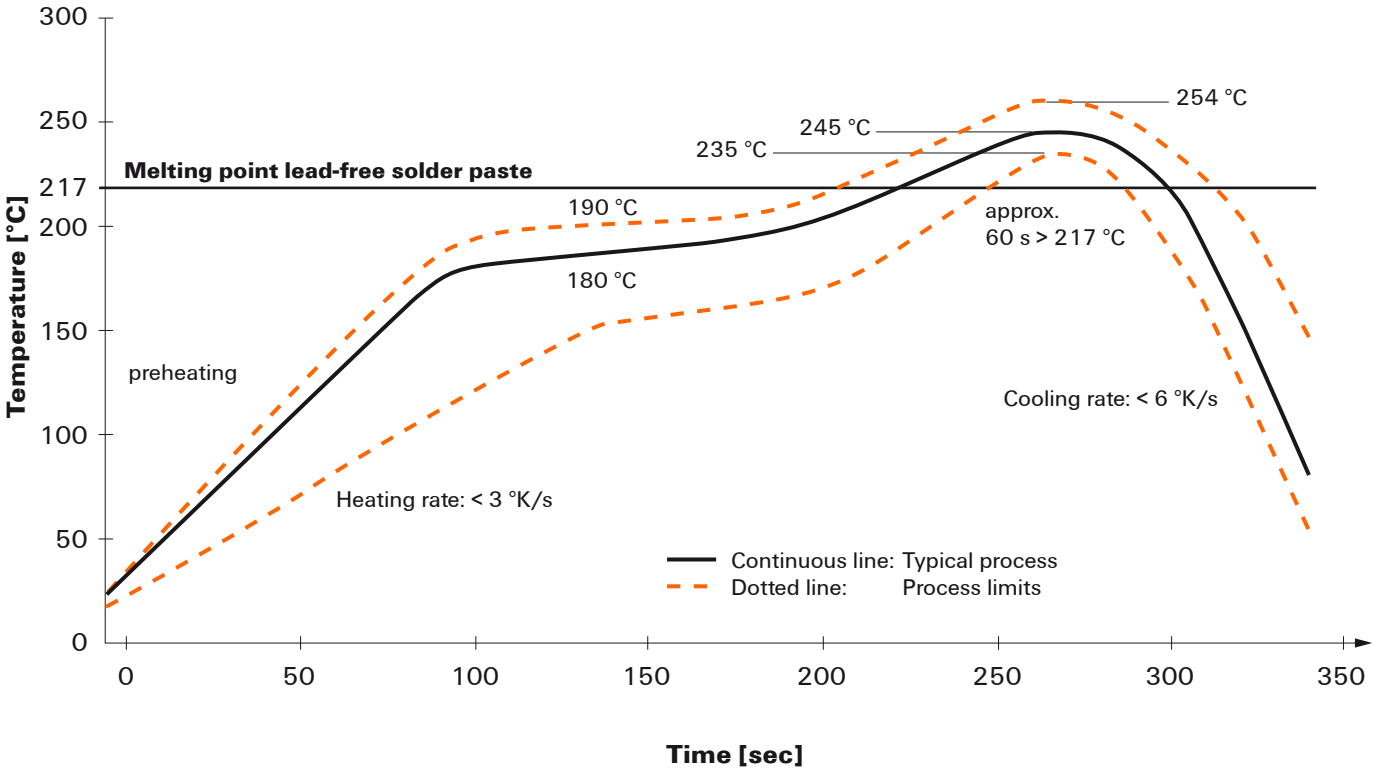


**Reflow soldering profile**

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 ≤ +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 ≥ -6K/s solder is cured. Board and components cool down while avoiding cold cracks.

We reserve the right to make technical changes.