

## OMNIMATE Signal - series BL/SL 3.50 SL-SMT 3.50/10/90RF 1.5SN BK BX

**Weidmüller Interface GmbH & Co. KG**  
Klingenbergstraße 26  
D-32758 Detmold  
Germany  
Fon: +49 5231 14-0  
Fax: +49 5231 14-292083  
www.weidmueller.com

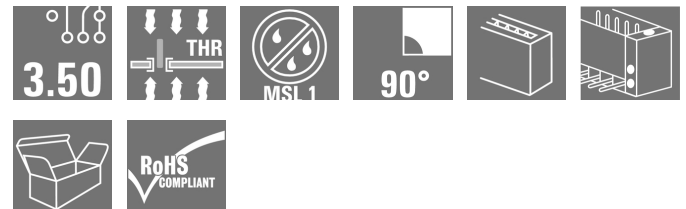
### Product image



Similar to illustration

**High-temperature-resistant male header, 3.50 mm pitch.**

- **Plugging direction parallel (90°), straight 180° or angled (135°) to PCB**
- **Housing variants: closed side (G), screw flange (F), solder flange (LF) or snap-on solder flange (RF)**
- **Optimised for the SMT process**
- **Pin length 3.2 mm universal for all soldering methods**
- **Pin length 1.5 mm optimised for reflow soldering methods**
- **Packed either in a box (BX) or tape-on-reel (RL)**
- **Male header can be coded**



### General ordering data

Type	SL-SMT 3.50/10/90RF 1.5SN BK BX
Order No.	<a href="#">1060780000</a>
Version	PCB plug-in connector, male header, Clip-on flange, THT/THR solder connection, 3.50 mm, Number of poles: 10, 90°, Solder pin length (l): 1.5 mm, tinned, black, Box
GTIN (EAN)	40322488 10246
Qty.	50 pc(s).
Product data	IEC: 320 V / 15 A UL: 300 V / 10 A
Packaging	Box

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

Width	41.86 mm	Width (inches)	1.648 inch
Height	9 mm	Height (inches)	0.354 inch
Height of lowest version	7.5 mm	Depth	11.1 mm
Depth (inches)	0.437 inch	Net weight	3.068 g

**System specifications**

Product family	OMNIMATE Signal - series BL/SL 3.50	Type of connection	Board connection
Mounting onto the PCB	THT/THR solder connection	Pitch in mm (P)	3.5 mm
Pitch in inches (P)	0.138 inch	Outgoing elbow	90°
Number of poles	10	Number of solder pins per pole	1
Solder pin length (l)	1.5 mm	Solder pin length tolerance	0 / -0.3 mm
Tolerance of solder pin position	± 0.15 mm	Solder pin dimensions	d = 1.2 mm, Octagonal
Solder pin dimensions = d tolerance	0 / -0,03 mm	Solder eyelet hole diameter (D)	1.4 mm
Solder eyelet hole diameter tolerance (D)+	0,1 mm	Outside diameter of solder pad	2.3 mm
Template aperture diameter	2.1 mm	L1 in mm	31.5 mm
L1 in inches	1.24 inch	Number of rows	1
Pin series quantity	1	Touch-safe protection acc. to DIN VDE 57 106	Safe from back-of-hand touch
Touch-safe protection acc. to DIN VDE 0470	IP 10	Volume resistance	≤ 5mΩ
Can be coded	Yes	Plugging cycles	25
Plugging force/pole, max.	6 N	Pulling force/pole, max.	6 N

**Material data**

Insulating material	LCP GF	Colour	black
Colour chart (similar)	RAL 9011	Insulating material group	IIIa
Comparative Tracking Index (CTI)	≥ 175	Insulation strength	≥ 10 <sup>8</sup> Ω
Moisture Level (MSL)	1	UL 94 flammability rating	V-0
GWIT	930 °C	GWFI	960 °C
Contact material	Copper alloy	Contact surface	tinned
Layer structure of solder connection	2-3 μm Ni / 5-7 μm Sn	Layer structure of plug contact	2-3 μm Ni / 5-7 μm Sn
Storage temperature, min.	-25 °C	Storage temperature, max.	50 °C
Max. relative humidity during storage	70 %	Operating temperature, min.	-50 °C
Operating temperature, max.	100 °C	Temperature range, installation, min.	-30 °C
Temperature range, installation, max.	100 °C		

**Rated data acc. to IEC**

tested acc. to standard	IEC 60664-1, IEC 61984	Rated current, min. number of poles (Tu=20°C)	15 A
Rated current, max. number of poles (Tu=20°C)	12 A	Rated current, min. number of poles (Tu=40°C)	13 A
Rated current, max. number of poles (Tu=40°C)	10 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 1 s with 100 A

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

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

**Rated data acc. to UL 1059**

Institute (UR)		Certificate No. (UR)	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)	10 A	Rated current (Use group D / UL 1059)	10 A
Reference to approval values	Specifications are maximum values, details - see approval certificate.		

**Packing**

Packaging	Box	VPE length	55 mm
VPE width	70 mm	VPE height	110 mm

**Classifications**

ETIM 6.0	EC002637	ETIM 7.0	EC002637
eClass 9.0	27-44-04-02	eClass 9.1	27-44-04-02
eClass 10.0	27-44-04-02		

**Notes**

Notes	<ul style="list-style-type: none"> <li>• Gold-plated contact surfaces on request</li> <li>• Rated current related to rated cross-section &amp; min. No. of poles.</li> <li>• Diameter of solder eyelet D = 1.4+0.1mm</li> <li>• Solder eyelet diameter D = 1.5 + 0.1 mm, from 9 poles</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> </ul>
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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.
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**Approvals**

Approvals	
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ROHS	Conform
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**Data sheet****OMNIMATE Signal - series BL/SL 3.50  
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**Technical data****Downloads**

Approval/Certificate/Document of Conformity	<a href="#">Declaration of the Manufacturer</a>
Brochure/Catalogue	<a href="#">FL DRIVES EN</a> <a href="#">MB SMT EN</a> <a href="#">FL DRIVES DE</a> <a href="#">MB DEVICE MANUF. EN</a> <a href="#">CAT 2 PORTFOLIOGUIDE EN</a> <a href="#">FL BUILDING SAFETY EN</a> <a href="#">FL APPL LED LIGHTING EN</a> <a href="#">FL INDUSTR.CONTROLS EN</a> <a href="#">FL MACHINE SAFETY EN</a> <a href="#">FL HEATING ELECTR EN</a> <a href="#">FL APPL INVERTER EN</a> <a href="#">FL_BASE_STATION_EN</a> <a href="#">FL ELEVATOR EN</a> <a href="#">FL POWER SUPPLY EN</a> <a href="#">FL 72H SAMPLE SER EN</a> <a href="#">PO OMNIMATE EN</a>
Engineering Data	<a href="#">STEP</a>
White paper surface mount technology	<a href="#">Download Whitepaper</a>

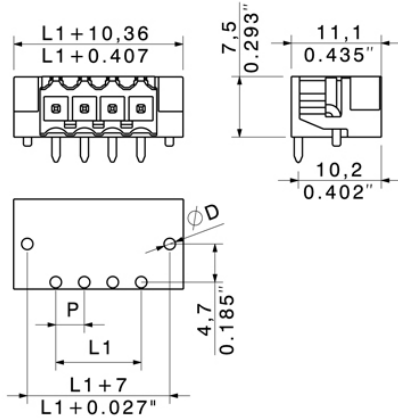
**Data sheet**

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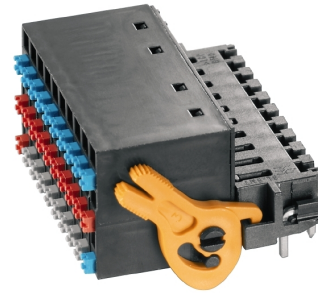
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**Drawings**

**Dimensional drawing**



**Example of use**



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**Mating connector (fully pluggable)**
**BL-I/O 3.5/30**


Female plugs with spring connection (PUSH IN) as a plug-in connection level for decentralised I/O electronic components; used together with male headers in a 3.50-mm pitch.

**General ordering data**

Type	BL-I/O 3.50/30LR SN BK ...	Version	Product data	Packaging
Order No.	<a href="#">1060790000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 30,	IEC: 200 V / 2.2 A / 0.2 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4032248810260	180°, PUSH IN, Spring connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 50 V / 5 A / AWG 24 - AWG 16	
Qty.	20 pc(s).	Box		
Type	BL-I/O 3.50/30LR SN BK ...	Version	Product data	Packaging
Order No.	<a href="#">1000550000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 30,	IEC: 200 V / 2.2 A / 0.2 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4032248821563	180°, PUSH IN, Spring connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 50 V / 5 A / AWG 24 - AWG 16	
Qty.	20 pc(s).	Box		
Type	BL-I/O 3.50/30LR SN BK ...	Version	Product data	Packaging
Order No.	<a href="#">1060750000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 30,	IEC: 200 V / 2.2 A / 0.2 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4032248810239	180°, PUSH IN, Spring connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 50 V / 5 A / AWG 24 - AWG 16	
Qty.	20 pc(s).	Box		

**BL-I/O 3.5/10 NPN LED**


Female plugs with spring connection (PUSH IN) as a plug-in connection level for decentralised I/O electronic components; used together with male headers in a 3.50-mm pitch.

**General ordering data**

Type	BL-I/O 3.50/10LR NPN LE ...	Version	Product data	Packaging
Order No.	<a href="#">1000580000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 10,	IEC: / 2.2 A / 0.2 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4032248822409	180°, PUSH IN, Spring connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 50 V / 5 A / AWG 24 - AWG 16	
Qty.	20 pc(s).	Box		
Type	BL-I/O 3.50/10/180LR NP ...	Version	Product data	Packaging
Order No.	<a href="#">1531200000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 10,	IEC: / 2.2 A / 0.2 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4050118335774	180°, PUSH IN, Spring connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 50 V / 5 A / AWG 24 - AWG 16	
Qty.	20 pc(s).	Box		

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**Mating connector (fully pluggable)**
**BLF 3.50/180LH**


Connect efficiently - in a small space: female header with spring connection (PUSH IN) as a plug-in connection level; used together with male headers in 3.50 mm pitch.

**General ordering data**

Type	BLF 3.50/10/180LH SN BK ...	Version	Product data	Packaging
Order No.	<a href="#">2538090000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 10,	IEC: 320 V / 17.5 A / 0.14 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4050118549812	180°, PUSH IN, Spring connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 300 V / AWG 26 - AWG 16	
Qty.	42 pc(s).	Box		
Type	BLF 3.50/10/180LH SN OR ...	Version	Product data	Packaging
Order No.	<a href="#">2460030000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 10,	IEC: 320 V / 17.5 A / 0.14 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4050118475449	180°, PUSH IN, Spring connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 300 V / AWG 26 - AWG 16	
Qty.	42 pc(s).	Box		

**BL-I/O 3.5/30 F PNP LED**


Female plugs with spring connection (PUSH IN) as a plug-in connection level for decentralised I/O electronic components; used together with male headers in a 3.50-mm pitch.

**General ordering data**

Type	BL-I/O 3.50/30LR PNP LE ...	Version	Product data	Packaging
Order No.	<a href="#">1000570000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 30,	IEC: / 2.2 A / 0.2 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4032248838073	180°, PUSH IN, Spring connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 50 V / 5 A / AWG 24 - AWG 16	
Qty.	20 pc(s).	Box		

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Fax: +49 5231 14-292083  
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**Mating connector (fully pluggable)**
**BL-I/O 3.5/30 NPN LED**


Female plugs with spring connection (PUSH IN) as a plug-in connection level for decentralised I/O electronic components; used together with male headers in a 3.50-mm pitch.

**General ordering data**

Type	BL-I/O 3.50/30LR NPN LE ...	Version	Product data	Packaging
Order No.	<a href="#">1000590000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 30,	IEC: / 2.2 A / 0.2 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4032248822393	180°, PUSH IN, Spring connection, Clamping range, max. : 1.5 mm <sup>2</sup> ,	UL: 50 V / 5 A / AWG 24 - AWG 16	
Qty.	20 pc(s).	Box		

**BL 3.50/180LR**


Female connectors with clamping yoke screw system for connecting conductors at 3.50 mm pitch. They provide space for labelling and can be coded.

**General ordering data**

Type	BL 3.50/10/180LR SN OR ...	Version	Product data	Packaging
Order No.	<a href="#">1134380000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 10,	IEC: 320 V / 17 A / 0.2 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4032248914456	180°, Clamping yoke connection, Clamping range, max. : 1.5 mm <sup>2</sup> ,	UL: 300 V / 10 A / AWG 28 - AWG 14	
Qty.	50 pc(s).	Box		
Type	BL 3.50/10/180LR SN OR ...	Version	Product data	Packaging
Order No.	<a href="#">1531080000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 10,	IEC: 320 V / 17 A / 0.2 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4050118336085	180°, Clamping yoke connection, Clamping range, max. : 1.5 mm <sup>2</sup> ,	UL: 300 V / 10 A / AWG 28 - AWG 14	
Qty.	42 pc(s).	Box		



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**Mating connector (fully pluggable)**
**BLZF 3.5/180LR**


Female connectors with tension clamp system for connecting cables in 3.50 pitch. They provide space for labelling and can be coded.

**General ordering data**

Type	BLZF 3.50/10/180LR SN O ...	Version	Product data	Packaging
Order No.	<a href="#">1134530000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 10,	IEC: 320 V / 14.5 A / 0.2 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4032248914722	180°, Tension-clamp connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 300 V / 10 A / AWG 26 - AWG 14	
Qty.	50 pc(s).	Box		
Type	BLZF 3.50/10/180LR SN O ...	Version	Product data	Packaging
Order No.	<a href="#">1531320000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 10,	IEC: 320 V / 14.5 A / 0.2 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4050118336474	180°, Tension-clamp connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 300 V / 10 A / AWG 26 - AWG 14	
Qty.	50 pc(s).	Box		

**BL-I/O 3.5/10**


Female plugs with spring connection (PUSH IN) as a plug-in connection level for decentralised I/O electronic components; used together with male headers in a 3.50-mm pitch.

**General ordering data**

Type	BL-I/O 3.50/10/180LR SN ...	Version	Product data	Packaging
Order No.	<a href="#">1531180000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 10,	IEC: 200 V / 2.2 A / 0.2 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4050118336245	180°, PUSH IN, Spring connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 50 V / 5 A / AWG 24 - AWG 16	
Qty.	20 pc(s).	Box		
Type	BL-I/O 3.50/10LR SN BK ...	Version	Product data	Packaging
Order No.	<a href="#">1060740000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 10,	IEC: 200 V / 2.2 A / 0.2 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4032248810222	180°, PUSH IN, Spring connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 50 V / 5 A / AWG 24 - AWG 16	
Qty.	20 pc(s).	Box		
Type	BL-I/O 3.50/10LR SN BK ...	Version	Product data	Packaging
Order No.	<a href="#">1000540000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 10,	IEC: 200 V / 2.2 A / 0.2 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4032248822386	180°, PUSH IN, Spring connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 50 V / 5 A / AWG 24 - AWG 16	
Qty.	20 pc(s).	Box		

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**Mating connector (fully pluggable)**
**BL-I/O 3.5/10 F PNP LED**


Female plugs with spring connection (PUSH IN) as a plug-in connection level for decentralised I/O electronic components; used together with male headers in a 3.50-mm pitch.

**General ordering data**

Type	BL-I/O 3.50/10/180LR PN ...	Version	Product data	Packaging
Order No.	<a href="#">1000560000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 10,	IEC: / 2.2 A / 0.2 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4032248838066	180°, PUSH IN, Spring connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 50 V / 5 A / AWG 24 - AWG 16	
Qty.	20 pc(s).	Box		
Type	BL-I/O 3.50/10/180LR PN ...	Version	Product data	Packaging
Order No.	<a href="#">1531190000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 10,	IEC: / 2.2 A / 0.2 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4050118336269	180°, PUSH IN, Spring connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 50 V / 5 A / AWG 24 - AWG 16	
Qty.	20 pc(s).	Box		

**BLF 3.50/180LR**


Connect efficiently - in a small space: female header with spring connection (PUSH IN) as a plug-in connection level; used together with male headers in 3.50 mm pitch.

**General ordering data**

Type	BLF 3.50/10/180LR SN OR ...	Version	Product data	Packaging
Order No.	<a href="#">2459760000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 10,	IEC: 320 V / 17.5 A / 0.14 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4050118475173	180°, PUSH IN, Spring connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 300 V / AWG 26 - AWG 16	
Qty.	42 pc(s).	Box		
Type	BLF 3.50/10/180LR SN BK ...	Version	Product data	Packaging
Order No.	<a href="#">2459920000</a>	PCB plug-in connector, female plug, 3.50 mm, Number of poles: 10,	IEC: 320 V / 17.5 A / 0.14 - 1.5 mm <sup>2</sup>	Box
GTIN (EAN)	4050118475333	180°, PUSH IN, Spring connection, Clamping range, max.: 1.5 mm <sup>2</sup> ,	UL: 300 V / AWG 26 - AWG 16	
Qty.	42 pc(s).	Box		

## Recommended wave soldering profiles

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 Klängenbergstraße 16  
 D-32758 Detmold  
 Germany  
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 Fax: +49 5231 14-292083  
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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.