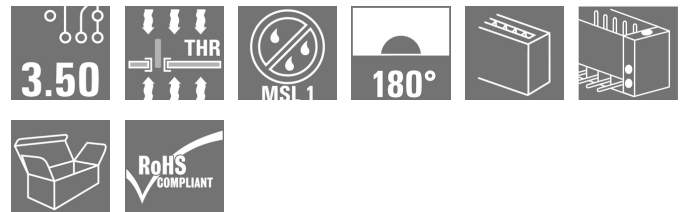


OMNIMATE Signal - series BL/SL 3.50

SL-SMT 3.50/20/180F 3.2SN BK BX

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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 3.50/20/180F 3.2SN BK BX
Order No.	1842950000
Version	PCB plug-in connector, male header, Flange, THT/THR solder connection, 3.50 mm, No. of poles: 20, 180°, Solder pin length (l): 3.2 mm, tinned, Black, Box
GTIN (EAN)	4032248354412
Qty.	24 pc(s).
Product data	IEC: 320 V / 15 A UL: 300 V / 10 A
Packaging	Box

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OMNIMATE Signal - series BL/SL 3.50

SL-SMT 3.50/20/180F 3.2SN BK BX

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Technical data

Dimensions and weights

Net weight	5.625 g
------------	---------

System specifications

Product family	OMNIMATE Signal - series BL/SL 3.50	Type of connection	Solder 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	180°
No. of poles	20	Number of solder pins per pole	1
Solder pin length (l)	3.2 mm	Solder pin length tolerance	0 / -0.3 mm
Tolerance of solder pin position	± 0.20 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	66.5 mm
L1 in inches	2.618 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	4.50 mΩ
Can be coded	Yes	Plugging cycles	25
push-in force/pole	4 N	Withdrawal force per pole	4 N
Packaging	Box		

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	CuSn	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.	55 °C
Max. relative humidity during storage	80 %	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. no. of poles (Tu=20°C)	15 A
Rated current, max. no. of poles (Tu=20°C)	12 A	Rated current, min. no. of poles (Tu=40°C)	13 A
Rated current, max. no. 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 1s with 100 A

OMNIMATE Signal - series BL/SL 3.50

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Technical data

Rated data acc. to CSA

Institute (CSA)



Certificate No. (CSA)

200039-1176845

Rated voltage (Use group B)	300 V
Rated current (use group B)	10 A
Reference to approval values	Specifications are maximum values, details - see approval certificate.

Rated voltage (use group D)	300 V
Rated current (use group D)	10 A

Rated data acc. to UL 1059

Institute (UR)



Certificate No. (UR)

E60693

Rated voltage (use group B)	300 V
Rated current (use group B)	10 A
Reference to approval values	Specifications are maximum values, details - see approval certificate.

Rated voltage (use group D)	300 V
Rated current (use group D)	10 A

Classifications

ETIM 3.0	EC001284	ETIM 4.0	EC002637
ETIM 5.0	EC002637	ETIM 6.0	EC002637
UNSPSC	30-21-18-10	eClass 5.1	27-26-07-04
eClass 6.2	27-26-07-04	eClass 7.1	27-44-04-02
eClass 8.1	27-44-04-02	eClass 9.0	27-44-04-02
eClass 9.1	27-44-04-02		

Notes

Notes

- Gold-plated contact surfaces on request
- Rated current related to rated cross-section & min. No. of poles.
- Diameter of solder eyelet D = 1.4+0.1mm
- Solder eyelet diameter D = 1.5 + 0.1 mm, from 9 poles
- 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.
- For additional mechanical support for male connectors with screw flange (...F), we recommend an additional cable gland with fastening screws (sheet metal screw ISO 1481-ST 2.2x4.5 C or ISO 7049-ST 2.2x4.5 C – see Accessories). Cable gland only permitted before soldering.

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.

OMNIMATE Signal - series BL/SL 3.50
SL-SMT 3.50/20/180F 3.2SN BK BX

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Technical data**Approvals**

Approvals



ROHS

Conform

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

Brochure/Catalogue

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[MB SMT EN](#)
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[CAT 2 PORTFOLIOGUIDE EN](#)
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[PO OMNIMATE EN](#)

SMT white paper

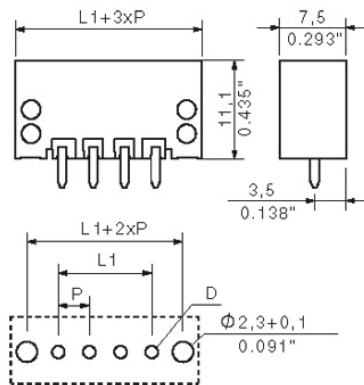
[Download Whitepaper](#)

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Drawings

Dimensional drawing



OMNIMATE Signal - series BL/SL 3.50 SL-SMT 3.50/20/180F 3.2SN BK BX

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Mating connector (fully pluggable)

BL 3.50/270F



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	Order No.	Version	GTIN (EAN)	Qty.	Product data	Packaging
BL 3.50/20/270F SN OR BX	1640110000	PCB plug-in connector, female plug, 3.50 mm, No. of poles: 20, 270°, Clamping yoke connection, Clamping range, max. : 1.5 mm², Box	4008190277666 24 pc(s).		IEC: 320 V / 12 A / 0.2 - 1.5 mm² UL: 300 V / 8 A / AWG 28 - AWG 14	Box
Discontinued	2014-05-20T00:00:00+02:00	BL 3.50/20/270F SN BK BX	1640340000	PCB plug-in connector, female plug, 3.50 mm, No. of poles: 20, 270°, Clamping yoke connection, Clamping range, max. : 1.5 mm², Box	4008190277925	20 pc(s).

BL 3.50/180LH



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	Order No.	Version	GTIN (EAN)	Qty.	Product data	Packaging
BL 3.50/20/180LH SN OR BX	1687830000	PCB plug-in connector, female plug, 3.50 mm, No. of poles: 20, 180°, Clamping yoke connection, Clamping range, max. : 1.5 mm², Box	4008190853389 24 pc(s).		IEC: 320 V / 17 A / 0.2 - 1.5 mm² UL: 300 V / 10 A / AWG 28 - AWG 14	Box
Discontinued	BL 3.50/20/180LH SN DKGX BX		1752900000	PCB plug-in connector, female plug, 3.50 mm,	4032248007516 20 pc(s).	IEC: 320 V /

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OMNIMATE Signal - series BL/SL 3.50

SL-SMT 3.50/20/180F 3.2SN BK BX

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Mating connector (fully pluggable)

No. of poles: 20,	17
180°, Clamping	A /
yoke connection,	0.2
Clamping range,	-
max. : 1.5 mm ² ,	1.5
Box	mm ²
	UL:
	300
	V /
	10
	A /
	AWG
	28
	-
	AWG
	14

BL	1688060000	PCB plug-in connector,	4008190853617 24 pc(s).	IEC: 320 V / 17 A / 0.2 - 1.5 mm ²	Box
3.50/20/180LH		female plug, 3.50 mm,		UL: 300 V / 10 A / AWG 28 - AWG 14	
SN BK BX		No. of poles: 20, 180°,			
		Clamping yoke connection,			
		Clamping range, max. : 1.5			
		mm ² , Box			

BL 3.50/180F



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	Order No.	Version	GTIN (EAN)	Qty.	Product data	Packaging
BL	1620870000	PCB plug-in connector,	4008190164775 24 pc(s).		IEC: 320 V / 17 A / 0.2 - 1.5 mm ²	Box
3.50/20/180F		female plug, 3.50 mm,			UL: 300 V / 10 A / AWG 28 - AWG 14	
SN BK BX		No. of poles: 20, 180°,				
		Clamping yoke connection,				
		Clamping range, max. : 1.5				
		mm ² , Box				
Discontinued	2014-05-20T00:00:00+02:00	BL 3.50/20/180F SN OR	1740771001	PCB plug-in	4008190961817	20
		BX PRT		connector, female		pc(s).
				plug, 3.50 mm,		
				No. of poles: 20,		
				180°, Clamping		
				yoke connection,		
				Clamping range,		
				max. : 1.5 mm ² ,		
				Box		

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OMNIMATE Signal - series BL/SL 3.50 SL-SMT 3.50/20/180F 3.2SN BK BX

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Mating connector (fully pluggable)

BL 3.50/20/180F SN OR BX	1620790000	PCB plug-in connector, female plug, 3.50 mm, No. of poles: 20, 180°, Clamping yoke connection, Clamping range, max. : 1.5 mm², Box	4008190163730 24 pc(s).	IEC: 320 V / 17 A / 0.2 - 1.5 mm² UL: 300 V / 10 A / AWG 28 - AWG 14	Box
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BL 3.50/90F



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	Order No.	Version	GTIN (EAN)	Qty.	Product data	Packaging
BL 3.50/20/90F SN BK BX	1639420000	PCB plug-in connector, female plug, 3.50 mm, No. of poles: 20, 90°, Clamping yoke connection, Clamping range, max. : 1.5 mm², Box	4008190276966 24 pc(s).		IEC: 320 V / 12 A / 0.2 - 1.5 mm² UL: 300 V / 8 A / AWG 28 - AWG 14	Box
BL 3.50/20/90F SN OR BX	1639190000	PCB plug-in connector, female plug, 3.50 mm, No. of poles: 20, 90°, Clamping yoke connection, Clamping range, max. : 1.5 mm², Box	4008190276737 24 pc(s).		IEC: 320 V / 12 A / 0.2 - 1.5 mm² UL: 300 V / 8 A / AWG 28 - AWG 14	Box

OMNIMATE Signal - series BL/SL 3.50

SL-SMT 3.50/20/180F 3.2SN BK BX

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Mating connector (conditionally pluggable)

BL 3.50/180



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	Order No.	Version	GTIN (EAN)	Qty.	Product data	Packaging
BL 3.50/20/180 SN BK BX	1620400000	PCB plug-in connector, female plug, 3.50 mm, No. of poles: 20, 180°, Clamping yoke connection, Clamping range, max. : 1.5 mm², Box	4008190155841	24 pc(s).	IEC: 320 V / 17 A / 0.2 - 1.5 mm² UL: 300 V / 10 A / AWG 28 - AWG 14	Box
Discontinued	2016-07-08T00:00:00+02:00	BL 3.50/20/180 SN OR BX PRT	1740701001	PCB plug-in connector, female plug, 3.50 mm, No. of poles: 20, 180°, Clamping yoke connection, Clamping range, max. : 1.5 mm², Box	4008190961671	24 pc(s).
Discontinued	2006-09-30T00:00:00+02:00	BL 3.50/20/180 SN GY BX	1620630000	PCB plug-in connector, female plug, 3.50 mm, No. of poles: 20, 180°, Clamping yoke connection, Clamping range, max. : 1.5 mm², Box	4008190159955	20 pc(s).
BL 3.50/20/180 SN DKGX BX	1620710000	PCB plug-in connector, female plug, 3.50 mm, No. of poles: 20, 180°, Clamping yoke connection, Clamping range, max. : 1.5 mm², Box	4008190160685	24 pc(s).	IEC: 320 V / 17 A / 0.2 - 1.5 mm² UL: 300 V / 10 A / AWG 28 - AWG 14	Box
BL 3.50/20/180 SN OR BX	1620320000	PCB plug-in connector, female plug, 3.50 mm, No. of poles: 20, 180°, Clamping yoke connection, Clamping range, max. : 1.5 mm², Box	4008190154455	24 pc(s).	IEC: 320 V / 17 A / 0.2 - 1.5 mm² UL: 300 V / 10 A / AWG 28 - AWG 14	Box

OMNIMATE Signal - series BL/SL 3.50
SL-SMT 3.50/20/180F 3.2SN BK BX

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Mating connector (conditionally pluggable)
BL 3.50/90


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	Order No.	Version	GTIN (EAN)	Qty.	Product data	Packaging
BL 3.50/20/90 SN OR BX	1638730000	PCB plug-in connector, female plug, 3.50 mm, No. of poles: 20, 90°, Clamping yoke connection, Clamping range, max.: 1.5 mm ² , Box	4008190276270 24 pc(s).		IEC: 320 V / 12 A / 0.2 - 1.5 mm ² UL: 300 V / 8 A / AWG 28 - AWG 14	Box
BL 3.50/20/90 SN BK BX	1638960000	PCB plug-in connector, female plug, 3.50 mm, No. of poles: 20, 90°, Clamping yoke connection, Clamping range, max.: 1.5 mm ² , Box	4008190276508 24 pc(s).		IEC: 320 V / 12 A / 0.2 - 1.5 mm ² UL: 300 V / 8 A / AWG 28 - AWG 14	Box

BL 3.50/270


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	Order No.	Version	GTIN (EAN)	Qty.	Product data	Packaging
BL 3.50/20/270 SN OR BX	1639650000	PCB plug-in connector, female plug, 3.50 mm, No. of poles: 20, 270°, Clamping yoke connection, Clamping range, max.: 1.5 mm ² , Box	4008190277208 24 pc(s).		IEC: 320 V / 12 A / 0.2 - 1.5 mm ² UL: 300 V / 8 A / AWG 28 - AWG 14	Box
Discontinued	2016-04-08T00:00:00+02:00	BL 3.50/20/270 SN BK BX	1639880000	PCB plug-in connector, female plug, 3.50 mm, No. of poles: 20, 270°, Clamping yoke connection, Clamping range,	4008190277437	24 pc(s).

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Mating connector (conditionally pluggable)

max. : 1.5 mm²,
Box

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Accessories

Coding elements



Only connects what is supposed to be connected: the right connection at the right place.

Coding elements and locking devices clearly assign connecting elements during the manufacturing process and operation

The coding elements and locking devices are inserted prior to assembly or during the cable assembly phase. The Weidmüller alternative: configure online using the variant configurator to precode prior to delivery.

Incorrect assembly on the circuit board and incorrect plugging of connecting elements is no longer possible. The advantage: no troubleshooting during manufacture and no operational errors by the user.

General ordering data

Type	Order No.	Version	GTIN (EAN)	Qty.	Product data	Packaging
BL SL 3.5 KO SW	1610100000	PCB plug-in connector, Accessories, Coding element, Black, No. of poles: 1	4008190187637	100 pc(s).	UL:	Box
BL SL 3.5 KO OR	1693430000	PCB plug-in connector, Accessories, Coding element, Orange, No. of poles: 1	4008190867447	100 pc(s).	UL:	Box

Additional accessories



No task is too small when creating the perfect solution.

Connections form just one part of the overall process. Small details are often the key to the perfect solution in applications where potentials are tested, grouped or even isolated.

A system is not a system without small but useful details:

- Test plugs - ensure reliable pick-up from diagnostic sockets
- Cross-connectors - ensure a stable electrical distribution contact directly at the connection
- Compartment partition elements - divide a large number of male connectors into several separate socket connector channels
- Locks and clips - optional vibration-resistant clip-on connection or mounting for male and female connectors

In tandem with the manufacturing process and application - more accessories = smaller workload

General ordering data

Type	Order No.	Version	GTIN (EAN)	Qty.	Product data
BL/SL 3.50 VR BK BX	1669300000	PCB plug-in connector, Accessories, Latches, Black, No. of poles: 1	4008190428471	100 pc(s).	UL:

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Accessories

PTSC KA 2.2X4.5 WN1412	1610740000	PCB plug-in connector, Accessories, Mounting screw, No. of poles: 1	4008190039523 100 pc(s).	UL:
BL/SL 3.50 VR OR BX	1669310000	PCB plug-in connector, Accessories, Latches, Orange, No. of poles: 1	4008190428488 100 pc(s).	UL:

LED Light guides



Effective: the link between LED and front panel.

Floodlight indicators allow users to monitor the switching states without requiring a special design: optical plastic directs the light from standard LEDs around a bend into the connectors or through the front plate.

The fibre-optic elements are simply clipped behind the relevant 90° bend male connectors (90° outlet direction). Versions with different incoming light beam heights achieve maximum light efficiency for LEDs with different designs or heights.

The advantages compared to conventional solutions:

- No additional LED circuit board required behind the front panel
- No "long-legged" LEDs with separate mounting required
- Bent fibre-optic cable line for maximum light efficiency
- Uncomplicated front plate bore holes due to circular shape of outgoing light beam
- Easy to maintain correct clearance and creepage distance
- Can be partitioned for smaller pole numbers

The result: simplified manufacturing process, reduced costs and simplified design

General ordering data

Type	Order No.	Version	GTIN (EAN)	Qty.	Product data	Packaging
SL 3.5 FLA 4.0/1.75/8	1597650000	PCB plug-in connector, Accessories, Flood-light display, Transparent, No. of poles: 1	4008190027773 50 pc(s).	UL:		Box
SL 3.5 FLA 1.5/8	1597510000	PCB plug-in connector, Accessories, Flood-light display, Transparent, No. of poles: 1	4008190127541 50 pc(s).	UL:		Box
SL 3.5 FLA 2.3/1.75/8	1597640000	PCB plug-in connector, Accessories, Flood-light display, Transparent, No. of poles: 1	4008190011321 25 pc(s).	UL:		Box
SL 3.5 FLA 1.5/1.75/8	1597630000	PCB plug-in connector, Accessories, Flood-light display, Transparent, No. of poles: 1	4008190148386 50 pc(s).	UL:		Box
SL 3.5 FLA 2.3/8	1597520000	PCB plug-in connector, Accessories, Flood-light	4008190120566 50 pc(s).	UL:		Box

Data sheet**OMNIMATE Signal - series BL/SL 3.50
SL-SMT 3.50/20/180F 3.2SN BK BX****Weidmüller Interface GmbH & Co. KG**

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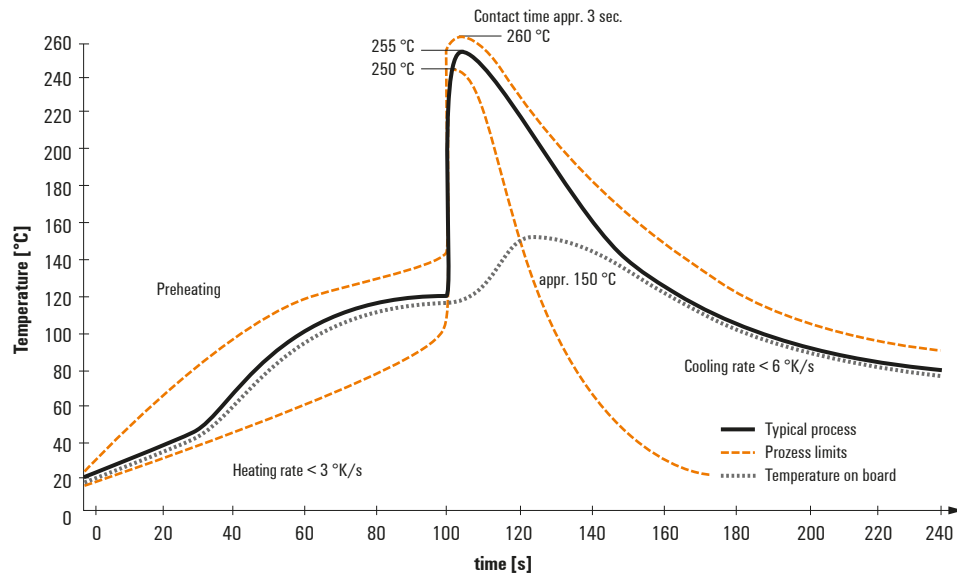
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display, Transparent, No. of
poles: 1

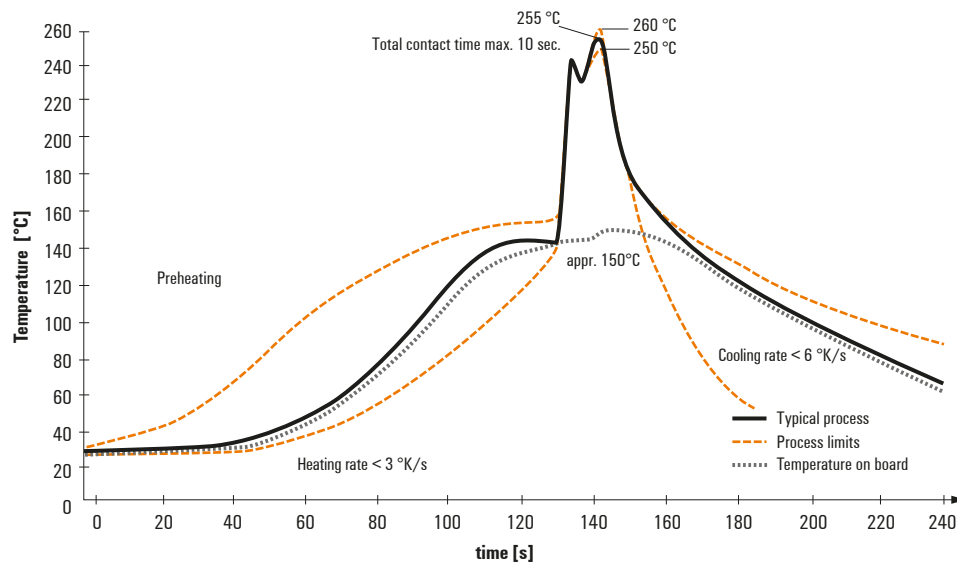
Recommended wave soldering profiles

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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:

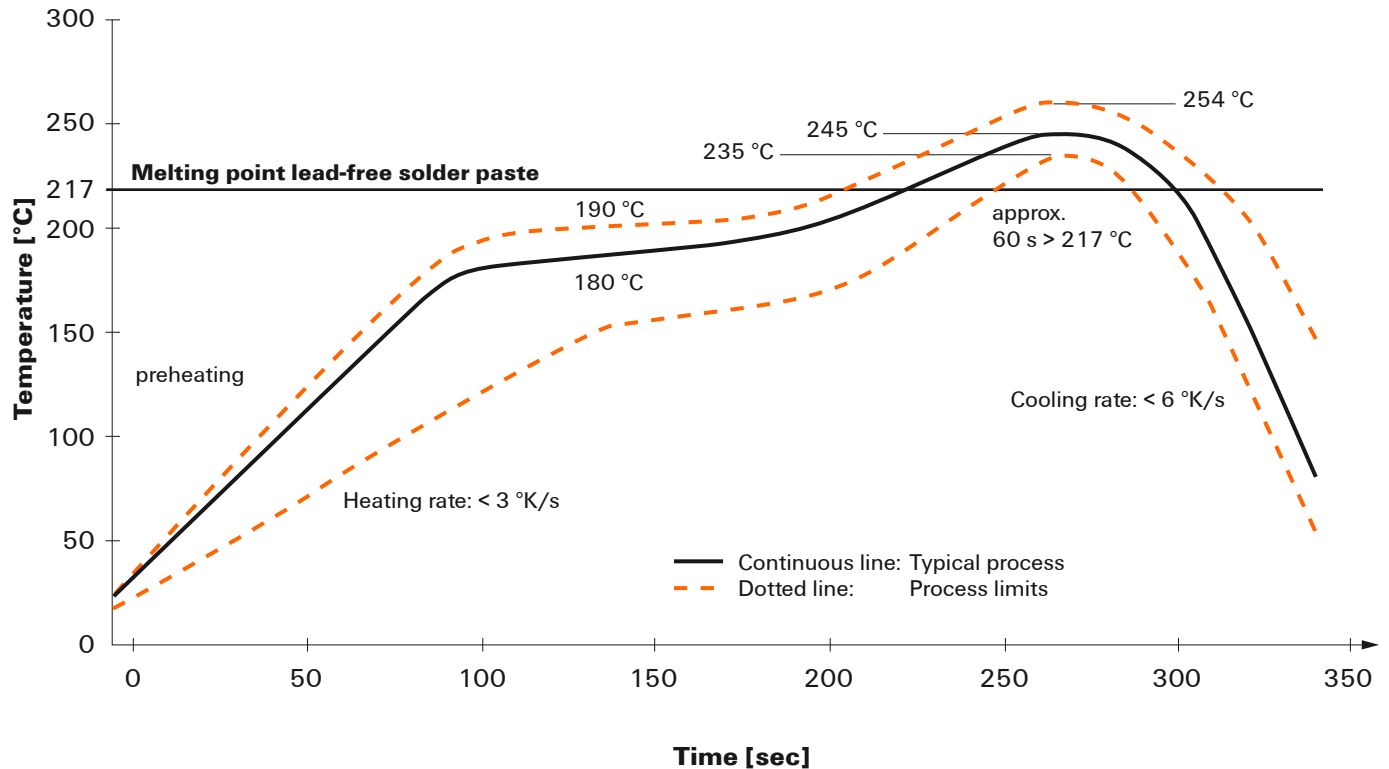
- PCB thickness
- Proportion of Cu in the layers
- Single/double-sided assembly
- Product range
- Heating and cooling rates

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.

We reserve the right to make technical changes.

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.