

## OMNIMATE Signal - series BC/SC 3.81 SC-SMT 3.81/04/135LF 3.2SN BK BX

**Weidmüller Interface GmbH & Co. KG**  
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### Product image



Similar to illustration

The high-temperature-resistant SC-SMT pin header with 135° wire outlet direction: the 135° angle exists between the plugging direction and the solder pin. The wire outlet direction is then diagonal or 45° to the PCB.

- More freedom when designing components and devices.
- Easy access and a high component density when multiple interfaces are arranged in parallel within a single plugging area
- The housing design is application-friendly because of the additional optional wire outlet direction.
- Available as closed (G) and with solder flange (LF).
- Pin length of either 1.5 mm or 3.2 mm

Weidmüller's 3.81-mm-pitch (0.15 inch) plug-in connectors are compatible with the layouts of standard connectors and offer space for labelling and coding.

### General ordering data

|              |                                                                                                                                                                    |
|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Type         | SC-SMT 3.81/04/135LF 3.2SN BK BX                                                                                                                                   |
| Order No.    | <a href="#">1978100000</a>                                                                                                                                         |
| Version      | PCB plug-in connector, male header, Solder flange, THT/THR solder connection, 3.81 mm, Number of poles: 4, 135°, Solder pin length (l): 3.2 mm, tinned, black, Box |
| GTIN (EAN)   | 4032248685684                                                                                                                                                      |
| Qty.         | 50 pc(s).                                                                                                                                                          |
| Product data | IEC: 320 V / 17.5 A<br>UL: 300 V / 11 A                                                                                                                            |
| Packaging    | Box                                                                                                                                                                |

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The solder connection is causing concern among whole global industries and international associations - just a brief outline of the issue would extend far beyond the scope of this summary. Weidmüller is a specialist in electrical connection systems and is always has its finger on the pulse to keep up to date with global development of the latest circuit board technology, manufacturing processes, electrical, chemical and thermal material characteristics and influential factors.

Automatic assembly requirements, the subtleties surrounding paste pressure, temperature profiles in the reflow oven or influential factors on measured results from different quality testing systems are just as important to us as skills such as defining problems in electronics development and finding possible solutions, EMS service providers and the long-term behaviour of a soldered connection under different conditions in daily operation all over the world.

If you should have any questions relating to our products and their behaviour in the soldering process, we will provide you with help and advice on historical challenges such as RoHS legislation and conversion to lead-free operation or on subjects such as whiskers, moisture level, REACH, etc.

The Weidmüller portfolio includes components for through-hole technology (THT) and through-hole reflow procedures (THR) - supplied in a box, tube tray or belt, depending on the process.

Pin geometry, surface systems, pin lengths, constructive parameters and the thermal properties of insulating material are always at the cutting edge of technology. Weidmüller soldering components represent outstanding quality and reliable function. Our own laboratory, electroplating shop and electronics manufacturing plant increase our know-how on a daily basis daily and assure the constant high quality of our products, data and specifications.

The objective for Portfolio and Service and the benefits to you: finding the best solution for every procedure, layout and circuit board - including all the necessary product data and other engineering information for assisting the design-in phase.

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## Technical data

### Dimensions and weights

|                          |            |                 |            |
|--------------------------|------------|-----------------|------------|
| Width                    | 25.63 mm   | Width (inches)  | 1.009 inch |
| Height                   | 14.2 mm    | Height (inches) | 0.559 inch |
| Height of lowest version | 11 mm      | Depth           | 13.1 mm    |
| Depth (inches)           | 0.516 inch | Net weight      | 3.08 g     |

### System specifications

|                                                   |                                     |                                              |                        |
|---------------------------------------------------|-------------------------------------|----------------------------------------------|------------------------|
| Product family                                    | OMNIMATE Signal - series BC/SC 3.81 | Type of connection                           | Board connection       |
| Mounting onto the PCB                             | THT/THR solder connection           | Pitch in mm (P)                              | 3.81 mm                |
| Pitch in inches (P)                               | 0.15 inch                           | Outgoing elbow                               | 135°                   |
| Number of poles                                   | 4                                   | Number of solder pins per pole               | 1                      |
| Solder pin length (l)                             | 3.2 mm                              | Solder pin length tolerance                  | 0 / -0.02 mm           |
| Tolerance of solder pin position                  | ± 0.1 mm                            | Solder pin dimensions                        | d = 1.0 mm, Octagonal  |
| Solder pin dimensions = d tolerance               | 0 / -0.03 mm                        | Solder eyelet hole diameter (D)              | 1.3 mm                 |
| Solder eyelet hole diameter tolerance (D)+ 0.1 mm |                                     | Outside diameter of solder pad               | 2.1 mm                 |
| Template aperture diameter                        | 1.9 mm                              | L1 in mm                                     | 11.43 mm               |
| L1 in inches                                      | 0.45 inch                           | Number of rows                               | 1                      |
| Pin series quantity                               | 1                                   | Touch-safe protection acc. to DIN VDE 57 106 | Safe from finger touch |
| Touch-safe protection acc. to DIN VDE 0470        | IP 20                               | Volume resistance                            | ≤ 5mΩ                  |
| Can be coded                                      | Yes                                 | Plugging cycles                              | 25                     |

### 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              |
| 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. | -25 °C              |
| Temperature range, installation, max. | 120 °C       |                                       |                     |

### 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)                             | 17.1 A                 | Rated current, min. number of poles (Tu=40°C)                         | 17.5 A           |
| Rated current, max. number of poles (Tu=40°C)                             | 17.5 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 76 A |

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

Institute (CSA)



Certificate No. (CSA)

200039-1121690

Rated voltage (Use group B / CSA) 300 V

Rated current (Use group B / CSA) 11 A

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) 11 A

Rated current (Use group D / UL 1059) 11 A

Reference to approval values

Specifications are maximum values, details - see approval certificate.

**Packing**

Packaging

Box

VPE length

55 mm

VPE width

65 mm

VPE height

95 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

UNSPSC

30-21-18-10

**Notes**

Notes

- Rated current related to rated cross-section & min. No. of poles.
- 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.
- P on drawing = pitch

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

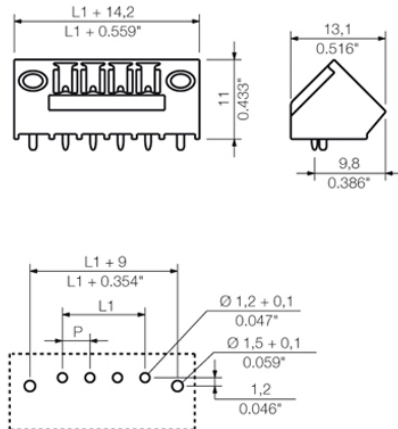
|                                             |                                                                                                                                                                                                                                                             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

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# Drawings

## Dimensional drawing



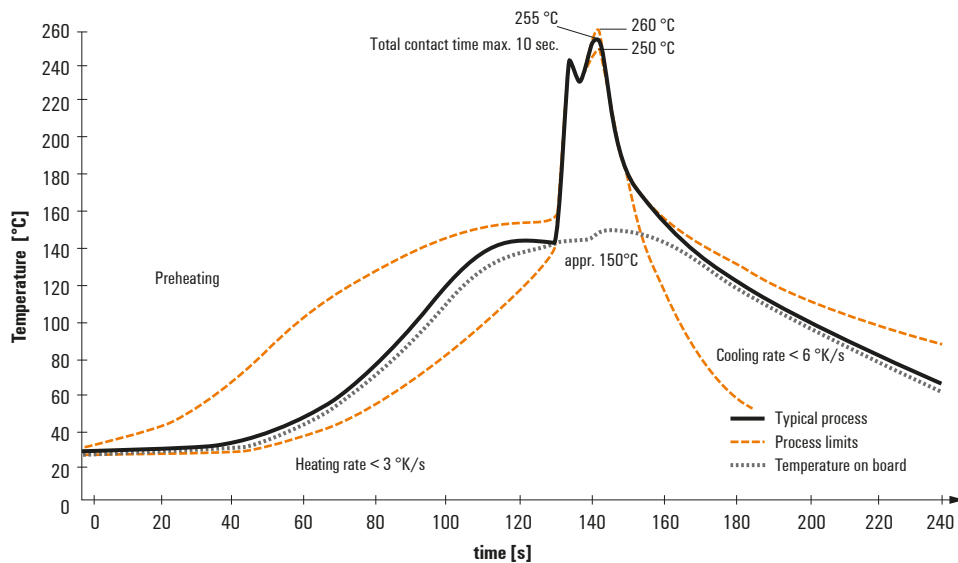
## Recommended wave soldering profiles

**Weidmüller Interface GmbH & Co. KG**  
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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  $260\text{ °C}$ . 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

**Weidmüller Interface GmbH & Co. KG**

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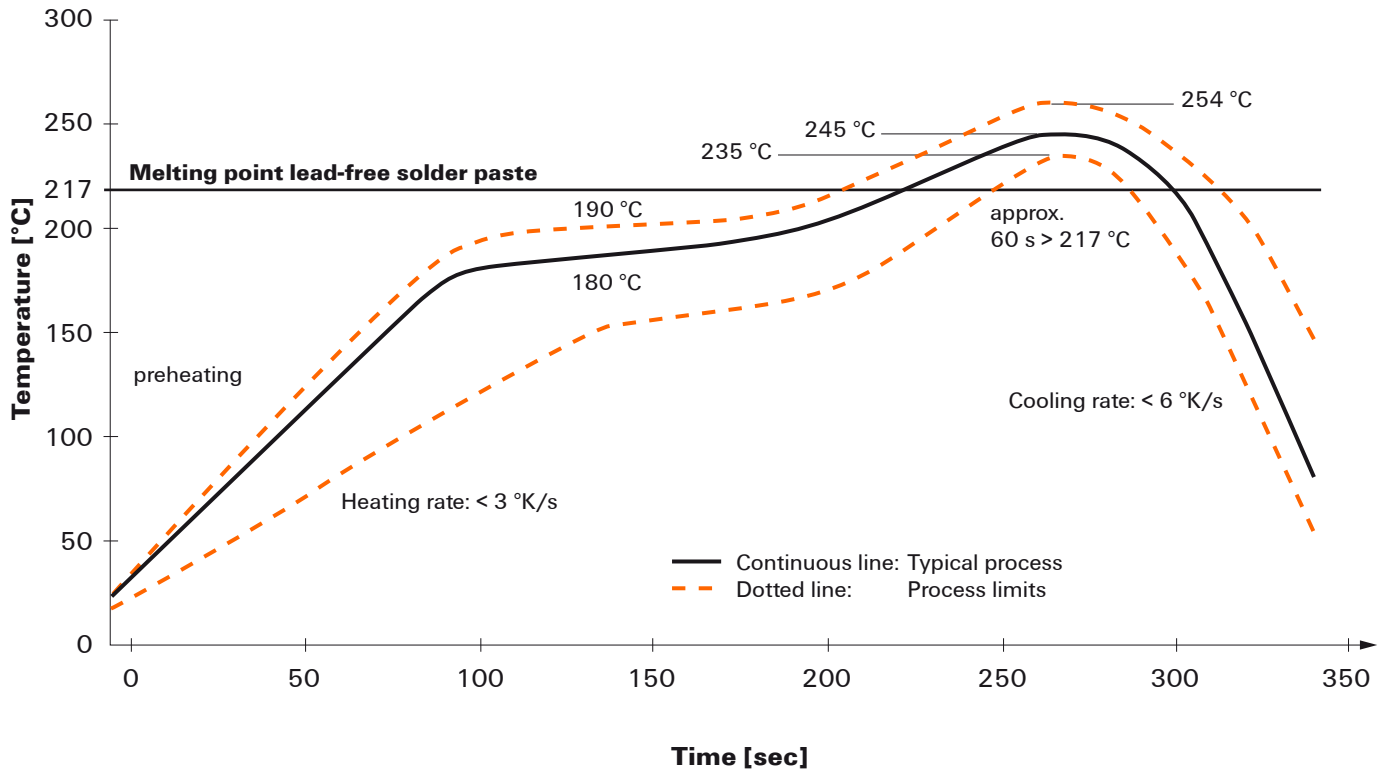
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## Reflow soldering profile

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.