

# MC 1,5/13-GU-3,81 P19 THR - PCB header



1532514

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PCB headers, nominal cross section: 1.5 mm<sup>2</sup>, color: black, nominal current: 8 A, rated voltage (III/2): 160 V, contact surface: Sn, contact connection type: Pin, number of rows: 1, number of positions: 13, product range: MC 1,5/-GU-THR, pitch: 3.81 mm, mounting: THR soldering, pin layout: Linear pinning, solder pin [P]: 1.9 mm, number of solder pins per potential: 1, plug-in system: COMBICON MC 1,5, Pin connector pattern alignment: Standard, locking: without, mounting method: without, type of packaging: Box packaging

## Your advantages

- Designed for integration into the SMT soldering process
- Maximum flexibility when it comes to device design – one header for connectors with different connection technologies
- Easy PCB replacement thanks to plug-in modules
- Well-known mounting principle allows worldwide use

## Commercial data

|                        |                                |
|------------------------|--------------------------------|
| Item number            | 1532514                        |
| Packing unit           | 50 pc                          |
| Minimum order quantity | 50 pc                          |
| Note                   | Made to order (non-returnable) |
| Sales key              | AA02                           |
| Product key            | AABTBI                         |
| GTIN                   | 4067923001077                  |
| Customs tariff number  | 85366930                       |
| Country of origin      | US                             |

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## Technical data

### Product properties

|                           |                       |
|---------------------------|-----------------------|
| Product type              | PCB headers           |
| Product family            | MC 1,5/...-GU-THR     |
| Product line              | COMBICON Connectors S |
| Number of positions       | 13                    |
| Pitch                     | 3.81 mm               |
| Number of rows            | 1                     |
| Pin layout                | Linear pinning        |
| Solder pins per potential | 1                     |

### Electrical properties

#### Properties

|                             |                |
|-----------------------------|----------------|
| Nominal current $I_N$       | 8 A            |
| Nominal voltage $U_N$       | 160 V          |
| Contact resistance          | 1.3 m $\Omega$ |
| Rated voltage (III/3)       | 160 V          |
| Rated surge voltage (III/3) | 2.5 kV         |
| Rated voltage (III/2)       | 160 V          |
| Rated surge voltage (III/2) | 2.5 kV         |
| Rated voltage (II/2)        | 250 V          |
| Rated surge voltage (II/2)  | 2.5 kV         |

### Mounting

|               |                |
|---------------|----------------|
| Mounting type | THR soldering  |
| Pin layout    | Linear pinning |

#### Processing notes

|                                  |                       |
|----------------------------------|-----------------------|
| Process                          | Reflow/wave soldering |
| Moisture Sensitive Level         | MSL 1                 |
| Classification temperature $T_c$ | 260 °C                |
| Solder cycles in the reflow      | 3                     |

### Material specifications

#### Material data - contact

|                                           |                                                                                  |
|-------------------------------------------|----------------------------------------------------------------------------------|
| Note                                      | WEEE/RoHS-compliant, free of whiskers according to IEC 60068-2-82/JEDEC JESD 201 |
| Contact material                          | Cu alloy                                                                         |
| Surface characteristics                   | Tin-plated                                                                       |
| Metal surface contact area (top layer)    | Tin (3 - 5 $\mu$ m Sn)                                                           |
| Metal surface contact area (middle layer) | Nickel (1.3 - 3 $\mu$ m Ni)                                                      |
| Metal surface soldering area (top layer)  | Tin (3 - 5 $\mu$ m Sn)                                                           |

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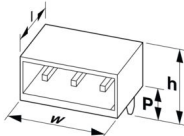
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|                                             |                        |
|---------------------------------------------|------------------------|
| Metal surface soldering area (middle layer) | Nickel (1.3 - 3 µm Ni) |
|---------------------------------------------|------------------------|

## Material data - housing

|                                                                   |              |
|-------------------------------------------------------------------|--------------|
| Color (Housing)                                                   | black (9005) |
| Insulating material                                               | LCP          |
| Insulating material group                                         | IIIa         |
| CTI according to IEC 60112                                        | 175          |
| Flammability rating according to UL 94                            | V0           |
| Glow wire flammability index GWFI according to EN 60695-2-12      | 850          |
| Glow wire ignition temperature GWIT according to EN 60695-2-13    | 775          |
| Temperature for the ball pressure test according to EN 60695-10-2 | 200 °C       |

## Dimensions

|                       |                                                                                     |
|-----------------------|-------------------------------------------------------------------------------------|
| Dimensional drawing   |  |
| Pitch                 | 3.81 mm                                                                             |
| Width [w]             | 50.92 mm                                                                            |
| Height [h]            | 9.4 mm                                                                              |
| Length [l]            | 8.7 mm                                                                              |
| Installed height      | 7.5 mm                                                                              |
| Solder pin length [P] | 1.9 mm                                                                              |
| Pin dimensions        | 0.8 x 0.8 mm                                                                        |

## PCB design

|               |        |
|---------------|--------|
| Hole diameter | 1.4 mm |
|---------------|--------|

## Mechanical tests

### Visual inspection

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60512-1-1:2002-02 |
| Result        | Test passed           |

### Dimension check

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60512-1-2:2002-02 |
| Result        | Test passed           |

### Polarization and coding

|               |                        |
|---------------|------------------------|
| Specification | IEC 60512-13-5:2006-02 |
| Result        | Test passed            |

### Contact holder in insert

|               |                        |
|---------------|------------------------|
| Specification | IEC 60512-15-1:2008-05 |
|---------------|------------------------|

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|                                                |             |
|------------------------------------------------|-------------|
| Contact holder in insert<br>Requirements >20 N | Test passed |
|------------------------------------------------|-------------|

## Insertion and withdrawal forces

|                                     |             |
|-------------------------------------|-------------|
| Result                              | Test passed |
| No. of cycles                       | 25          |
| Insertion strength per pos. approx. | 5 N         |
| Withdraw strength per pos. approx.  | 4 N         |

## Electrical tests

### Thermal test | Test group C

|                            |                       |
|----------------------------|-----------------------|
| Specification              | IEC 60512-5-1:2002-02 |
| Tested number of positions | 6                     |

### Insulation resistance

|                                              |                       |
|----------------------------------------------|-----------------------|
| Specification                                | IEC 60512-3-1:2002-02 |
| Insulation resistance, neighboring positions | > 5 MΩ                |

### Air clearances and creepage distances |

|                                                        |                     |
|--------------------------------------------------------|---------------------|
| Specification                                          | IEC 60664-1:2007-04 |
| Insulating material group                              | IIIa                |
| Comparative tracking index (IEC 60112)                 | CTI 175             |
| Rated insulation voltage (III/3)                       | 160 V               |
| Rated surge voltage (III/3)                            | 2.5 kV              |
| minimum clearance value - non-homogenous field (III/3) | 1.5 mm              |
| minimum creepage distance (III/3)                      | 2.5 mm              |
| Rated insulation voltage (III/2)                       | 160 V               |
| Rated surge voltage (III/2)                            | 2.5 kV              |
| minimum clearance value - non-homogenous field (III/2) | 1.5 mm              |
| minimum creepage distance (III/2)                      | 1.6 mm              |
| Rated insulation voltage (II/2)                        | 250 V               |
| Rated surge voltage (II/2)                             | 2.5 kV              |
| minimum clearance value - non-homogenous field (II/2)  | 1.5 mm              |
| minimum creepage distance (II/2)                       | 2.5 mm              |

## Environmental and real-life conditions

### Vibration test

|                        |                                          |
|------------------------|------------------------------------------|
| Specification          | IEC 60068-2-6:2007-12                    |
| Frequency              | 10 - 150 - 10 Hz                         |
| Sweep speed            | 1 octave/min                             |
| Amplitude              | 0.35 mm (10 Hz ... 60.1 Hz)              |
| Acceleration           | 50 m/s <sup>2</sup> (60.1 Hz ... 150 Hz) |
| Test duration per axis | 2.5 h                                    |
| Test directions        | X-, Y- and Z-axis                        |

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## Durability test

|                                              |                       |
|----------------------------------------------|-----------------------|
| Specification                                | IEC 60512-9-1:2010-03 |
| Impulse withstand voltage at sea level       | 2.95 kV               |
| Contact resistance $R_1$                     | 1.3 mΩ                |
| Contact resistance $R_2$                     | 1.6 mΩ                |
| Insertion/withdrawal cycles                  | 25                    |
| Insulation resistance, neighboring positions | > 5 MΩ                |

## Climatic test

|                                   |                                                                           |
|-----------------------------------|---------------------------------------------------------------------------|
| Specification                     | EN ISO 22479:2022-06                                                      |
| Corrosive stress                  | 0.2 dm <sup>3</sup> SO <sub>2</sub> on 300 dm <sup>3</sup> /40 °C/1 cycle |
| Thermal stress                    | 105 °C/168 h                                                              |
| Power-frequency withstand voltage | 1.39 kV                                                                   |

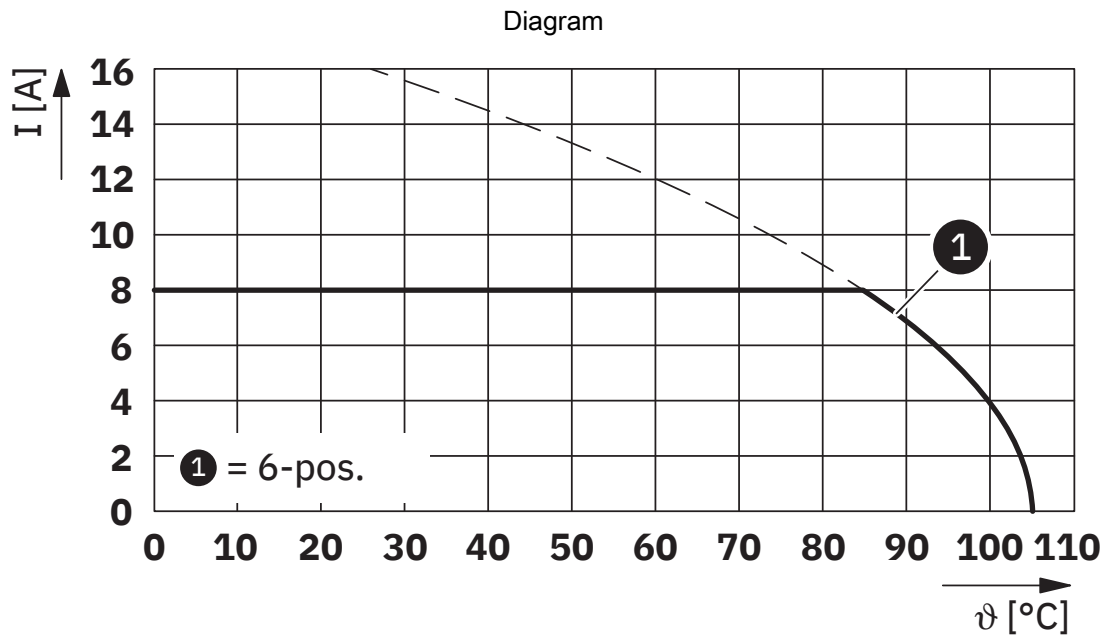
## Ambient conditions

|                                         |                                                     |
|-----------------------------------------|-----------------------------------------------------|
| Ambient temperature (operation)         | -40 °C ... 105 °C (dependent on the derating curve) |
| Ambient temperature (storage/transport) | -40 °C ... 70 °C                                    |
| Relative humidity (storage/transport)   | 30 % ... 70 %                                       |
| Ambient temperature (assembly)          | -5 °C ... 100 °C                                    |

## Packaging specifications

|                   |               |
|-------------------|---------------|
| Type of packaging | Box packaging |
|-------------------|---------------|

## Drawings



Type: MC 1,5/...-ST-3,81 with MC 1,5/...-GU-3,81 P... THR

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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1532514>

|                                                                                                                                                       |                       |                       |                   |                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-------------------|-----------------------------|
| <div> <b>cULus Recognized</b><br/>Approval ID: E60425-20110128</div> |                       |                       |                   |                             |
|                                                                                                                                                       | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| B                                                                                                                                                     |                       |                       |                   |                             |
|                                                                                                                                                       | 300 V                 | 8 A                   | -                 | -                           |
| D                                                                                                                                                     |                       |                       |                   |                             |
|                                                                                                                                                       | 300 V                 | 8 A                   | -                 | -                           |

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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27460201 |
| ECLASS-15.0 | 27460201 |

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC002637 |
|----------|----------|

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## Environmental product compliance

### EU RoHS

|                                         |                    |
|-----------------------------------------|--------------------|
| Fulfills EU RoHS substance requirements | Yes, No exemptions |
|-----------------------------------------|--------------------|

### China RoHS

|                                        |                                          |
|----------------------------------------|------------------------------------------|
| Environment friendly use period (EFUP) | EFUP-E                                   |
|                                        | No hazardous substances above the limits |

### EU REACH SVHC

|                                     |                            |
|-------------------------------------|----------------------------|
| REACH candidate substance (CAS No.) | No substance above 0.1 wt% |
|-------------------------------------|----------------------------|

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