

# MC 0,5/10-G-2,5 THT - PCB header

1963502

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PCB headers, nominal cross section: 0.5 mm<sup>2</sup>, color: black, nominal current: 4 A, rated voltage (III/2): 160 V, contact surface: Sn, contact connection type: Pin, number of potentials: 10, number of rows: 1, number of positions: 10, number of connections: 10, product range: MC 0,5/..-G-THT, pitch: 2.5 mm, mounting: THR soldering / wave soldering, pin layout: Linear pinning, solder pin [P]: 3.8 mm, number of solder pins per potential: 1, plug-in system: COMBICON FK-MC 0,5, Pin connector pattern alignment: Standard, locking: without, mounting method: without, type of packaging: packed in cardboard, For user information and design recommendations for through-hole reflow technology, go to: Downloads

## Your advantages

- Designed for integration into the SMT soldering process

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1963502       |
| Packing unit                         | 50 pc         |
| Minimum order quantity               | 50 pc         |
| Sales key                            | AA01          |
| Product key                          | AAATGA        |
| GTIN                                 | 4017918912321 |
| Weight per piece (including packing) | 3.9 g         |
| Weight per piece (excluding packing) | 3.16 g        |
| Customs tariff number                | 85366930      |
| Country of origin                    | DE            |

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## Technical data

### Product properties

|                           |                                            |
|---------------------------|--------------------------------------------|
| Product type              | PCB headers                                |
| Product family            | MC 0,5/...-G-THT                           |
| Product line              | COMBICON Connectors XS                     |
| Type                      | Component suitable for through hole reflow |
| Number of positions       | 10                                         |
| Pitch                     | 2.5 mm                                     |
| Number of connections     | 10                                         |
| Number of rows            | 1                                          |
| Number of potentials      | 10                                         |
| Mounting flange           | without                                    |
| Pin layout                | Linear pinning                             |
| Solder pins per potential | 1                                          |

### Electrical properties

#### Properties

|                             |        |
|-----------------------------|--------|
| Nominal current $I_N$       | 4 A    |
| Nominal voltage $U_N$       | 160 V  |
| Contact resistance          | 2 mΩ   |
| Rated voltage (III/3)       | 32 V   |
| Rated surge voltage (III/3) | 1.5 kV |
| Rated voltage (III/2)       | 160 V  |
| Rated surge voltage (III/2) | 2.5 kV |
| Rated voltage (II/2)        | 160 V  |
| Rated surge voltage (II/2)  | 1.5 kV |

### Mounting

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

#### Processing notes

|                                  |                       |
|----------------------------------|-----------------------|
| Process                          | Reflow/wave soldering |
| Moisture Sensitive Level         | MSL 3                 |
| Classification temperature $T_c$ | 245 °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                                                                         |

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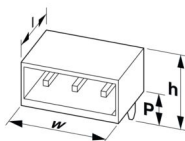
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|                                             |                      |
|---------------------------------------------|----------------------|
| Surface characteristics                     | Tin-plated           |
| Metal surface contact area (top layer)      | Tin (3 - 5 µm Sn)    |
| Metal surface contact area (middle layer)   | Nickel (1 - 3 µm Ni) |
| Metal surface soldering area (top layer)    | Tin (3 - 5 µm Sn)    |
| Metal surface soldering area (middle layer) | Nickel (1 - 3 µm Ni) |

## Material data - housing

|                                                                   |              |
|-------------------------------------------------------------------|--------------|
| Color (Housing)                                                   | black (9005) |
| Insulating material                                               | PA           |
| Insulating material group                                         | IIIa         |
| CTI according to IEC 60112                                        | 250          |
| 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 | 125 °C       |

## Dimensions

|                       |                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------|
| Dimensional drawing   |  |
| Pitch                 | 2.5 mm                                                                               |
| Width [w]             | 26.9 mm                                                                              |
| Height [h]            | 11.9 mm                                                                              |
| Length [l]            | 10.1 mm                                                                              |
| Installed height      | 8.1 mm                                                                               |
| Solder pin length [P] | 3.8 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           |

### Resistance of inscriptions

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|               |                        |
|---------------|------------------------|
| Specification | IEC 60068-2-70:1995-12 |
| 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 |
| 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. | 8 N         |
| Withdraw strength per pos. approx.  | 6 N         |

## Electrical tests

### Thermal test | Test group C

|                            |                       |
|----------------------------|-----------------------|
| Specification              | IEC 60512-5-1:2002-02 |
| Tested number of positions | 12                    |

### Insulation resistance

|                                              |                       |
|----------------------------------------------|-----------------------|
| Specification                                | IEC 60512-3-1:2002-02 |
| Insulation resistance, neighboring positions | 10 <sup>12</sup> Ω    |

### Air clearances and creepage distances |

|                                                        |                     |
|--------------------------------------------------------|---------------------|
| Specification                                          | IEC 60664-1:2007-04 |
| Insulating material group                              | IIIa                |
| Comparative tracking index (IEC 60112)                 | CTI 250             |
| Rated insulation voltage (III/3)                       | 32 V                |
| Rated surge voltage (III/3)                            | 1.5 kV              |
| minimum clearance value - non-homogenous field (III/3) | 0.8 mm              |
| minimum creepage distance (III/3)                      | 1.3 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)                        | 160 V               |
| Rated surge voltage (II/2)                             | 1.5 kV              |
| minimum clearance value - non-homogenous field (II/2)  | 0.5 mm              |
| minimum creepage distance (II/2)                       | 1.6 mm              |

## Environmental and real-life conditions

### Vibration test

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|                        |                             |
|------------------------|-----------------------------|
| 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           | 5g (60.1 Hz ... 150 Hz)     |
| Test duration per axis | 2.5 h                       |
| Test directions        | X-, Y- and Z-axis           |

## Durability test

|                                        |                       |
|----------------------------------------|-----------------------|
| Specification                          | IEC 60512-9-1:2010-03 |
| Impulse withstand voltage at sea level | 2.95 kV               |
| Contact resistance R <sub>1</sub>      | 2 mΩ                  |
| Contact resistance R <sub>2</sub>      | 2.2 mΩ                |
| Insertion/withdrawal cycles            | 25                    |

## Climatic test

|                                   |                                                                           |
|-----------------------------------|---------------------------------------------------------------------------|
| Specification                     | ISO 6988:1985-02                                                          |
| Corrosive stress                  | 0.2 dm <sup>3</sup> SO <sub>2</sub> on 300 dm <sup>3</sup> /40 °C/1 cycle |
| Thermal stress                    | 100 °C/168 h                                                              |
| Power-frequency withstand voltage | 1.39 kV                                                                   |

## Ambient conditions

|                                         |                                                     |
|-----------------------------------------|-----------------------------------------------------|
| Ambient temperature (operation)         | -40 °C ... 100 °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    | packed in cardboard |
| Outer packaging type | Dry bag             |

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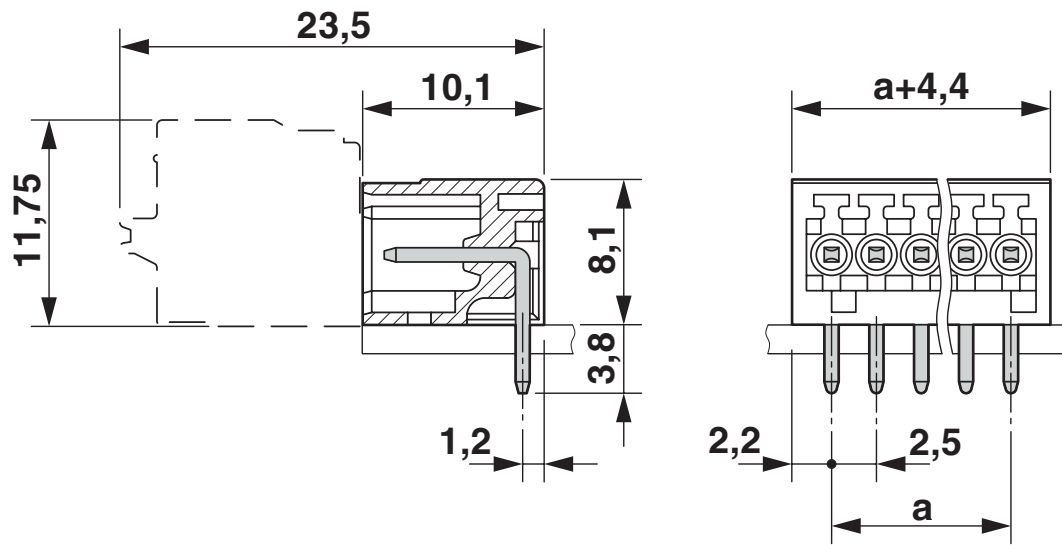
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## Drawings

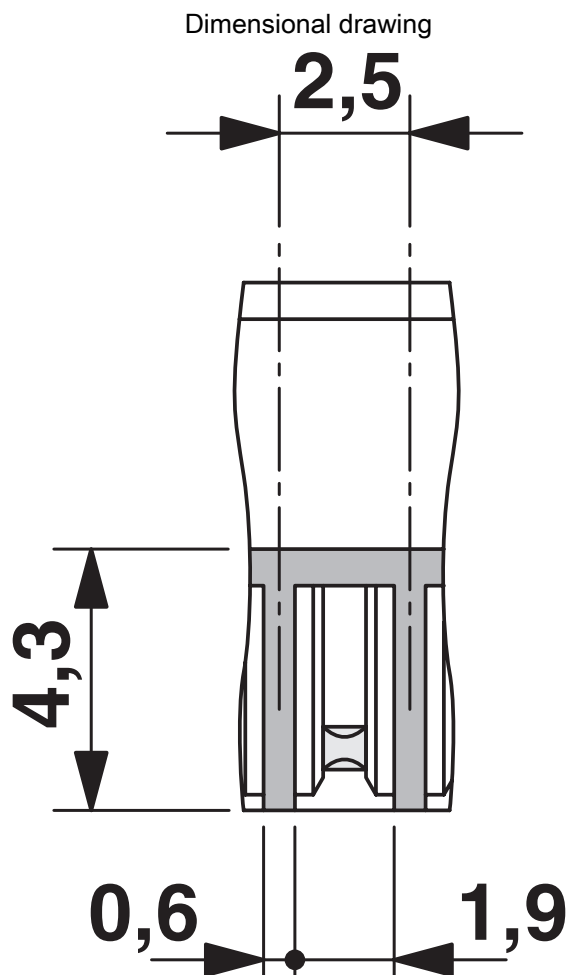
Dimensional drawing



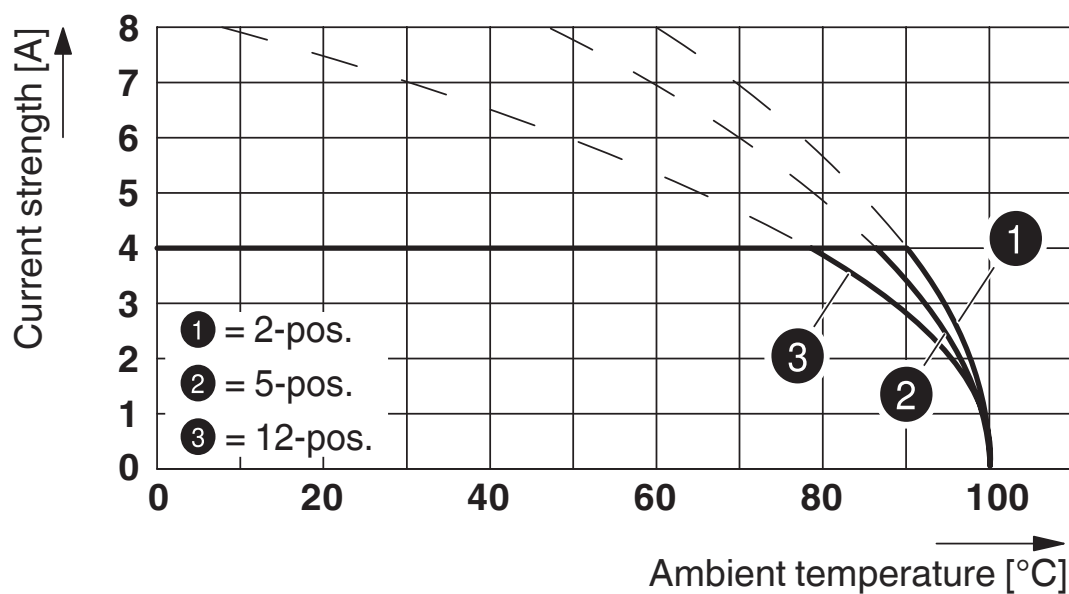
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Diagram



Type: FK-MC 0,5/...-ST-2,5 with MC 0,5/...-G-2,5 THT

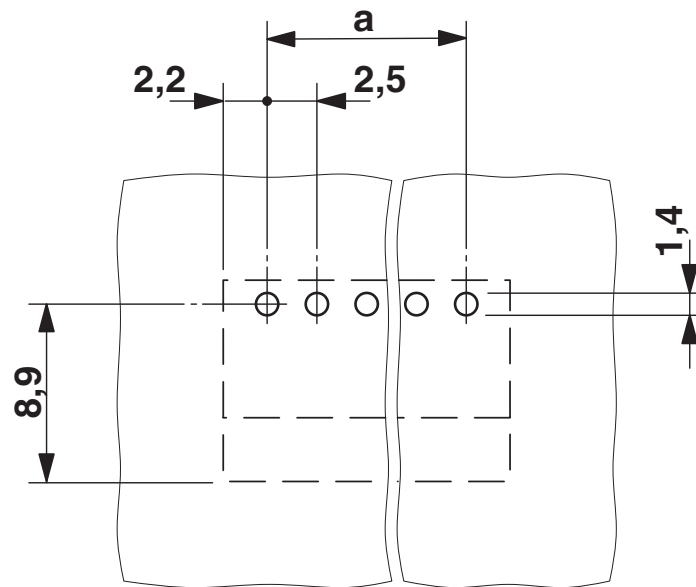
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Drilling plan/solder pad geometry



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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1963502>

|                                                                                   |                                                         |                                |                                |                   |                               |
|-----------------------------------------------------------------------------------|---------------------------------------------------------|--------------------------------|--------------------------------|-------------------|-------------------------------|
|  | <b>cULus Recognized</b><br>Approval ID: E60425-19990913 |                                |                                |                   |                               |
|                                                                                   |                                                         | Nominal voltage U <sub>N</sub> | Nominal current I <sub>N</sub> | Cross section AWG | Cross section mm <sup>2</sup> |
|                                                                                   | B                                                       |                                |                                |                   |                               |
|                                                                                   |                                                         | 125 V                          | 4 A                            | -                 | -                             |

|                                                                                   |                                                                       |                                |                                |                   |                               |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------|--------------------------------|-------------------|-------------------------------|
|  | <b>VDE report with production monitoring</b><br>Approval ID: 40013394 |                                |                                |                   |                               |
|                                                                                   |                                                                       | Nominal voltage U <sub>N</sub> | Nominal current I <sub>N</sub> | Cross section AWG | Cross section mm <sup>2</sup> |
|                                                                                   | keine                                                                 |                                |                                |                   |                               |
|                                                                                   |                                                                       | 32 V                           | 4 A                            | -                 | -                             |

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## Classifications

### ECLASS

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

### ETIM

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

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 39121400 |
|-------------|----------|

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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%               |
| EF3.0 Climate Change                    |                                          |
| CO2e kg                                 | 0.034 kg CO2e                            |

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