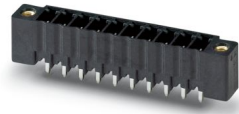


1829043  
<https://www.phoenixcontact.com/us/products/1829043>

Please be informed that the data shown in this PDF document is generated from our online catalog. Please find the complete data in the user documentation. Our general terms of use for downloads are valid.



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: Tin, contact connection type: Pin, number of potentials: 20, number of rows: 1, number of positions: 20, number of connections: 20, product range: MCV 1,5/...-GF-THR, pitch: 3.81 mm, mounting: THR soldering, pin layout: Linear pinning, solder pin [P]: 2 mm, number of solder pins per potential: 1, plug-in system: COMBICON MC 1,5, Pin connector pattern alignment: Standard, locking: Screw locking mechanism, mounting: Threaded flange, 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
- Screwable flange for superior mechanical stability
- Vertical connection enables multi-row arrangement on the PCB
- Maximum flexibility when it comes to device design – one header for connectors with different connection technologies

Commercial data

|                                      |                                |
|--------------------------------------|--------------------------------|
| Item number                          | 1829043                        |
| Packing unit                         | 50 pc                          |
| Minimum order quantity               | 1 pc                           |
| Note                                 | Made to order (non-returnable) |
| Product key                          | AABTBE                         |
| Catalog page                         | Page 19 (NTK-2014)             |
| GTIN                                 | 4046356869249                  |
| Weight per piece (including packing) | 5.89 g                         |
| Weight per piece (excluding packing) | 5.531 g                        |
| Country of origin                    | DE                             |

# MCV 1,5/20-GF-3,81 P20 THR - PCB header



1829043

<https://www.phoenixcontact.com/us/products/1829043>

## Technical data

### Product properties

|                           |                                            |
|---------------------------|--------------------------------------------|
| Product type              | PCB headers                                |
| Product family            | MCV 1,5/..-GF-THR                          |
| Product line              | COMBICON Connectors S                      |
| Type                      | Component suitable for through hole reflow |
| Number of positions       | 20                                         |
| Pitch                     | 3.81 mm                                    |
| Number of connections     | 20                                         |
| Number of rows            | 1                                          |
| Number of potentials      | 20                                         |
| Mounting flange           | Threaded flange                            |
| Pin layout                | Linear pinning                             |
| Solder pins per potential | 1                                          |

### Electrical properties

|                             |        |
|-----------------------------|--------|
| Nominal current $I_N$       | 8 A    |
| Nominal voltage $U_N$       | 160 V  |
| Degree of pollution         | 3      |
| Contact resistance          | 1.1 mΩ |
| 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 |

### Flange

|                   |        |
|-------------------|--------|
| Tightening torque | 0.3 Nm |
|-------------------|--------|

### Processing notes

|                                  |                       |
|----------------------------------|-----------------------|
| Process                          | Reflow/wave soldering |
| Moisture Sensitive Level         | MSL 1                 |
| Classification temperature $T_c$ | 250 °C                |
| Solder cycles in the reflow      | 3                     |

### Material specifications

#### Material data - contact

|      |                                                        |
|------|--------------------------------------------------------|
| Note | WEEE/RoHS-compliant, free of whiskers according to IEC |
|------|--------------------------------------------------------|

# MCV 1,5/20-GF-3,81 P20 THR - PCB header



1829043

<https://www.phoenixcontact.com/us/products/1829043>

|                                             |                           |
|---------------------------------------------|---------------------------|
|                                             | 60068-2-82/JEDEC JESD 201 |
| Contact material                            | Cu alloy                  |
| Surface characteristics                     | Tin-plated                |
| Metal surface contact area (top layer)      | Tin (3 - 5 µm Sn)         |
| Metal surface contact area (middle layer)   | Nickel (1.3 - 3 µm Ni)    |
| Metal surface soldering area (top layer)    | Tin (3 - 5 µm Sn)         |
| Metal surface soldering area (middle layer) | Nickel (1.3 - 3 µm Ni)    |

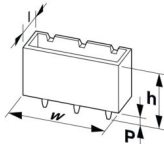
## Material data - housing

|                                        |              |
|----------------------------------------|--------------|
| Color (Housing)                        | black (9005) |
| Insulating material                    | LCP          |
| Insulating material group              | IIIa         |
| CTI according to IEC 60112             | 175          |
| Flammability rating according to UL 94 | V0           |

## Notes

|                                 |                                                                                                                                                                                 |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Details for soldering processes | Processing using reflow processes in compliance with IEC 60068-2-58 or DIN EN 61760-1 (latest version)<br>Moisture Sensitive Level (MSL) = 1 according to IPC/JEDEC J-STD-020-C |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Dimensions

|                       |                                                                                      |
|-----------------------|--------------------------------------------------------------------------------------|
| Dimensional drawing   |  |
| Pitch                 | 3.81 mm                                                                              |
| Width [w]             | 86.59 mm                                                                             |
| Height [h]            | 11.2 mm                                                                              |
| Length [l]            | 7 mm                                                                                 |
| Installed height      | 9.2 mm                                                                               |
| Solder pin length [P] | 2 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 |
|---------------|-----------------------|

# MCV 1,5/20-GF-3,81 P20 THR - PCB header



1829043

<https://www.phoenixcontact.com/us/products/1829043>

|                                                |                        |
|------------------------------------------------|------------------------|
| Result                                         | Test passed            |
| Resistance of inscriptions                     |                        |
| 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 | > 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              |

# MCV 1,5/20-GF-3,81 P20 THR - PCB header



1829043

<https://www.phoenixcontact.com/us/products/1829043>

## 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           | 5g (60.1 Hz ... 150 Hz)     |
| Test duration per axis | 2.5 h                       |

### Durability test

|                                              |                       |
|----------------------------------------------|-----------------------|
| Specification                                | IEC 60512-9-1:2010-03 |
| Impulse withstand voltage at sea level       | 2.95 kV               |
| Contact resistance $R_1$                     | 1.1 mΩ                |
| Contact resistance $R_2$                     | 1.2 mΩ                |
| Insertion/withdrawal cycles                  | 25                    |
| Insulation resistance, neighboring positions | > 5 MΩ                |

### 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                                                                   |

### Shocks

|                 |                                   |
|-----------------|-----------------------------------|
| Specification   | IEC 60068-2-27:2008-02            |
| Pulse shape     | Semi-sinusoidal                   |
| Acceleration    | 30g                               |
| Shock duration  | 18 ms                             |
| Test directions | X-, Y- and Z-axis (pos. and neg.) |

### Ambient conditions

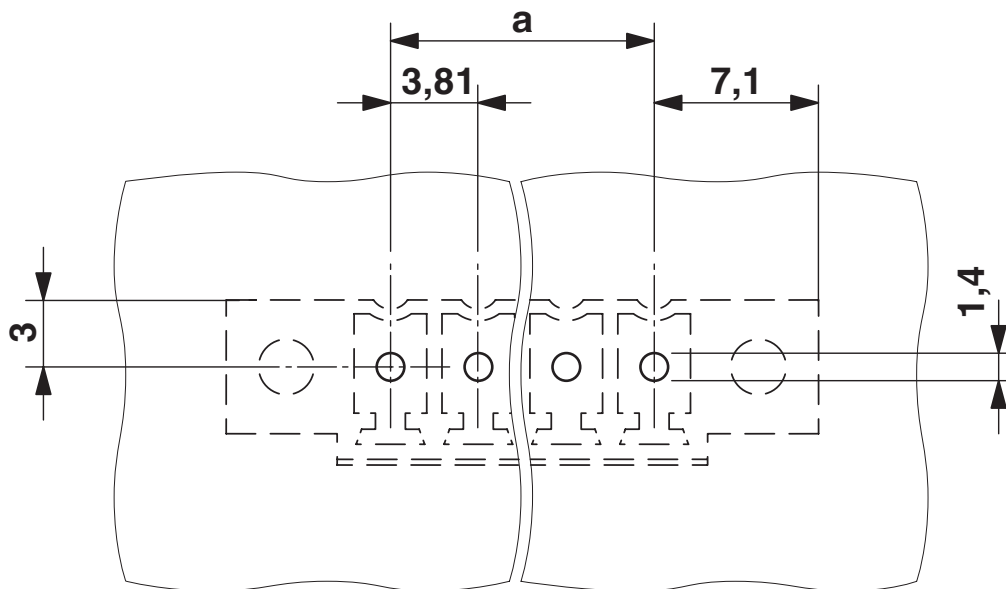
|                                         |                                                     |
|-----------------------------------------|-----------------------------------------------------|
| Ambient temperature (operation)         | -40 °C ... 100 °C (dependent on the derating curve) |
| Ambient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

## Packaging specifications

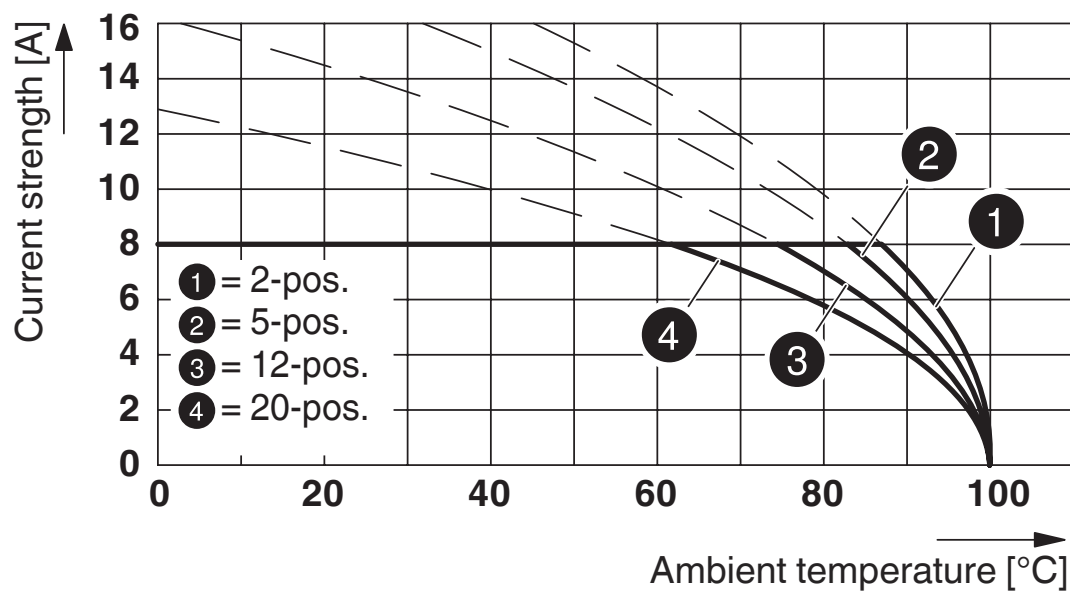
|                   |                     |
|-------------------|---------------------|
| Type of packaging | packed in cardboard |
|-------------------|---------------------|

## Drawings

Drilling plan/solder pad geometry

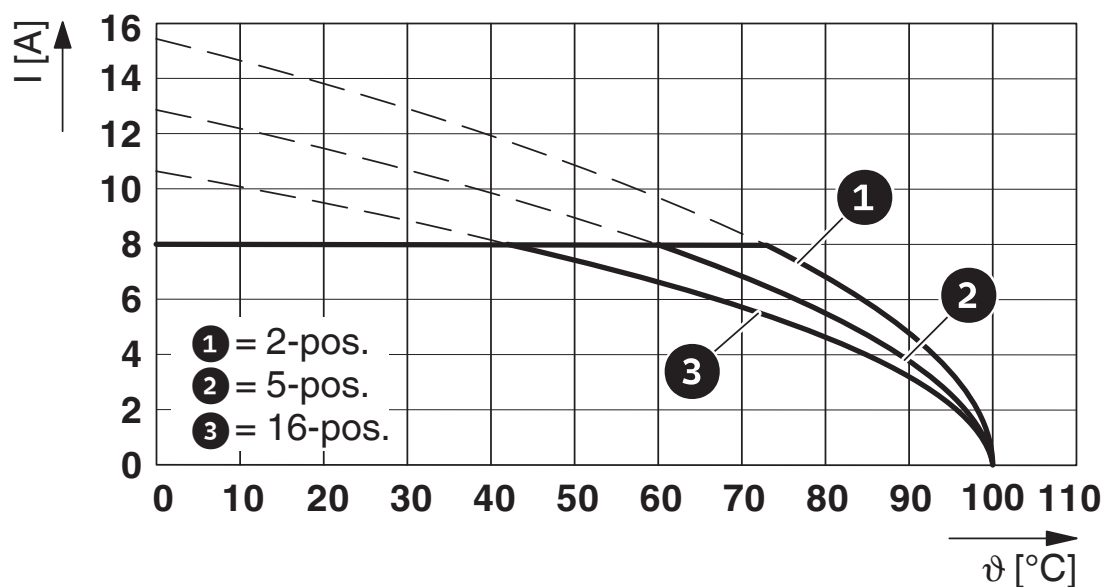


Diagram



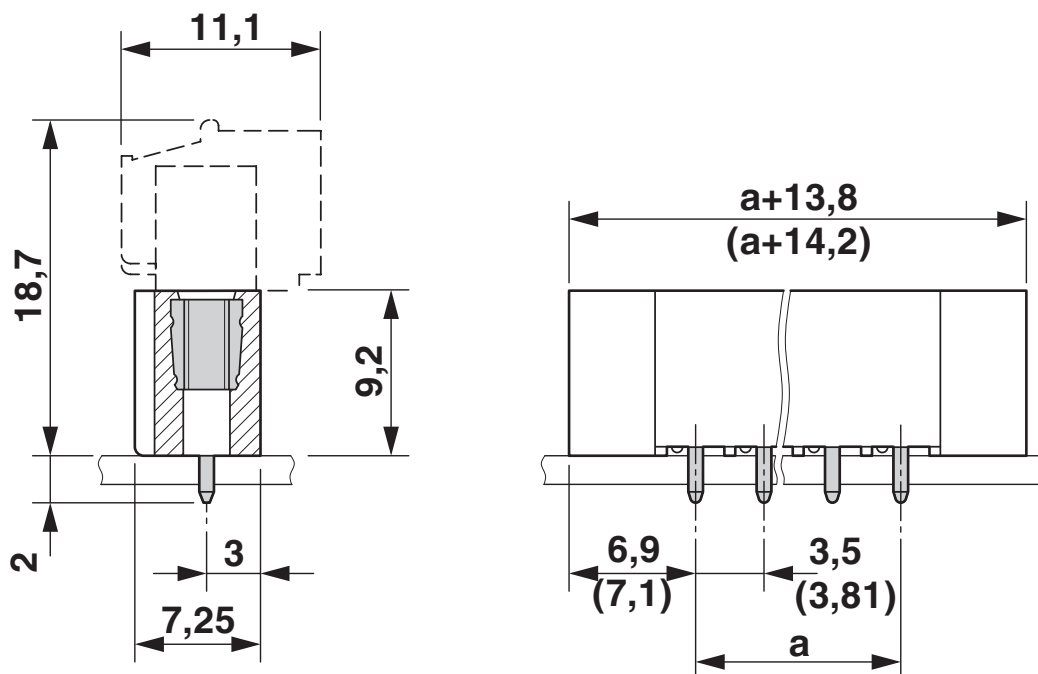
Type: FMC 1,5/...-STF-3,81 with MCV 1,5/...-GF-3,81 P... THR

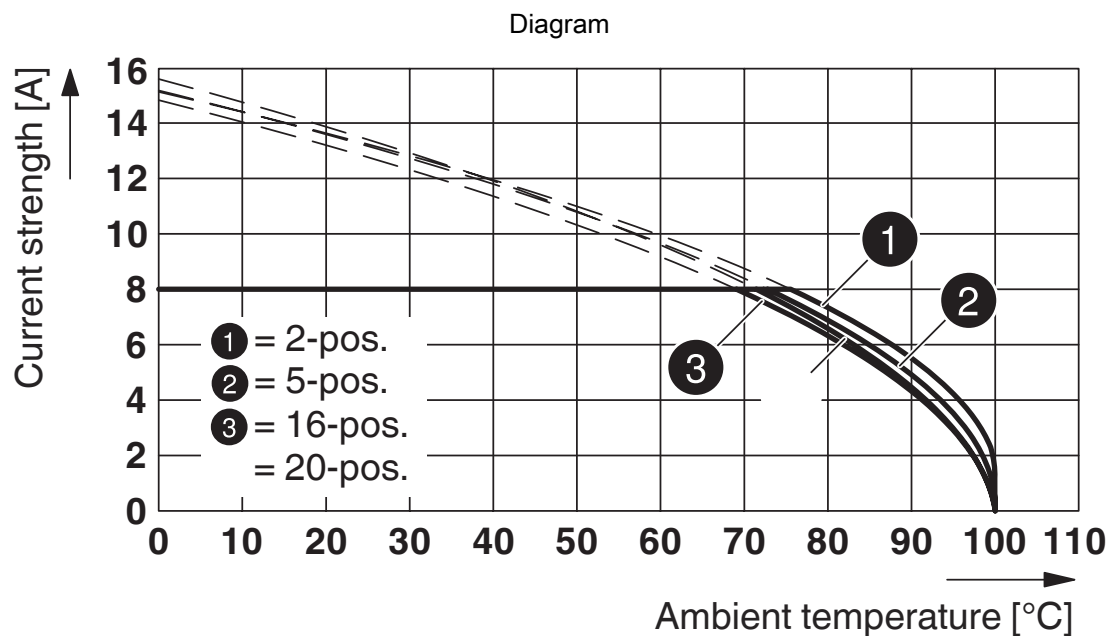
Diagram



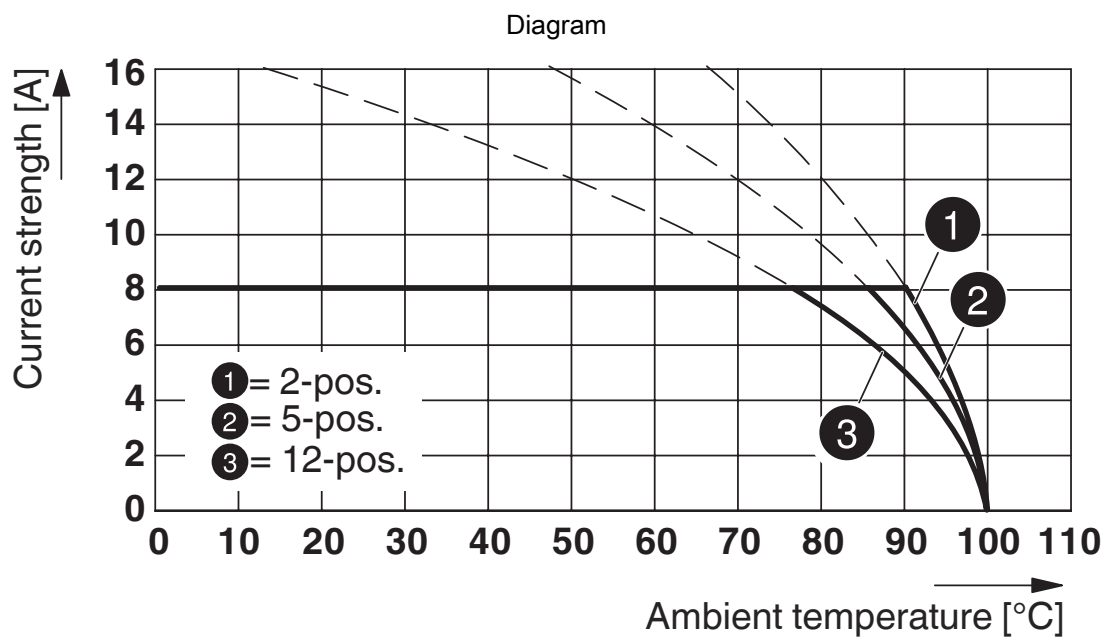
Type: MCV(W/R) 1,5/...-STF-3,81 with MCV 1,5/...-GF-3,81 P...THR

Dimensional drawing

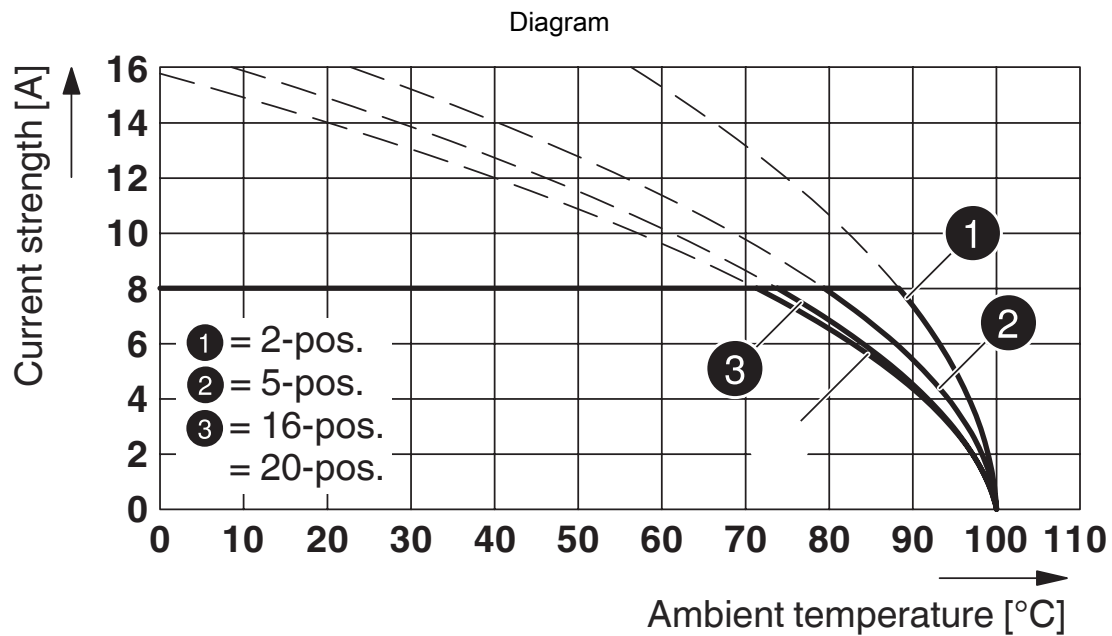




Type: FRONT-MC 1,5/...-STF-3,81 with MCV 1,5/...-GF-3,81 P... THR



Type: MC 1,5/...-STF-3,81 with MCV 1,5/...-GF-3,81 P26 THR



Type: FK-MCP 1,5/...-STF-3,81 with MCV 1,5/...-GF-3,81 P...THR

# MCV 1,5/20-GF-3,81 P20 THR - PCB header



1829043

<https://www.phoenixcontact.com/us/products/1829043>

## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1829043>

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

|                                                                                                                                                      |                       |                       |                   |                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------|-------------------|-----------------------------|
| <div> <b>VDE Zeichengenehmigung</b><br/>Approval ID: 40011723</div> |                       |                       |                   |                             |
|                                                                                                                                                      | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
|                                                                                                                                                      | 160 V                 | 8 A                   | -                 | -                           |

# MCV 1,5/20-GF-3,81 P20 THR - PCB header



1829043

<https://www.phoenixcontact.com/us/products/1829043>

## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-11.0 | 27460201 |
| ECLASS-12.0 | 27460201 |
| ECLASS-13.0 | 27460201 |

### ETIM

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

### UNSPSC

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

# MCV 1,5/20-GF-3,81 P20 THR - PCB header



1829043  
<https://www.phoenixcontact.com/us/products/1829043>

## Environmental product compliance

|                                         |                                                                                                                                                                                                                                   |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EU RoHS                                 |                                                                                                                                                                                                                                   |
| Fulfills EU RoHS substance requirements | Yes                                                                                                                                                                                                                               |
| Exemption                               | 6(c)                                                                                                                                                                                                                              |
| China RoHS                              |                                                                                                                                                                                                                                   |
| Environment friendly use period (EFUP)  | EFUP-50                                                                                                                                                                                                                           |
|                                         | An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required. |
| EU REACH SVHC                           |                                                                                                                                                                                                                                   |
| REACH candidate substance (CAS No.)     | Lead(CAS: 7439-92-1)                                                                                                                                                                                                              |
| SCIP                                    | a8af2489-bf22-417f-97d1-c9ef740de3a6                                                                                                                                                                                              |

Phoenix Contact 2024 © - all rights reserved  
<https://www.phoenixcontact.com>

Phoenix Contact USA  
586 Fulling Mill Road  
Middletown, PA 17057, United States  
(+717) 944-1300  
[info@phoenixcon.com](mailto:info@phoenixcon.com)