

# Printed-circuit board connector - FK-MCP 1,5/ 3-STF-3,5 - 1940101

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PCB connector, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 3, pitch: 3.5 mm, connection method: Push-in spring connection, color: green, contact surface: Tin



The figure shows a 10-position version of the product

## Your advantages

- Time saving push-in connection, tools not required
- Defined contact force ensures that contact remains stable over the long term
- Intuitive use through colour coded actuation lever
- Screwable flange for superior mechanical stability
- Quick and convenient testing using integrated test option



## Key Commercial Data

|              |               |
|--------------|---------------|
| Packing unit | 50 pc         |
| GTIN         |               |
| GTIN         | 4017918889425 |

## Technical data

### Item properties

|                           |                           |
|---------------------------|---------------------------|
| Brief article description | PCB connector             |
| Plug-in system            | MINI COMBICON             |
| Type of contact           | Female connector          |
| Range of articles         | FK-MCP 1,5/...-STF        |
| Pitch                     | 3.5 mm                    |
| Number of positions       | 3                         |
| Connection method         | Push-in spring connection |
| Locking                   | Screw flange              |
| Number of levels          | 1                         |
| Number of connections     | 3                         |

# Printed-circuit board connector - FK-MCP 1,5/ 3-STF-3,5 - 1940101

## Technical data

### Item properties

|                      |   |
|----------------------|---|
| Number of potentials | 3 |
|----------------------|---|

### Electrical parameters

|                             |        |
|-----------------------------|--------|
| Nominal current             | 8 A    |
| Nom. voltage                | 160 V  |
| Rated voltage               | 160 V  |
| Rated voltage (III/2)       | 160 V  |
| Rated voltage (II/2)        | 320 V  |
| Rated surge voltage (III/3) | 2.5 kV |
| Rated surge voltage (III/2) | 2.5 kV |
| Rated surge voltage (II/2)  | 2.5 kV |

### Connection capacity

|   |  |
|---|--|
| Connection method   | Push-in spring connection                    |
| pluggable   | Yes  |
| Conductor cross section solid   | 0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
| Conductor cross section flexible                                      | 0.14 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
| Conductor cross section AWG / kcmil                                   | 26 ... 16                                    |
| Conductor cross section flexible, with ferrule without plastic sleeve | 0.25 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> |
| Conductor cross section, flexible, with ferrule, with plastic sleeve  | 0.25 mm <sup>2</sup> ... 0.5 mm <sup>2</sup> |
| Cylindrical gauge a x b / diameter                                    | 2.4 mm x 1.5 mm / -                          |
| Stripping length  | 9 mm   |

### Specifications for ferrules

|  |  |
|--|--|
| Recommended crimping pliers                                  | 1212034 CRIMPFOX 6   |
| Ferrules without insulating collar, according to DIN 46228-1 | Cross section: 0.25 mm <sup>2</sup> ; Length: 7 mm           |
|  | Cross section: 0.34 mm <sup>2</sup> ; Length: 7 mm           |
|  | Cross section: 0.5 mm <sup>2</sup> ; Length: 8 mm ... 10 mm  |
|  | Cross section: 0.75 mm <sup>2</sup> ; Length: 8 mm ... 10 mm |
|  | Cross section: 1 mm <sup>2</sup> ; Length: 8 mm ... 10 mm    |
|  | Cross section: 1.5 mm <sup>2</sup> ; Length: 10 mm           |
| Recommended crimping pliers                                  | 1212034 CRIMPFOX 6   |
| Ferrules with insulating collar, according to DIN 46228-4    | Cross section: 0.14 mm <sup>2</sup> ; Length: 8 mm           |
|  | Cross section: 0.25 mm <sup>2</sup> ; Length: 8 mm           |
|  | Cross section: 0.34 mm <sup>2</sup> ; Length: 8 mm           |
|  | Cross section: 0.5 mm <sup>2</sup> ; Length: 8 mm ... 10 mm  |
|  | Cross section: 0.75 mm <sup>2</sup> ; Length: 10 mm          |

### Flange specifications

|                 |               |
|-----------------|---------------|
| Type of locking | Screw locking |
| Mounting flange | Screw flange  |
| Torque          | 0.3 Nm        |

# Printed-circuit board connector - FK-MCP 1,5/ 3-STF-3,5 - 1940101

## Technical data

### 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                  | hot-dip tin-plated  |
| Metal surface terminal point (top layer) | Tin (4 - 8 µm Sn)   |
| Metal surface contact area (top layer)   | Tin (4 - 8 µm Sn)   |

### Material data - housing

|   |              |
|---|--------------|
| Housing color   | green (6021) |
| Insulating material   | PA           |
| Insulating material group   | I            |
| CTI according to IEC 60112  | 600          |
| 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       |

### Material data – actuating element

|  |               |
|--|---------------|
| Color of the actuating lever           | orange (2003) |
| Insulating material                    | POM           |
| CTI according to IEC 60112             | 600           |
| Flammability rating according to UL 94 | HB            |

### Dimensions for the product

|                             |         |
|-----------------------------|---------|
| Length [ l ]                | 20.8 mm |
| Width [ w ]                 | 20.8 mm |
| Height [ h ]                | 12.4 mm |
| Pitch                       | 3.5 mm  |
| Height (without solder pin) | 12.4 mm |

### Packaging information

|                            |                     |
|----------------------------|---------------------|
| Type of packaging          | packed in cardboard |
| Pieces per package         | 50                  |
| Denomination packing units | Pcs.                |

### Ambient conditions

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

### Termination and connection method

|                           |   |
|---------------------------|---|
| Conductor connection test | The stripped-off ends of the largest conductor can be completely inserted in the opening of the terminal point without using excessive force. |
| Test result               | Test passed   |

# Printed-circuit board connector - FK-MCP 1,5/ 3-STF-3,5 - 1940101

## Technical data

### Termination and connection method

|  |                     |
|--|---------------------|
| Test – repeated connection and release   | IEC 60999-1:1999-11 |
|  | Test passed         |
| Test for conductor damage and slackening | IEC 60999-1:1999-11 |
|  | Test passed         |

### Pull-out test

|  |  |
|--|--|
| Pull-out test  | IEC 60999-1:1999-11                      |
|  | Test passed                              |
| Conductor cross section / conductor type / tensile force | 0.14 mm <sup>2</sup> / solid / > 10 N    |
|  | 0.14 mm <sup>2</sup> / flexible / > 10 N |
|  | 1.5 mm <sup>2</sup> / solid / > 40 N     |
|  | 1.5 mm <sup>2</sup> / flexible / > 40 N  |

### Mechanical tests according to standard

|                                     |                        |
|-------------------------------------|------------------------|
| Test specification                  | IEC 61984              |
| Visual inspection                   | IEC 60512-1-1:2002-02  |
| Dimension check                     | IEC 60512-1-2:2002-02  |
| Resistance of inscriptions          | IEC 60068-2-70:1995-12 |
| Insertion and withdrawal force      | IEC 60512-13-2:2006-02 |
| No. of cycles                       | 25                     |
| Insertion strength per pos. approx. | 7 N                    |
| Withdraw strength per pos. approx.  | 5 N                    |
| Polarization and coding             | IEC 60512-13-5:2006-02 |
| Contact holder in insert            | IEC 60512-15-1:2008-05 |
| Test force per pos.                 | 26 N                   |

### Air clearances and creepage distances

|   |                     |
|---|---------------------|
| Clearances and creepage distances               | IEC 60664-1:2007-04 |
| Specification                                   | IEC 60664-1:2007-04 |
| Minimum clearance - inhomogeneous field (III/3) | 1.5 mm              |
| Minimum clearance - inhomogeneous field (III/2) | 1.5 mm              |
| Minimum clearance - inhomogeneous field (II/2)  | 1.5 mm              |
| Minimum creepage distance value (III/3)         | 2 mm                |
| Minimum creepage distance value (III/2)         | 1.5 mm              |
| Minimum creepage distance value (II/2)          | 1.6 mm              |

### Electrical tests - Function

|               |                     |
|---------------|---------------------|
| Specification | IEC 60999-1:1999-11 |
|---------------|---------------------|

### Temperature cycles

|                                      |                     |
|--------------------------------------|---------------------|
| Specification                        | IEC 60999-1:1999-11 |
| Test current (minimum cross section) | 4 A DC              |
| Test current (maximum cross section) | 8 A DC              |

# Printed-circuit board connector - FK-MCP 1,5/ 3-STF-3,5 - 1940101

## Technical data

### Temperature cycles

|                    |     |
|--------------------|-----|
| Temperature cycles | 192 |
|--------------------|-----|

### Current carrying capacity / derating curves

|                  |   |
|------------------|---|
| Caption          | Type: FK-MCP 1,5/...-STF-3,5 with MC 1,5/...-GF-3,5 |
| Specification    | IEC 61984:2008-10                                   |
| Reduction factor | 0.8   |
| Note             | Representation based on IEC 60512-5-2:2002-02       |
|                  | For number of positions, see diagram                |

### Mechanical tests (A)

|  |             |
|--|-------------|
| Test specification                           | IEC 61984   |
| Insertion strength per pos. approx.          | 7 N         |
| Withdraw strength per pos. approx.           | 5 N         |
| Polarization when inserted requirement >20 N | Test passed |
| Contact holder in insert requirements >20 N  | Test passed |

### Durability tests (B)

|  |                     |
|--|---------------------|
| Specification                                | IEC 60512-5:1992-08 |
| Contact resistance R <sub>1</sub>            | 2 mΩ                |
| Insertion/withdrawal cycles                  | 25                  |
| Contact resistance R <sub>2</sub>            | 2.2 mΩ              |
| Impulse withstand voltage at sea level       | 2.95 kV             |
| Power-frequency withstand voltage            | 1.39 kV             |
| Insulation resistance, neighboring positions | 10 <sup>12</sup> Ω  |

### Thermal tests (C)

|   |                       |
|---|-----------------------|
| Specification                                   | IEC 60512-5-1:2002-02 |
| Number of positions                             | 20                    |
| Conductor cross section                         | 1.5 mm <sup>2</sup>   |
| Test current                                    | 8 A DC                |
| Upper limiting temperature requirements <100 °C | Test passed           |

### Climatic tests (D)

|  |   |
|--|---|
| Specification                          | ISO 6988:1985-02  |
| Cold stress                            | -40 °C/2 h  |
| Thermal stress                         | 100 °C/168 h  |
| Corrosive stress                       | 0.2 dm <sup>3</sup> SO <sub>2</sub> on 300 dm <sup>3</sup> /40 °C/1 cycle |
| Impulse withstand voltage at sea level | 2.95 kV   |
| Power-frequency withstand voltage      | 1.39 kV   |

### Environmental and durability tests (E)

|                                       |                                     |
|---------------------------------------|-------------------------------------|
| Specification                         | IEC 61984:2008-10                   |
| Result, degree of protection, IP code | Finger safety with IP20 test finger |

# Printed-circuit board connector - FK-MCP 1,5/ 3-STF-3,5 - 1940101

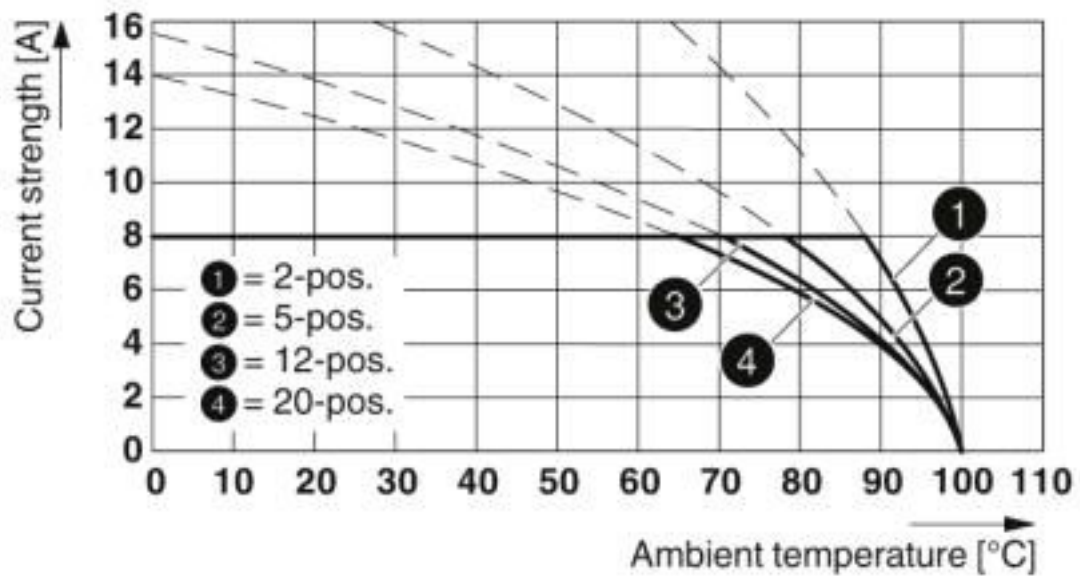
## Technical data

### Environmental Product Compliance

|            |   |
|------------|---|
| China RoHS | Environmentally friendly use period: unlimited = EFUP-e |
|            | No hazardous substances above threshold values          |

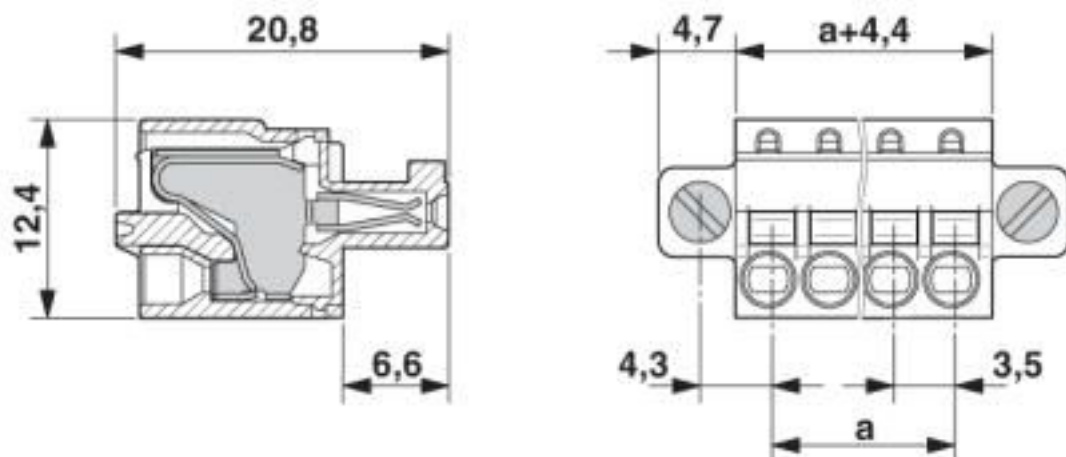
## Drawings

Diagram



Type: FK-MCP 1,5/...-STF-3,5 with MC 1,5/...-GF-3,5

Dimensional drawing



# Printed-circuit board connector - FK-MCP 1,5/ 3-STF-3,5 - 1940101

## Classifications

### eCl@ss

|               |          |
|---------------|----------|
| eCl@ss 10.0.1 | 27440309 |
| eCl@ss 4.0    | 27260700 |
| eCl@ss 4.1    | 27260700 |
| eCl@ss 5.0    | 27260700 |
| eCl@ss 5.1    | 27260700 |
| eCl@ss 6.0    | 27260700 |
| eCl@ss 7.0    | 27440309 |
| eCl@ss 8.0    | 27440309 |
| eCl@ss 9.0    | 27440309 |

### ETIM

|          |          |
|----------|----------|
| ETIM 3.0 | EC001121 |
| ETIM 4.0 | EC002638 |
| ETIM 5.0 | EC002638 |
| ETIM 6.0 | EC002638 |
| ETIM 7.0 | EC002638 |

### UNSPSC

|               |          |
|---------------|----------|
| UNSPSC 6.01   | 30211810 |
| UNSPSC 7.0901 | 39121409 |
| UNSPSC 11     | 39121409 |
| UNSPSC 12.01  | 39121409 |
| UNSPSC 13.2   | 39121409 |
| UNSPSC 18.0   | 39121409 |
| UNSPSC 19.0   | 39121409 |
| UNSPSC 20.0   | 39121409 |
| UNSPSC 21.0   | 39121409 |

## Approvals

### Approvals

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#### Approvals

IECEE CB Scheme / VDE Gutachten mit Fertigungsüberwachung / EAC / cULus Recognized

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#### Ex Approvals

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### Approval details

# Printed-circuit board connector - FK-MCP 1,5/ 3-STF-3,5 - 1940101

## Approvals

|                            |         |   |                |
|----------------------------|---------|---|----------------|
| IECEE CB Scheme            |         | <a href="http://www.iecee.org/">http://www.iecee.org/</a> | DE1-60987-B1B2 |
| Nominal voltage UN         | 160 V   |   |                |
| Nominal current IN         | 8 A     |   |                |
| mm <sup>2</sup> /AWG/kcmil | 0.2-1.5 |   |                |

|   |         |   |          |
|---|---------|---|----------|
| VDE Gutachten mit Fertigungsüberwachung |         | <a href="http://www2.vde.com/de/Institut/Online-Service/VDE-gepruefteProdukte/Seiten/Online-Suche.aspx">http://www2.vde.com/de/Institut/Online-Service/VDE-gepruefteProdukte/Seiten/Online-Suche.aspx</a> | 40011723 |
| Nominal voltage UN                      | 160 V   |   |          |
| Nominal current IN                      | 8 A     |   |          |
| mm <sup>2</sup> /AWG/kcmil              | 0.2-1.5 |   |          |

|     |  |  |         |
|-----|--|--|---------|
| EAC |  |  | B.01687 |
|-----|--|--|---------|

|                            |       |   |                 |
|----------------------------|-------|---|-----------------|
| cULus Recognized           |       | <a href="http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm">http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.htm</a> | E60425-19920306 |
| Nominal voltage UN         | 300 V |   |                 |
| Nominal current IN         | 8 A   |   |                 |
| mm <sup>2</sup> /AWG/kcmil | 28-16 |   |                 |

## Accessories

### Accessories

#### Crimping tool

Crimping pliers - CRIMPFOX 6 - 1212034



Crimping pliers, for ferrules without insulating collar according to DIN 46228 Part 1 and ferrules with insulating collar according to DIN 46228 Part 4, 0.25 mm<sup>2</sup> ... 6.0 mm<sup>2</sup>, lateral entry, trapezoidal crimp

#### Labeled terminal marker



## Printed-circuit board connector - FK-MCP 1,5/ 3-STF-3,5 - 1940101

### Accessories

Marker card - SK 3,5/2,8:FORTL.ZAHLEN - 0804073



Marker card, Card, white, labeled, horizontal: consecutive numbers 1 ... 10, 11 ... 20, etc. up to 91 ... 99, mounting type: adhesive, for terminal block width: 3.5 mm, lettering field size: 3.5 x 2.8 mm

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### Screwdriver tools

Screwdriver - SZS 0,4X2,5 VDE - 1205037



Screwdriver, slot-headed, VDE insulated, size: 0.4 x 2.5 x 80 mm, 2-component grip, with non-slip grip

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### Terminal marking

Marker card - SK U/2,8 WH:UNBEDRUCKT - 0803883



Marker card, Sheet, white, unlabeled, can be labeled with: PLOTMARK, CMS-P1-PLOTTER, Office printing systems, mounting type: adhesive, for terminal block width: 210 mm, lettering field size: 186 x 2.8 mm, Number of individual labels: 3600

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### Test plug terminal block

Test plugs - MPS-MT 1-S - 1944372



Test plug, consisting of 1.0 mm Ø test pin and 2.0 mm Ø socket

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### Additional products

Printed-circuit board connector - MCV 1,5/ 3-GF-3,5 P20 THRR56 - 1780684



PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 3, pitch: 3.5 mm, color: black, contact surface: Tin, mounting: THR soldering, pin layout: Linear pinning, solder pin [P]: 2 mm, User information and design recommendations for through hole reflow technology can be found under: Downloads

## Printed-circuit board connector - FK-MCP 1,5/ 3-STF-3,5 - 1940101

### Accessories

#### Printed-circuit board connector - MC 1,5/ 3-GF-3,5 P26 THR - 1789180

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 3, pitch: 3.5 mm, color: black, contact surface: Tin, mounting: THR soldering, pin layout: Linear pinning, solder pin [P]: 2.6 mm



#### Printed-circuit board connector - MC 1,5/ 3-GF-3,5 P20 THRR56 - 1789410

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 3, pitch: 3.5 mm, color: black, contact surface: Tin, mounting: THR soldering, pin layout: Linear pinning, solder pin [P]: 2 mm



#### Printed-circuit board connector - MC 1,5/ 3-GF-3,5 P14 THR - 1789627

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 3, pitch: 3.5 mm, color: black, contact surface: Tin, mounting: THR soldering, pin layout: Linear pinning, solder pin [P]: 1.4 mm



#### Feed-through header - MCV 1,5/ 3-GF-3,5 - 1843237

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 3, pitch: 3.5 mm, color: green, contact surface: Tin, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.4 mm



#### Feed-through header - MC 1,5/ 3-GF-3,5 - 1843800

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 3, pitch: 3.5 mm, color: green, contact surface: Tin, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.4 mm



## Printed-circuit board connector - FK-MCP 1,5/ 3-STF-3,5 - 1940101

### Accessories

Feed-through header - EMC 1,5/ 3-GF-3,5 - 1897254

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 3, pitch: 3.5 mm, color: green, contact surface: Tin, mounting: Press-in technology, pin layout: Linear pinning, solder pin [P]: 3.5 mm



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Feed-through header - EMCV 1,5/ 3-GF-3,5 - 1911172

PCB headers, nominal current: 8 A, rated voltage (III/2): 160 V, nominal cross section: 1.5 mm<sup>2</sup>, number of positions: 3, pitch: 3.5 mm, color: green, contact surface: Tin, mounting: Press-in technology, pin layout: Linear pinning, solder pin [P]: 3.8 mm



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PHOENIX CONTACT GmbH & Co. KG  
Flachsmarktstr. 8  
32825 Blomberg  
Germany  
Tel. +49 5235 300  
Fax +49 5235 3 41200  
<http://www.phoenixcontact.com>

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