

# Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

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PCB connector, nominal current: 12 A, rated voltage (III/2): 320 V, nominal cross section: 2.5 mm<sup>2</sup>, number of positions: 21, pitch: 5.08 mm, connection method: Screw connection with tension sleeve, color: green, contact surface: Tin




The figure shows a 10-position version of the product

## Your advantages

- Well-known connection principle allows worldwide use
- Low temperature rise, thanks to maximum contact force
- Quick and convenient testing using integrated test option
- Allows connection of two conductors



## Key Commercial Data

|                        |   |
|------------------------|---|
| Packing unit           | 20 pc   |
| Minimum order quantity | 20 pc   |
| GTIN                   | <br>4 017918 034535 |
| GTIN                   | 4017918034535   |

## Technical data

### Item properties

|                           |                                      |
|---------------------------|--------------------------------------|
| Brief article description | Printed-circuit board connector      |
| Plug-in system            | CLASSIC COMBICON                     |
| Type of contact           | Female connector                     |
| Range of articles         | MSTBP 2,5/..-ST                      |
| Pitch                     | 5.08 mm                              |
| Number of positions       | 21                                   |
| Connection method         | Screw connection with tension sleeve |
| Drive form screw head     | Slotted (L)                          |
| Screw thread              | M3                                   |
| Locking                   | without                              |

# Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

## Technical data

### Item properties

|                       |    |
|-----------------------|----|
| Number of levels      | 1  |
| Number of connections | 21 |
| Number of potentials  | 21 |

### Electrical parameters

|                             |       |
|-----------------------------|-------|
| Nominal current             | 12 A  |
| Nom. voltage                | 320 V |
| Rated voltage               | 250 V |
| Rated voltage (III/2)       | 320 V |
| Rated voltage (II/2)        | 630 V |
| Rated surge voltage (III/3) | 4 kV  |
| Rated surge voltage (III/2) | 4 kV  |
| Rated surge voltage (II/2)  | 4 kV  |

### Connection capacity

|   |  |
|---|--|
| Connection method   | Screw connection with tension sleeve         |
| pluggable   | Yes  |
| Conductor cross section solid   | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>  |
| Conductor cross section flexible  | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>  |
| Conductor cross section AWG / kcmil   | 24 ... 12                                    |
| Conductor cross section flexible, with ferrule without plastic sleeve                     | 0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross section, flexible, with ferrule, with plastic sleeve                      | 0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| 2 conductors with same cross section, solid   | 0.2 mm <sup>2</sup> ... 1 mm <sup>2</sup>    |
| 2 conductors with same cross section, flexible  | 0.2 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>  |
| 2 conductors with same cross section, flexible, with ferrule without plastic sleeve       | 0.25 mm <sup>2</sup> ... 1 mm <sup>2</sup>   |
| 2 conductors with the same cross section, flexible, with TWIN ferrule with plastic sleeve | 0.5 mm <sup>2</sup> ... 1.5 mm <sup>2</sup>  |
| Cylindrical gauge a x b / diameter  | 2.8 mm x 2.4 mm / 2.5 mm                     |
| Stripping length  | 7 mm   |
| Torque  | 0.5 Nm ... 0.6 Nm                            |

### 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 (5 - 7 µm Sn)   |
| Metal surface contact area (top layer)   | Tin (5 - 7 µm Sn)   |

### Material data - housing

|                           |              |
|---------------------------|--------------|
| Housing color             | green (6021) |
| Insulating material       | PA           |
| Insulating material group | I            |

# Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

## Technical data

### Material data - housing

|   |        |
|---|--------|
| 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 |

### Dimensions for the product

|                             |           |
|-----------------------------|-----------|
| Length [ l ]                | 21.3 mm   |
| Width [ w ]                 | 106.68 mm |
| Height [ h ]                | 15 mm     |
| Pitch                       | 5.08 mm   |
| Height (without solder pin) | 15 mm     |

### Packaging information

|                            |                     |
|----------------------------|---------------------|
| Type of packaging          | packed in cardboard |
| Pieces per package         | 20                  |
| Denomination packing units | Pcs.                |

### General product information

|      |  |
|------|--|
| Note | In accordance with IEC 61984, COMBICON connectors have no switching power (COC). During designated use, they must not be plugged in or disconnected when carrying voltage or under load. |
|------|--|

### 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

|  |                     |
|--|---------------------|
| 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 | 0.2 mm <sup>2</sup> / solid / > 10 N    |
|  | 0.2 mm <sup>2</sup> / flexible / > 10 N |
|  | 2.5 mm <sup>2</sup> / solid / > 50 N    |
|  | 2.5 mm <sup>2</sup> / flexible / > 50 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 |

# Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

## Technical data

### Mechanical tests according to standard

|                                     |                        |
|-------------------------------------|------------------------|
| Insertion and withdrawal force      | IEC 60512-13-2:2006-02 |
| No. of cycles                       | 25                     |
| Insertion strength per pos. approx. | 8 N                    |
| Withdraw strength per pos. approx.  | 6 N                    |
| Polarization and coding             | IEC 60512-13-5:2006-02 |
| Contact holder in insert            | IEC 60512-15-1:2008-05 |
| Test force per pos.                 | 39 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) | 3 mm                |
| Minimum clearance - inhomogeneous field (III/2) | 3 mm                |
| Minimum clearance - inhomogeneous field (II/2)  | 3 mm                |
| Minimum creepage distance value (III/3)         | 3.2 mm              |
| Minimum creepage distance value (III/2)         | 3 mm                |
| Minimum creepage distance value (II/2)          | 3.2 mm              |

### Current carrying capacity / derating curves

|                  |  |
|------------------|--|
| Caption          | Type: MSTBP 2,5/...-ST-5,08 with CC 2,5/...-G-5,08 P26 THR |
| 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.          | 8 N         |
| Withdraw strength per pos. approx.           | 6 N         |
| Polarization when inserted requirement >20 N | Test passed |
| Contact holder in insert requirements >20 N  | Test passed |

### Durability tests (B)

|  |                       |
|--|-----------------------|
| Specification                                | IEC 60512-9-1:2010-03 |
| Contact resistance R <sub>1</sub>            | 1.3 mΩ                |
| Insertion/withdrawal cycles                  | 25                    |
| Contact resistance R <sub>2</sub>            | 1.4 mΩ                |
| Impulse withstand voltage at sea level       | 4.8 kV                |
| Power-frequency withstand voltage            | 2.21 kV               |
| Insulation resistance, neighboring positions | > 0.2 TΩ              |

### Thermal tests (C)

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60512-5-1:2002-02 |
|---------------|-----------------------|

## Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

### Technical data

#### Thermal tests (C)

|   |                     |
|---|---------------------|
| Number of positions                             | 12                  |
| Conductor cross section                         | 2.5 mm <sup>2</sup> |
| Test current                                    | 12 A                |
| 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 | 4.8 kV  |
| Power-frequency withstand voltage      | 2.21 kV   |

#### Environmental and durability tests (E)

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

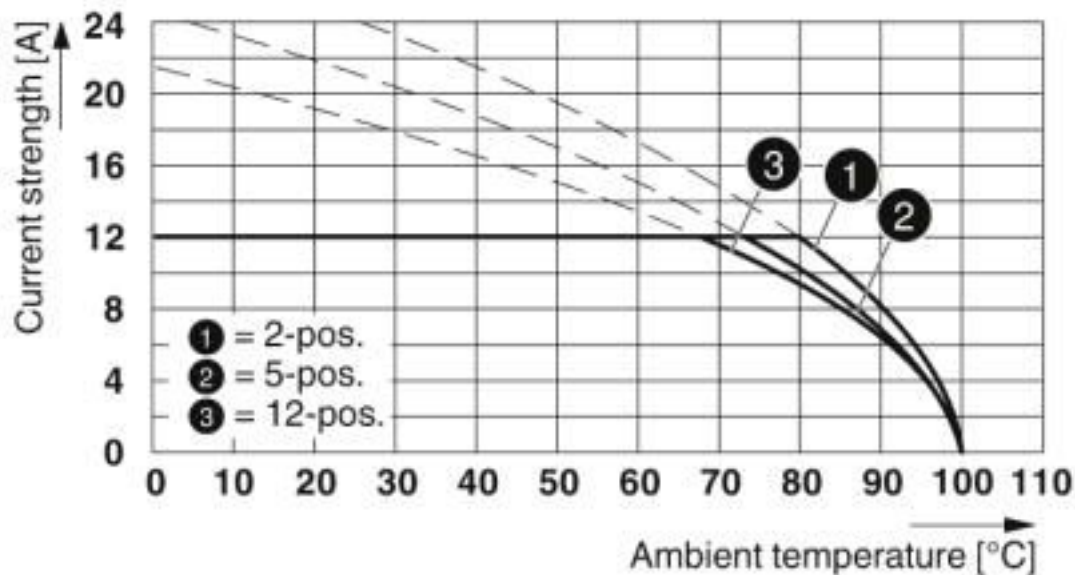
#### Environmental Product Compliance

|            |   |
|------------|---|
| REACH SVHC | Lead 7439-92-1  |
| China RoHS | Environmentally Friendly Use Period = 50 years  |
|            | For details about hazardous substances go to tab "Downloads", Category "Manufacturer's declaration" |

### Drawings

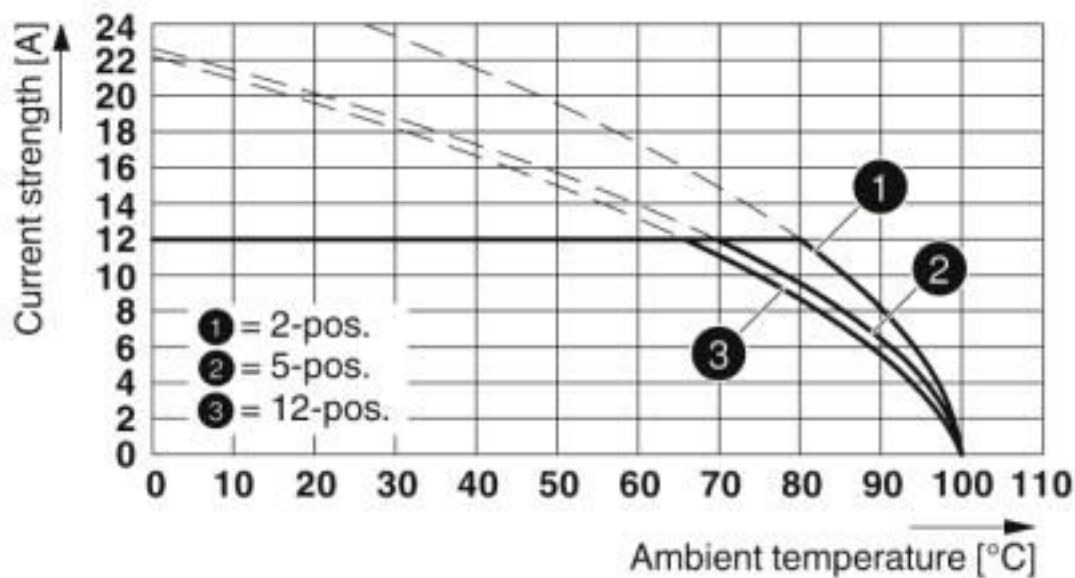
# Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

Diagram



Type: MSTBP 2,5/...-ST-5,08 with CC 2,5/...-G-5,08 P26 THR

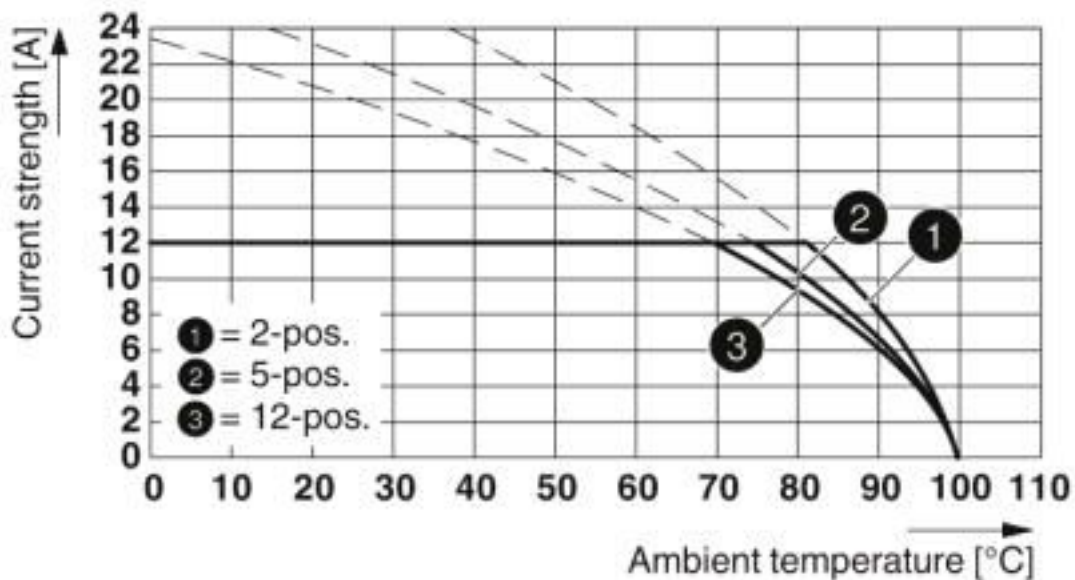
Diagram



Type: MSTBP 2,5/...-ST-5,08 with CCA 2,5/...-G-5,08 P26THR

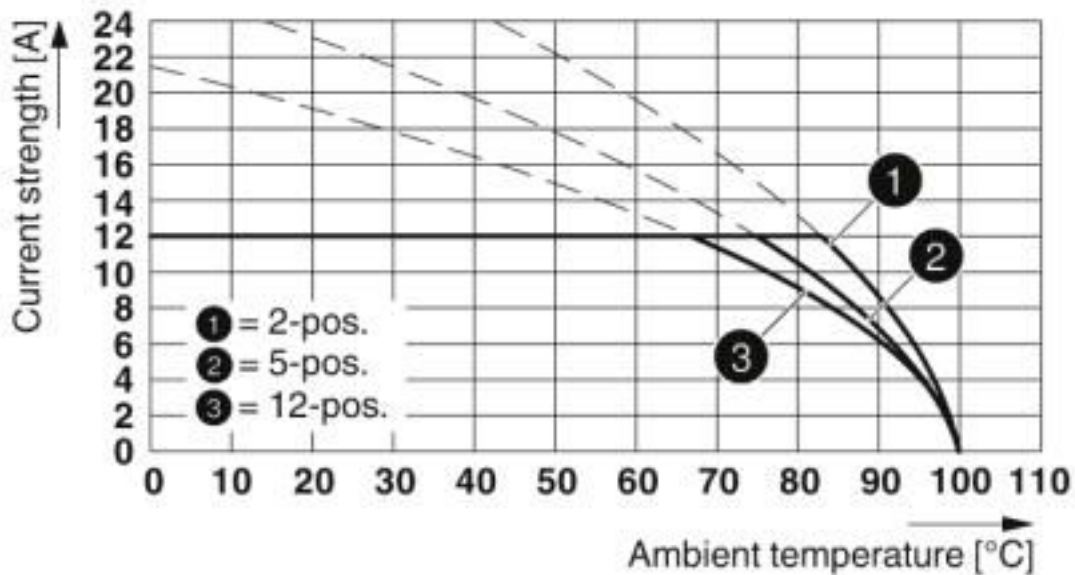
# Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

Diagram



Type: MSTBP 2,5/...-ST-5,08 with CCV 2,5/...-G-5,08 P26THR

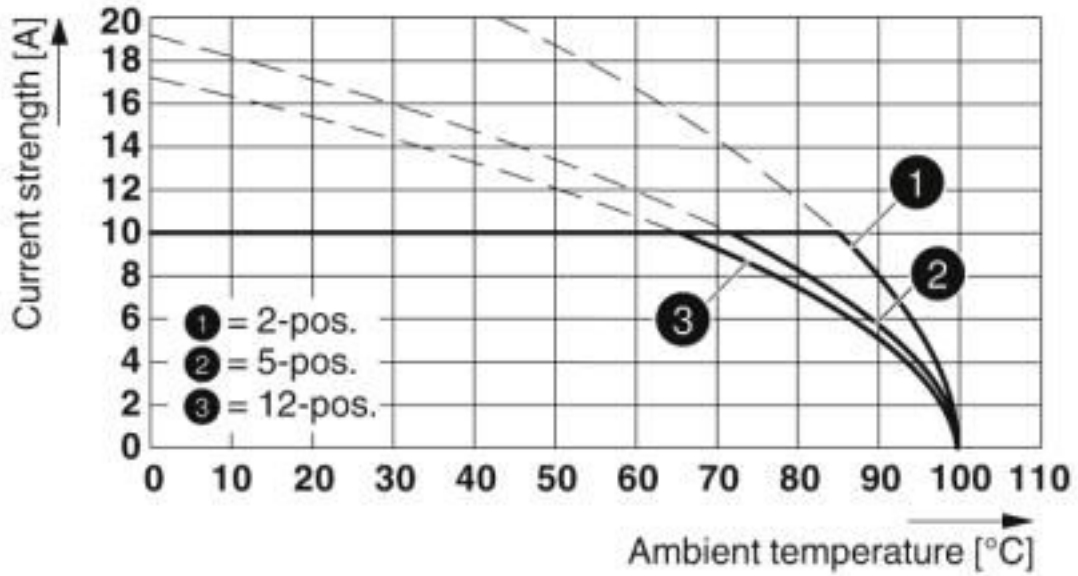
Diagram



Type: MSTBP 2,5/...-ST-5,08 with CCVA 2,5/...-G-5,08 P26THR

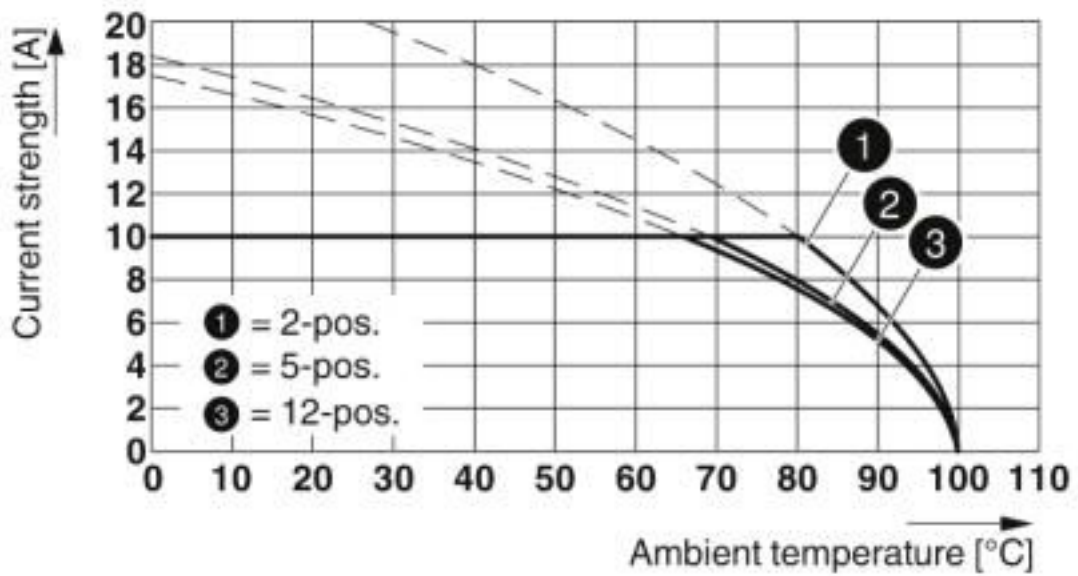
# Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

Diagram



Type: MSTBP 2,5/...-ST-5,08 with MDSTB 2,5/...-G-5,08

Diagram

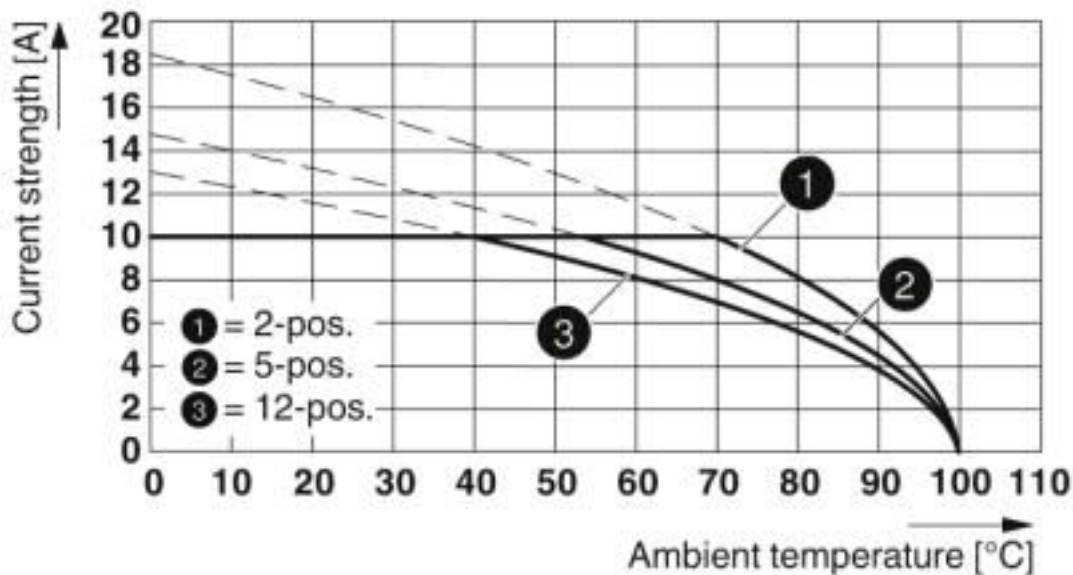


Type: MSTBP 2,5/...-ST-5,08 with MDSTBA 2,5/...-G-5,08



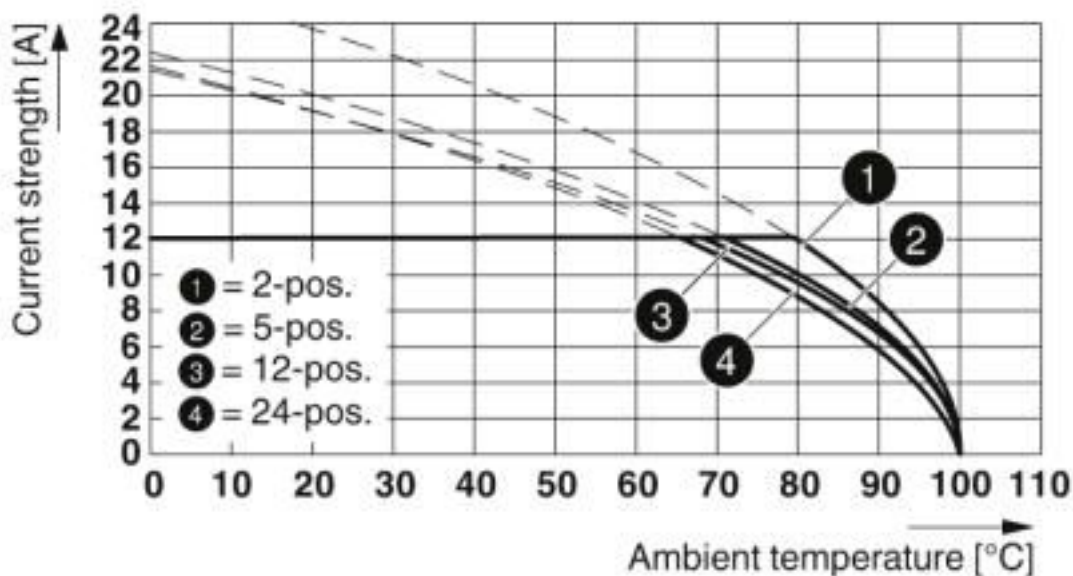
# Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

Diagram



Type: MSTBP 2,5/...-ST-5,08 with MDSTBV 2,5/...-G-5,08

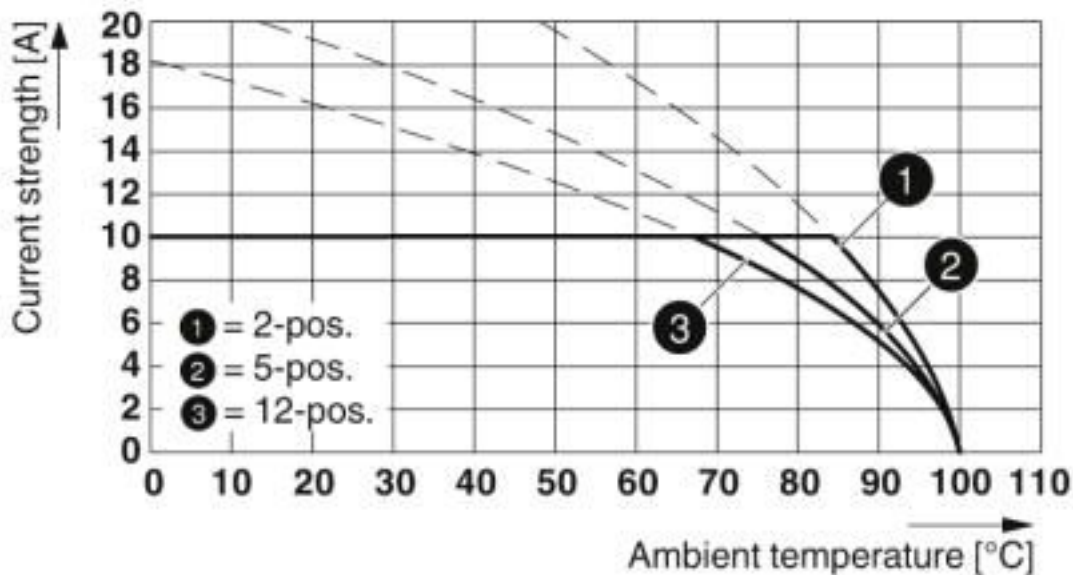
Diagram



Type: MSTBP 2,5/...-ST-5,08 with MSTB 2,5/...-G-5,08

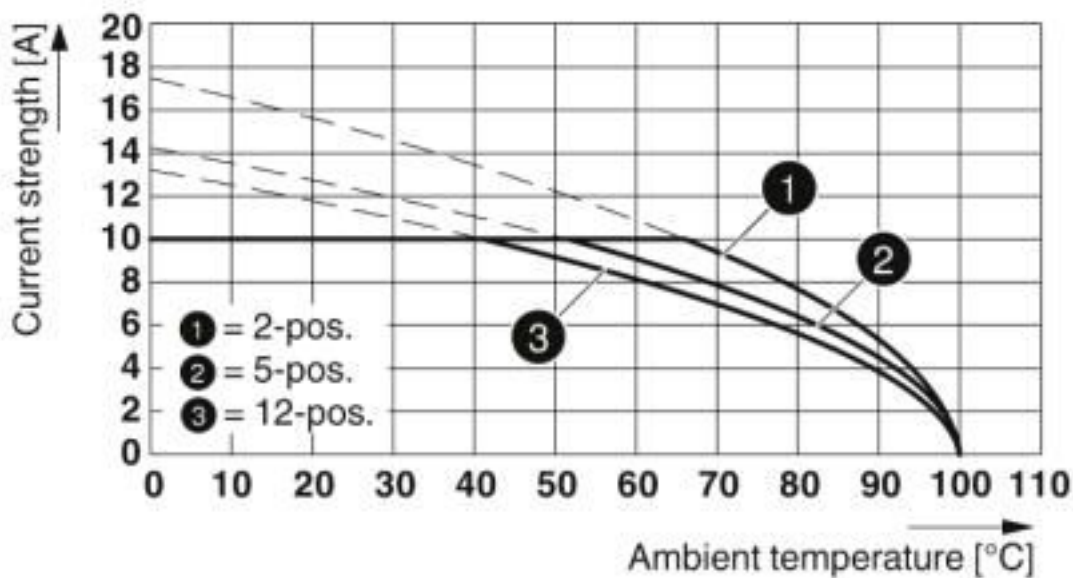
# Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

Diagram



Type: MSTBP 2,5/...-ST-5,08 with MDSTBW 2,5/...-G-5,08

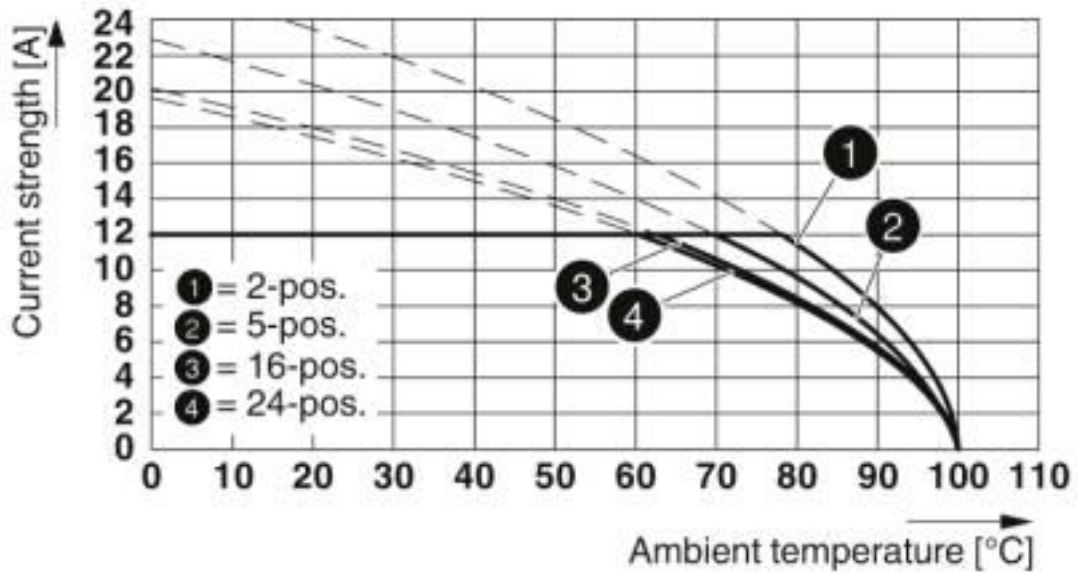
Diagram



Type: MSTBP 2,5/...-ST-5,08 with MDSTBVA 2,5/...-G-5,08

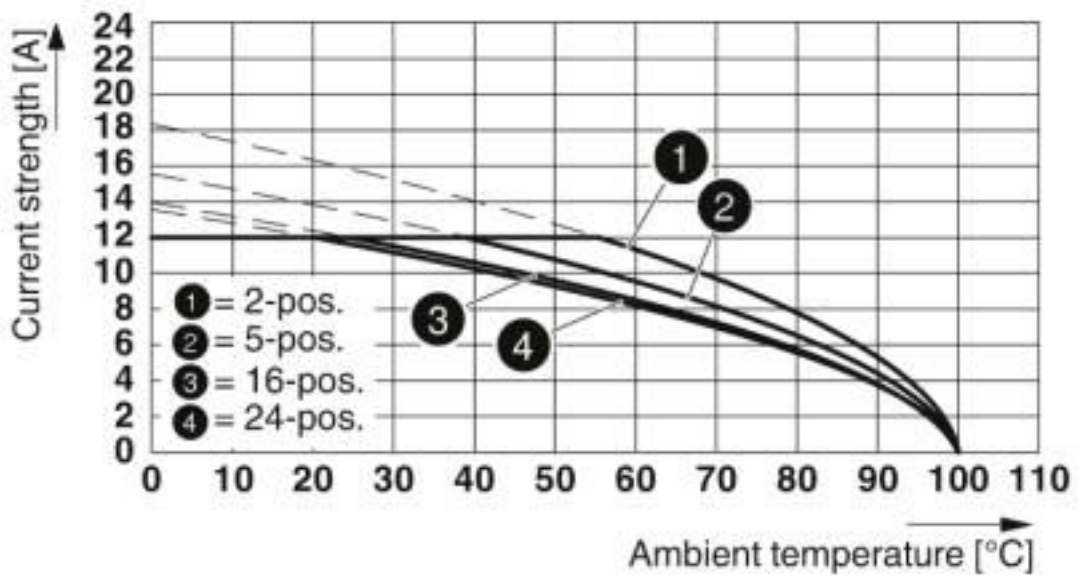
# Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

Diagram



Type: MSTBP 2,5/...-ST-5,08 with MSTBW 2,5/...-G-5,08

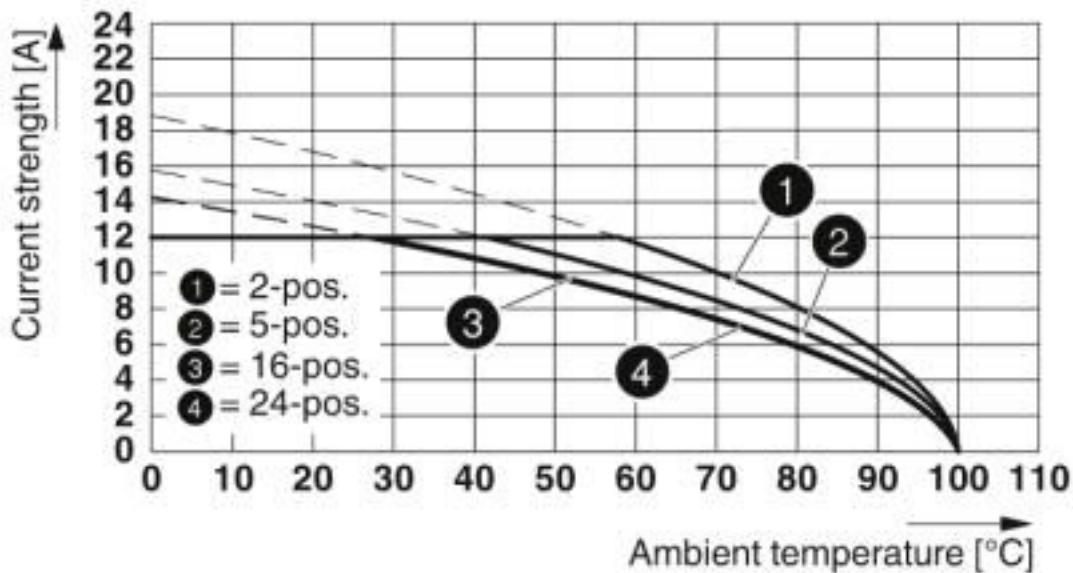
Diagram



Type: MSTBP 2,5/...-ST-5,08 with MSTBVA 2,5/...-G-5,08

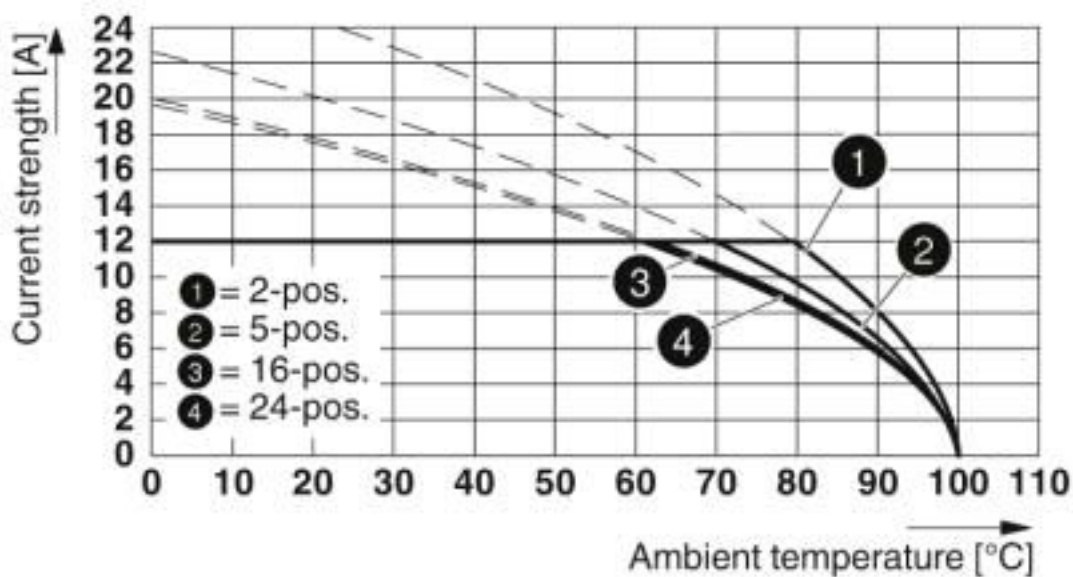
# Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

Diagram



Type: MSTBP 2,5/...-ST-5,08 with MSTBV 2,5/...-G-5,08

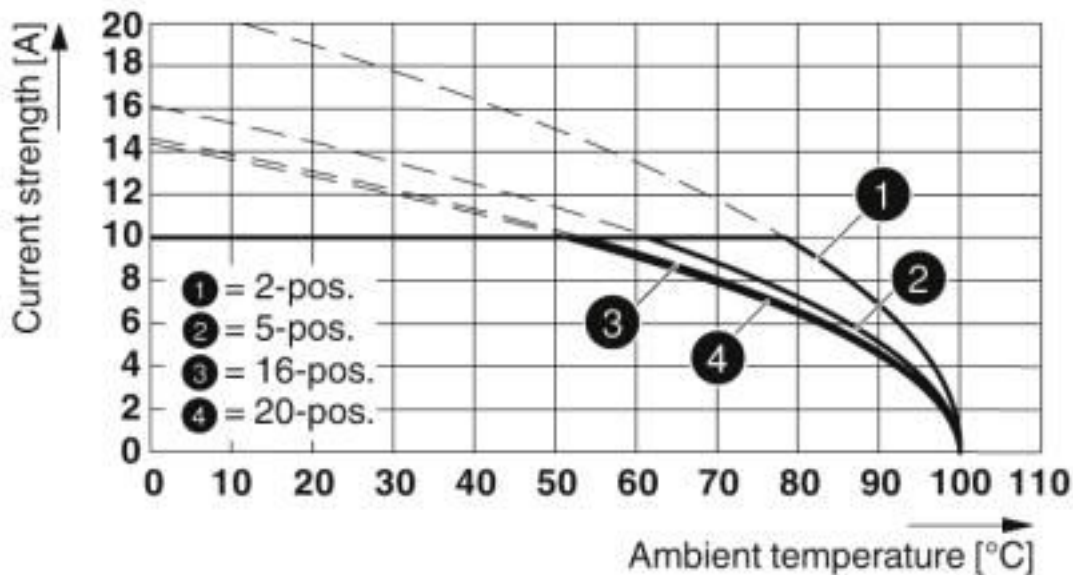
Diagram



Type: MSTBP 2,5/...-ST-5,08 with MSTBA 2,5/...-G-5,08-5,08

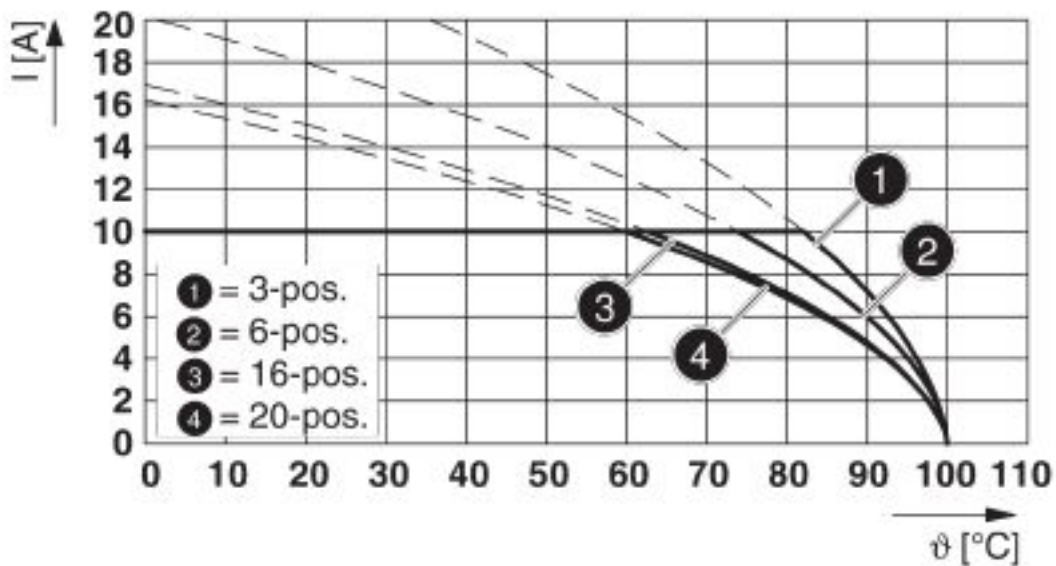
# Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

Diagram



Type: MSTBP 2,5/...-ST-5,08 with MDSTB 2,5/...-G1-5,08

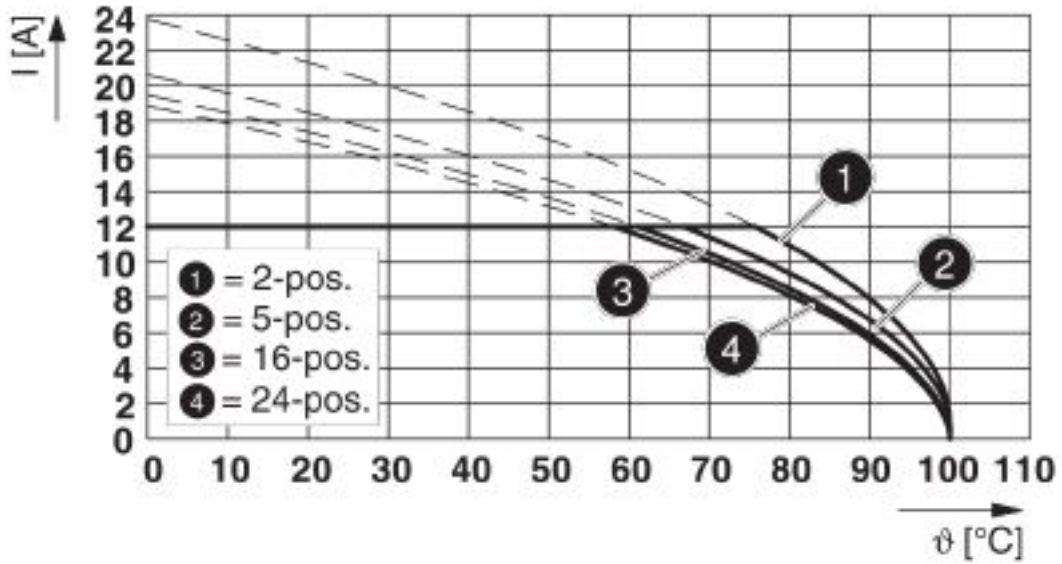
Diagram



Type: MSTBP 2,5/...-ST-5,08 with MDSTBV 2,5/...-G1-5,08

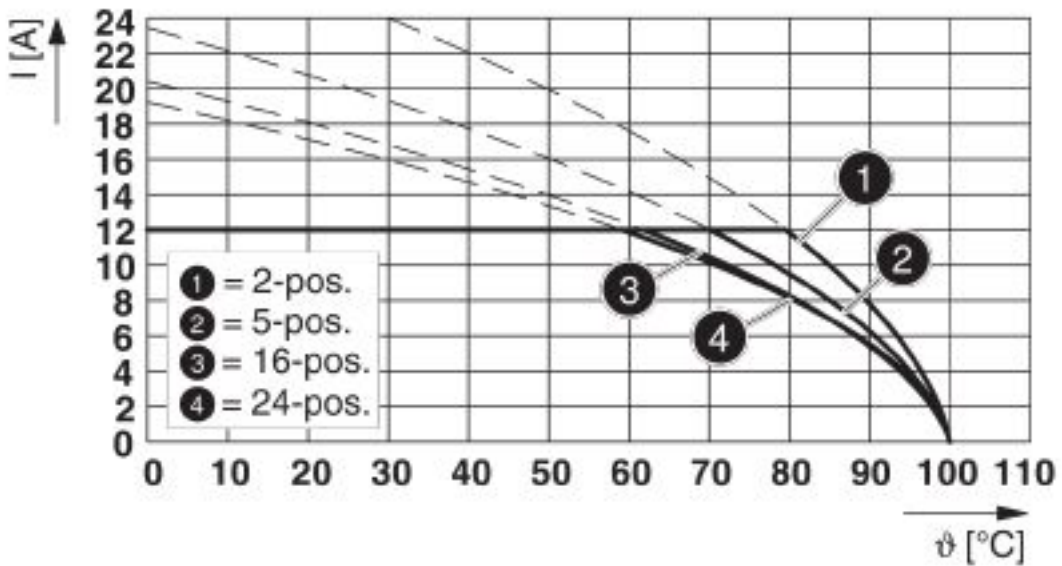
# Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

Diagram



Type: MSTBP 2,5/...-ST-5,08 with SMSTBA 2,5/...-G-5,08

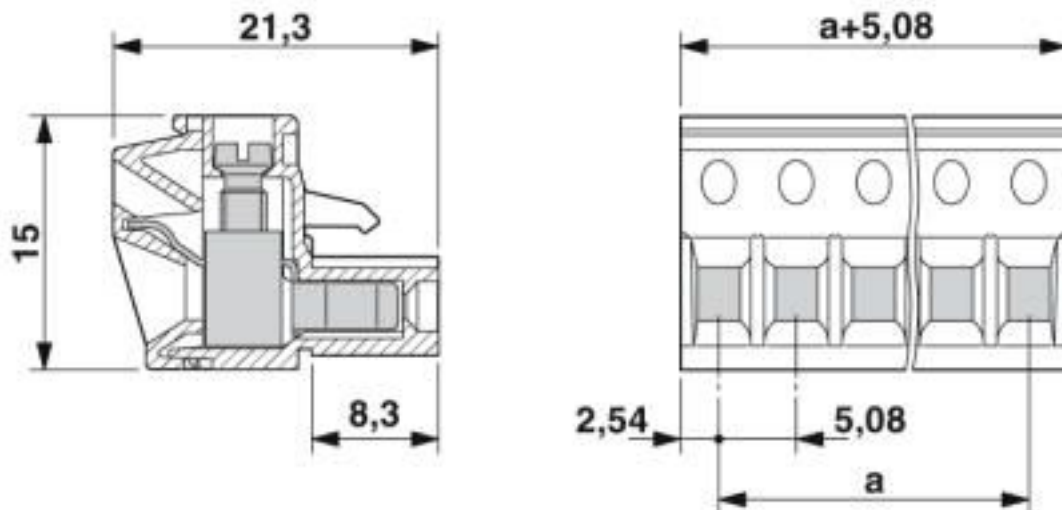
Diagram



Type: MSTBP 2,5/...-ST-5,08 with SMSTB 2,5/...-G-5,08

# Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

Dimensional drawing



## 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 |

# Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

## Classifications

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 20.0 | 39121409 |
| UNSPSC 21.0 | 39121409 |

## Approvals

### Approvals

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### Approvals

CSA / IECCEB CB Scheme / EAC / cULus Recognized / VDE Zeichengenehmigung

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### Ex Approvals

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### Approval details

|                            |       |   |       |
|----------------------------|-------|---|-------|
| CSA                        |       | <a href="http://www.csagroup.org/services-industries/product-listing/">http://www.csagroup.org/services-industries/product-listing/</a> | 13631 |
|                            | B     | D   |       |
| Nominal voltage UN         | 300 V | 300 V   |       |
| Nominal current IN         | 10 A  | 10 A  |       |
| mm <sup>2</sup> /AWG/kcmil | 28-12 | 28-12   |       |

|                            |         |   |                |
|----------------------------|---------|---|----------------|
| IECEE CB Scheme            |         | <a href="http://www.iecee.org/">http://www.iecee.org/</a> | DE1-60988-B1B2 |
| Nominal voltage UN         | 250 V   |   |                |
| Nominal current IN         | 12 A    |   |                |
| mm <sup>2</sup> /AWG/kcmil | 0.2-2.5 |   |                |

|     |  |         |
|-----|--|---------|
| 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> | E60425-19931011 |
|                    | B     | D   |                 |
| Nominal voltage UN | 300 V | 300 V   |                 |
| Nominal current IN | 15 A  | 10 A  |                 |



# Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

## Approvals

|               |       |       |
|---------------|-------|-------|
|               | B     | D     |
| mm²/AWG/kcmil | 30-12 | 30-12 |

|                        |         |   |          |
|------------------------|---------|---|----------|
| VDE Zeichengenehmigung |         | <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> | 40050694 |
| Nominal voltage UN     | 250 V   |   |          |
| Nominal current IN     | 12 A    |   |          |
| mm²/AWG/kcmil          | 0.2-2.5 |   |          |

## Accessories

### Accessories

#### Insulating sleeve

Insulating sleeve - MPS-IH GN - 0201702

Insulating sleeve, color: green



Insulating sleeve - MPS-IH RD - 0201676

Insulating sleeve, color: red



### Screwdriver tools

Screwdriver - SZS 0,6X3,5 - 1205053



Actuation tool, for ST terminal blocks, insulated, also suitable for use as a bladed screwdriver, size: 0.6 x 3.5 x 100 mm, 2-component grip, with non-slip grip

### Test plug terminal block

## Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

### Accessories

Reducing plug - RPS - 0201647



Reducing plug, color: gray

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Test plugs - MPS-MT - 0201744



Test plugs, with solder connection up to 1 mm<sup>2</sup> conductor cross section, color: gray

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### Additional products

Feed-through header - MSTBW 2,5/21-G-5,08 - 1735691



PCB headers, nominal current: 12 A, rated voltage (III/2): 320 V, nominal cross section: 2.5 mm<sup>2</sup>, number of positions: 21, pitch: 5.08 mm, color: green, contact surface: Tin, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.5 mm

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Printed-circuit board connector - MSTBVA 2,5/21-G-5,08 - 1755927



PCB headers, nominal current: 12 A, rated voltage (III/2): 320 V, nominal cross section: 2.5 mm<sup>2</sup>, number of positions: 21, pitch: 5.08 mm, color: green, contact surface: Tin, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.9 mm

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Printed-circuit board connector - MSTBA 2,5/21-G-5,08 - 1757433



PCB headers, nominal current: 12 A, rated voltage (III/2): 320 V, nominal cross section: 2.5 mm<sup>2</sup>, number of positions: 21, pitch: 5.08 mm, color: green, contact surface: Tin, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.5 mm

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## Printed-circuit board connector - MSTBP 2,5/21-ST-5,08 - 1769201

### Accessories

#### Feed-through header - MSTBV 2,5/21-G-5,08 - 1758209

PCB headers, nominal current: 12 A, rated voltage (III/2): 320 V, nominal cross section: 2.5 mm<sup>2</sup>, number of positions: 21, pitch: 5.08 mm, color: green, contact surface: Tin, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.9 mm



#### Feed-through header - MSTB 2,5/21-G-5,08 - 1759208

PCB headers, nominal current: 12 A, rated voltage (III/2): 320 V, nominal cross section: 2.5 mm<sup>2</sup>, number of positions: 21, pitch: 5.08 mm, color: green, contact surface: Tin, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.5 mm



#### Feed-through header - SMSTBA 2,5/21-G-5,08 - 1767562

PCB headers, nominal current: 12 A, rated voltage (III/2): 320 V, nominal cross section: 2.5 mm<sup>2</sup>, number of positions: 21, pitch: 5.08 mm, color: green, contact surface: Tin, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.5 mm



#### Feed-through header - MSTBA 2,5/21-G-5,08-LA - 1768134

PCB headers, number of positions: 21, pitch: 5.08 mm, color: green, contact surface: Tin, pin layout: Linear pinning, solder pin [P]: 3.5 mm



#### Printed-circuit board connector - SMSTB 2,5/21-G-5,08 - 1769654

PCB headers, nominal current: 12 A, rated voltage (III/2): 320 V, nominal cross section: 2.5 mm<sup>2</sup>, number of positions: 21, pitch: 5.08 mm, color: green, contact surface: Tin, mounting: Wave soldering, pin layout: Linear pinning, solder pin [P]: 3.5 mm



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