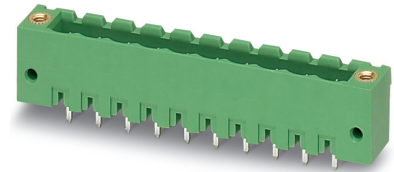


# Data sheet

**Order No.: 1776896**

**Type: MSTBV 2,5/ 3-GF**

**PCB header**



The figure shows a 10-position version of the product

## 1 Main features



- |                         |                     |                        |                     |
|-------------------------|---------------------|------------------------|---------------------|
| • No. of pos.           | 3                   | • Nominal current      | 12 A                |
| • Nominal cross section | 2.5 mm <sup>2</sup> | • Nominal voltage      | 320 V               |
| • Color                 | green (6021)        | • Connection direction | 90 °                |
| • Pitch                 | 5 mm                | • Type of packaging    | packed in cardboard |
| • Mounting type         | Wave soldering      |                        |                     |

## 2 Your advantages

- ✓ Maximum flexibility when it comes to device design – one header for connectors with different connection technologies
- ✓ Well-known mounting principle allows worldwide use
- ✓ Vertical connection enables multi-row arrangement on the PCB



Make sure you always use the latest documentation.

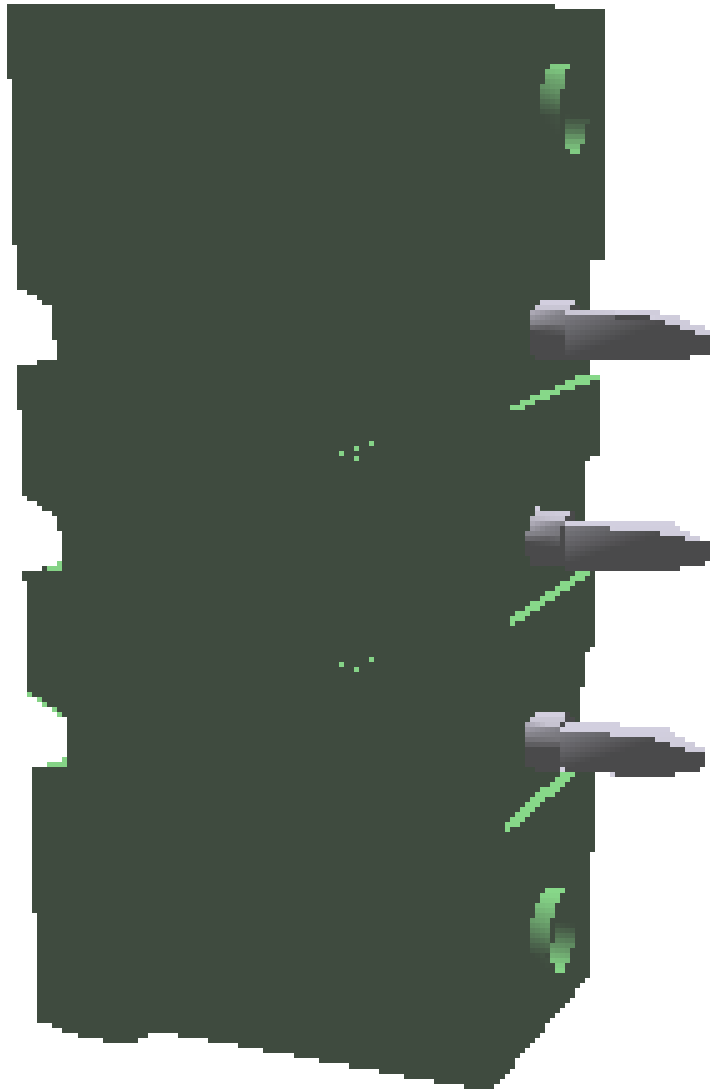
It can be downloaded at: [phoenixcontact.net/product/1776896](https://phoenixcontact.net/product/1776896)

**1776896 MSTBV 2,5/ 3-GF****3 Table of contents**

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1776896 MSTBV 2,5/ 3-GF

4 3D model in PDF can be activated (Acrobat Reader only)



**1776896 MSTBV 2,5/ 3-GF****5 General Technical Data****5.1 item properties**

Order No.	1776896
Type	MSTBV 2,5/ 3-GF
Plug-in system	CLASSIC COMBICON
Product type	PCB header
Type of contact	Male connector
Range of articles	MSTBV 2,5/..-GF
Pitch	5 mm
Number of positions	3
Number of levels	1
Number of connections	3
Number of potentials	3
Mounting type	Wave soldering
Connection direction of the connector to the PCB	90 °
Pin layout	Linear pinning
Solder pins per potential	1
Type	Standard

**1776896 MSTBV 2,5/ 3-GF****6 Mounting****6.1 Flange mounting**

Type of locking	Screw locking
Mounting flange	Threaded flange
Torque	0.3 Nm

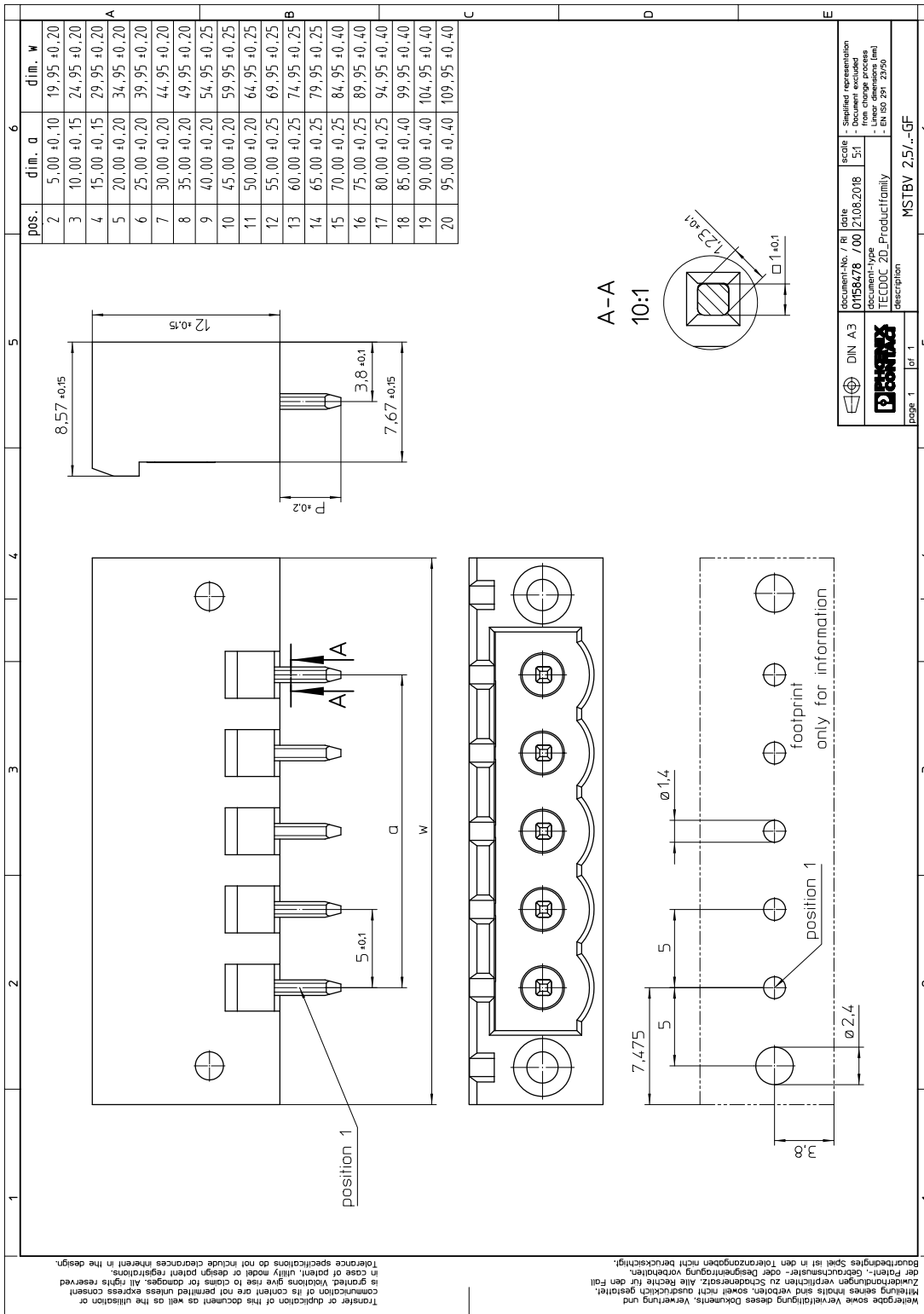
**7 Material properties****7.1 Material of metal parts**

Note	WEEE/RoHS-compliant, whisker-free acc. to IEC 60068-2-82/JEDEC JESD 201
Contact material	Cu alloy
Surface contact area	Nickel (1.3 - 3 µm Ni) , Tin (3 - 5 µm Sn)
Soldering area surface	Nickel (1.3 - 3 µm Ni) , Tin (3 - 5 µm Sn)
Surface characteristics	Tin-plated
Insulating material data	Housing
Color	green (6021)
Insulating material	PBT
Insulating material group	IIIa
CTI according to IEC 60112	225
Flammability rating according to UL 94	V0

**1776896 MSTBV 2,5/ 3-GF****8 Dimensions****8.1 Dimensions for the product**

Length	8.6 mm
Width	25 mm
Height (without solder pin)	12 mm
Total height	15.9 mm
Solder pin [P]	3.9 mm

9 Series drawing



**1776896 MSTBV 2,5/ 3-GF****10 Product notes****10.1 General information**

Notes on operation

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.

**11 Application****12 Packaging information**

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

Pieces per package	250
--------------------	-----

**12.1 Temperature limit values**

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)
---------------------------------	---



**1776896 MSTBV 2,5/ 3-GF****13 Mechanical tests****13.1 Visual examination**

Specification	IEC 61984:2008-10
Visual examination	Test passed
Specification	IEC 60512-1-1:2002-02

**13.2 Dimensional test**

Dimensional test	Test passed
Specification	IEC 60512-1-2:2002-02

**13.3 Resistance of marking**

Resistance of marking	Test passed
Specification	IEC 60068-2-70:1995-12

**13.4 Polarization and coding**

Polarization and coding	Test passed
Specification	IEC 60512-13-5:2006-02
Test force	20 N

**13.5 Contact retention in insert**

Contact holder in insert Requirements >20 N	Test passed
Specification	IEC 60512-15-1:2008-05

**1776896 MSTBV 2,5/ 3-GF****14 Insertion and withdrawal forces**

Insertion and withdrawal force	Test passed
Specification	IEC 60512-13-2:2006-02
No. of cycles	25
Insertion strength per pos. approx.	8 N
Withdraw strength per pos. approx.	6 N

**1776896 MSTBV 2,5/ 3-GF****15 Electrical tests**

Rated current / conductor cross section	12 A / 2.5 mm <sup>2</sup>
Rated insulation voltage (III/2)	320 V
Rated surge voltage (III/2)	4 kV
Contact resistance	2.4 mΩ
Degree of pollution	2

**15.1 Air and creepage distances**

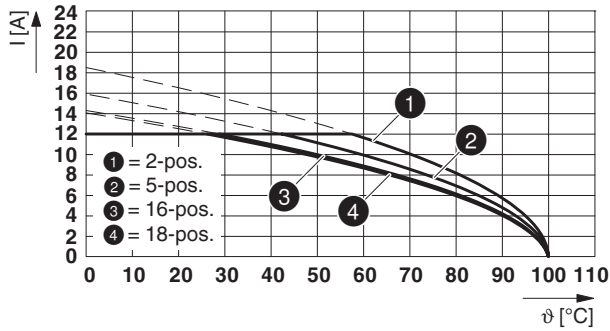
Component	PCB header		
Specification	IEC 60664-1:2007-04		
Mains type	unearthed mains		
Insulating material group	IIIa		
Comparative tracking index (IEC 60112:2003-01)	CTI 225		
Rated insulation voltage	250 V	320 V	400 V
Rated surge voltage	4 kV	4 kV	4 kV
Degree of pollution	3	2	2
Overvoltage category	III	III	II
Minimum clearance case A (inhomogeneous field)	3 mm	3 mm	3 mm
Minimum value of the creepage path requirement in acc. with table	4 mm	3.2 mm	4 mm

1776896 MSTBV 2,5/ 3-GF

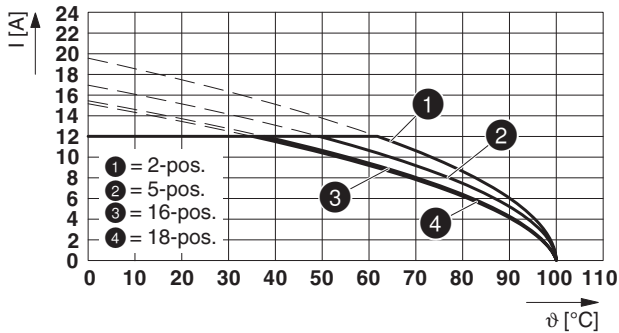
16 Current carrying capacity/derating curves

Specification	IEC 61984:2008-10
Note	Representation based on IEC 60512-5-2:2002-02
Note	For number of positions, see diagram
Reduction factor	0.8
Conductor cross section	2.5 mm <sup>2</sup>

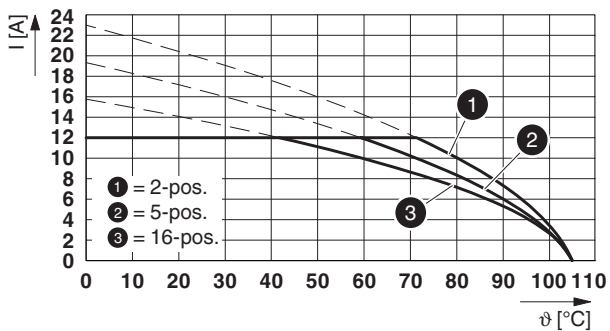
Type: MSTBT 2,5/...-STF with MSTBV 2,5/...-GF



Type: FKCT 2.5/...-STF with MSTBV 2.5/...-GF

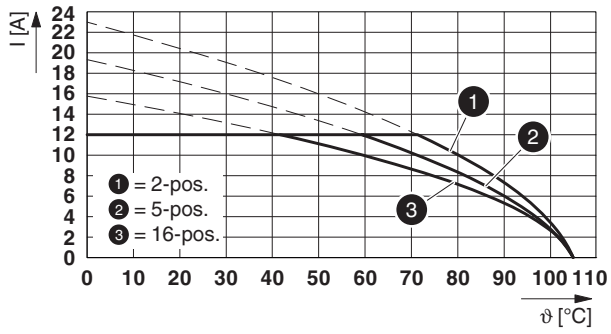


Type: FKCVR 2,5/...-STF with MSTBV 2,5/...-GF



# 1776896 MSTBV 2,5/ 3-GF

Type: FKCVW 2,5/...-STF with MSTBV 2,5/...-GF



**1776896 MSTBV 2,5/ 3-GF****17 Environmental and durability tests****17.1 Vibration test**


Specification	IEC 60068-2-6:2007-12
Result	Test passed
Frequency	10 - 150 - 10 Hz
Sweep speed	1 octave/min
Amplitude	0.35 mm (10 - 60.1 Hz)
Acceleration	5 g (60.1 - 150 Hz)
Test duration per axis	2.5 h
Test directions	X-, Y- and Z-axis
Note	The connected conductor loops were guided to the test sample at a distance of approx. 10 cm.

**17.2 Insulation resistance**

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

## 1776896 MSTBV 2,5/ 3-GF

## 18 Approvals / Certificates

CSA 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm <sup>2</sup> ]
<b>Usegroup B</b>				
	300 V	12 A	-	-
<b>Usegroup D</b>				
	300 V	10 A	-	-
IECEE CB Scheme 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm <sup>2</sup> ]
	250 V	12 A	-	-
EAC 				
VDE Zeichengenehmigung 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm <sup>2</sup> ]
	250 V	12 A	-	-
cULus Recognized 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm <sup>2</sup> ]
<b>Usegroup B</b>				
	300 V	12 A	-	-
<b>Usegroup D</b>				
	300 V	10 A	-	-
DNV GL 				
RS 				
VDE Zeichengenehmigung 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm <sup>2</sup> ]
	250 V	12 A	-	-

**1776896 MSTBV 2,5/ 3-GF****19 Commercial Data**

Order No.	1776896
Type	MSTBV 2,5/ 3-GF
Pieces per package	250
Net weight	2.556 g
GTIN	4017918039066
	Information that applies locally, see link on page 1
	Information that applies locally, see link on page 1

**20 corresponding plugs**

Order No.	Type
1718122	QC 1,5/ 3-STF
1732975	FKCN 2,5/ 3-STF
1779657	FRONT-MSTB 2,5/ 3-STF
1786844	MSTB 2,5/ 3-STF
1835290	MVSTBW 2,5/ 3-STF
1835481	MVSTBR 2,5/ 3-STF
1909414	FKCT 2,5/ 3-STF
1909896	FKCVR 2,5/ 3-STF
1910212	FKCVW 2,5/ 3-STF
1910539	FKC 2,5/ 3-STF
1970883	SMSTB 2,5/ 3-STF
1974931	FKCS 2,5/ 3-STF

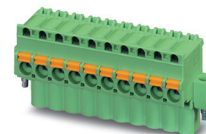
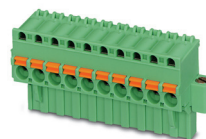
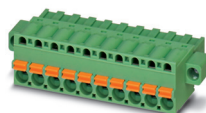
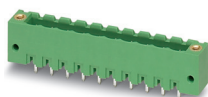
**21 Accessories**

Description	Order No.	Type
Coding section, inserted into the recess in the header or the inverted plug, red insulating material	1734401	CR-MSTB
Keying cap, for forming sections, plugs onto header pin, green insulating material	1755477	MSTB-BL
	0804183	SK 5/3,8:FORTL.ZAHLEN
	0805409	SK 5/3,8:UNBEDRUCKT
	0805072	SK 5/3,8:SO
Marker pen, for manual labeling of unprinted Zack strips, smear-proof and waterproof, line thickness 0.5 mm	1051993	B-STIFT



## 1776896 MSTBV 2,5/ 3-GF

## 22 Combination tests

**MSTBV 2,5/..-GF**

IEC 61984

**Mechanical tests (A)**

Insertion/withdrawal force per position

Polarization when inserted  
Requirement >20 NContact holder in insert  
Requirements >20 N**Durability tests (B)**Contact resistance R<sub>1</sub> 1st levelContact resistance R<sub>1</sub> 2nd level

Insertion/withdrawal cycles

Contact resistance R<sub>2</sub>Rated impulse voltage at sea level  
Voltage waveform ≥ (1.2/50 μs)Power-frequency withstand voltage  
Voltage waveform ≥ (50/60 Hz)**Thermal tests (C)**

Tested number of positions

Tested conductor cross section

Test current

Upper limiting temperature  
Requirements < 100°C**Climatic tests (D)**

Test sequence 1: low temperature storage

Test sequence 2: heat storage

Test sequence 3: noxious gas storage  
(ISO 6988)Rated impulse voltage at sea level  
Voltage waveform ≥ (1.2/50 μs)Power-frequency withstand voltage  
Voltage waveform ≥ (50/60 Hz)**Environmental and endurance tests (E)**

Specification

Degree of protection

**MSTBT 2,5/..-STF**

IEC 61984

approx. 8 N / 6 N

Test passed

Test passed

2.4 mΩ

25

2.4 mΩ

4.8 kV

2.21 kV

18

2.5 mm<sup>2</sup>

12 A

Test passed

-40 °C/2 h

100 °C/168 h

0.2 dm<sup>3</sup> SO<sub>2</sub> on 300 dm<sup>3</sup>/  
40 °C/1 cycle

4.8 kV

2.21 kV

IEC 61984:2008-10

Finger safety with IP20  
test finger**FKCT 2,5/..-STF**

IEC 61984

approx. 8 N / 6 N

Test passed

Test passed

2.4 mΩ

25

2.4 mΩ

4.8 kV

2.21 kV

18

2.5 mm<sup>2</sup>

12 A

Test passed

-40 °C/2 h

100 °C/168 h

0.2 dm<sup>3</sup> SO<sub>2</sub> on 300 dm<sup>3</sup>/  
40 °C/1 cycle

4.8 kV

2.21 kV

IEC 61984:2008-10

Finger safety with IP20  
test finger**FKCVR 2,5/..-STF**

IEC 61984

approx. 10 N / 7 N

Test passed

Test passed

2 mΩ

25

2.2 mΩ

4.8 kV

2.21 kV

12

2.5 mm<sup>2</sup>

12 A

Test passed

-40 °C/2 h

105 °C/168 h

0.2 dm<sup>3</sup> SO<sub>2</sub> on 300 dm<sup>3</sup>/  
40 °C/1 cycle

4.8 kV

2.21 kV

IEC 61984:2008-10

Finger safety with IP20  
test finger**FKCVW 2,5/..-STF**

IEC 61984

approx. 10 N / 7 N

Test passed

Test passed

2 mΩ

25

2.2 mΩ

4.8 kV

2.21 kV

12

2.5 mm<sup>2</sup>

12 A

Test passed

-40 °C/2 h

105 °C/168 h

0.2 dm<sup>3</sup> SO<sub>2</sub> on 300 dm<sup>3</sup>/  
40 °C/1 cycle

4.8 kV

2.21 kV

IEC 61984:2008-10

Finger safety with IP20  
test finger