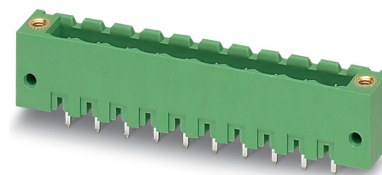


Order No.: 1777170

Type: MSTBV 2,5/12-GF-5,08

PCB headers



The figure shows a 10-position version of the product

1 Main features



- | | | | |
|-------------------------|---------------------|------------------------|---------------------|
| • No. of pos. | 12 | • Nominal current | 12 A |
| • Nominal cross section | 2.5 mm ² | • Nominal voltage | 320 V |
| • Color | green (6021) | • Connection direction | 90 ° |
| • Pitch | 5.08 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
- ✓ Screwable flange for superior mechanical stability



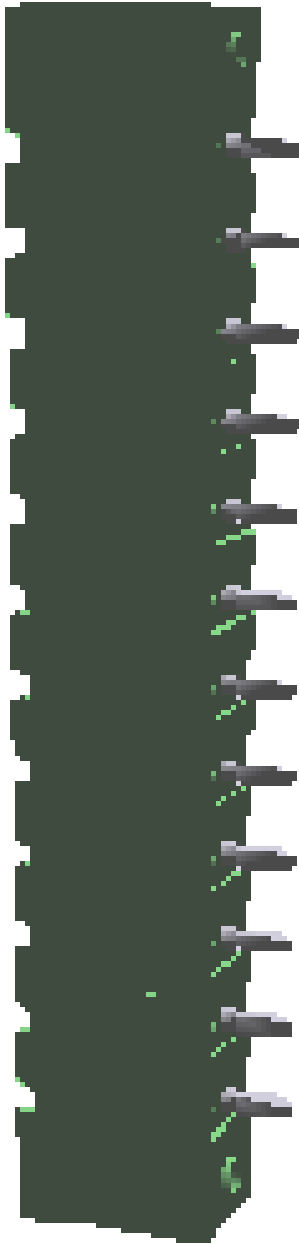
Make sure you always use the latest documentation.
It can be downloaded at: phoenixcontact.net/product/1777170

1777170 MSTBV 2,5/12-GF-5,08**3 Table of contents**

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1777170 MSTBV 2,5/12-GF-5,08

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



1777170 MSTBV 2,5/12-GF-5,08**5 General Technical Data****5.1 item properties**

Order No.	1777170
Type	MSTBV 2,5/12-GF-5,08
Plug-in system	CLASSIC COMBICON
Product type	PCB headers
Type of contact	Male connector
Range of articles	MSTBV 2,5/...-GF
Pitch	5.08 mm
Range of positions	2...24
Number of positions	12
Number of levels	1
Number of connections	12
Number of potentials	12
Mounting type	Wave soldering
Connection direction of the connector to the PCB	90 °
Pin layout	Linear pinning
Solder pins per potential	1
Type	Standard

1777170 MSTBV 2,5/12-GF-5,08**6 Mounting****6.1 Flange fixing**

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

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

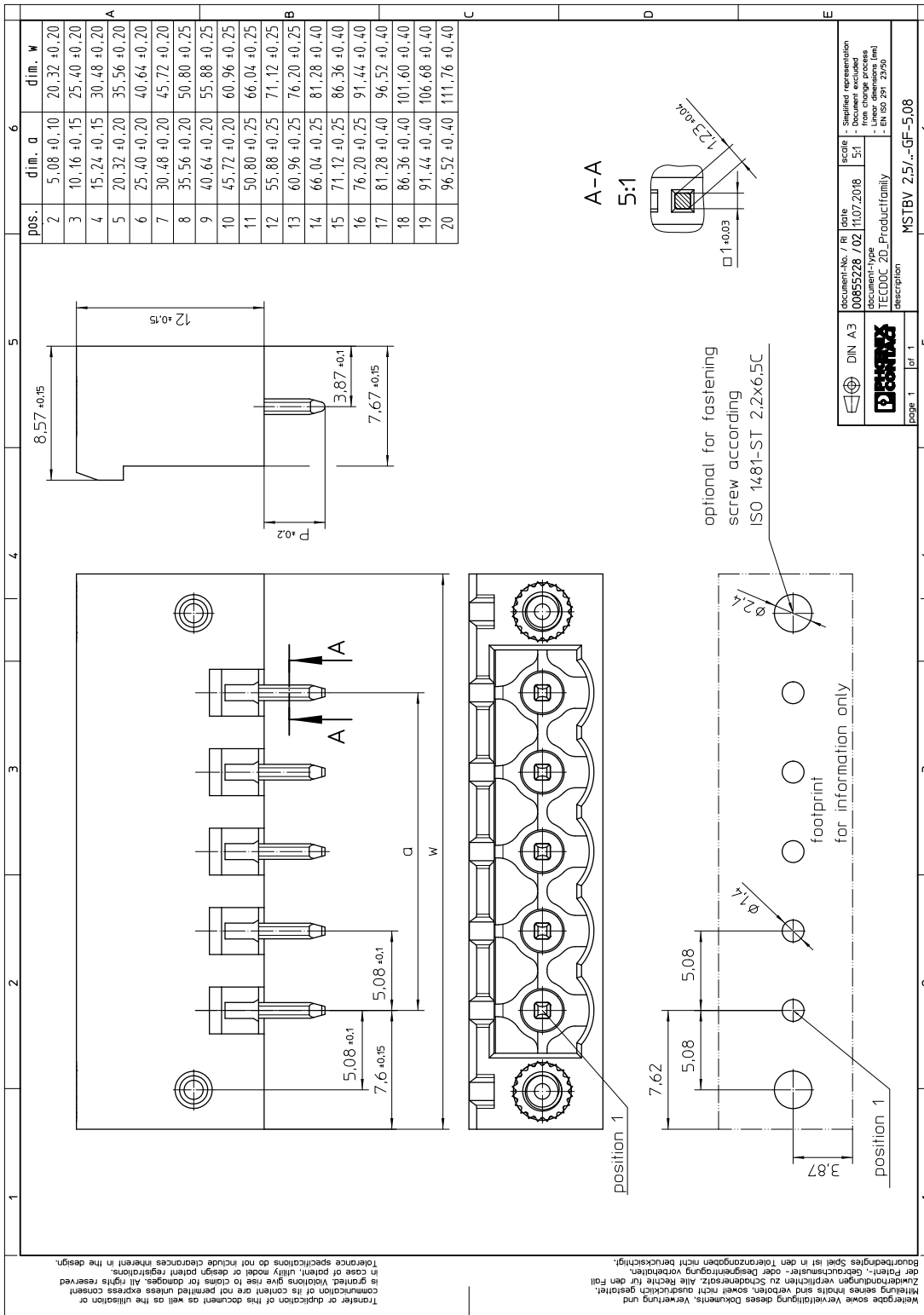
Note	WEEE/RoHS-compliant, whisker-free acc. to IEC 60068-2-82/JEDEC JESD 201
Contact material	Cu alloy
Surface contact area	Nickel (1.3 - 3 µm Ni) , Tin (3 - 5 µm Sn)
Soldering area surface	Nickel (1.3 - 3 µm Ni) , Tin (3 - 5 µm Sn)
Surface characteristics	Tin-plated
Insulating material data	Housing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

1777170 MSTBV 2,5/12-GF-5,08**8 Dimensions****8.1 Dimensions for the product**

Length	8.6 mm
Width	71.12 mm
Height (without solder pin)	12 mm
Total height	15.9 mm
Solder pin [P]	3.9 mm
Dimension a	55.88 mm

1777170 MSTBV 2,5/12-GF-5,08

9 Series drawing



1777170 MSTBV 2,5/12-GF-5,08

10 Application**11 Packaging information**

Type of packaging	packed in cardboard
Pieces per package	50

11.1 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)

1777170 MSTBV 2,5/12-GF-5,08**12 Mechanical tests****12.1 Visual examination**

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

12.2 Dimensional test

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

12.3 Resistance of marking

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

12.4 Polarization and coding

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

12.5 Contact retention in insert

Contact retention in insert	Test passed
Specification	IEC 60512-15-1:2008-05
Test force per pos.	40 N

1777170 MSTBV 2,5/12-GF-5,08**13 Insertion and withdrawal forces**

Insertion and withdrawal force	
Specification	Test passed
No. of cycles	25
Insertion strength per pos. approx.	8 N
Withdraw strength per pos. approx.	6 N

1777170 MSTBV 2,5/12-GF-5,08**14 Electrical tests****14.1 Electrical data**

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

14.2 Air and creepage distances

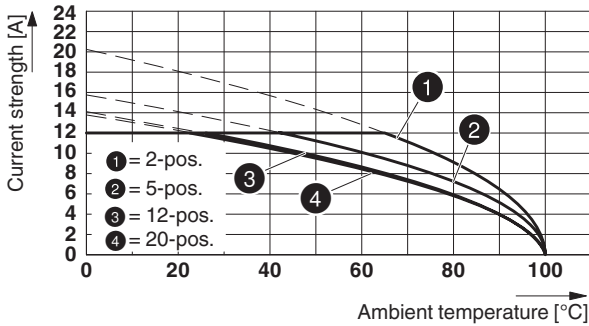
Component	PCB headers		
Specification	IEC 60664-1:2007-04		
Mains type	unearthed mains		
Insulating material group	IIIa		
Comparative tracking index (IEC 60112:2003-01)	CTI 225		
Rated insulation voltage	250 V	320 V	400 V
Rated surge voltage	4 kV	4 kV	4 kV
Degree of pollution	3	2	2
Overvoltage category	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

1777170 MSTBV 2,5/12-GF-5,08

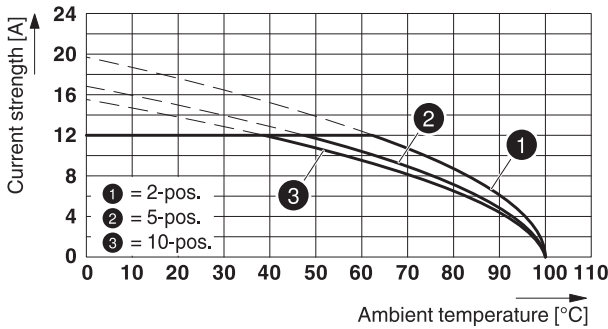
15 Current carrying capacity/derating curves

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 ²

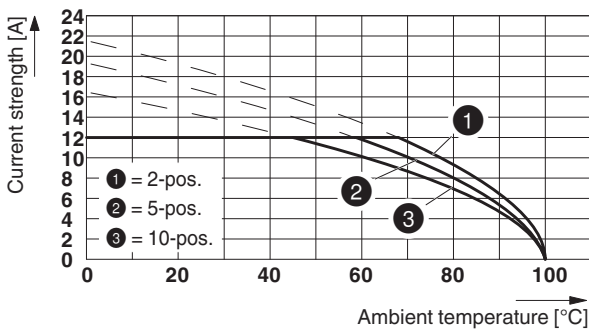
Type: MSTB 2,5/...-STF-5,08 with MSTBV 2,5/...-GF-5,08



Type: TVMSTB 2,5/...-STF-5,08 with MSTBV 2,5/...-GF-5,08

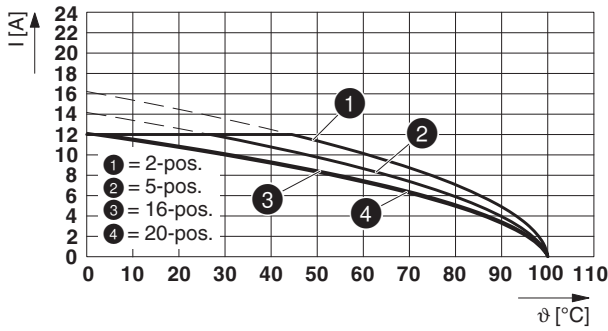


Type: TFKC 2,5/...-STF-5,08 with MSTBV 2,5/...-GF-5,08

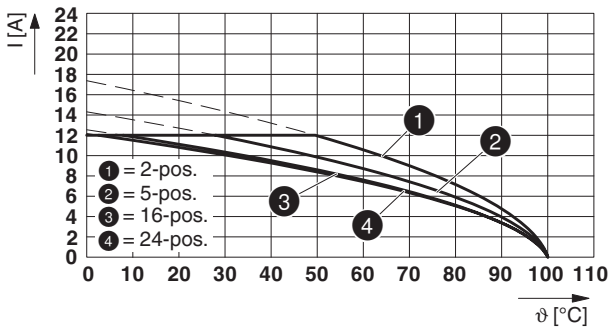


1777170 MSTBV 2,5/12-GF-5,08

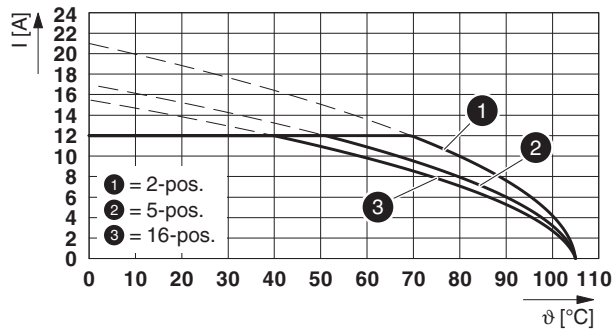
Type: MVSTB(R/W) 2,5/...-STF-5,08 with MSTBV 2,5/...-GF-5,08



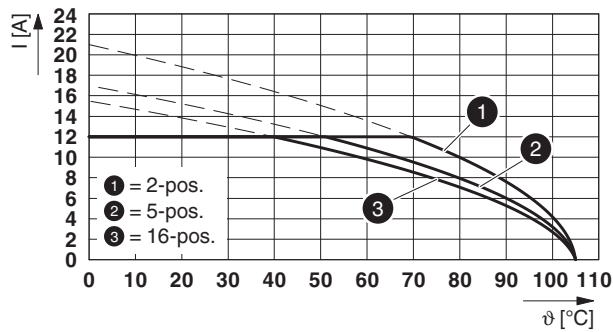
Type: SMSTB 2,5/...-STF-5,08 with MSTBV 2,5/...-GF-5,08

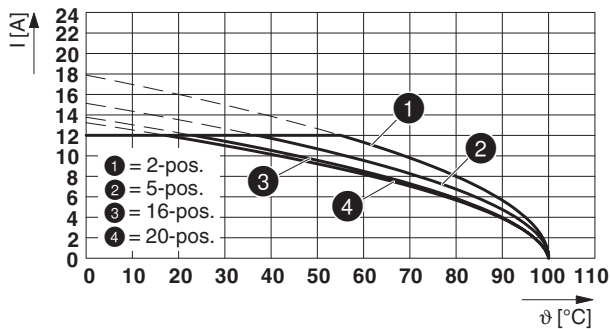


Type: FKCVR 2,5/...-STF-5,08 with MSTBV 2,5/...-GF-5,08



Type: FKCVW 2,5/...-STF-5,08 with MSTBV 2,5/...-GF-5,08



1777170 MSTBV 2,5/12-GF-5,08**Type: FRONT-MSTB 2,5/...-STF-5,08 with MSTBV 2,5/...-GF-5,08****15.1 Insulation resistance**








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

15.2 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.

1777170 MSTBV 2,5/12-GF-5,08

16 Approvals / Certificates

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

1777170 MSTBV 2,5/12-GF-5,08**17 Commercial Data**

Order No.	1777170
Type	MSTBV 2,5/12-GF-5,08
Pieces per package	50
Net weight	5.914 g
GTIN	4017918039349
	Information that applies locally, see link on page 1
Country of origin	Information that applies locally, see link on page 1

18 corresponding plugs

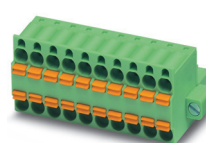
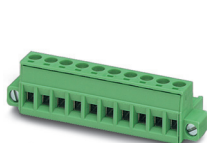
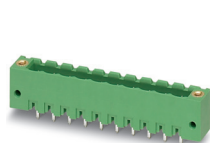
Order No.	Type
1754898	FKCN 2,5/12-STF-5,08
1777895	FRONT-MSTB 2,5/12-STF-5,08
1778085	MSTB 2,5/12-STF-5,08
1805398	MSTBT 2,5/12-STF-5,08
1809831	MSTBC 2,5/12-STZF-5,08
1835009	MVSTBW 2,5/12-STF-5,08
1835193	MVSTBR 2,5/12-STF-5,08
1873304	FKC 2,5/12-STF-5,08
1873906	FKCVW 2,5/12-STF-5,08
1874206	FKCVR 2,5/12-STF-5,08
1883459	QC 1/12-STF-5,08
1902408	FKCT 2,5/12-STF-5,08
1971167	SMSTB 2,5/12-STF-5,08
1975367	FKCS 2,5/12-STF-5,08

19 Accessories

Description	Order No.	Type
Coding section, inserted into the recess in the header or the inverted plug, red insulating material	1734401	CR-MSTB
	0804293	SK 5,08/3,8:FORTL.ZAHLEN
Keying cap, for forming sections, plugs onto header pin, green insulating material	1755477	MSTB-BL
	1754898	FKCN 2,5/12-STF-5,08
	1777895	FRONT-MSTB 2,5/12-STF-5,08
	1778085	MSTB 2,5/12-STF-5,08
	1805398	MSTBT 2,5/12-STF-5,08
	1809831	MSTBC 2,5/12-STZF-5,08
	1835009	MVSTBW 2,5/12-STF-5,08
	1835193	MVSTBR 2,5/12-STF-5,08
	1873304	FKC 2,5/12-STF-5,08
	1873906	FKCVW 2,5/12-STF-5,08
	1874206	FKCVR 2,5/12-STF-5,08
	1883459	QC 1/12-STF-5,08
	1902408	FKCT 2,5/12-STF-5,08
	1971167	SMSTB 2,5/12-STF-5,08
	1975367	FKCS 2,5/12-STF-5,08

1777170 MSTBV 2,5/12-GF-5,08

20 Combination tests

**MSTBV 2,5/12-GF****MSTB 2,5/12-STF****TVMSTB 2,5/12-STF****TFKC 2,5/12-STF****MVSTBW 2,5/12-STF**

IEC 61984

IEC 61984

IEC 61984

IEC 61984

IEC 61984

Mechanical tests (A)

Insertion/withdrawal force per position

approx. 8 N / 6 N

approx. 8 N / 6 N

approx. 10 N / 9.5 N

approx. 8 N / 6 N

Polarization when inserted
Requirement >20 N

Test passed

Test passed

Test passed

Test passed

Contact holder in insert
Requirements >20 N

Test passed

Test passed

Test passed

Test passed

Durability tests (B)Contact resistance R_1 2.5 m Ω 2.3 m Ω 2 m Ω 3.5 m Ω

Insertion/withdrawal cycles

25

25

25

25

Contact resistance R_2 2.6 m Ω 2.5 m Ω 2.2 m Ω 3.5 m Ω Rated impulse voltage at sea level
Voltage waveform \geq (1.2/50 μ s)

4.8 kV

4.8 kV

4.8 kV

4.8 kV

Power-frequency withstand voltage
Voltage waveform \geq (50/60 Hz)

2.21 kV

2.21 kV

2.21 kV

2.21 kV

Thermal tests (C)

Tested number of positions

20

10

10

20

Tested conductor cross section

2.5 mm²2.5 mm²2.5 mm²2.5 mm²

Test current

12 A

12 A DC

12 A

12 A

Upper limiting temperature
Requirements < 100°C

Test passed

Test passed

Test passed

Test passed

Climatic tests (D)

Test sequence 1: low temperature storage

-40 °C/2 h

-40 °C/2 h

-40 °C/2 h

-40 °C/2 h

Test sequence 2: heat storage

100 °C/168 h

100 °C/168 h

100 °C/168 h

100 °C/168 h

Test sequence 3: noxious gas storage
(ISO 6988)0.2 dm³ SO₂ on 300 dm³/
40 °C/1 cycle0.2 dm³ SO₂ on 300 dm³/
40 °C/1 cycle0.2 dm³ SO₂ on 300 dm³/
40 °C/1 cycle0.2 dm³ SO₂ on 300 dm³/
40 °C/1 cycleRated impulse voltage at sea level
Voltage waveform \geq (1.2/50 μ s)

4.8 kV

4.8 kV

4.8 kV

4.8 kV

Power-frequency withstand voltage
Voltage waveform \geq (50/60 Hz)

2.21 kV

2.21 kV

2.21 kV

2.21 kV

Environmental and endurance tests (E)

Specification

IEC 61984:2008-10

IEC 61984:2008-10

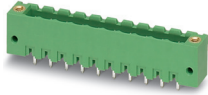
IEC 61984:2008-10

IEC 61984:2008-10

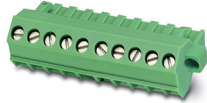
Degree of protection

Finger safety with IP20
test fingerFinger safety with IP20
test fingerFinger safety with IP20
test fingerFinger safety with IP20
test finger

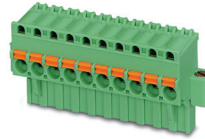
1777170 MSTBV 2,5/12-GF-5,08



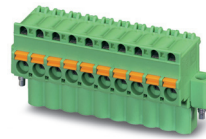
MSTBV 2,5/12-GF



SMSTB 2,5/12-STF



FKCVR 2,5/12-STF



FKCVW 2,5/12-STF



FRONT-MSTB 2,5/12-STF

IEC 61984	IEC 61984	IEC 61984	IEC 61984	IEC 61984
Mechanical tests (A)				
Insertion/withdrawal force per position	approx. 8 N / 6 N	approx. 8 N / 6 N	approx. 8 N / 6 N	approx. 8 N / 6 N
Polarization when inserted Requirement >20 N	Test passed	Test passed	Test passed	Test passed
Contact holder in insert Requirements >20 N	Test passed	Test passed	Test passed	Test passed
Durability tests (B)				
Contact resistance R ₁	3.4 mΩ	2.2 mΩ	2.2 mΩ	2.4 mΩ
Insertion/withdrawal cycles	25	25	25	25
Contact resistance R ₂	3.5 mΩ	2.3 mΩ	2.3 mΩ	2.6 mΩ
Rated impulse voltage at sea level Voltage waveform ≥ (1.2/50 μs)	4.8 kV	4.8 kV	4.8 kV	4.8 kV
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	2.21 kV	2.21 kV	2.21 kV	2.21 kV
Thermal tests (C)				
Tested number of positions	24	16	16	20
Tested conductor cross section	2.5 mm ²	2.5 mm ²	2.5 mm ²	2.5 mm ²
Test current	12 A	12 A	12 A	12 A
Upper limiting temperature Requirements < 100°C	Test passed	Test passed	Test passed	Test passed
Climatic tests (D)				
Test sequence 1: low temperature storage	-40 °C/2 h	-40 °C/2 h	-40 °C/2 h	-40 °C/2 h
Test sequence 2: heat storage	100 °C/168 h	105 °C/168 h	105 °C/168 h	100 °C/168 h
Test sequence 3: noxious gas storage (ISO 6988)	0.2 dm ³ SO ₂ on 300 dm ³ / 40 °C/1 cycle	0.2 dm ³ SO ₂ on 300 dm ³ / 40 °C/1 cycle	0.2 dm ³ SO ₂ on 300 dm ³ / 40 °C/1 cycle	0.2 dm ³ SO ₂ on 300 dm ³ / 40 °C/1 cycle
Rated impulse voltage at sea level Voltage waveform ≥ (1.2/50 μs)	4.8 kV	4.8 kV	4.8 kV	4.8 kV
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	2.21 kV	2.21 kV	2.21 kV	2.21 kV
Environmental and endurance tests (E)				
Specification	IEC 61984:2008-10	IEC 61984:2008-10	IEC 61984:2008-10	IEC 61984:2008-10
Degree of protection	Finger safety with IP20 test finger	Finger safety with IP20 test finger	Finger safety with IP20 test finger	Finger safety with IP20 test finger