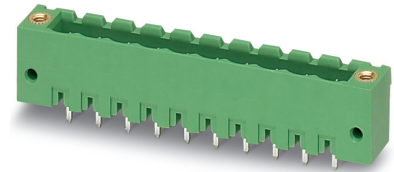


Data sheet

Order No.: 1777141

Type: MSTBV 2,5/ 9-GF-5,08

PCB headers



The figure shows a 10-position version of the product

1 Main features



- | | | | |
|-------------------------|---------------------|------------------------|---------------------|
| • No. of pos. | 9 | • 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/1777141

3 Table of contents

1	Main features.....	1
2	Your advantages	1
3	Table of contents	2
4	3D model in PDF can be activated (Acrobat Reader only).....	3
5	General Technical Data	4
	5.1 item properties	4
6	Mounting.....	5
	6.1 Flange fixing.....	5
7	Material properties.....	5
	7.1 Material of metal parts.....	5
8	Dimensions.....	6
	8.1 Dimensions for the product	6
9	Series drawing.....	7
10	Application.....	8
11	Packaging information	8
	11.1 Temperature limit values	8
12	Mechanical tests.....	9
	12.1 Visual examination	9
	12.2 Dimensional test.....	9
	12.3 Resistance of marking	9
	12.4 Polarization and coding	9
	12.5 Contact retention in insert	9
13	Insertion and withdrawal forces	10
14	Electrical tests	11
	14.1 Electrical data	11
	14.2 Air and creepage distances	11
15	Current carrying capacity/derating curves	12
	15.1 Insulation resistance.....	14
	15.2 Vibration test	14
16	Approvals / Certificates.....	15
17	Commercial Data.....	16
18	corresponding plugs	16
19	Accessories.....	16
20	Combination tests.....	18

1777141 MSTBV 2,5/ 9-GF-5,08

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



1777141 MSTBV 2,5/ 9-GF-5,08**5 General Technical Data****5.1 item properties**

Order No.	1777141
Type	MSTBV 2,5/ 9-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	9
Number of levels	1
Number of connections	9
Number of potentials	9
Mounting type	Wave soldering
Connection direction of the connector to the PCB	90 °
Pin layout	Linear pinning
Solder pins per potential	1
Type	Standard

1777141 MSTBV 2,5/ 9-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**

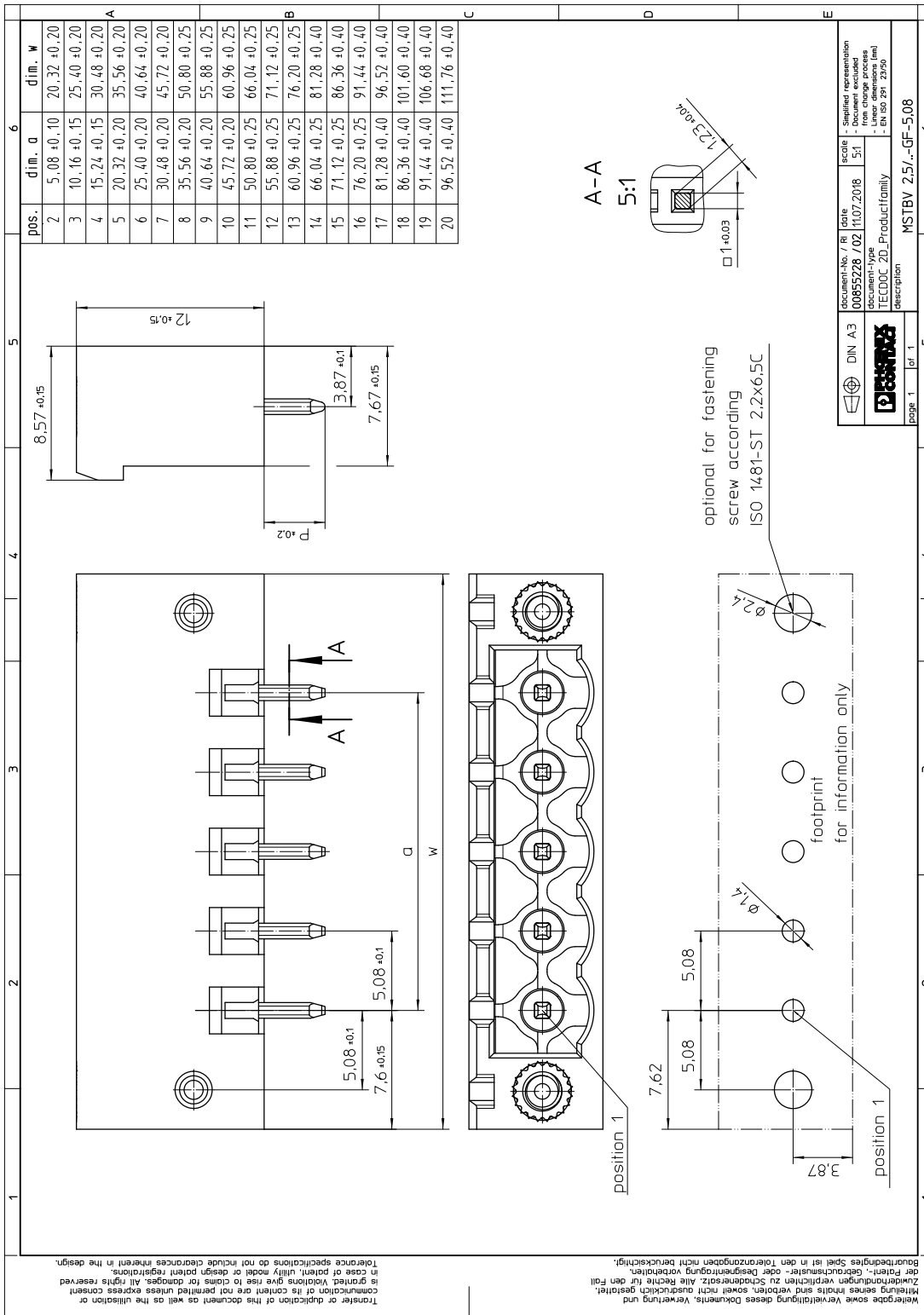
Note	WEEE/RoHS-compliant, whisker-free acc. to IEC 60068-2-82/JEDEC JESD 201
Contact material	Cu alloy
Surface contact area	Nickel (1.3 - 3 µm Ni) , Tin (3 - 5 µm Sn)
Soldering area surface	Nickel (1.3 - 3 µm Ni) , Tin (3 - 5 µm Sn)
Surface characteristics	Tin-plated
Insulating material data	Housing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

1777141 MSTBV 2,5/ 9-GF-5,08**8 Dimensions****8.1 Dimensions for the product**

Length	8.6 mm
Width	55.88 mm
Height (without solder pin)	12 mm
Total height	15.9 mm
Solder pin [P]	3.9 mm
Dimension a	40.64 mm

1777141 MSTBV 2,5/ 9-GF-5,08

9 Series drawing



1777141 MSTBV 2,5/ 9-GF-5,08

10 Application**11 Packaging information**

Type of packaging	packed in cardboard
Pieces per package	100

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)

1777141 MSTBV 2,5/ 9-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

1777141 MSTBV 2,5/ 9-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

1777141 MSTBV 2,5/ 9-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

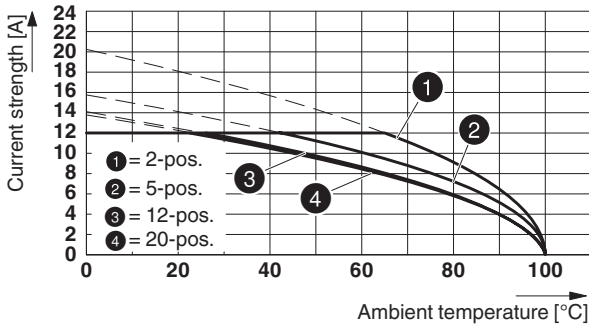
Component	PCB headers		
Specification	IEC 60664-1:2007-04		
Mains type	unearthed mains		
Insulating material group	IIIa		
Comparative tracking index (IEC 60112:2003-01)	CTI 225		
Rated insulation voltage	250 V	320 V	400 V
Rated surge voltage	4 kV	4 kV	4 kV
Degree of pollution	3	2	2
Overvoltage category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

1777141 MSTBV 2,5/ 9-GF-5,08

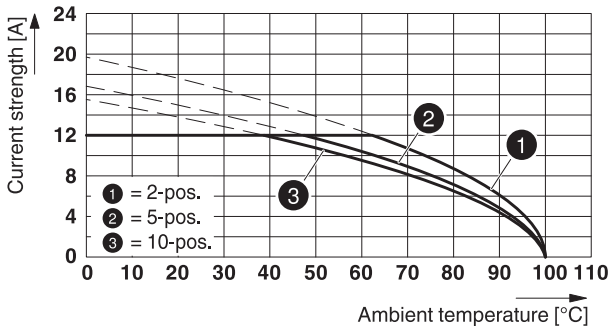
15 Current carrying capacity/derating curves

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

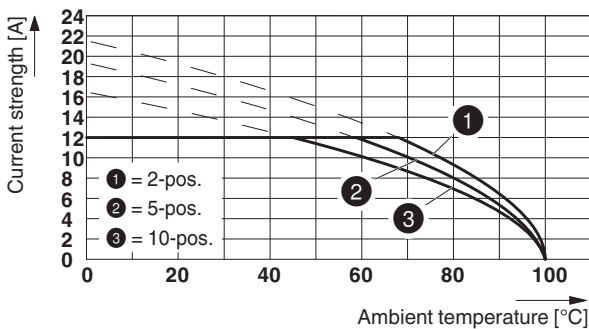
Type: MSTB 2,5/...-STF-5,08 with MSTBV 2,5/...-GF-5,08



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

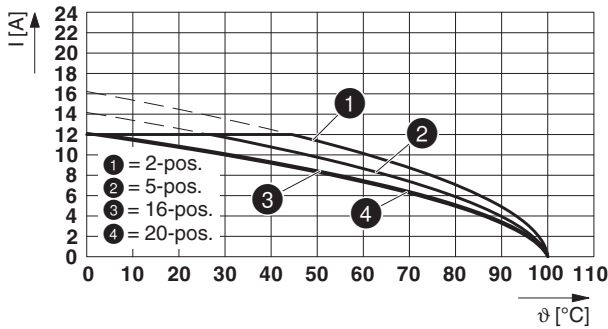


Type: TFKC 2,5/...-STF-5,08 with MSTBV 2,5/...-GF-5,08

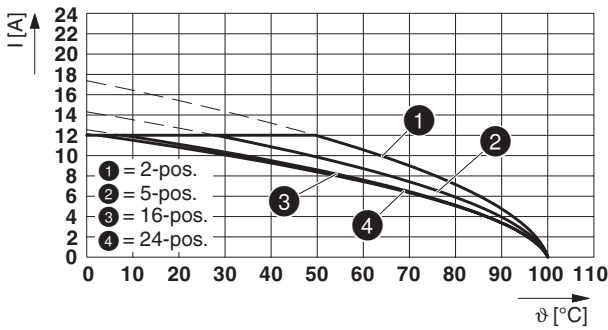


1777141 MSTBV 2,5/ 9-GF-5,08

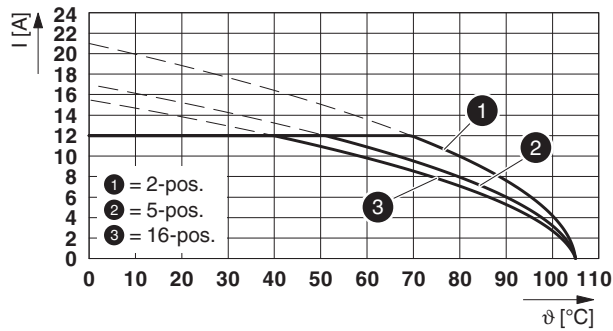
Type: MVSTB(R/W) 2,5/...-STF-5,08 with MSTBV 2,5/...-GF-5,08



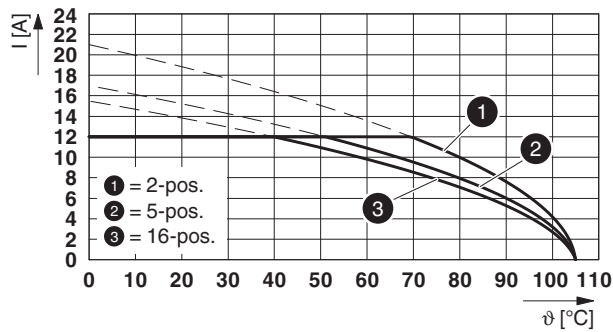
Type: SMSTB 2,5/...-STF-5,08 with MSTBV 2,5/...-GF-5,08

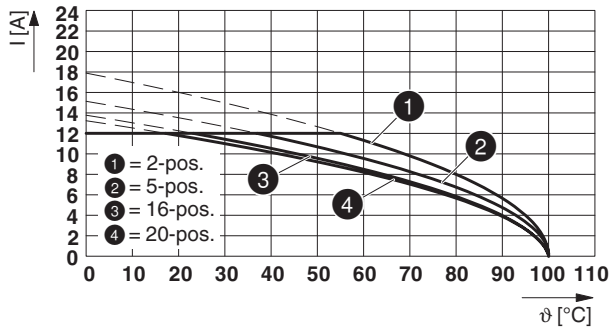


Type: FKCVR 2,5/...-STF-5,08 with MSTBV 2,5/...-GF-5,08



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



1777141 MSTBV 2,5/ 9-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.

1777141 MSTBV 2,5/ 9-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 				

1777141 MSTBV 2,5/ 9-GF-5,08**17 Commercial Data**

Order No.	1777141
Type	MSTBV 2,5/ 9-GF-5,08
Pieces per package	100
Net weight	4.421 g
GTIN	4017918039318
	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
1719163	TVMSTB 2,5/ 9-STF-5,08
1754869	FKCN 2,5/ 9-STF-5,08
1777866	FRONT-MSTB 2,5/ 9-STF-5,08
1778056	MSTB 2,5/ 9-STF-5,08
1805369	MSTBT 2,5/ 9-STF-5,08
1809802	MSTBC 2,5/ 9-STZF-5,08
1834974	MVSTBW 2,5/ 9-STF-5,08
1835164	MVSTBR 2,5/ 9-STF-5,08
1853175	TMSTBP 2,5/ 9-STF-5,08
1873278	FKC 2,5/ 9-STF-5,08
1873870	FKCVW 2,5/ 9-STF-5,08
1874170	FKCVR 2,5/ 9-STF-5,08
1883420	QC 1/ 9-STF-5,08
1902372	FKCT 2,5/ 9-STF-5,08
1962765	TFKC 2,5/ 9-STF-5,08
1971138	SMSTB 2,5/ 9-STF-5,08
1975338	FKCS 2,5/ 9-STF-5,08

19 Accessories

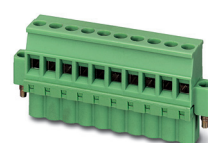
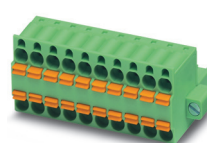
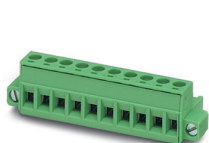
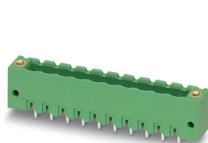
Description	Order No.	Type
Coding section, inserted into the recess in the header or the inverted plug, red insulating material	1734401	CR-MSTB
	0804293	SK 5,08/3,8:FORTL.ZAHLEN
Keying cap, for forming sections, plugs onto header pin, green insulating material	1755477	MSTB-BL
	0805412	SK 5,08/3,8:UNBEDRUCKT
	0805085	SK 5,08/3,8:SO
Marker pen, for manual labeling of unprinted Zack strips, smear-proof and waterproof, line thickness 0.5 mm	1051993	B-STIFT
	1719163	TVMSTB 2,5/ 9-STF-5,08
	1754869	FKCN 2,5/ 9-STF-5,08
	1777866	FRONT-MSTB 2,5/ 9-STF-5,08
	1778056	MSTB 2,5/ 9-STF-5,08
	1805369	MSTBT 2,5/ 9-STF-5,08
	1809802	MSTBC 2,5/ 9-STZF-5,08
	1834974	MVSTBW 2,5/ 9-STF-5,08
	1835164	MVSTBR 2,5/ 9-STF-5,08

1777141 MSTBV 2,5/ 9-GF-5,08

Description	Order No.	Type
	1853175	TMSTBP 2,5/ 9-STF-5,08
	1873278	FKC 2,5/ 9-STF-5,08
	1873870	FKCVW 2,5/ 9-STF-5,08
	1874170	FKCVR 2,5/ 9-STF-5,08
	1883420	QC 1/ 9-STF-5,08
	1902372	FKCT 2,5/ 9-STF-5,08
	1962765	TFKC 2,5/ 9-STF-5,08
	1971138	SMSTB 2,5/ 9-STF-5,08
	1975338	FKCS 2,5/ 9-STF-5,08

1777141 MSTBV 2,5/ 9-GF-5,08

20 Combination tests

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

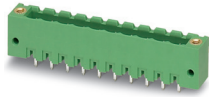
IEC 61984:2008-10

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

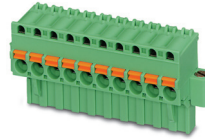
1777141 MSTBV 2,5/ 9-GF-5,08



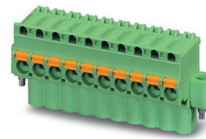
MSTBV 2,5/..-GF



SMSTB 2,5/..-STF



FKCVR 2,5/..-STF



FKCVW 2,5/..-STF

FRONT-MSTB 2,5/
..-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