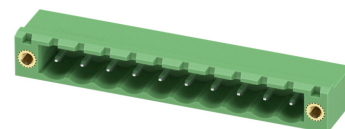


Item No.: 1776582

Type: MSTB 2,5/10-GF-5,08

PCB headers



1 Main features



- | | | | |
|-------------------------|---------------------|------------------------|---------------------|
| • No. of pos. | 10 | • Nominal current | 12 A |
| • Nominal cross section | 2.5 mm ² | • Nominal voltage | 320 V |
| • Color | green (RAL 6021) | • Connection direction | 0 ° |
| • 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
- ✓ Easy PCB replacement thanks to plug-in modules
- ✓ Well-known mounting principle allows worldwide use
- ✓ Plug-in direction parallel to the PCB
- ✓ Screwable flange for superior mechanical stability



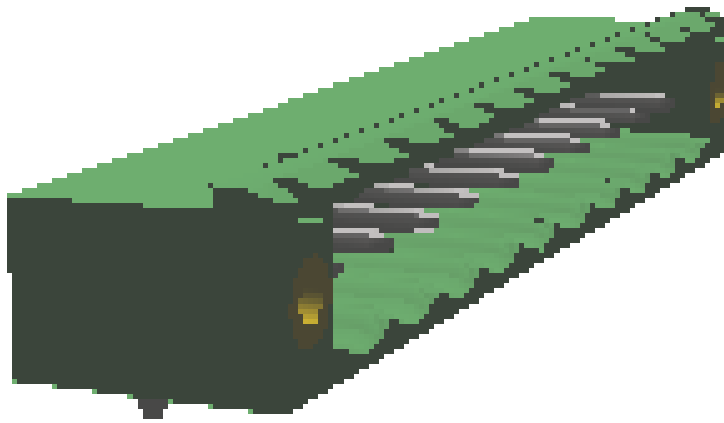
Make sure you always use the latest documentation.
It can be downloaded at: phoenixcontact.com/product/1776582

3 Table of contents

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1776582 MSTB 2,5/10-GF-5,08

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



1776582 MSTB 2,5/10-GF-5,08**5 General Technical Data****5.1 item properties**

Item no.	1776582
Type	MSTB 2,5/10-GF-5,08
Product line	COMBICON Connectors M
Connector system	COMBICON MSTB 2,5
Product type	PCB headers
Contact connection type	Pin
Range of articles	MSTB 2,5/..-GF
Pitch	5.08 mm
Number of positions	10
Number of rows	1
Number of connections	10
Number of potentials	10
Connection direction of the connector to the PCB	0 °
Pin layout	Linear pinning
Solder pins per potential	1
Type	Standard

1776582 MSTB 2,5/10-GF-5,08**6 Mounting****6.1 Flange mounting**

Type of locking	Screw locking mechanism
Mounting flange	Threaded flange
Tightening torque	0.3 Nm

6.2 Mounting the PCB

Screw	Sheet metal screw ISO 1481-ST 2,2x6,5 C or ISO 7049-ST 2,2x6,5 C
Tightening torque	0.3 Nm

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

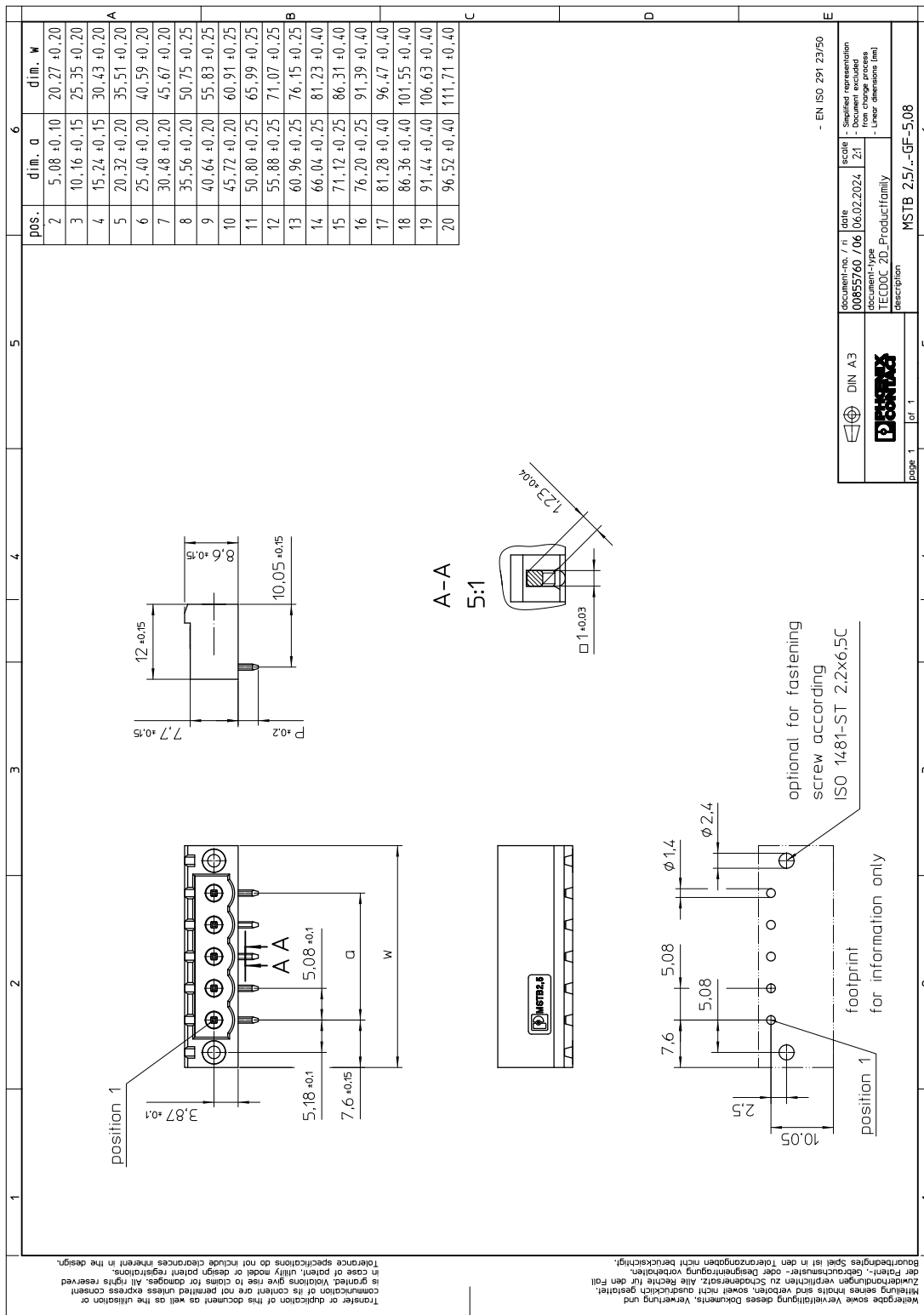
Note	WEEE/RoHS-compliant, whisker-free acc. to IEC 60068-2-82/JEDEC JESD 201
Contact material	Cu alloy
Surface contact area	Nickel (1.3 - 3 µm Ni) , Tin (3 - 5 µm Sn)
Soldering area surface	Nickel (1.3 - 3 µm Ni) , Tin (3 - 5 µm Sn)
Surface characteristics	Tin-plated
Insulating material data	Housing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

1776582 MSTB 2,5/10-GF-5,08**8 Dimensions****8.1 Dimensions for the product**

Length	12 mm
Width	60.96 mm
Height (without solder pin)	8.57 mm
Total height	11.8 mm
Solder pin [P]	3.23 mm

1776582 MSTB 2,5/10-GF-5,08

9 Series drawing



1776582 MSTB 2,5/10-GF-5,08**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 specifications**

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

Packing unit	100
--------------	-----

12.1 Temperature limit values

Ambient temperature (storage/transport)	-40 °C ... 70 °C
---	------------------

Relative humidity (storage/transport)	30 % ... 70 %
---------------------------------------	---------------

Ambient temperature (assembly)	-5 °C ... 100 °C
--------------------------------	------------------

Ambient temperature (operation)	-40 °C ... 105 °C (dependent on the derating curve)
---------------------------------	---

1776582 MSTB 2,5/10-GF-5,08**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

1776582 MSTB 2,5/10-GF-5,08**14 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

1776582 MSTB 2,5/10-GF-5,08**15 Electrical tests**

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	1 mΩ
Degree of pollution	2

1776582 MSTB 2,5/10-GF-5,08**16 Air and creepage distances**

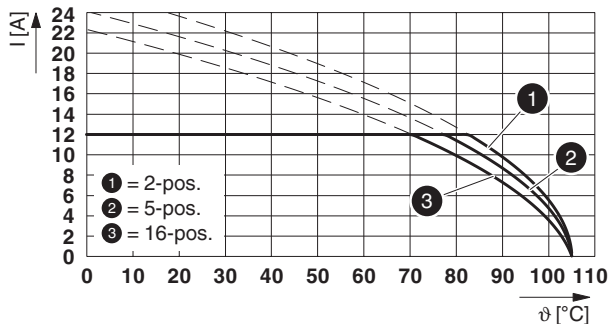
Component	PCB headers		
Specification	IEC 60664-1:2007-04		
Mains type	unearthed mains		
Insulating material group	IIIa		
Comparative tracking index (IEC 60112)	CTI 225		
Rated insulation voltage	250 V	320 V	400 V
Rated surge voltage	4 kV	4 kV	4 kV
Degree of pollution	3	2	2
Overvoltage category	III	III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

1776582 MSTB 2,5/10-GF-5,08

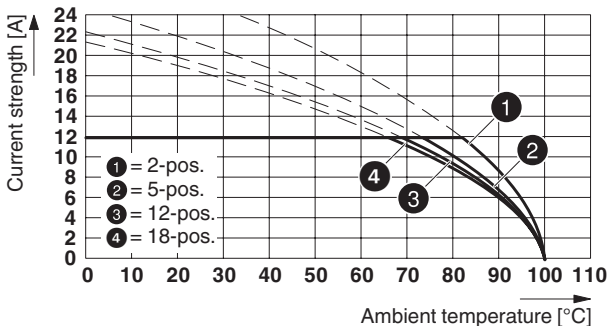
17 Current carrying capacity/derating curves

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

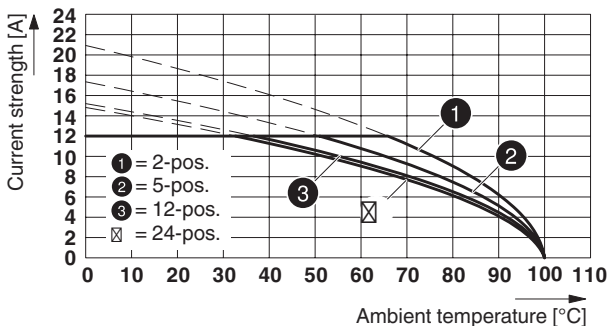
Type: FKCS 2,5/...-STF-5,08 with MSTB 2,5/...-GF-5,08



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

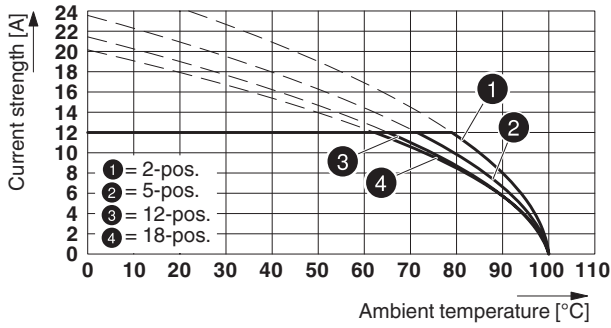


Type: MVSTBR 2,5/...-STF-5,08 with MSTB 2,5/...-GF-5,08

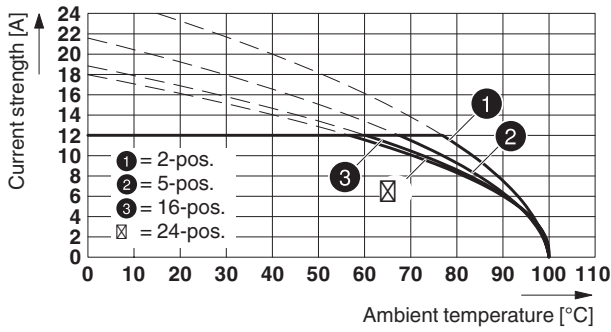


1776582 MSTB 2,5/10-GF-5,08

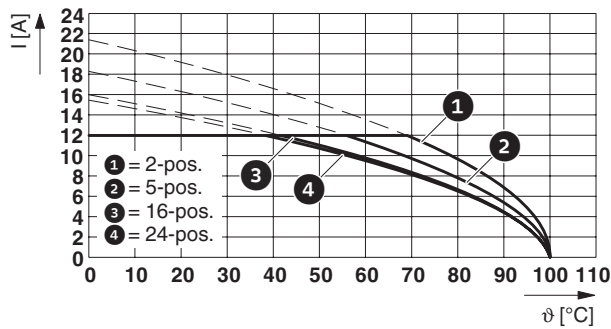
Type: MSTBT 2,5/...-STF-5,08 with MSTB 2,5/...-GF-5,08



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

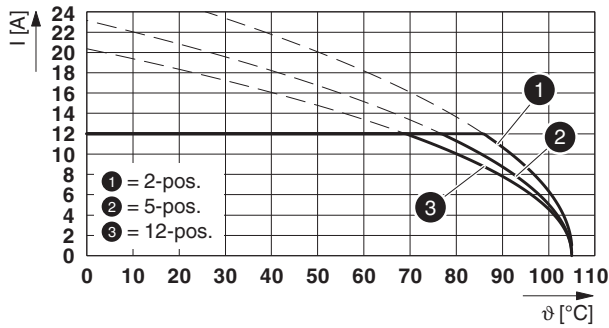


Type: SMSTB 2,5/...-STF-5,08 with MSTB 2,5/...-GF-5,08

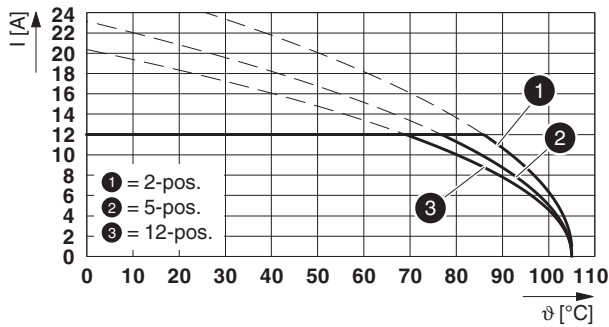


1776582 MSTB 2,5/10-GF-5,08

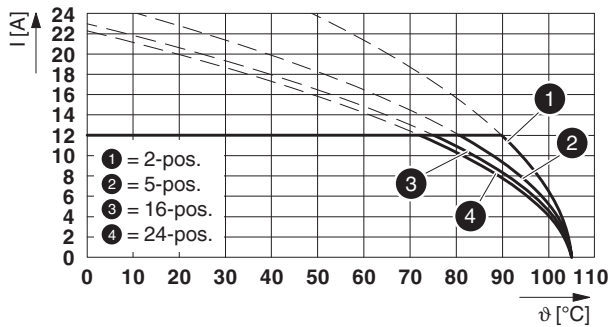
Type: FKCVR 2,5/...-STF-5,08 with MSTB 2,5/...-GF-5,08



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

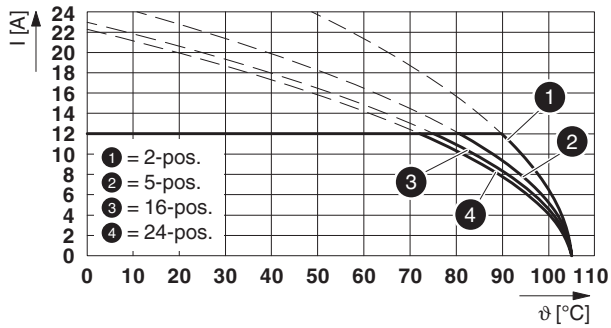


Type: FKCO(R/W) 2,5/...-STF-5,08 with MSTB 2,5/...-GF-5,08

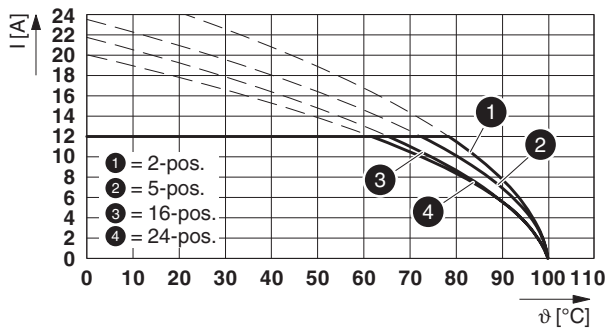


1776582 MSTB 2,5/10-GF-5,08

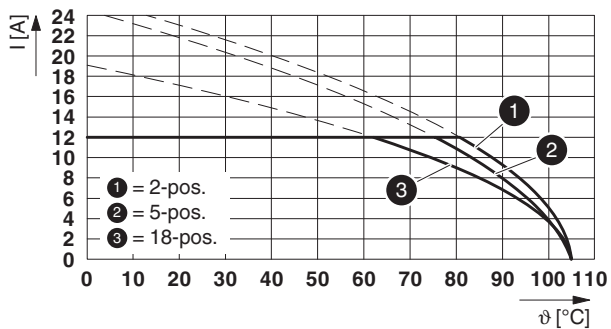
Type: FKCO(R/W) 2,5/...-STF-5,08 with MSTB 2,5/...-GF-5,08



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



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



1776582 MSTB 2,5/10-GF-5,08**18 Environmental and durability tests****18.1 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 Hz ... 60.1 Hz)
Acceleration	5g (60.1 Hz ... 150 Hz)
Test duration per axis	2.5 h
Test directions	X-, Y- and Z-axis
Note	

18.2 Insulation resistance





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

1776582 MSTB 2,5/10-GF-5,08

19 Data transmission

1776582 MSTB 2,5/10-GF-5,08

20 Approvals / Certificates

CSA 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm ²]
Usegroup B				
	300 V	10 A	-	-
Usegroup D				
	300 V	10 A	-	-
cULus Recognized 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm ²]
Usegroup B				
	300 V	15 A	-	-
Usegroup D				
	300 V	10 A	-	-
DNV GL 				
VDE Zeichengenehmigung 	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm ²]
	250 V	12 A	-	-

1776582 MSTB 2,5/10-GF-5,08**21 Commercial Data**

Item no.	1776582
Type	MSTB 2,5/10-GF-5,08
Packing unit	100
Net weight	5.255 g
GTIN	4017918038755
	Information that applies locally, see link on page 1

22 corresponding plugs

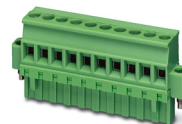
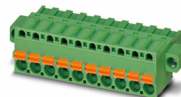
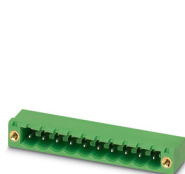
Item no.	Type
1719176	TVMSTB 2,5/10-STF-5,08
1754872	FKCN 2,5/10-STF-5,08
1777879	FRONT-MSTB 2,5/10-STF-5,08
1778069	MSTB 2,5/10-STF-5,08
1805372	MSTBT 2,5/10-STF-5,08
1809815	MSTBC 2,5/10-STZF-5,08
1834987	MVSTBW 2,5/10-STF-5,08
1835177	MVSTBR 2,5/10-STF-5,08
1853188	TMSTBP 2,5/10-STF-5,08
1873281	FKC 2,5/10-STF-5,08
1873883	FKCVW 2,5/10-STF-5,08
1874183	FKCVR 2,5/10-STF-5,08
1883433	QC 1/10-STF-5,08
1902385	FKCT 2,5/10-STF-5,08
1962778	TFKC 2,5/10-STF-5,08
1971141	SMSTB 2,5/10-STF-5,08
1975341	FKCS 2,5/10-STF-5,08

23 Accessories

Description	Item No.	Type
Keying cap, for forming sections, plugs onto header pin, green insulating material	1755477	MSTB-BL
Coding profile, is inserted into the slot on the plug or inverted header, red insulating material	1734634	CP-MSTB
	0804183	SK 5/3,8:FORTL.ZAHLEN

1776582 MSTB 2,5/10-GF-5,08

24 Combination tests

**MSTB 2,5/10-GF****FKCS 2,5/10-STF****FKCT 2,5/10-STF****MVSTBR 2,5/10-STF****MSTBT 2,5/10-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 R₁ 1st level

1 mΩ

1.2 mΩ

2.4 mΩ

1.2 mΩ

Contact resistance R₁ 2nd level

Insertion/withdrawal cycles

25

25

25

25

Contact resistance R₂

1 mΩ

1.2 mΩ

2.4 mΩ

1.2 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

Insulation resistance
Requirements > 5 MΩ

> 5 MΩ

> 5 MΩ

> 5 MΩ

> 5 MΩ

Thermal tests (C)

Tested number of positions

16

18

24

18

Tested conductor cross section

2.5 mm²2.5 mm²2.5 mm²2.5 mm²

Test current

12 A

12 A

12 A DC

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

105 °C/168 h

100 °C/168 h

100 °C/168 h

100 °C/168 h

Test sequence 3: noxious gas storage

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 ≥ (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

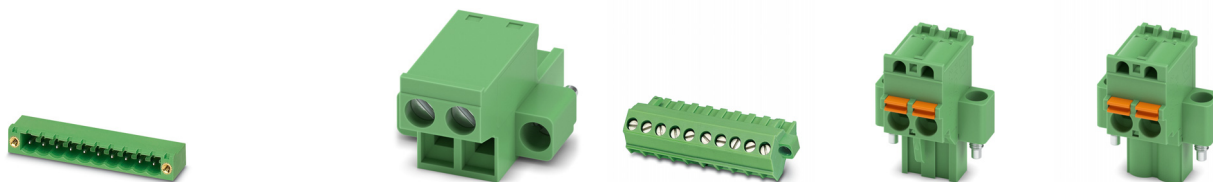
IEC 61984:2008-10

IEC 61984:2008-10

Degree of protection

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

1776582 MSTB 2,5/10-GF-5,08

**MSTB 2,5/10-GF****FRONT-MSTB 2,5/10-STF****SMSTB 2,5/10-STF****FKCVR 2,5/10-STF****FKCVW 2,5/10-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. 14 N / 11 N

approx. 14 N / 11 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 R₁ 1st level

1.4 mΩ

2.3 mΩ

1.2 mΩ

1.2 mΩ

Contact resistance R₁ 2nd level

Insertion/withdrawal cycles

25

25

25

25

Contact resistance R₂

1.4 mΩ

2.3 mΩ

1.2 mΩ

1.2 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

Insulation resistance
Requirements > 5 MΩ

> 5 MΩ

> 5 MΩ

> 5 MΩ

> 5 MΩ

Thermal tests (C)

Tested number of positions

24

24

16

16

Tested conductor cross section

2.5 mm²2.5 mm²2.5 mm²2.5 mm²

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

100 °C/168 h

105 °C/168 h

105 °C/168 h

Test sequence 3: noxious gas storage

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 ≥ (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

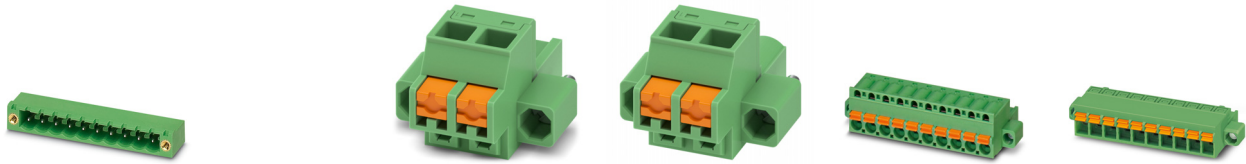
IEC 61984:2008-10

IEC 61984:2008-10

Degree of protection

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

1776582 MSTB 2,5/10-GF-5,08

**MSTB 2,5/10-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 R₁ 1st levelContact resistance R₁ 2nd level

Insertion/withdrawal cycles

Contact resistance R₂Rated impulse voltage at sea level
Voltage waveform ≥ (1.2/50 μs)Power-frequency withstand voltage
Voltage waveform ≥ (50/60 Hz)Insulation resistance
Requirements > 5 MΩ**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

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

FKCOR 2,5/10-STF

IEC 61984

approx. 10 N / 11 N

Test passed

Test passed

1.1 mΩ

25

1.1 mΩ

4.8 kV

2.21 kV

> 5 MΩ

24

2.5 mm²

12 A

Test passed

-40 °C/2 h

105 °C/168 h

0.2 dm³ SO₂ on 300 dm³/
40 °C/1 cycle

4.8 kV

2.21 kV

IEC 61984:2008-10

Finger safety with IP20
test finger**FKCOW 2,5/10-STF**

IEC 61984

approx. 10 N / 11 N

Test passed

Test passed

1.1 mΩ

25

1.1 mΩ

4.8 kV

2.21 kV

> 5 MΩ

24

2.5 mm²

12 A

Test passed

-40 °C/2 h

105 °C/168 h

0.2 dm³ SO₂ on 300 dm³/
40 °C/1 cycle

4.8 kV

2.21 kV

IEC 61984:2008-10

Finger safety with IP20
test finger**FKC 2,5/10-STF**

IEC 61984

approx. 8 N / 6 N

Test passed

Test passed

1 mΩ

25

1 mΩ

4.8 kV

2.21 kV

> 5 MΩ

24

2.5 mm²

12 A

Test passed

-40 °C/2 h

105 °C/168 h

0.2 dm³ SO₂ on 300 dm³/
40 °C/1 cycle

4.8 kV

2.21 kV

IEC 61984:2008-10

Finger safety with IP20
test finger**FKCN 2,5/10-STF**

IEC 61984

approx. 8 N / 6 N

Test passed

Test passed

1.1 mΩ

25

1.1 mΩ

4.8 kV

2.21 kV

> 5 MΩ

18

2.5 mm²

12 A

Test passed

-40 °C/2 h

105 °C/168 h

0.2 dm³ SO₂ on 300 dm³/
40 °C/1 cycle

4.8 kV

2.21 kV

IEC 61984:2008-10

Finger safety with IP20
test finger