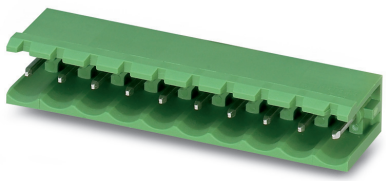
2021-05-19
Product version 04
Document revision 01

Data sheet

Order No.: 1754436

Type: MSTB 2,5/ 2-G

PCB header



The figure shows a 10-position version of the product

1 Main features

- No. of pos. 2
- Nominal cross section 2.5 mm²
- Color green (6021)
- Pitch 5 mm
- Mounting type Wave soldering
- Nominal current 12 A
- Nominal voltage 320 V
- Connection direction 0 °
- Type of packaging packed in cardboard

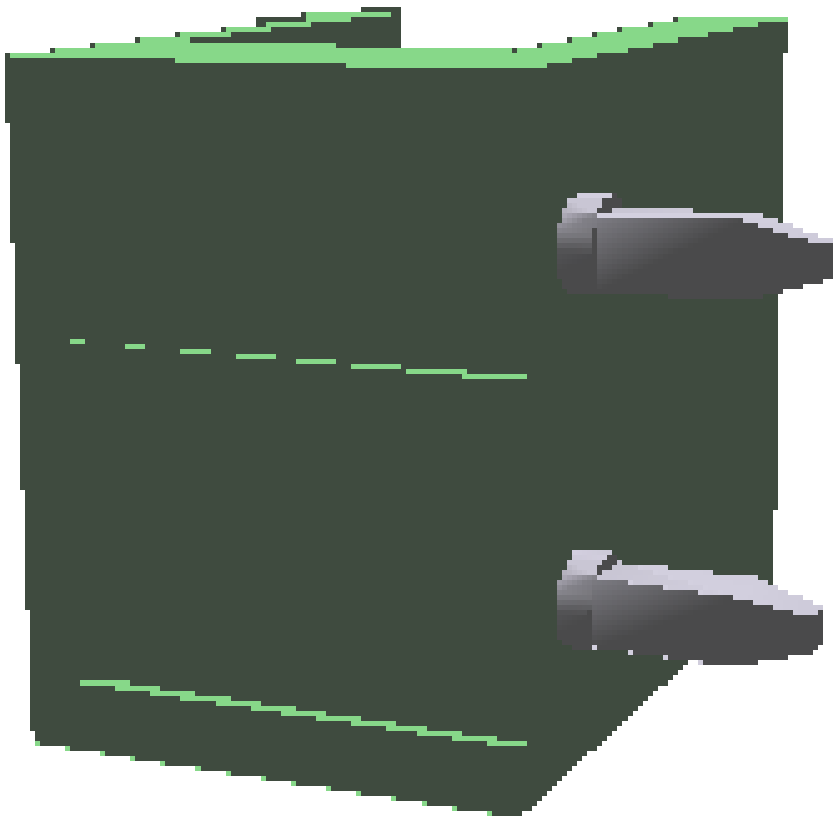
2 Your advantages

- 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
- Items that can be aligned in various pitches support flexible and space-saving PCB assembly

Make sure you always use the latest documentation.
It can be downloaded at: phoenixcontact.net/product/1754436

3 Table of contents

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



5 General Technical Data

5.1 item properties

Order No.	1754436
Type	MSTB 2,5/ 2-G
Connector system	CLASSIC COMBICON
Product type	PCB header
Type of contact	Male connector
Range of articles	MSTB 2,5/..-G
Pitch	5 mm
Number of positions	2
Number of levels	1
Number of connections	2
Number of potentials	2
Mounting type	Wave soldering
Connection direction of the connector to the PCB	0 °
Pin layout	Linear pinning
Solder pins per potential	1
Type	Standard

6 Mounting

6.1 Flange mounting

Type of locking	without
Mounting flange	without

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

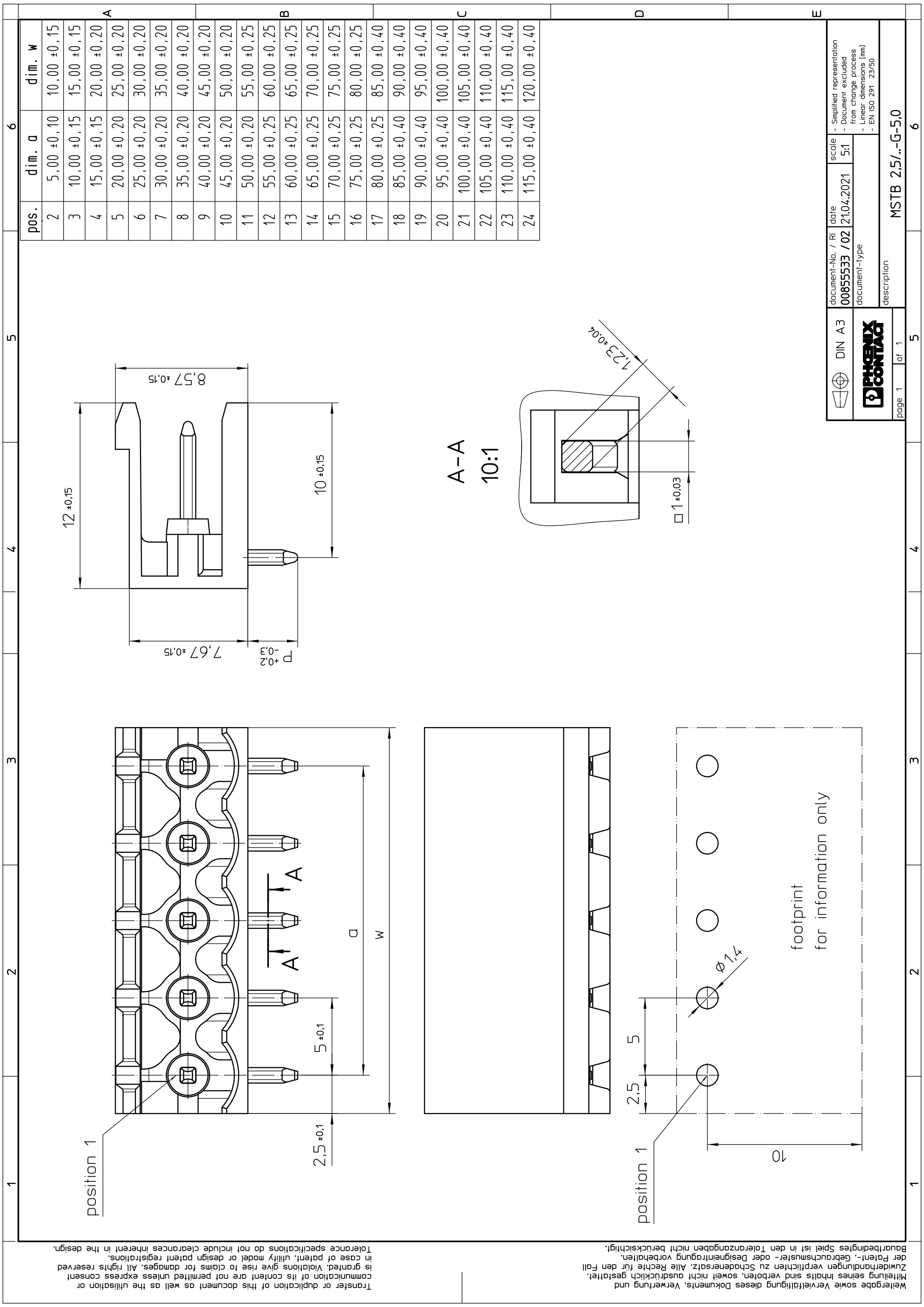
Insulating material data	Housing
Color	green (6021)
Insulating material	PA
Insulating material group	I
CTI according to IEC 60112	600
Flammability rating according to UL 94	V0
Glow wire flammability index GWFI according to EN 60695-2-12	850
Glow wire ignition temperature GWIT according to EN 60695-2-13	775
Temperature for the ball pressure test according to EN 60695-10-2	125 °C

8 Dimensions

8.1 Dimensions for the product

Length	12 mm
Width	10 mm
Height (without solder pin)	8.6 mm
Total height	12.1 mm
Solder pin [P]	3.5 mm

9 Series drawing



pos.	dim. a	dim. w
2	5,00 ±0,10	10,00 ±0,15
3	10,00 ±0,15	15,00 ±0,15
4	15,00 ±0,15	20,00 ±0,20
5	20,00 ±0,20	25,00 ±0,20
6	25,00 ±0,20	30,00 ±0,20
7	30,00 ±0,20	35,00 ±0,20
8	35,00 ±0,20	40,00 ±0,20
9	40,00 ±0,20	45,00 ±0,20
10	45,00 ±0,20	50,00 ±0,20
11	50,00 ±0,20	55,00 ±0,25
12	55,00 ±0,25	60,00 ±0,25
13	60,00 ±0,25	65,00 ±0,25
14	65,00 ±0,25	70,00 ±0,25
15	70,00 ±0,25	75,00 ±0,25
16	75,00 ±0,25	80,00 ±0,25
17	80,00 ±0,25	85,00 ±0,40
18	85,00 ±0,40	90,00 ±0,40
19	90,00 ±0,40	95,00 ±0,40
20	95,00 ±0,40	100,00 ±0,40
21	100,00 ±0,40	105,00 ±0,40
22	105,00 ±0,40	110,00 ±0,40
23	110,00 ±0,40	115,00 ±0,40
24	115,00 ±0,40	120,00 ±0,40

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)

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

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

15 Electrical tests

Rated current / conductor cross section	12 A / 2.5 mm²
Rated insulation voltage (III/2)	320 V
Rated surge voltage (III/2)	4 kV
Contact resistance	1.7 mΩ
Degree of pollution	2

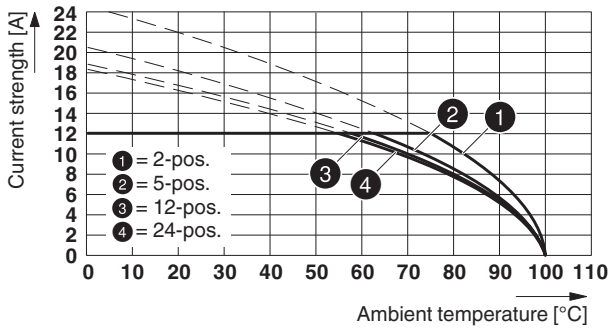
15.1 Air and creepage distances

Component	PCB header		
Specification	IEC 60664-1:2007-04		
Mains type	unearthed mains		
Insulating material group	I		
Comparative tracking index (IEC 60112:2003-01)	CTI 600		
Rated insulation voltage	320 V	320 V	630 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 mm	3.2 mm

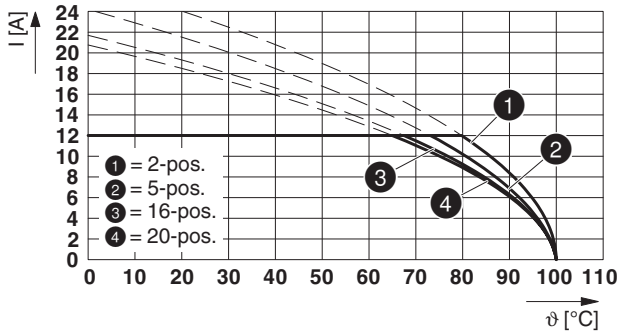
16 Current carrying capacity/derating curves

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 mm²

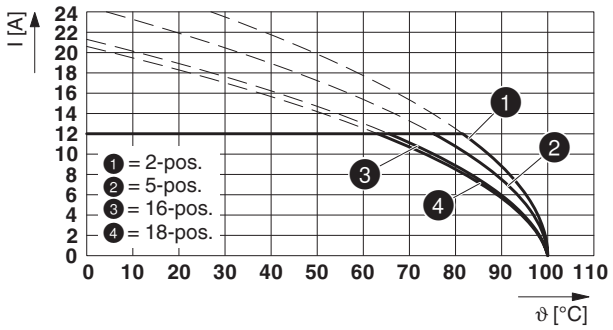
Type: FRONT-MSTB 2,5/..-ST with MSTB 2,5/...-G



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

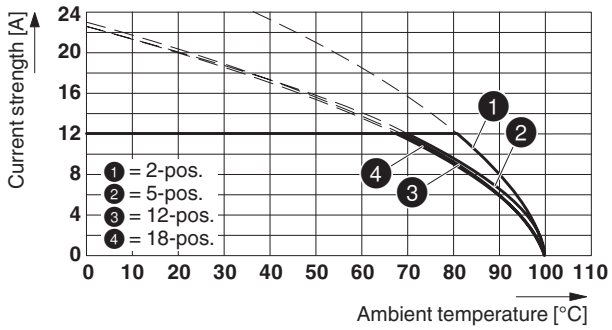


Type: FKCV(W/R) 2,5/...-ST with MSTB 2,5/...-G

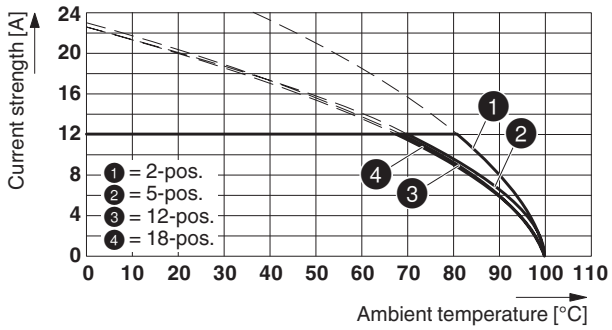


1754436 MSTB 2,5/ 2-G

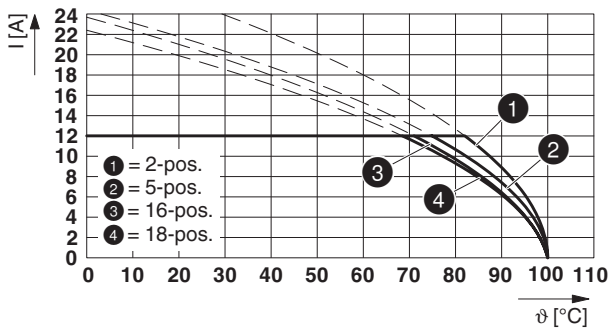
Type: MSTBTP 2,5/...-ST with MSTB 2,5/...-G



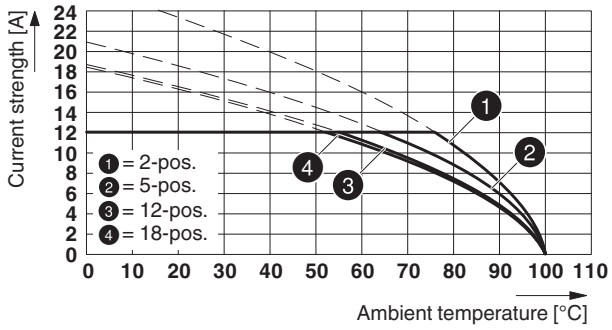
Type: MSTBTP 2,5/...-ST-RDB with MSTB 2,5/...-G



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

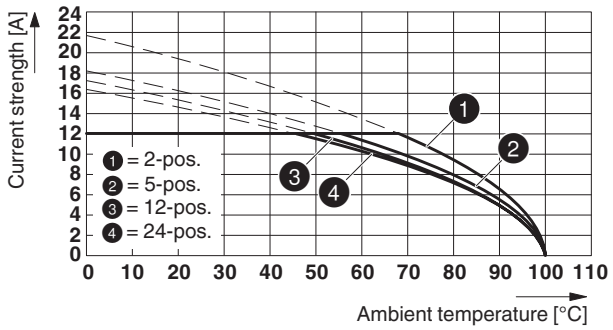


Type: FKCS 2,5/...-ST with MSTB 2,5/...-G

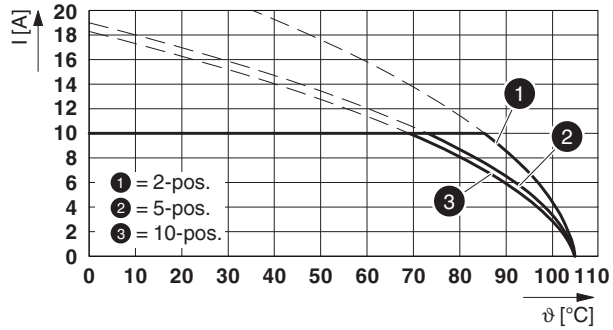


1754436 MSTB 2,5/ 2-G

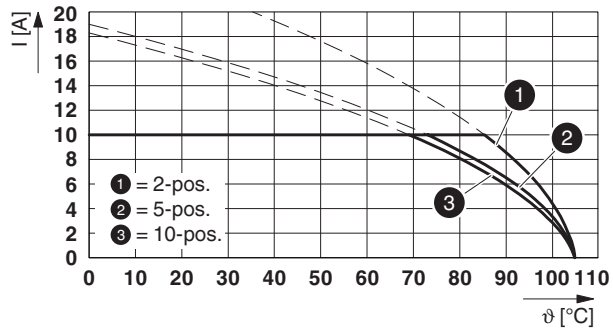
Type: SMSTB 2,5/...-ST with MSTB 2,5/...-G



Type: TVFKC 1,5/...-ST with MSTB 2,5/...-G



Type: TVFKC 1,5/...-ST RDB ... with MSTB 2,5/...-G



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

18 Approvals / Certificates

CSA	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
Usegroup B				
	300 V	10 A	-	-
Usegroup D				
	300 V	10 A	-	-

IECEE CB Scheme	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
	250 V	12 A	-	-

EAC				

VDE Zeichengenehmigung	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
	250 V	12 A	-	-

cULus Recognized	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
Usegroup B				
	300 V	15 A	-	-
Usegroup D				
	300 V	10 A	-	-

VDE Zeichengenehmigung	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
	250 V	12 A	-	-

19 Commercial Data

Order No.	1754436
Type	MSTB 2,5/ 2-G
Pieces per package	250
Net weight	0.61 g
GTIN	4017918028602
	Information that applies locally, see link on page 1
	Information that applies locally, see link on page 1

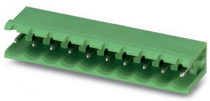
20 corresponding plugs

Order No.	Type
1713839	TVFKC 1,5/ 2-ST
1715921	TVFKCL 1,5/ 2-ST
1717961	QC 1,5/ 2-ST
1732742	FKCN 2,5/ 2-ST
1754449	MSTB 2,5/ 2-ST
1765771	MSTBP 2,5/ 2-ST
1768765	SMSTB 2,5/ 2-ST
1779411	FRONT-MSTB 2,5/ 2-ST
1779835	MSTBT 2,5/ 2-ST
1792016	MVSTBR 2,5/ 2-ST
1792524	MVSTBW 2,5/ 2-ST
1909210	FKCT 2,5/ 2-ST
1909715	FKCVR 2,5/ 2-ST
1910034	FKCVW 2,5/ 2-ST
1910351	FKC 2,5/ 2-ST
1921670	QC 1/ 2-ST-BUS
1974737	FKCS 2,5/ 2-ST

21 Accessories

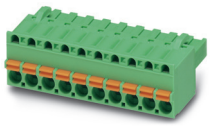
Description	Order No.	Type
Coding section, inserted into the recess in the header or the inverted plug, red insulating material	1734401	CR-MSTB
Mounting flange, for fixing both ends of the header onto the PCB, green insulating material, with M 2 x 14 screws and nuts.	1759981	MSTB-BF
Keying cap, for forming sections, plugs onto header pin, green insulating material	1755477	MSTB-BL
	0804183	SK 5/3,8:FORTL.ZAHLEN

22 Combination tests

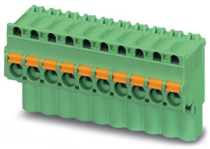


MSTB 2,5/..-G

FRONT-MSTB 2,5/ ..-ST



FKCT 2,5/..-ST

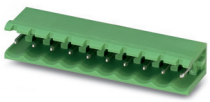


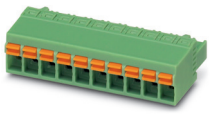
FKCVW 2,5/..-ST

MSTBTP 2,5/..-ST

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. 9 N / 9 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 1st level	1.7 mΩ	1.1 mΩ	1 mΩ	1.2 mΩ
Contact resistance R_1 2nd level				
Insertion/withdrawal cycles	25	25	25	25
Contact resistance R_2	1.8 mΩ	1.2 mΩ	1.2 mΩ	1.3 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	20	18	18
Tested conductor cross section	2.5 mm²	2.5 mm²	2.5 mm²	2.5 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	100 °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

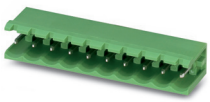
1754436 MSTB 2,5/ 2-G

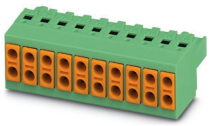


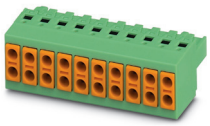


MSTB 2,5/..-G	MSTBTP 2,5/..-ST	FKCN 2,5/..-ST	FKCS 2,5/..-ST	SMSTB 2,5/..-ST
IEC 61984	IEC 61984	IEC 61984	IEC 61984	IEC 61984
Mechanical tests (A)				
Insertion/withdrawal force per position	approx. 13 N / 16 N	approx. 8 N / 6 N	approx. 8 N / 6 N	approx. 8 N / 6 N
Polarization when inserted Requirement >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 1st level	1.2 mΩ	1.1 mΩ	1 mΩ	2.3 mΩ
Contact resistance R_1 2nd level				
Insertion/withdrawal cycles	25	25	25	25
Contact resistance R_2	1.3 mΩ	1.1 mΩ	1.1 mΩ	2.3 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	18	18	18	24
Tested conductor cross section	2.5 mm²	2.5 mm²	2.5 mm²	2.5 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	100 °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

1754436 MSTB 2,5/ 2-G







MSTB 2,5/..-G	TVFKC 1,5/..-ST	TVFKC 1,5/..-ST		
IEC 61984	IEC 61984	IEC 61984		
Mechanical tests (A)				
Insertion/withdrawal force per position	approx. 10 N / 8 N	approx. 12 N / 10 N		
Polarization when inserted Requirement >20 N	Test passed	Test passed		
Contact holder in insert Requirements >20 N	Test passed	Test passed		
Durability tests (B)				
Contact resistance R_1 1st level	1.3 mΩ	1.3 mΩ		
Contact resistance R_1 2nd level				
Insertion/withdrawal cycles	25	25		
Contact resistance R_2	1.4 mΩ	1.4 mΩ		
Rated impulse voltage at sea level Voltage waveform ≥ (1.2/50 µs)	4.8 kV	4.8 kV		
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	2.21 kV	2.21 kV		
Thermal tests (C)				
Tested number of positions	10	10		
Tested conductor cross section	1.5 mm²	1.5 mm²		
Test current	10 A	10 A		
Upper limiting temperature Requirements < 100°C	Test passed	Test passed		
Climatic tests (D)				
Test sequence 1: low temperature storage	-40 °C/2 h	-40 °C/2 h		
Test sequence 2: heat storage	105 °C/168 h	105 °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		
Rated impulse voltage at sea level Voltage waveform ≥ (1.2/50 µs)	4.8 kV	4.8 kV		
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	2.21 kV	2.21 kV		
Environmental and endurance tests (E)				
Specification	IEC 61984:2008-10	IEC 61984:2008-10		
Degree of protection	Finger safety with IP20 test finger	Finger safety with IP20 test finger		