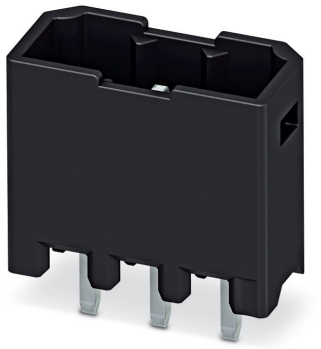
2020-07-15
Product version 02
Document revision 00

Data sheet

Order No.: 1778573

Type: PTSM 0,5/ 4-HV-2,5-THR R32

PCB headers, Reflow/wave soldering



The figure shows the 3-pos. version

1 Main features

- No. of pos. 4
- Nominal cross section 0.5 mm²
- Color black (9005)
- Pitch 2.5 mm
- Mounting type THR soldering
- Nominal current 6 A
- Nominal voltage 160 V
- Connection direction 90 °
- Type of packaging 32 mm wide tape

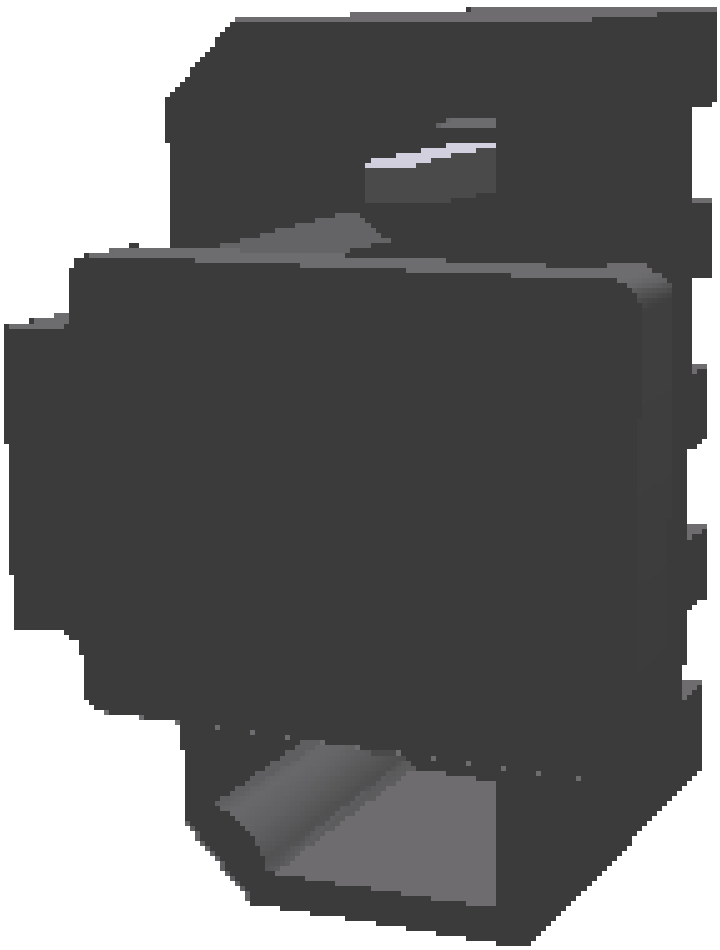
2 Your advantages

- Designed for integration into the SMT soldering process
- Supplied in tape-on-reel packing according to IEC 60286-3 for automated mounting
- 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/1778573

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.	1778573
Type	PTSM 0,5/ 4-HV-2,5-THR R32
Plug-in system	COMBICON COMPACT PTSM
Product type	PCB headers
Type of contact	Male connector
Range of articles	PTSM 0,5/..-HV-THR
Pitch	2.5 mm
Range of positions	2...8
Number of positions	4
Number of levels	1
Number of connections	4
Number of potentials	4
Mounting type	THR soldering
Connection direction of the connector to the PCB	90 °
Pin layout	Linear pinning
Solder pins per potential	1
Type	Component suitable for through hole reflow

6 Mounting

6.1 Flange fixing

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	black (9005)
Insulating material	LCP
Insulating material group	IIIa
CTI according to IEC 60112	175
Flammability rating according to UL 94	V0

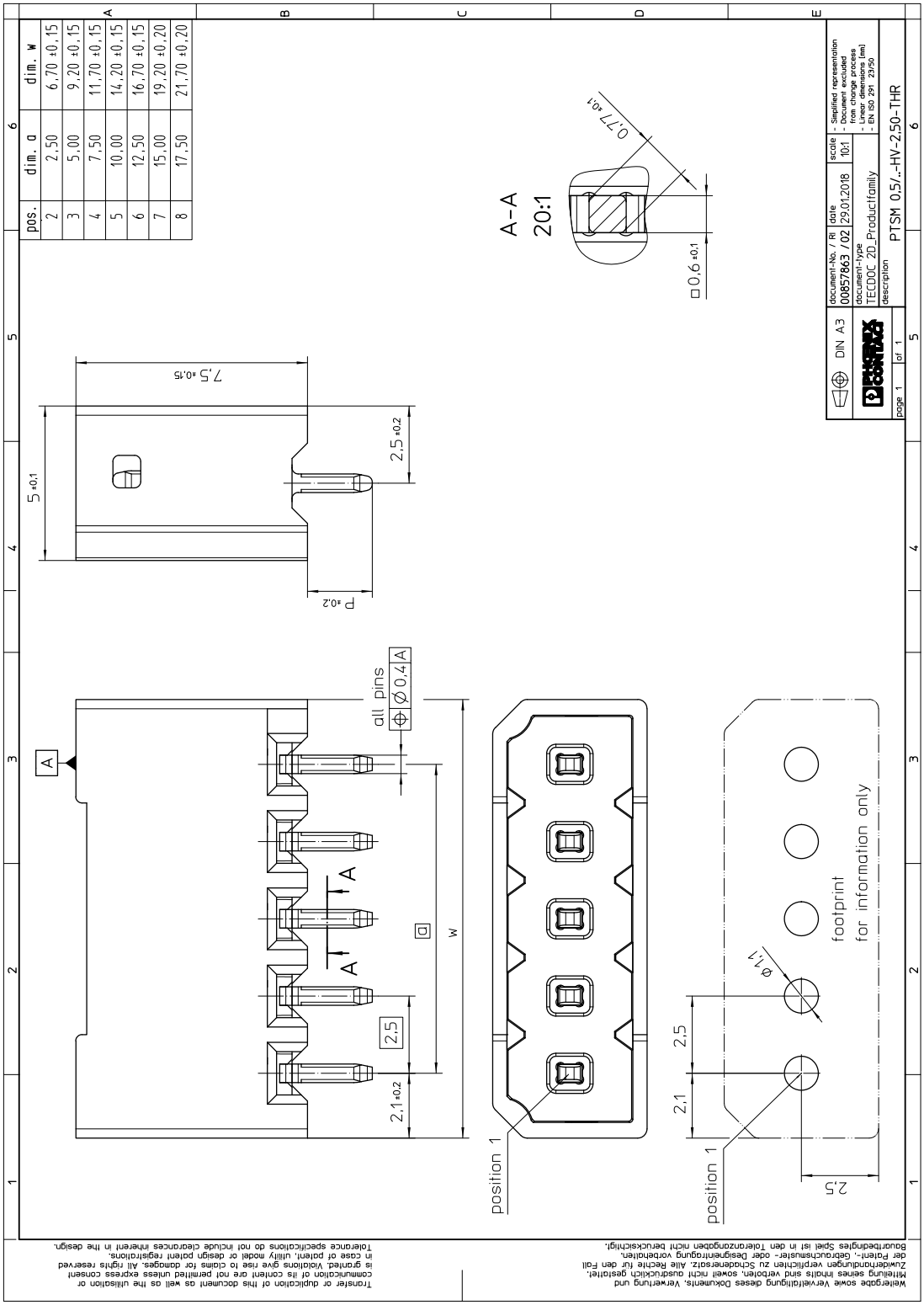
8 Dimensions

8.1 Dimensions for the product

Length	5 mm
Width	11.7 mm
Height (without solder pin)	7.5 mm
Total height	9.5 mm
Solder pin [P]	2 mm
Dimension a	7.5 mm

1778573 PTSM 0,5/ 4-HV-2,5-THR R32

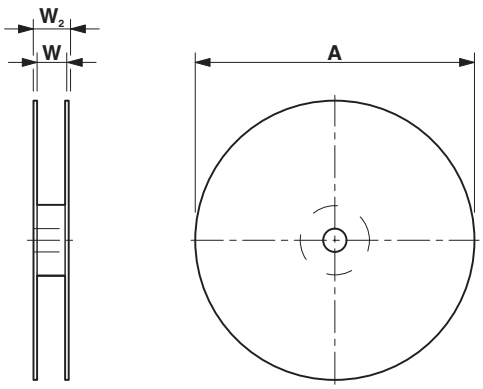
9 Series drawing



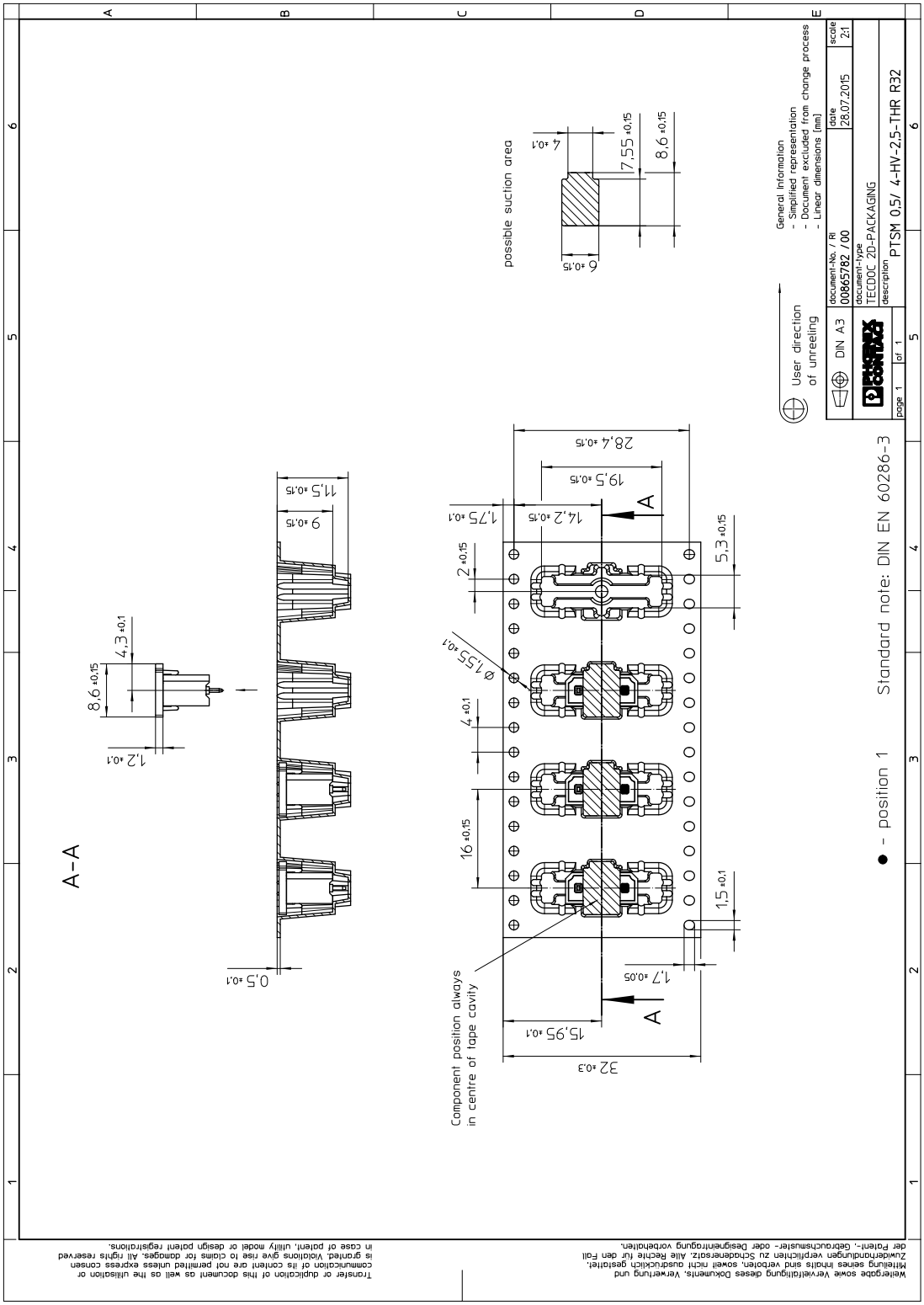
10 Application

11 Packaging information

Type of packaging	32 mm wide tape
Pieces per package	330
Outer packaging type	Transparent-Bag
ESD level	(D) electrostatically conductive
Specification	DIN EN 61340-5-1 (VDE 0300-5-1): 2008-07
[W] tape width	32 mm
[A] coil diameter	330 mm
[W2] coil overall dimension	38.4 mm
Number of products per coil	330



12 Blister drawing



12.1 Processing notes

Process	Reflow/wave soldering
Specification	Following IPC/JEDEC J-STD-020D.1:2008-03
Specification	Following IEC 61760-1:2006-04
Specification	Following IEC 60068-2-58:2005-02
Moisture Sensitive Level	MSL 1
Classification temperature T_c	max. 260 °C
Solder cycles in the reflow	3
swash circumference	see dimensional drawing

12.2 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 retention in insert	Test passed
Specification	IEC 60512-15-1:2008-05
Test force per pos.	20 N

14 Insertion and withdrawal forces

Insertion and withdrawal force	Test passed
Specification	IEC 60512-13-2:2006-02
No. of cycles	10
Insertion strength per pos. approx.	5 N
Withdraw strength per pos. approx.	4 N

15 Electrical tests

15.1 Electrical data

Rated current / conductor cross section	6 A / 0.5 mm²
Rated insulation voltage (III/2)	160 V
Rated surge voltage (III/2)	2.5 kV
Contact resistance	3 mΩ
Degree of pollution	2

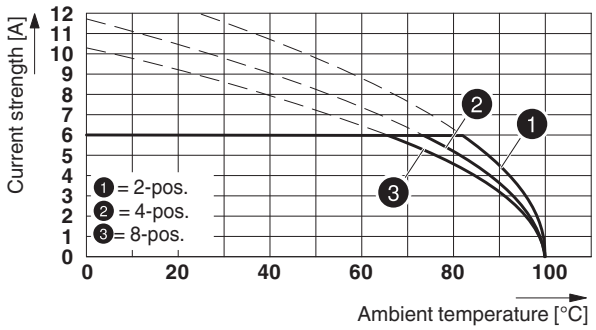
15.2 Air and creepage distances

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 ≥175 to <400		
Rated insulation voltage	50 V	160 V	160 V
Rated surge voltage	2.5 kV	2.5 kV	2.5 kV
Degree of pollution	3	2	2
Overvoltage category	III	III	II
Minimum clearance case A (inhomogeneous field)	1.5 mm	1.5 mm	1.5 mm
Minimum value of the creepage path requirement in acc. with table	1.9 mm	1.6 mm	1.6 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	0.5 mm²

Derating curve for: PTSM 0,5/...-P-2,5 with PTSM 0,5/...-HV-2,5-THR R...



16.1 Insulation resistance

Specification	IEC 60512-3-1:2002-02
Result	Test passed
Insulation resistance, neighboring positions	31 TΩ

16.2 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.

17 Approvals / Certificates

UL Recognized	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
Usegroup B				
	150 V	5 A	-	-

EAC				

VDE Zeichengenehmigung	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
	160 V	6 A	-	0.14 - 0.5

cULus Recognized	Voltage [V]	Current [A]	Cross section [AWG]	Cross section [mm²]
Usegroup B				
	150 V	6 A	-	-

18 Commercial Data

Order No.	1778573
Type	PTSM 0,5/ 4-HV-2,5-THR R32
Pieces per package	330
Net weight	1.932 g
GTIN	4046356529747
	Information that applies locally, see link on page 1
Country of origin	Information that applies locally, see link on page 1

19 corresponding plugs

Order No.	Type
1778858	PTSM 0,5/ 4-P-2,5

20 Combination tests

PTSM 0,5/..-HV-THR	**PTSM 0,5/..-P**
IEC 61984	IEC 61984
Mechanical tests (A)	
Insertion/withdrawal force per position	approx. 5 N / 4 N
Polarization when inserted Requirement >20 N	Test passed
Contact holder in insert Requirements >20 N	Test passed
Durability tests (B)	
Contact resistance R_1	3 mΩ
Insertion/withdrawal cycles	10
Contact resistance R_2	4 mΩ
Rated impulse voltage at sea level Voltage waveform ≥ (1.2/50 µs)	2.95 kV
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	1.39 kV
Thermal tests (C)	
Tested number of positions	8
Tested conductor cross section	0.5 mm^2
Test current	6 A DC
Upper limiting temperature Requirements < 100°C	Test passed
Climatic tests (D)	
Test sequence 1: low temperature storage	-40 °C/2 h
Test sequence 2: heat storage	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
Rated impulse voltage at sea level Voltage waveform ≥ (1.2/50 µs)	2.95 kV
Power-frequency withstand voltage Voltage waveform ≥ (50/60 Hz)	1.39 kV
Environmental and endurance tests (E)	
Specification	IEC 61984:2008-10
Degree of protection	Finger safety with IP20 test finger