

# SPT 2,5/ 3-H-5,0 BK - PCB terminal block



1827304

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Printed circuit board terminal, nominal current: 24 A, rated voltage (III/2): 400 V, nominal cross section: 2.5 mm<sup>2</sup>, number of potentials: 3, number of rows: 1, number of positions per row: 3, product range: SPT 2,5/...-H, pitch: 5 mm, connection method: Push-in spring connection, mounting: Wave soldering, conductor/PCB connection direction: 0 °, color: black, Pin layout: Linear pinning, Solder pin [P]: 2.5 mm, number of solder pins per potential: 2, type of packaging: packed in cardboard

## Your advantages

- Time saving push-in connection, tools not required
- Defined contact force ensures that contact remains stable over the long term
- Clamping space opened by means of fixed screwdriver enables convenient conductor connection
- Operation and conductor connection from one direction enable integration into front of device
- Two solder pins reduce the mechanical strain on the soldering spots

## Commercial data

|                                      |               |
|--------------------------------------|---------------|
| Item number                          | 1827304       |
| Packing unit                         | 160 pc        |
| Minimum order quantity               | 100 pc        |
| Sales key                            | AA13          |
| Product key                          | AAMBF E       |
| GTIN                                 | 4055626044736 |
| Weight per piece (including packing) | 3.88 g        |
| Weight per piece (excluding packing) | 3.6 g         |
| Customs tariff number                | 85369010      |
| Country of origin                    | DE            |

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## Technical data

### Product properties

|                           |                                |
|---------------------------|--------------------------------|
| Product type              | Printed circuit board terminal |
| Product family            | SPT 2,5/...-H                  |
| Product line              | COMBICON Terminals M           |
| Number of positions       | 3                              |
| Pitch                     | 5 mm                           |
| Number of connections     | 3                              |
| Number of rows            | 1                              |
| Number of potentials      | 3                              |
| Pin layout                | Linear pinning                 |
| Solder pins per potential | 2                              |

### Electrical properties

#### Properties

|                             |       |
|-----------------------------|-------|
| Nominal current $I_N$       | 24 A  |
| Nominal voltage $U_N$       | 400 V |
| Rated voltage (III/3)       | 250 V |
| Rated surge voltage (III/3) | 4 kV  |
| Rated voltage (III/2)       | 400 V |
| Rated surge voltage (III/2) | 4 kV  |
| Rated voltage (II/2)        | 630 V |
| Rated surge voltage (II/2)  | 4 kV  |

### Connection data

#### Connection technology

|                       |                     |
|-----------------------|---------------------|
| Nominal cross section | 2.5 mm <sup>2</sup> |
|-----------------------|---------------------|

#### Conductor connection

|   |  |
|---|--|
| Connection method   | Push-in spring connection                    |
| Conductor cross section rigid   | 0.2 mm <sup>2</sup> ... 4 mm <sup>2</sup>    |
| Conductor cross section flexible                                      | 0.2 mm <sup>2</sup> ... 2.5 mm <sup>2</sup>  |
| Conductor cross section AWG   | 24 ... 12                                    |
| Conductor cross section flexible, with ferrule without plastic sleeve | 0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Conductor cross section, flexible, with ferrule, with plastic sleeve  | 0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> |
| Stripping length  | 10 mm  |

#### Specifications for ferrules without insulating collar

|  |  |
|--|--|
| recommended crimping tool                                    | 1212034 CRIMPFOX 6                                 |
| ferrules without insulating collar, according to DIN 46228-1 | Cross section: 0.25 mm <sup>2</sup> ; Length: 7 mm |
|  | Cross section: 0.34 mm <sup>2</sup> ; Length: 7 mm |
|  | Cross section: 0.5 mm <sup>2</sup> ; Length: 8 mm  |

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|  |                                       |
|--|---------------------------------------|
|  | Cross section: 0.75 mm²; Length: 8 mm |
|  | Cross section: 1 mm²; Length: 8 mm    |
|  | Cross section: 1.5 mm²; Length: 8 mm  |
|  | Cross section: 2.5 mm²; Length: 8 mm  |

## Specifications for ferrules with insulating collar

|   |   |
|---|---|
| recommended crimping tool                                 | 1212034 CRIMPFOX 6                              |
| ferrules with insulating collar, according to DIN 46228-4 | Cross section: 0.25 mm²; Length: 8 mm           |
|   | Cross section: 0.34 mm²; Length: 8 mm           |
|   | Cross section: 0.5 mm²; Length: 8 mm ... 10 mm  |
|   | Cross section: 0.75 mm²; Length: 8 mm ... 10 mm |
|   | Cross section: 1 mm²; Length: 8 mm ... 10 mm    |
|   | Cross section: 1.5 mm²; Length: 8 mm ... 10 mm  |
|   | Cross section: 2.5 mm²; Length: 10 mm           |

## Mounting

|               |                |
|---------------|----------------|
| Mounting type | Wave soldering |
| Pin layout    | Linear pinning |

## Material specifications

### Material data - contact

|  |  |
|--|--|
| Note                                     | WEEE/RoHS-compliant, free of whiskers according to IEC 60068-2-82/JEDEC JESD 201 |
| Contact material                         | Cu alloy   |
| Surface characteristics                  | Tin-plated   |
| Metal surface terminal point (top layer) | Tin (4 - 8 µm Sn)  |
| Metal surface soldering area (top layer) | Tin (4 - 8 µm Sn)  |

### Material data - housing

|   |              |
|---|--------------|
| Color (Housing)   | black (9005) |
| 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       |

## Dimensions

|                  |         |
|------------------|---------|
| Pitch            | 5 mm    |
| Width [w]        | 16.4 mm |
| Height [h]       | 16 mm   |
| Length [l]       | 14.4 mm |
| Installed height | 13.5 mm |

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|                       |        |
|-----------------------|--------|
| Solder pin length [P] | 2.5 mm |
|-----------------------|--------|

## PCB design

|               |        |
|---------------|--------|
| Pin spacing   | 8.2 mm |
| Hole diameter | 1.2 mm |

## Mechanical tests

### Test for conductor damage and slackening

|               |                     |
|---------------|---------------------|
| Specification | IEC 60999-1:1999-11 |
| Result        | Test passed         |

### Pull-out test

|   |   |
|---|---|
| Specification   | IEC 60999-1:1999-11                     |
| Conductor cross section/conductor type/tractive force setpoint/actual value | 0.2 mm <sup>2</sup> / solid / > 10 N    |
|   | 0.2 mm <sup>2</sup> / flexible / > 10 N |
|   | 4 mm <sup>2</sup> / solid / > 60 N      |
|   | 2.5 mm <sup>2</sup> / flexible / > 50 N |

## Electrical tests

### Temperature-rise test

|                                   |  |
|-----------------------------------|--|
| Specification                     | IEC 60947-7-4:2019-01  |
| Requirement temperature-rise test | The sum of ambient temperature and temperature rise of the PCB terminal block shall not exceed the upper limiting temperature. |

### Short-time withstand current

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60947-7-4:2019-01 |
|---------------|-----------------------|

### Insulation resistance

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

### Air clearances and creepage distances | 1. Insulation coordination

|  |                       |
|--|-----------------------|
| Application  | without pitch spacer  |
| Specification  | IEC 60947-7-4:2019-01 |
| Insulating material group                              | I                     |
| Comparative tracking index (IEC 60112)                 | CTI 600               |
| Rated insulation voltage (III/3)                       | 250 V                 |
| Rated surge voltage (III/3)                            | 4 kV                  |
| minimum clearance value - non-homogenous field (III/3) | 3 mm                  |
| minimum creepage distance (III/3)                      | 3.2 mm                |
| Rated insulation voltage (III/2)                       | 400 V                 |
| Rated surge voltage (III/2)                            | 4 kV                  |
| minimum clearance value - non-homogenous field (III/2) | 3 mm                  |
| minimum creepage distance (III/2)                      | 3 mm                  |
| Rated insulation voltage (II/2)                        | 630 V                 |

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|   |        |
|---|--------|
| Rated surge voltage (II/2)                            | 4 kV   |
| minimum clearance value - non-homogenous field (II/2) | 3 mm   |
| minimum creepage distance (II/2)                      | 3.2 mm |

## Air clearances and creepage distances | 2. Insulation coordination

|  |                       |
|--|-----------------------|
| Application  | with RZ-SPT 2,5-2,5   |
| Specification  | IEC 60947-7-4:2019-01 |
| Insulating material group                              | I                     |
| Comparative tracking index (IEC 60112)                 | CTI 600               |
| Rated insulation voltage (III/3)                       | 400 V                 |
| Rated surge voltage (III/3)                            | 6 kV                  |
| minimum clearance value - non-homogenous field (III/3) | 5.5 mm                |
| minimum creepage distance (III/3)                      | 5.5 mm                |
| Rated insulation voltage (III/2)                       | 630 V                 |
| Rated surge voltage (III/2)                            | 6 kV                  |
| minimum clearance value - non-homogenous field (III/2) | 5.5 mm                |
| minimum creepage distance (III/2)                      | 5.5 mm                |
| Rated insulation voltage (II/2)                        | 1000 V                |
| Rated surge voltage (II/2)                             | 6 kV                  |
| minimum clearance value - non-homogenous field (II/2)  | 5.5 mm                |
| minimum creepage distance (II/2)                       | 5.5 mm                |

## Air clearances and creepage distances | 3. Insulation coordination

|  |                       |
|--|-----------------------|
| Application  | with RZ-SPT 2,5-5,0   |
| Specification  | IEC 60947-7-4:2019-01 |
| Insulating material group                              | I                     |
| Comparative tracking index (IEC 60112)                 | CTI 600               |
| Rated insulation voltage (III/3)                       | 630 V                 |
| Rated surge voltage (III/3)                            | 8 kV                  |
| minimum clearance value - non-homogenous field (III/3) | 8 mm                  |
| minimum creepage distance (III/3)                      | 8 mm                  |
| Rated insulation voltage (III/2)                       | 800 V                 |
| Rated surge voltage (III/2)                            | 8 kV                  |
| minimum clearance value - non-homogenous field (III/2) | 8 mm                  |
| minimum creepage distance (III/2)                      | 8 mm                  |
| Rated insulation voltage (II/2)                        | 1000 V                |
| Rated surge voltage (II/2)                             | 8 kV                  |
| minimum clearance value - non-homogenous field (II/2)  | 8 mm                  |
| minimum creepage distance (II/2)                       | 8 mm                  |

## Environmental and real-life conditions

### Vibration test

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60068-2-6:2007-12 |
| Frequency     | 10 - 150 - 10 Hz      |

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|                        |  |
|------------------------|--|
| Sweep speed            | 1 octave/min                             |
| Amplitude              | 0.35 mm (10 Hz ... 60.1 Hz)              |
| Acceleration           | 50 m/s <sup>2</sup> (60.1 Hz ... 150 Hz) |
| Test duration per axis | 2.5 h                                    |
| Test directions        | X-, Y- and Z-axis                        |

## Glow-wire test

|                  |                        |
|------------------|------------------------|
| Specification    | IEC 60695-2-10:2013-04 |
| Temperature      | 850 °C                 |
| Time of exposure | 5 s                    |

## Aging

|               |                       |
|---------------|-----------------------|
| Specification | IEC 60947-7-4:2019-01 |
|---------------|-----------------------|

## Ambient conditions

|   |   |
|---|---|
| Ambient temperature (operation)         | -40 °C ... 105 °C (Depending on the current carrying capacity/derating curve) |
| Ambient temperature (storage/transport) | -40 °C ... 70 °C  |
| Relative humidity (storage/transport)   | 30 % ... 70 %   |
| Ambient temperature (assembly)          | -5 °C ... 100 °C  |

## Packaging specifications

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

## SPT 2,5/ 3-H-5,0 BK - PCB terminal block

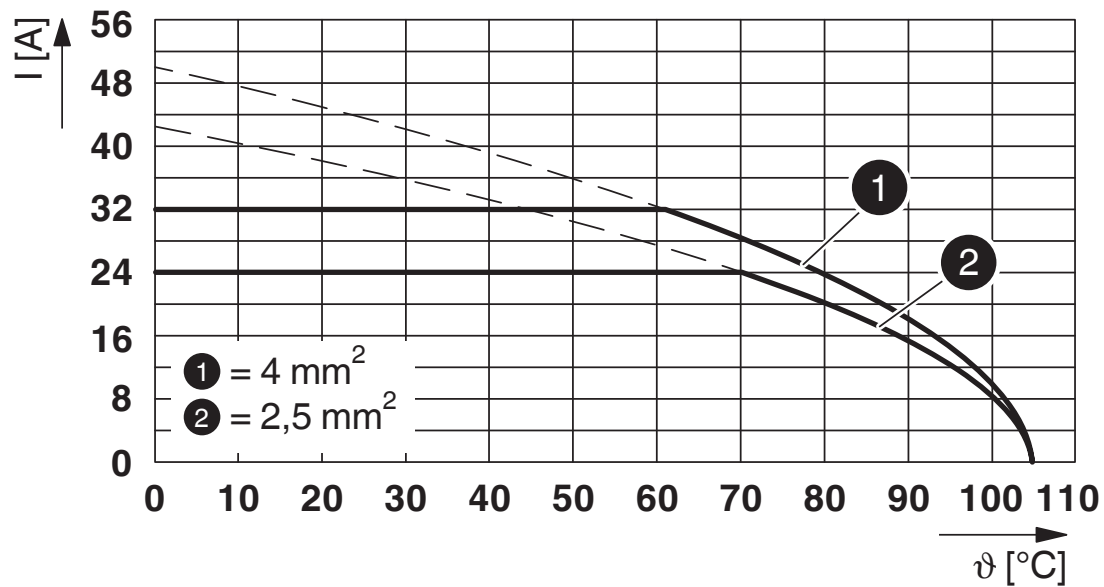
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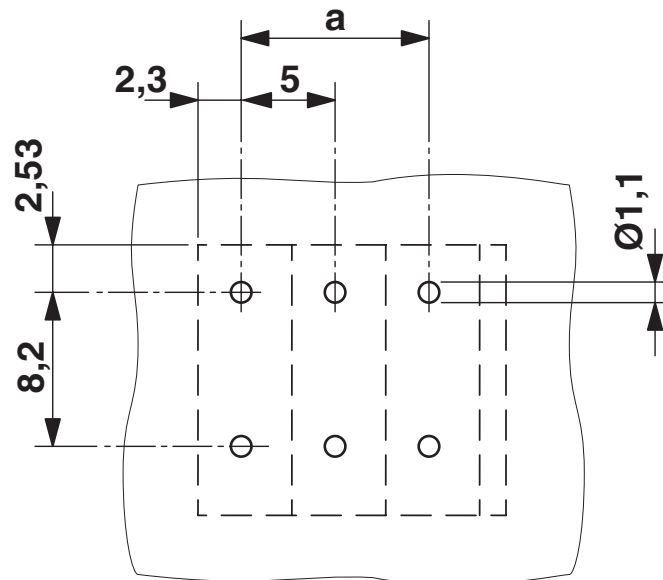
## Drawings

### Diagram



Type: SPT 2,5/...-H-5,0

Drilling plan/solder pad geometry



# SPT 2,5/ 3-H-5,0 BK - PCB terminal block





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## Approvals

To download certificates, visit the product detail page: <https://www.phoenixcontact.com/us/products/1827304>

|  <b>VDE approval of drawings</b><br>Approval ID: 40042909 |                       |                       |                   |                             |
|--|-----------------------|-----------------------|-------------------|-----------------------------|
|  | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
|  | 400 V                 | 32 A                  | -                 | 0.2 - 4                     |

|  <b>cULus Recognized</b><br>Approval ID: E60425-20061129 |                       |                       |                   |                             |
|---|-----------------------|-----------------------|-------------------|-----------------------------|
|   | Nominal voltage $U_N$ | Nominal current $I_N$ | Cross section AWG | Cross section $\text{mm}^2$ |
| Use group B   |                       |                       |                   |                             |
|   | 300 V                 | 20 A                  | 24 - 12           | -                           |
| Use group C   |                       |                       |                   |                             |
|   | 150 V                 | 20 A                  | 24 - 12           | -                           |
| Use group D   |                       |                       |                   |                             |
|   | 150 V                 | 15 A                  | 24 - 12           | -                           |



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## Classifications

### ECLASS

|             |          |
|-------------|----------|
| ECLASS-13.0 | 27460101 |
|-------------|----------|

### ETIM

|          |          |
|----------|----------|
| ETIM 9.0 | EC002643 |
|----------|----------|

### UNSPSC

|             |          |
|-------------|----------|
| UNSPSC 21.0 | 39121400 |
|-------------|----------|

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## Environmental product compliance

|   |  |
|---|--|
| EU RoHS                                 |  |
| Fulfills EU RoHS substance requirements | Yes, No exemptions                       |
| China RoHS                              |  |
| Environment friendly use period (EFUP)  | EFUP-E                                   |
|   | No hazardous substances above the limits |
| EU REACH SVHC                           |  |
| REACH candidate substance (CAS No.)     | No substance above 0.1 wt%               |
| EF3.0 Climate Change                    |  |
| CO2e kg                                 | 0.03 kg CO2e                             |

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