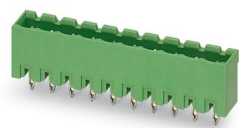


1859603  
<https://www.phoenixcontact.com/pc/products/1859603>

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PCB headers, nominal cross section: 2.5 mm<sup>2</sup>, color: green, nominal current: 12 A, rated voltage (III/2): 320 V, contact surface: Tin, contact connection type: Pin, number of potentials: 11, number of rows: 1, number of positions: 11, number of connections: 11, product range: EMSTBVA 2,5/...-G, pitch: 5.08 mm, mounting: Press-in technology, pin layout: Linear pinning, solder pin [P]: 3.9 mm, number of solder pins per potential: 1, plug-in system: COMBICON MSTB 2,5, Pin connector pattern alignment: Standard, locking: without, mounting: without, type of packaging: packed in cardboard

Your advantages

- Long-term stable press-in connection ensures high holding force without thermal load
- Maximum flexibility when it comes to device design – one header for connectors with different connection technologies
- Vertical connection enables multi-row arrangement on the PCB
- Closed contour for optimum stability of the plug-in connection

Commercial data

|                                      |                                |
|--------------------------------------|--------------------------------|
| Item number                          | 1859603                        |
| Packing unit                         | 50 pc                          |
| Minimum order quantity               | 1 pc                           |
| Note                                 | Made to order (non-returnable) |
| Product key                          | AAC1EH                         |
| Catalog page                         | Page 311 (C-1-2013)            |
| GTIN                                 | 4017918133023                  |
| Weight per piece (including packing) | 5 g                            |
| Weight per piece (excluding packing) | 4.419 g                        |
| Customs tariff number                | 85366930                       |
| Country of origin                    | DE                             |

## Technical data

### Product properties

|                           |                       |
|---------------------------|-----------------------|
| Product type              | PCB headers           |
| Product family            | EMSTBVA 2,5/..-G      |
| Product line              | COMBICON Connectors M |
| Type                      | Standard              |
| Number of positions       | 11                    |
| Pitch                     | 5.08 mm               |
| Number of connections     | 11                    |
| Number of rows            | 1                     |
| Number of potentials      | 11                    |
| Mounting flange           | without               |
| Pin layout                | Linear pinning        |
| Solder pins per potential | 1                     |

### Electrical properties

|                             |        |
|-----------------------------|--------|
| Nominal current $I_N$       | 12 A   |
| Nominal voltage $U_N$       | 320 V  |
| Contact resistance          | 1.1 mΩ |
| Rated voltage (III/3)       | 200 V  |
| Rated surge voltage (III/3) | 4 kV   |
| Rated voltage (III/2)       | 320 V  |
| Rated surge voltage (III/2) | 4 kV   |
| Rated voltage (II/2)        | 320 V  |
| Rated surge voltage (II/2)  | 4 kV   |

### Mounting

|               |                     |
|---------------|---------------------|
| Mounting type | Press-in technology |
| 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 contact area (top layer)      | Tin (1 - 2 μm Sn)                                                                |
| Metal surface contact area (middle layer)   | Nickel (2 - 3 μm Ni)                                                             |
| Metal surface soldering area (top layer)    | Tin (1 - 2 μm Sn)                                                                |
| Metal surface soldering area (middle layer) | Nickel (2 - 3 μm Ni)                                                             |

#### Material data - housing

|           |     |
|-----------|-----|
| Color ( ) | ( ) |
|-----------|-----|

# EMSTBVA 2,5/11-G-5,08 - PCB header



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|                                        |      |
|----------------------------------------|------|
| Insulating material                    | PBT  |
| Insulating material group              | IIIa |
| CTI according to IEC 60112             | 225  |
| Flammability rating according to UL 94 | V0   |

## Notes

|                    |                                                                                                                                                                                          |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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. |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Dimensions

|                       |          |
|-----------------------|----------|
| Dimensional drawing   |          |
| Pitch                 | 5.08 mm  |
| Width [w]             | 57.88 mm |
| Height [h]            | 15.9 mm  |
| Length [l]            | 8.6 mm   |
| Installed height      | 12 mm    |
| Solder pin length [P] | 3.9 mm   |
| PCB design            |          |
| Hole diameter         | 1.6 mm   |

## Mechanical tests

### Insertion and withdrawal forces

|                                     |             |
|-------------------------------------|-------------|
| Result                              | Test passed |
| No. of cycles                       | 25          |
| Insertion strength per pos. approx. | 5 N         |
| Withdraw strength per pos. approx.  | 4 N         |

## Electrical tests

### Insulation resistance

|                                              |                     |
|----------------------------------------------|---------------------|
| Specification                                | IEC 60512-2:1985-00 |
| Insulation resistance, neighboring positions | $10^{12} \Omega$    |

### Air clearances and creepage distances |

|                                        |                     |
|----------------------------------------|---------------------|
| Specification                          | IEC 60664-1:2007-04 |
| Insulating material group              | IIIa                |
| Comparative tracking index (IEC 60112) | CTI 225             |
| Rated insulation voltage (III/3)       | 200 V               |
| Rated surge voltage (III/3)            | 4 kV                |

# EMSTBVA 2,5/11-G-5,08 - PCB header



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|                                                        |        |
|--------------------------------------------------------|--------|
| minimum clearance value - non-homogenous field (III/3) | 3 mm   |
| minimum creepage distance (III/3)                      | 3.2 mm |
| Rated insulation voltage (III/2)                       | 320 V  |
| Rated surge voltage (III/2)                            | 4 kV   |
| minimum clearance value - non-homogenous field (III/2) | 3 mm   |
| minimum creepage distance (III/2)                      | 3.2 mm |
| Rated insulation voltage (II/2)                        | 320 V  |
| 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 |

## Environmental and real-life conditions

### Vibration test

|                        |                                 |
|------------------------|---------------------------------|
| Specification          | IEC 60068-2-6:1982 + AMD 2:1985 |
| 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                           |

### Durability test

|                                        |                      |
|----------------------------------------|----------------------|
| Specification                          | DIN VDE 0627:1993-05 |
| Impulse withstand voltage at sea level | 4.8 kV               |
| Contact resistance $R_1$               | 1.1 mΩ               |
| Contact resistance $R_2$               | 1.5 mΩ               |
| Insertion/withdrawal cycles            | 25                   |

### Climatic test

|                                   |                                                                           |
|-----------------------------------|---------------------------------------------------------------------------|
| Specification                     | DIN VDE 0627:1993-05                                                      |
| Corrosive stress                  | 0.2 dm <sup>3</sup> SO <sub>2</sub> on 300 dm <sup>3</sup> /40 °C/1 cycle |
| Thermal stress                    | 100 °C/168 h                                                              |
| Power-frequency withstand voltage | 2.21 kV                                                                   |

### Ambient conditions

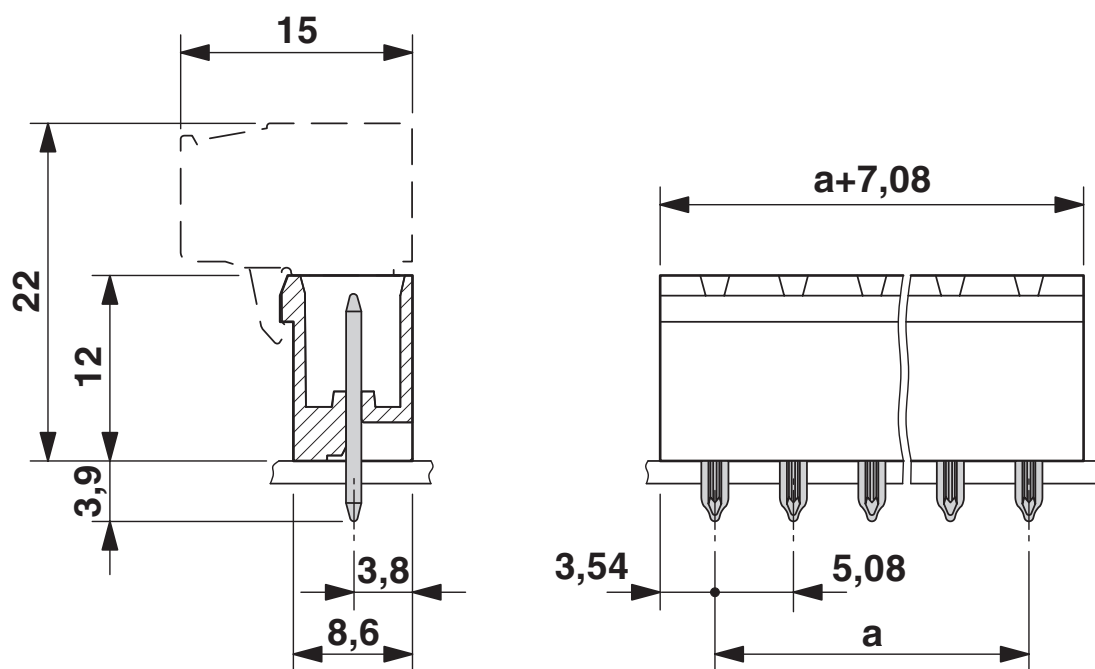
|                                         |                                                     |
|-----------------------------------------|-----------------------------------------------------|
| Ambient temperature (operation)         | -40 °C ... 100 °C (dependent on the derating curve) |
| Ambient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

## Packaging specifications

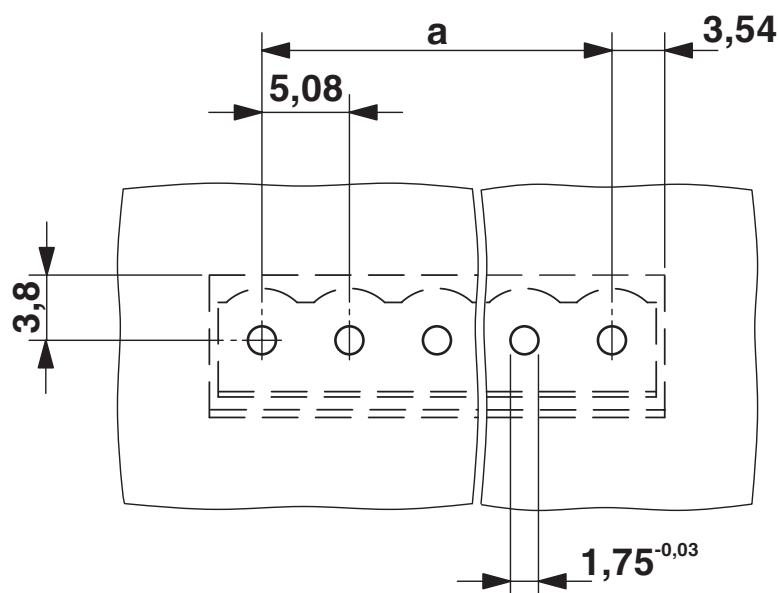
|                   |                     |
|-------------------|---------------------|
| Type of packaging | packed in cardboard |
|-------------------|---------------------|

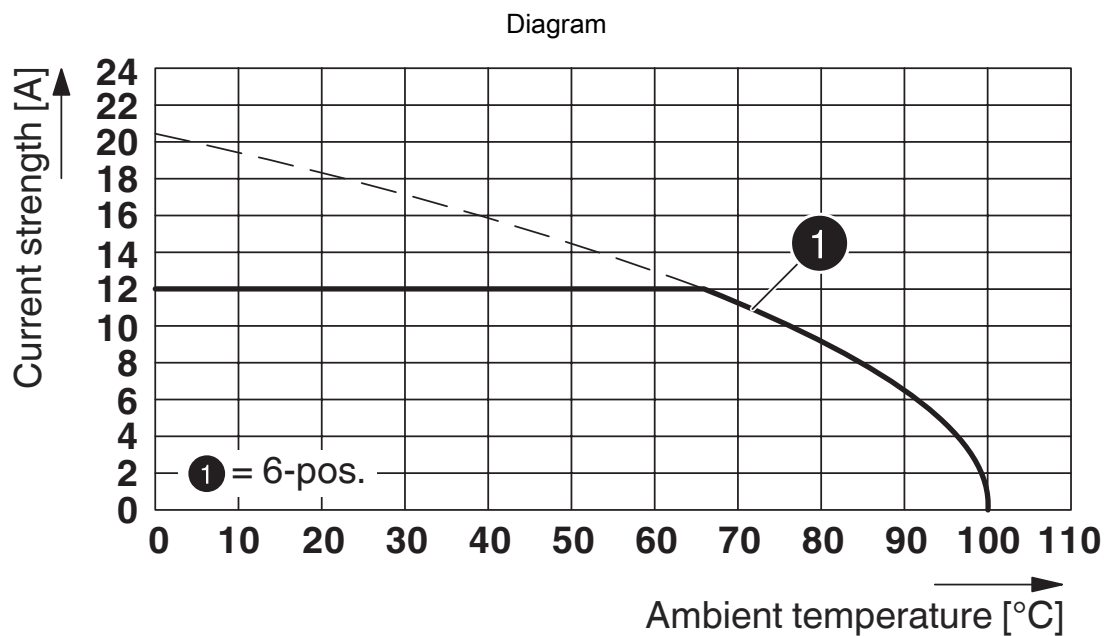
## Drawings

Dimensional drawing



Drilling plan/solder pad geometry

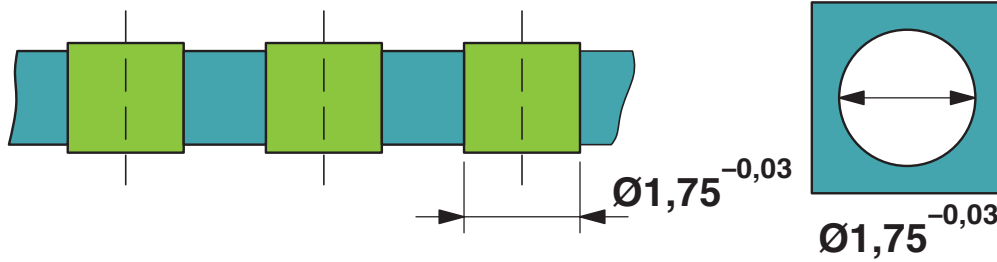




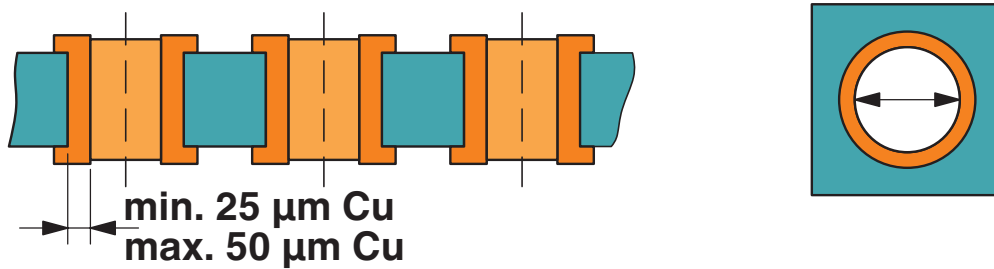
Type: MSTB 2,5/...-ST(-5,08) with EMSTBVA 2,5/...-G(-5,08)

## Drilling plan/solder pad geometry

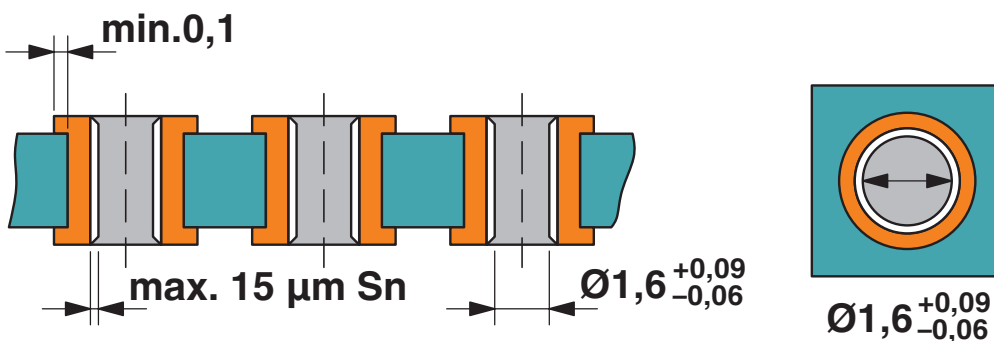
1)



2)



3)



Drill hole layout in FR4 or EP-GC basic material

# EMSTBVA 2,5/11-G-5,08 - PCB header



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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%               |

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