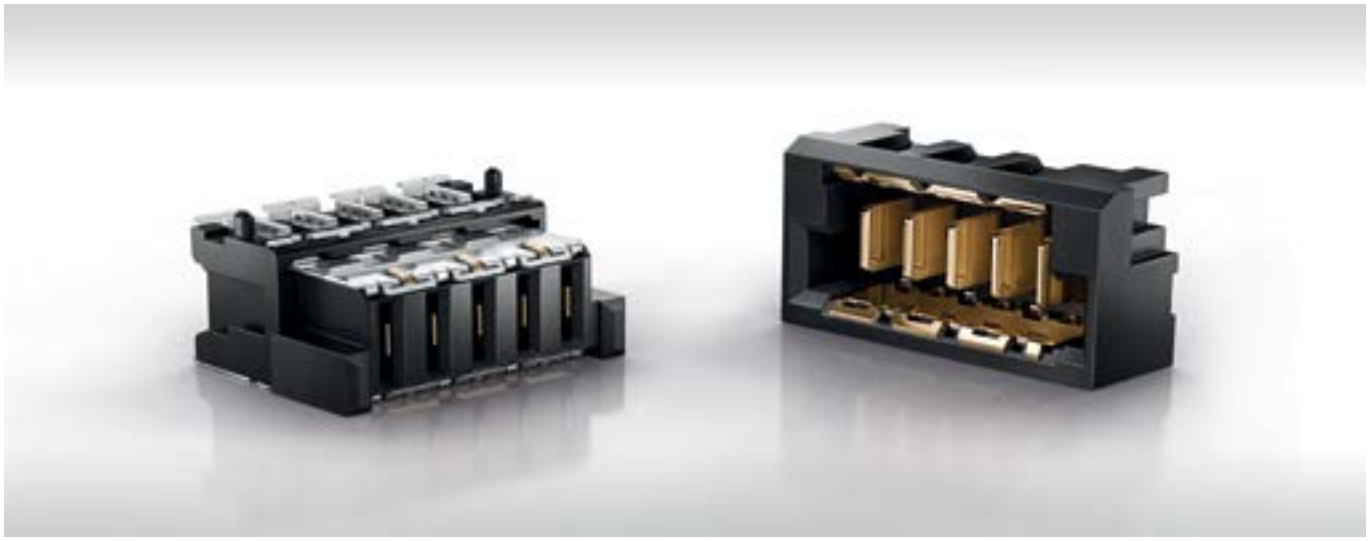
# MicroSpeed POWER MODULES & POWER CONNECTORS







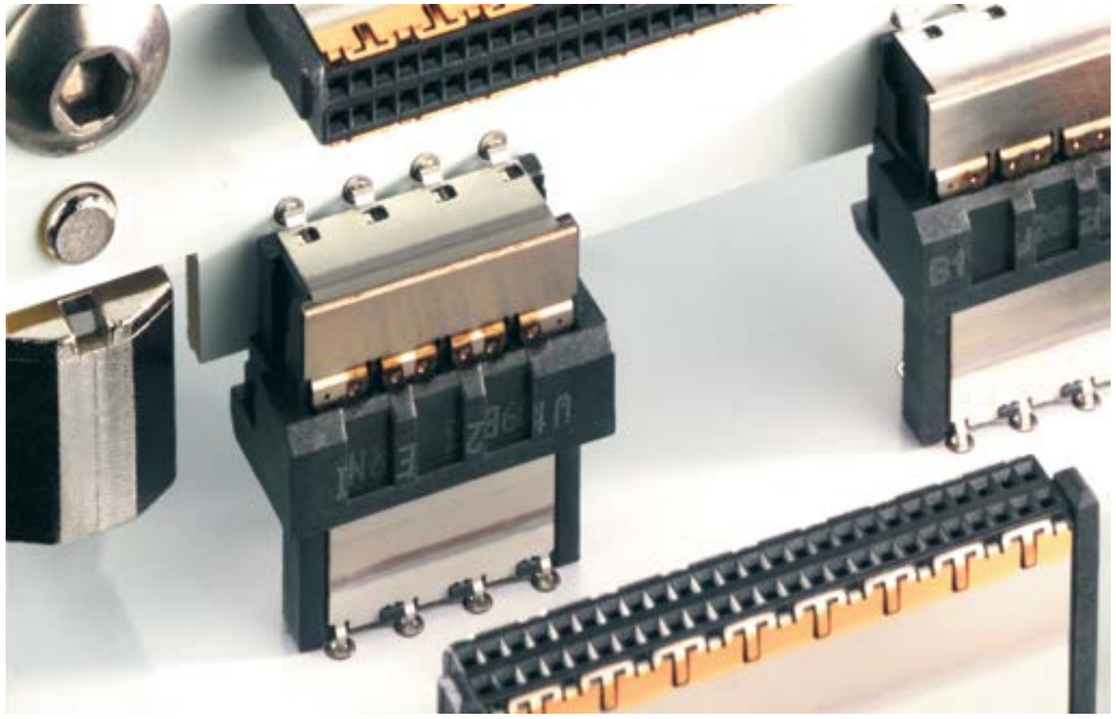
# MicroSpeed POWER MODULES - HIGH-POWER. INTERCONNECT. SOLUTIONS.

This complementary range of Power Module connectors, with 2.0 mm contact pitch, fulfils the need for miniaturized and high reliability power systems, and offers a large number of options for mezzanine applications. One of its features is its high current-carrying capacity in comparison to its small size. Therefore, the system is excellently suited for use with small, high performance devices such as CPUs, drives, LCD panels, etc.

Providing a variety of height versions of the male and female connectors, the Power Module series enables stacking heights from 5 mm to 20 mm. Subsequently, almost every need for different Printed Circuit Board (PCB) arrangements can be addressed. Another major advantage is the multiple-connector mating capability, which allows the mating of more than one connector pair at the same time.

The Surface Mount Technology (SMT) connectors meet all the needs of fast automatic assembly machines. They are manufactured and 100% inline quality checked by machine to provide high coplanarity and optimized soldering. The layout is designed with an enhanced solder pad size to provide high retention forces. The integrated 3-point double beam female contact provides durable low-contact resistance over the whole lifecycle.

The contacts are post plated, leaving no bare edges in the contact and solder areas. The connectors are equipped with polarized positioning pegs, and the connector plating is lead free, complying with the European RoHS directive.



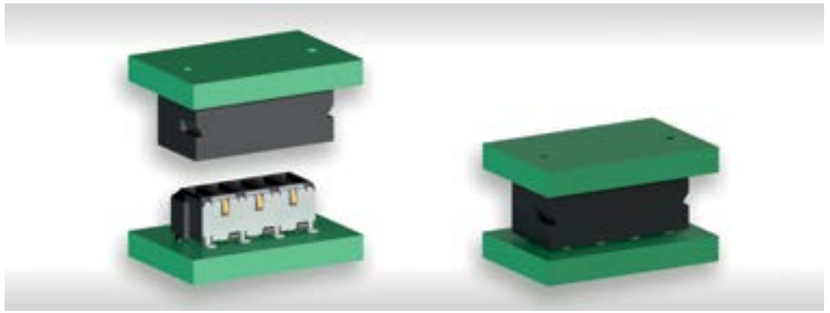


# FEATURES

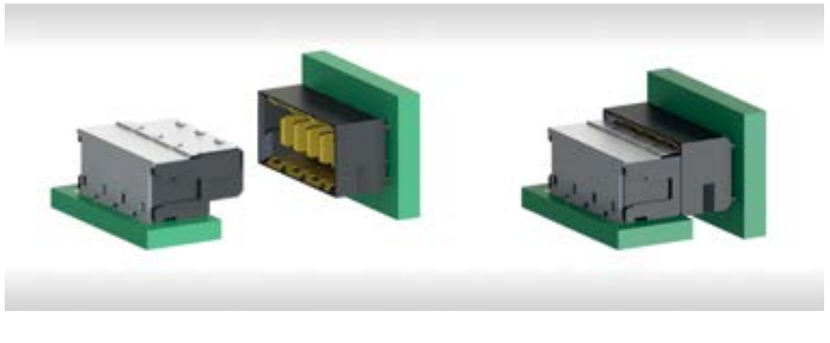
| | |
|---|---|
| No. of Pins | 5 |
| Current rating per contact | up to 18 A |
| Temperature range | -55 °C to 125 °C |
| Board-to-Board heights | 5 - 20 mm |
| Termination technology | SMT, SMT/ Through Hole Reflow (THR) and THR |
| Applications | orthogonal<br>mezzanine<br>coplanar |
| Variants | male and female connectors<br>vertical and right angle<br>Non-Blind Mate and Blind Mate<br>shielded |



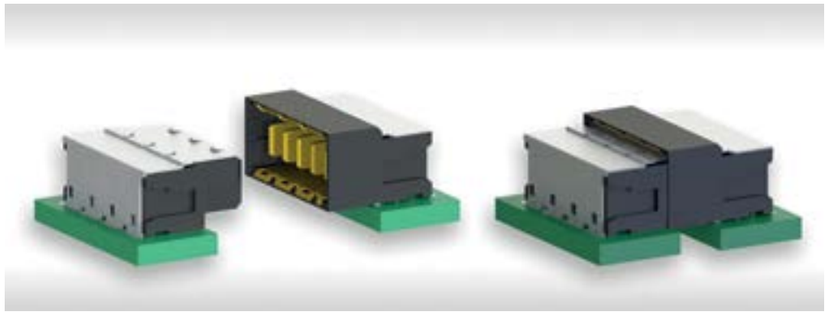
# CAPABILITIES



- stacked boards (mezzanine)



- orthogonal boards



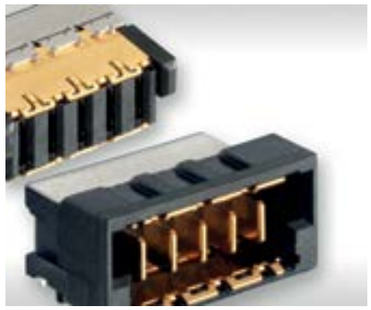
- extender card (coplanar)



# ADVANTAGES

## Blind Mate Design

- Blind Mate versions feature
  - a distinctive polarization of the mating face
  - extended guides to capture the mating connector
  - increased wall thickness
  - slightly larger footprint
- self-aligning feature, guide the Blind Mate connectors into correct mating position
- designed to provide consistent and reliable mating even in difficult conditions
- robust connectors for harsh environments
- shrouded housing protect contacts; high-temperature resistant materials
- distinctive polarization significantly reduces mismating



## Contact Design

- superior reliability due to dual-beam female contact design:
  - 3-point dual-beam female contact
  - homogeneous, rolled surface provides for more secure contact
  - wide contact surface between mated pair
  - low surface roughness minimizes abrasion
  - low contact resistance
- provides excellent misalignment tolerance/ tolerance compensation
- wipe length 1,5 mm
- durability: > 500 mating cycles
- contact finish: Au plating



## Pick & Place Pad

- pick and place pad for vacuum pick-up nozzles provided for straight connectors
- high-temperature plastic to resist reflow solder temperatures
- right angled versions are commonly picked-up at the smooth shield surface



## Termination

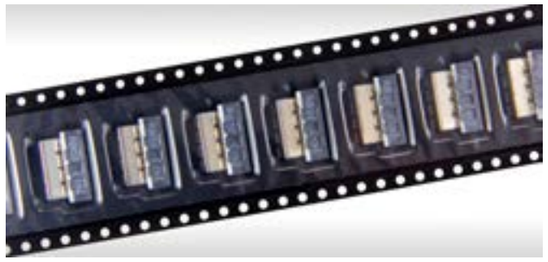
- SMT: SMT high power blade contacts, SMT shield terminals
  - double sided board assembly
  - 100% machine tested by TE coplanarity of ≤0.1 mm leads to excellent soldering results
- SMT/THR: SMT high power blade contacts, THR shield terminals
  - THR shield terminals provide strong mechanical solder joint for demanding applications
- THR: THR high power blade contacts, THR shield terminals
  - THR shield terminals provide strong mechanical solder joint for demanding applications



# PROCESSING

## Tape and Reel Packaging

- transport safe packaging
- automatic assembly



## Automatic Assembly and Reflow Soldering

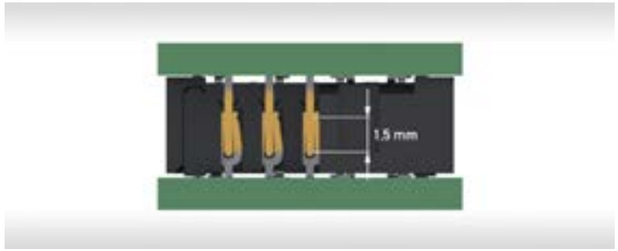
- for efficient processing on modern assembly lines



# WIPE LENGTH AND TOLERANCES

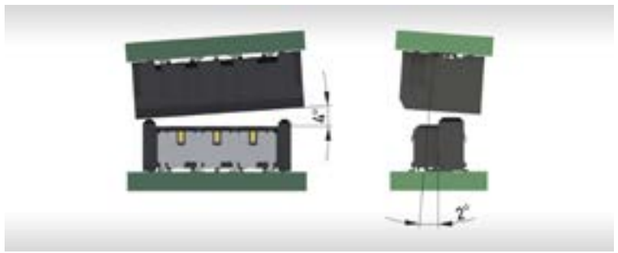
## Wipe Length

- 1.5 mm
- Blind Mate version



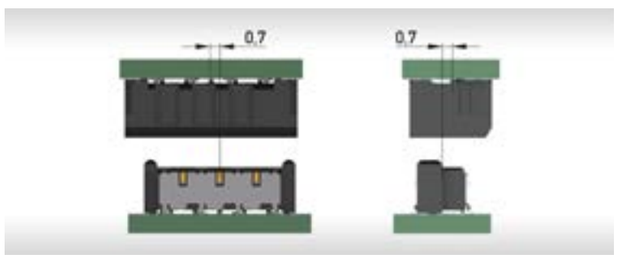

## Allowed Inclination for Secure Self-Centering

- angular inclination longitudinal 4° (1° in combination with misalignment)
- angular inclination transverse 2°
- Blind Mate version




## Allowed Misalignment for Secure Self-Centering

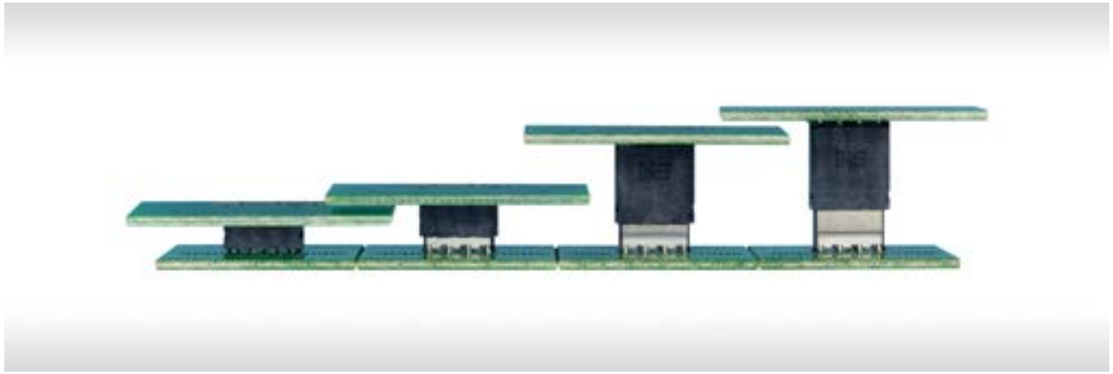
- misalignment tolerance of 0,7 mm
- Blind Mate version






# BOARD-TO-BOARD HEIGHT

## Flexible Board Stacking



| Board-to-Board Height | Male Stacking Height | Female Stacking Height |
|---|---|---|
| 5 – 6 mm | 1 mm | 4 mm |
| 6 – 7 mm | 2 mm | 4 mm |
| 7 – 8 mm | 1 mm | 6 mm |
| 8 – 9 mm | 2 mm | 6 mm |
| 9 – 10 mm | 1 mm | 8 mm |
| 10 – 11 mm | 2 mm | 8 mm |
| 11 – 12 mm | 1 mm | 10 mm |
| 12 – 13 mm | 2 mm | 10 mm |
| 13 – 14 mm | 9 mm | 4 mm |
| 14 – 15 mm | 10 mm | 4 mm |
| 15 – 16 mm | 9 mm | 6 mm |
| 16 – 17 mm | 10 mm | 6 mm |
| 17 – 18 mm | 9 mm | 8 mm |
| 18 – 19 mm | 10 mm | 8 mm |
| 19 – 20 mm | 9 mm | 10 mm |
| 20 – 21 mm | 10 mm | 10 mm |

# ELECTRICAL AND MECHANICAL CHARACTERISTICS

## Technical Data

| Description | Standard | MicroSpeed Power Modules |
|---|---|---|
| Climate category | DIN EN 60068-1 test b | 55 / 125 / 56 |
| Temperature range | | -55 / 125 °C |
| Current rating per contact | IEC60512 test 5b | up to 18 A / 10 A per shield |
| Air- and creepage (min.) | | contact – contact 1.5 mm<br>contact – ground 0.9 mm |
| Operating voltage | IEC 60664 | The permissible operating voltages depends on the customer application and on the applicable or specified safety requirements. Insulation coordination according to IEC 60664-1 has to be regarded for the complete electrical device. Therefore, the maximum creep- age and clearance distances of the mated connectors are specified for consideration as a part of the whole current path. In practice, reductions in creepage or clearance distances may occur due to the conductive pattern of the printed board or the wiring used, and have to be taken into account separately. As a result the creepage and clearance distances for the application may be reduced compared to those of the connector. |
| Dielectric strength | IEC 60512 test 4a | contact – contact 500 $V_{rms}$<br>contact – ground 500 $V_{rms}$ |
| Contact resistant | IEC 60512 test 2a | < 4 mΩ |
| Insulation resistant | IEC 60512 test 3a | > $10^4$ MΩ |
| Vibration, sine | IEC 60512 test 6d | 10 – 2000 Hz<br>20 g |
| Contact disturbance (while vibration test) | IEC 60512 test 2e | < 1 µs |
| Shock, halfsine | IEC 60512 test 6c | 50 g<br>11 ms |
| Contact disturbance (while shock test) | IEC 60512 test 2e | < 1 µs |
| Mechanical operation | IEC 60512 test 9a | 500 mating cycles |
| Insertion and withdrawal force | IEC 60512 test 13b | < 5 N |
| Gauge retention force | IEC 60512 test 16e | > 0.5 N |
| **Processing Conditions** | | |
| Reflow soldering temperature max. | JEDEC<br>J-STD-020 | 10 s at 260 °C |
| Coplanarity | | < 0.1 mm |



# ELECTRICAL AND MECHANICAL CHARACTERISTICS

## Technical Data

| Description | Standard | MicroSpeed Power Modules |
|---|---|---|
| **Housing Material** | | |
| Insulation body | | LCP |
| CTI value | IEC 112 | 175 |
| UL flame rating | UL 94 | V-0 |
| UL file plastic material | | E83005 |
| MSL | JEDEC<br>J-STD-020 | Level 1 |
| **Contact Material** | | |
| Base material | | Cu alloy |
| Mating area | | Gold plating |
| Termination area | | Sn |
| **Environment Compatibility** | | |
| Recycling | | no flame-retardant additives, no toxic additives allow easy recycling |
| **Product Approval** | | |
| UL/CSA | | E84703 |

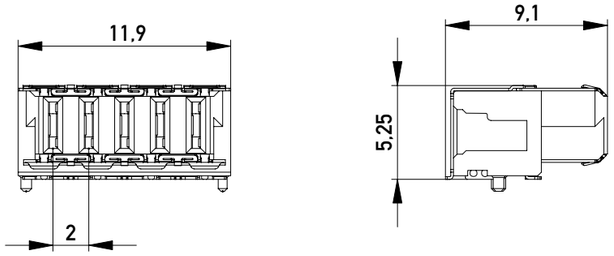
# RIGHT ANGLE FEMALE

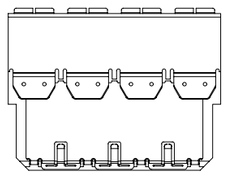
## Product Specification

- MicroSpeed Power Module
- 5 pin
- current rating up to 18 A per contact
- SMT or THR termination
- tape and reel packaging
- for available part numbers please refer to our website

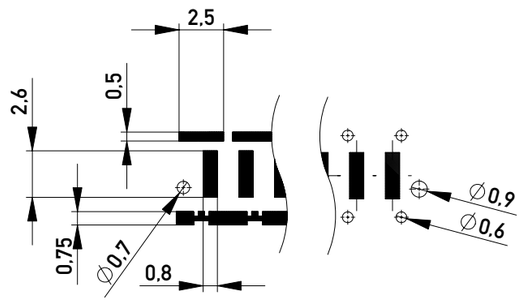


## Dimensional Drawings



## Recommended Layout




All dimensions in mm



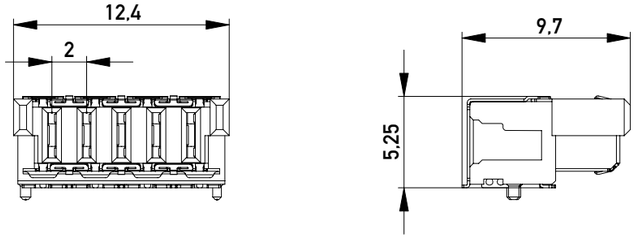
# BLIND MATE, RIGHT ANGLE FEMALE

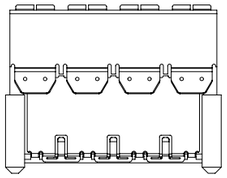
## Product Specification

- MicroSpeed Power Module
- 5 pin
- current rating up to 18 A per contact
- SMT or THR termination
- for robust applications (reinforced side walls)
- tape and reel packaging
- for available part numbers please refer to our website

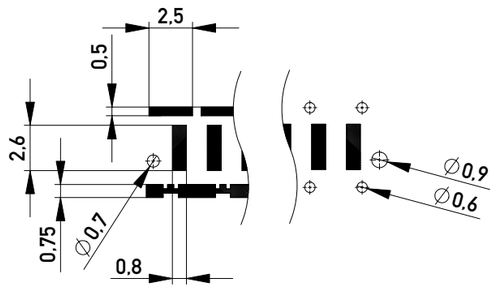


## Dimensional Drawings



## Recommended Layout




All dimensions in mm

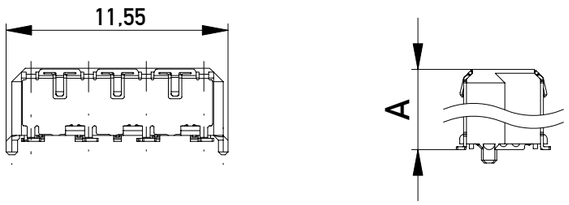
# VERTICAL FEMALE

## Product Specification

- MicroSpeed Power Module
- 5 pin
- current rating up to 18 A per contact
- SMT or THR termination
- tape and reel packaging
- heights: 4, 6, 8, 10 mm
- for available part numbers please refer to our website

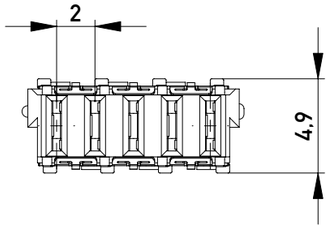


## Dimensional Drawings

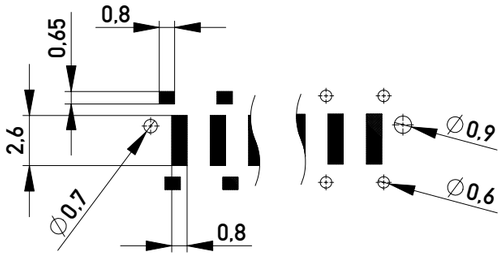



| Stacking Height | A |
|---|---|
| 4 mm | 3.80 |
| 6 mm | 5.80 |
| 8 mm | 7.80 |
| 10 mm | 9.80 |

All dimensions in mm




## Recommended Layout




All dimensions in mm



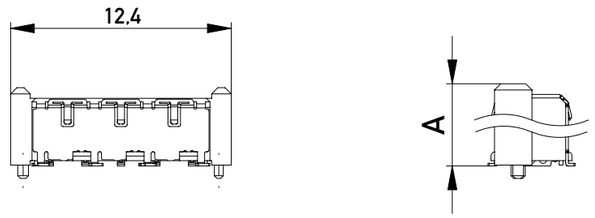
# BLIND MATE, VERTICAL FEMALE

## Product Specification

- MicroSpeed Power Module
- 5 pin
- current rating up to 18 A per contact
- SMT or THR termination
- for robust applications (reinforced side walls)
- tape and reel packaging
- heights: 4, 6, 8, 10 mm
- for available part numbers please refer to our website

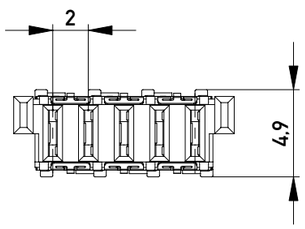


## Dimensional Drawings

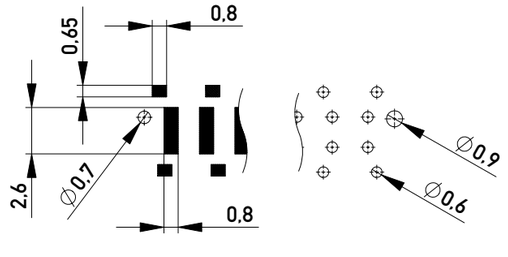



| Stacking Height | A |
|---|---|
| 4 mm | 3.80 |
| 6 mm | 5.80 |
| 8 mm | 7.80 |
| 10 mm | 9.80 |

All dimensions in mm




## Recommended Layout




All dimensions in mm

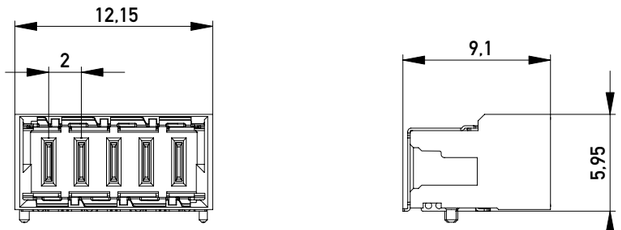
# RIGHT ANGLE MALE

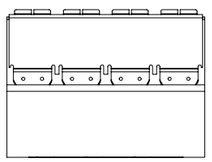
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- 5 pin
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- SMT or THR termination
- tape and reel packaging
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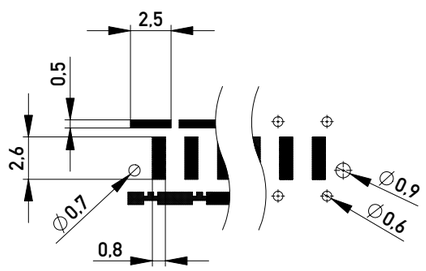


## Dimensional Drawings



## Recommended Layout




All dimensions in mm



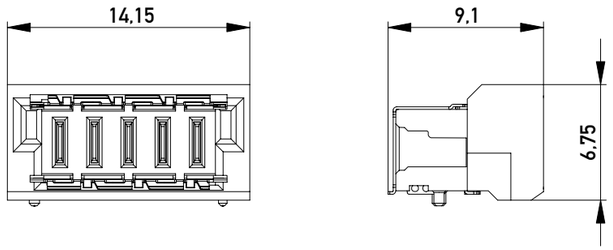
# BLIND MATE, RIGHT ANGLE MALE

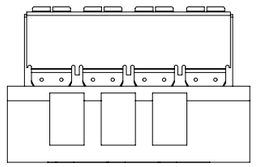
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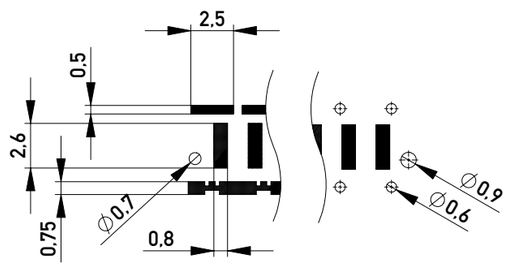


## Dimensional Drawings



## Recommended Layout




All dimensions in mm

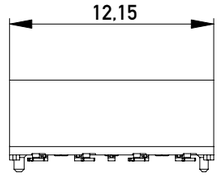
# VERTICAL MALE

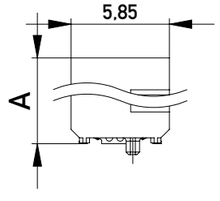
## Product Specification

- MicroSpeed Power Module
- 5 pin
- current rating up to 18 A per contact
- SMT or THR termination
- tape and reel packaging
- heights: 1, 2, 9, 10 mm
- for available part numbers please refer to our website



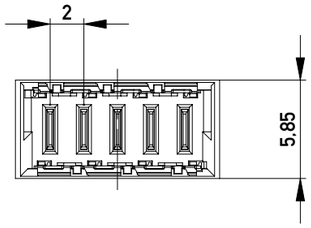
## Dimensional Drawings



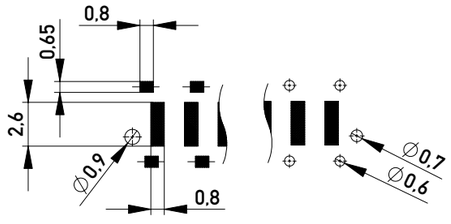




| Stacking Height | A |
|---|---|
| 1 mm | 6.30 |
| 2 mm | 7.30 |
| 9 mm | 14.30 |
| 10 mm | 15.30 |

All dimensions in mm




## Recommended Layout




All dimensions in mm



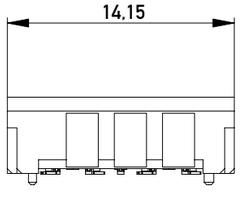
# BLIND MATE, VERTICAL MALE

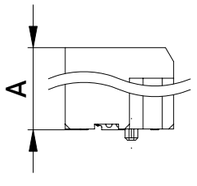
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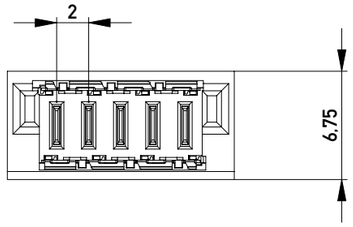
## Dimensional Drawings



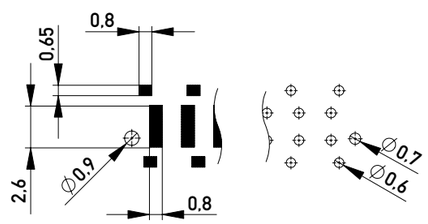




| Stacking Height | A |
|---|---|
| 1 mm | 6.30 |
| 2 mm | 7.30 |
| 9 mm | 14.30 |
| 10 mm | 15.30 |

All dimensions in mm




## Recommended Layout




All dimensions in mm

# POWER CONNECTORS

Power Connectors and MicroSpeed Power Modules share the common characteristic of having a high current carrying capacity compared to their small size. Therefore, both systems are excellently suited for use with small, high-performance devices. With the integrated 3-point double beam female contact they provide durable low-contact resistance over the whole lifecycle.

The power connectors as well as the SMT version of microspeed power modules meet the needs of fast automatic assembly machines. They are delivered with a pre-assembled pick&place pad.

Power connectors and MicroSpeed power modules differ based on the pins. This unshielded connector can supply up to 32 pins and is available as 1 or 2-row version. Higher operating voltages are possible due to a variable distance between the contacts. This provides high flexibility in the applications.

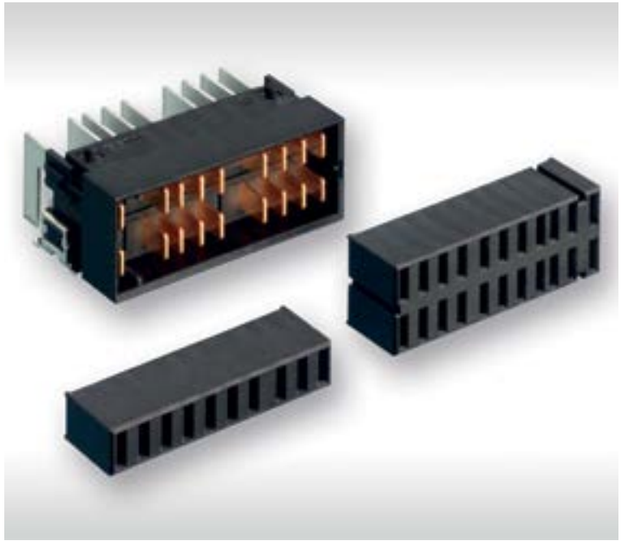


# FEATURES

| Description | MicroSpeed Power Modules | Power Connectors |
|---|---|---|
| No. of Pins | 5 | - 7 (up to 10 possible)<br>- 9 (up to 22 possible)<br>- 18 (up to 22 possible)<br>- 20<br>- 32 (up to 44 possible) |
| Current rating per contact | up to 18 A | up to 15 A |
| Temperature range | -55 °C to 125 °C | -55 °C to 125 °C |
| Board-to-Board heights | 5 - 20 mm | - |
| Termination technology | SMT, SMT/ THR and THR | SMT |
| Applications | orthogonal<br>mezzanine<br>coplanar | orthogonal |
| Variants | male and female connectors<br>vertical and right angle<br>Non-Blind Mate and Blind Mate<br>shielded | right angle male<br>vertical female |

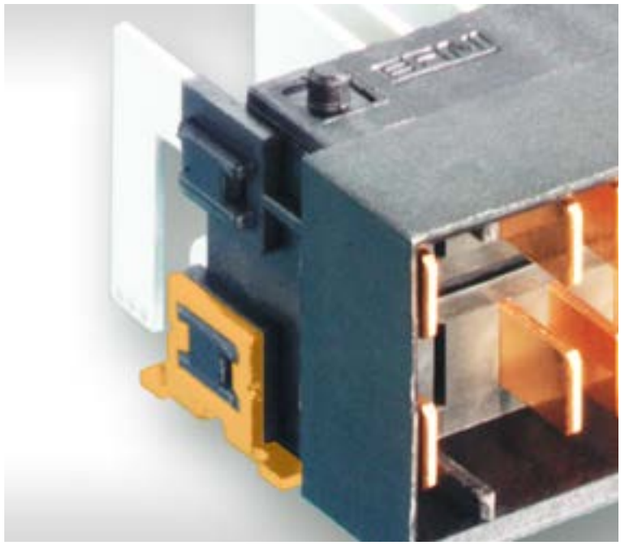


# CONCEPT



## Various Types

- no. of pins:
  - 7 (up to 10 possible)
  - 9 (up to 22 possible)
  - 18 (up to 22 possible)
  - 20
  - 32 (up to 44 possible)
- durability: orthogonal
- unshielded
- current rating up to 15 A per contact at 125 °C limit temperature
- variable contact distance, thus higher operating voltages are possible
- possible selective placement for higher flexibility in the applications



## Solder Clips

- robust SMT solder clips for 90° male connectors
- extremely high shear forces due to form-fit mounting in the housing
- strain relief

# ELECTRICAL AND MECHANICAL CHARACTERISTICS

## Technical Data

| Description | Standard | Power Connectors |
|---|---|---|
| Climate category | DIN EN 60068-1 test b | 55 / 125 / 56 |
| Temperature range | | -55 / 125 °C |
| Current rating per contact | IEC60512 test 5b | up to 15 A |
| Air- and creepage (min.) | | variable |
| Operating voltage | IEC 60664 | The permissible operating voltages depends on the customer application and on the applicable or specified safety requirements. Insulation coordination according to IEC 60664-1 has to be regarded for the complete electrical device. Therefore, the maximum creep- age and clearance distances of the mated connectors are specified for consideration as a part of the whole current path. In practice, reductions in creepage or clearance distances may occur due to the conductive pattern of the printed board or the wiring used, and have to be taken into account separately. As a result the creepage and clearance distances for the application may be reduced compared to those of the connector. |
| Dielectric strength | IEC 60512 test 4a | contact – contact 750 $V_{rms}$ |
| Contact resistant | IEC 60512 test 2a | < 4 mΩ |
| Insulation resistant | IEC 60512 test 3a | > $10^6$ MΩ |
| Vibration, sine | IEC 60512 test 6d | 10 – 2000 Hz<br>20 g |
| Contact disturbance (while vibration test) | IEC 60512 test 2e | < 1 µs |
| Mechanical operation | IEC 60512 test 9a | 500 mating cycles |
| Insertion and withdrawal force | IEC 60512 test 13b | < 5 N |
| Gauge retention force | IEC 60512 test 16e | > 0.5 N |
| **Processing Conditions** | | |
| Reflow soldering temperature max. | JEDEC<br>J-STD-020 | 20 - 40 s at 260 °C |
| Coplanarity | | < 0.1 mm |



# ELECTRICAL AND MECHANICAL CHARACTERISTICS

## Technical Data

| Description | Standard | Power Connectors |
|---|---|---|
| **Housing Material** | | |
| Insulation body | | PPA |
| CTI value | IEC 112 | 600 |
| UL flame rating | UL 94 | V-0 |
| UL file plastic material | | E53898 |
| MSL | JEDEC<br>J-STD-020 | Level 2 |
| **Contact Material** | | |
| Base material | | Cu alloy |
| Mating area | | Gold plating |
| Termination area | | Sn |
| **Environment Compatibility** | | |
| Recycling | | no flame-retardant additives, no toxic additives allow easy recycling |

# VERTICAL FEMALE

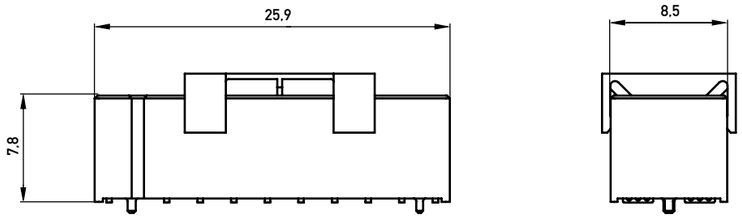
## Product Specification

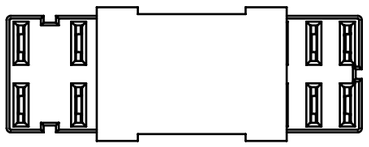
- unshielded power connectors
- 7,  9, 18, 20, 28, 32 pins
- 1- and 2-row
- current rating up to 15 A per contact
- SMT termination
- tape and reel packaging
- for available part numbers please refer to our website



## Dimensional Drawings

20 pin version



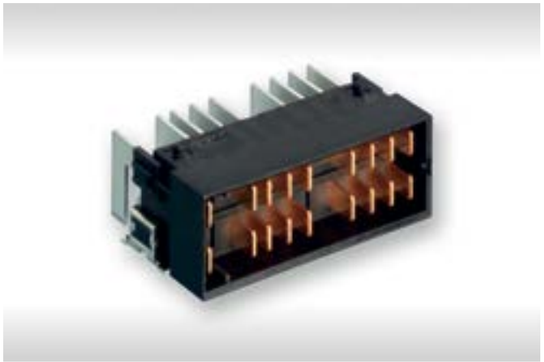
All dimensions in mm



# RIGHT ANGLE MALE

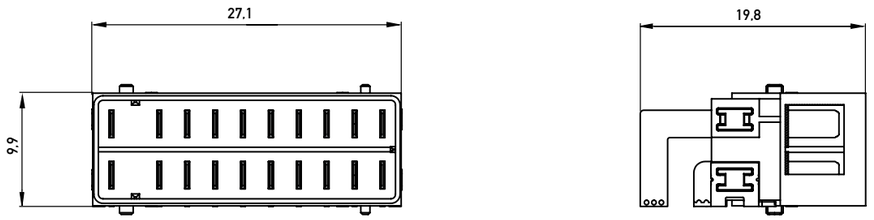
## Product Specification

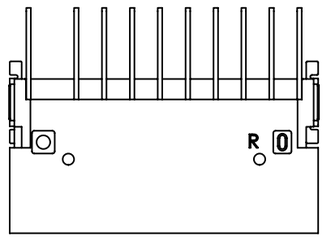
- unshielded power connectors
- 7, 9, 18, 20, 28, 32 pins
- 1- and 2-row
- current rating up to 15 A per contact
- SMT termination
- tape and reel packaging
- for available part numbers please refer to our website



## Dimensional Drawings

20 pin version




All dimensions in mm

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