



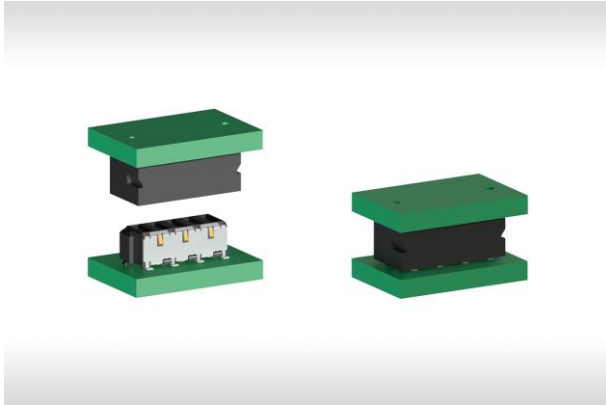
**MICROSPEED POWER MODULES &
POWER CONNECTORS**

MICROSPEED POWER MODULES

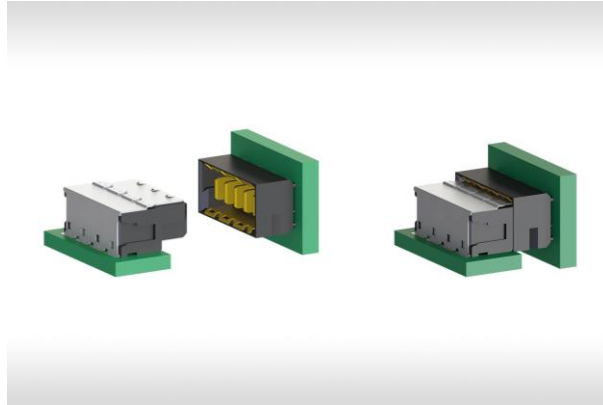
Miniaturized High-Power Connector



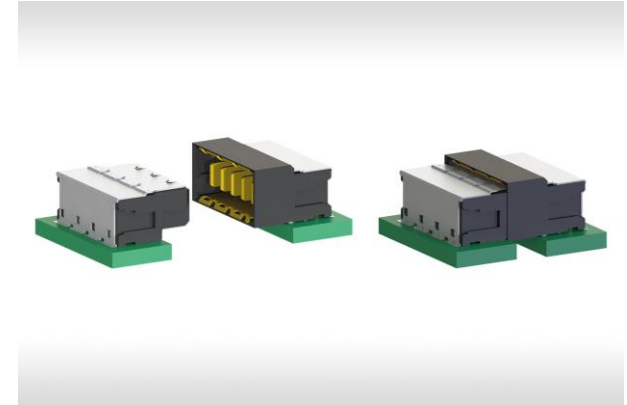
- Miniaturized design with high power blade contacts
- Pitch: 2 mm
- No. of pins: 5
- Current carrying capacity up to 18 A per contact at 150 °C limit temperature
- Temperature range: -55 °C to 125 °C
- Board-to-board height: 5 – 20 mm
- Termination technology: SMT and/or THR
- Capabilities:
 - Mezzanine
 - Orthogonal
 - Coplanar
- Variants:
 - Male and female
 - Vertical and right angle
 - Non-blind mate and blind mate
 - Shielded
 - 1-row



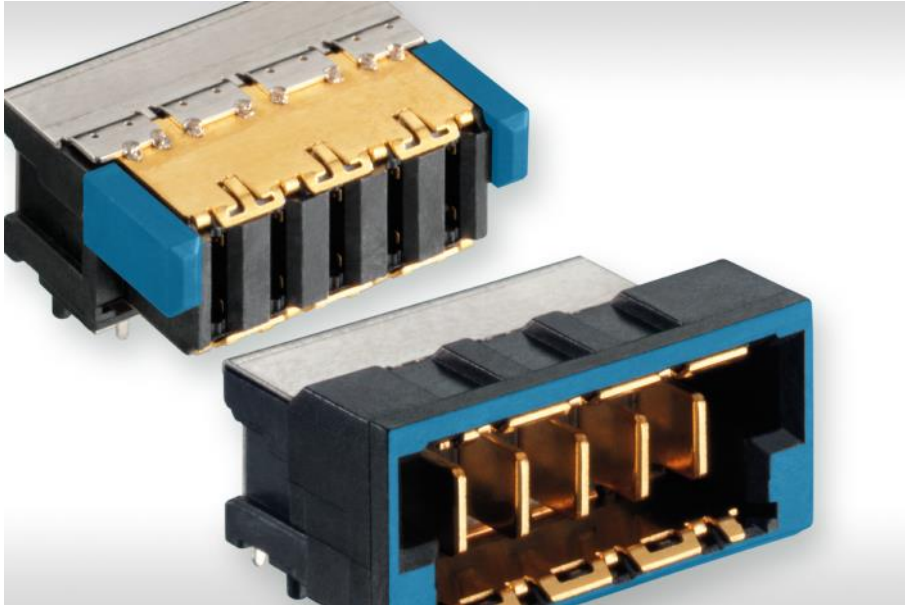
- Mezzanine



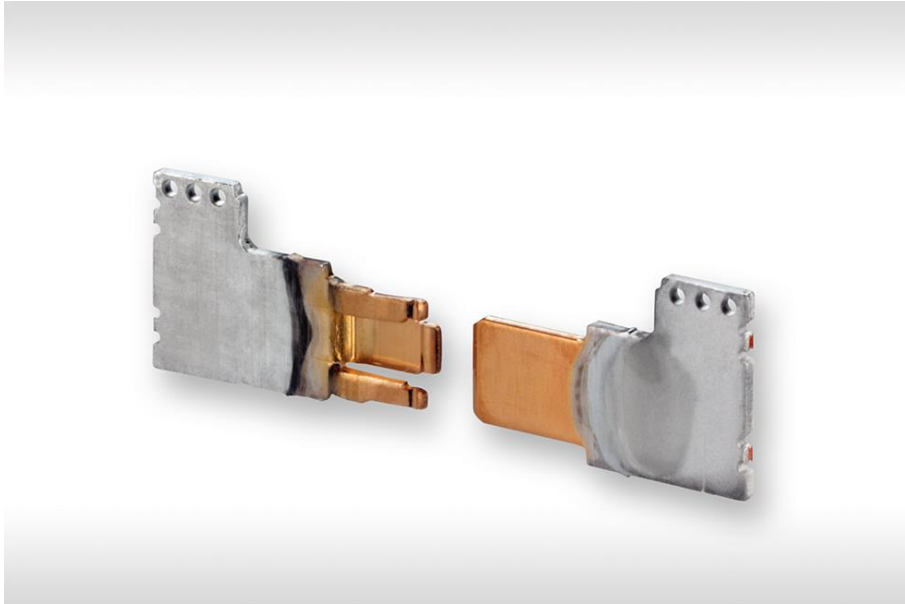
- Orthogonal



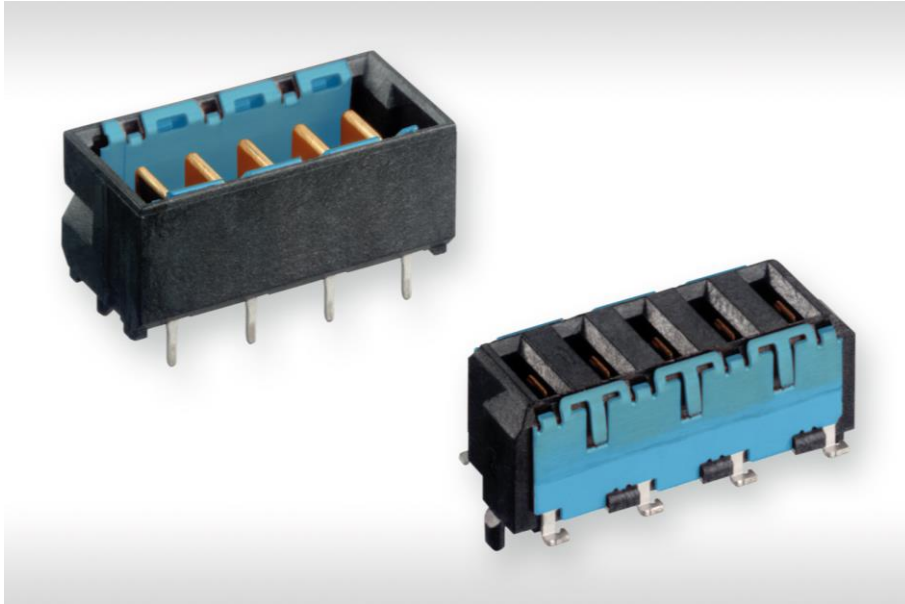
- Coplanar



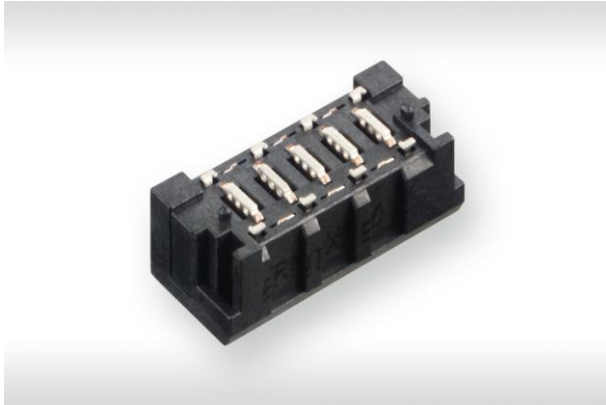
- Blind mate versions feature
 - A distinctive polarization of the mating face
 - Extended guides to capture the mating connector
 - Increased wall thickness
- Self-aligning feature guides the connectors into correct mating position
- Ensures consistent and reliable mating even in difficult conditions
- Robust connectors for harsh environments
- Shrouded housing protect contacts; high-temperature resistant materials
- Distinctive polarization avoids mismating



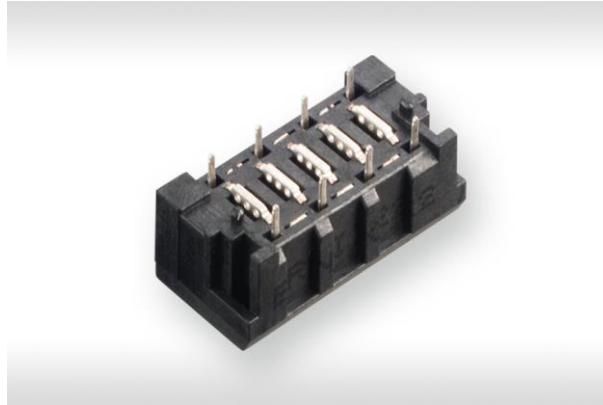
- Superior reliability due to dual-beam female contact design:
 - 3-point contacting
 - Homogeneous, rolled surface guarantees secure contact
 - Wide contact surface between mated pair
 - Low surface roughness minimizes abrasion
 - Low contact resistance
- Provides excellent misalignment tolerance/tolerance compensation
- Wipe length 1.5 mm
- Durability: > 500 mating cycles
- Contact finish: Au plating



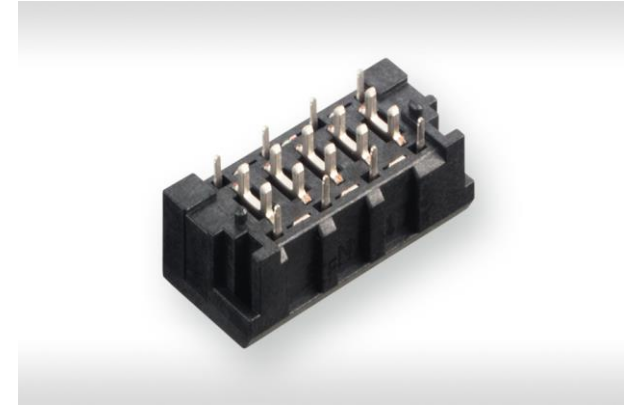
- Shielding can also be used as power planes:
5 A per shielding, or 10 A per shield pair
- Strain relief



- SMT:
 - SMT high power blade contacts
 - SMT shield terminals
- Double sided board assembly
- 100 % tested coplanarity of ≤ 0.1 mm leads to excellent soldering results

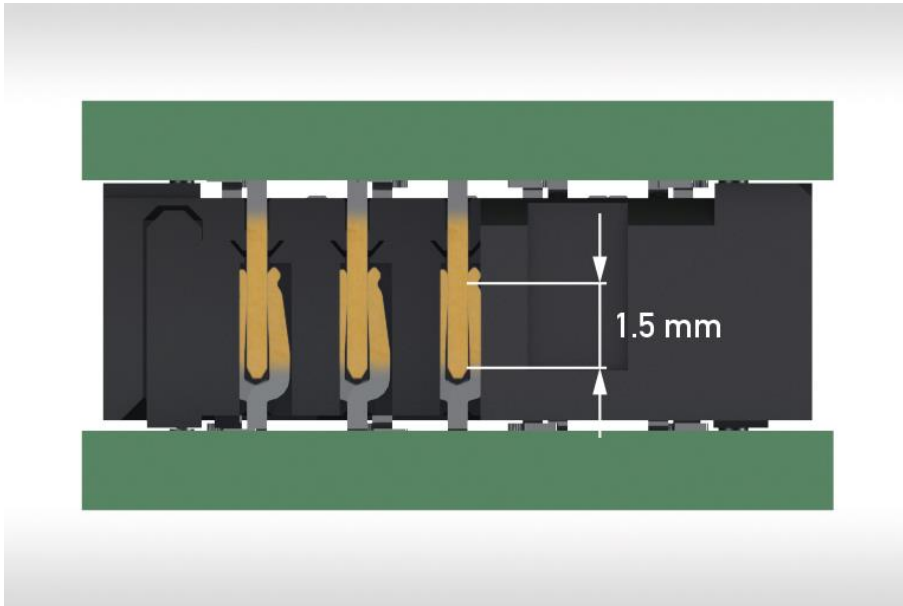


- SMT/THR
 - SMT high power blade contacts
 - THR shield terminals
- THR shield terminals provide strong mechanical solder joint for demanding applications

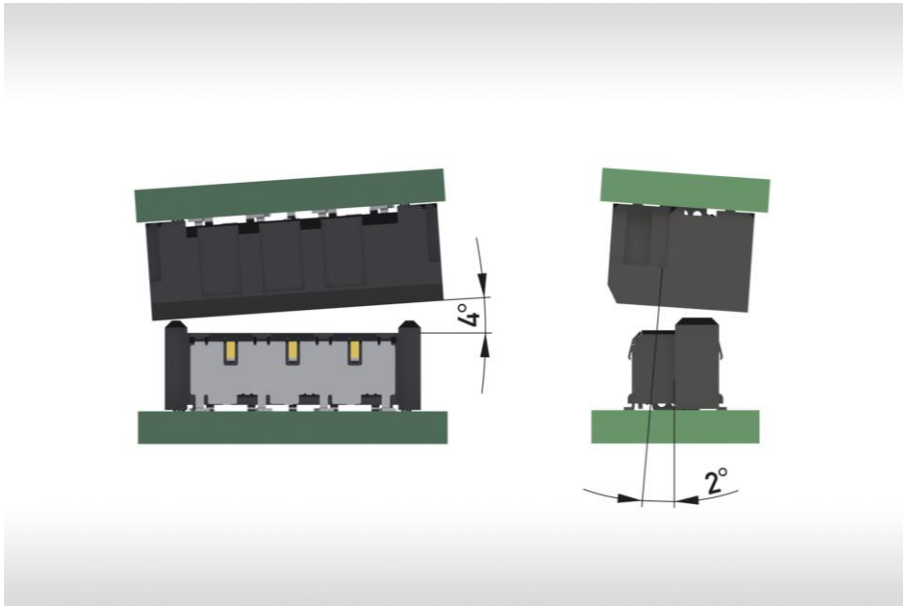


- THR
 - THR high power blade contacts
 - THR shield terminals
- THR shield terminals provide strong mechanical solder joint for demanding applications

- Wipe length 1.5 mm

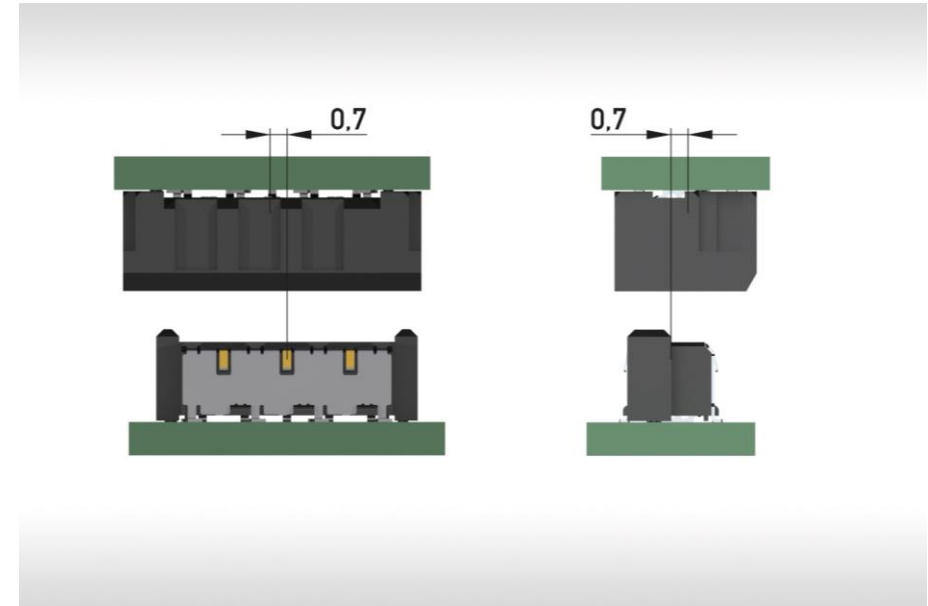


Insert Angle and Center Offset



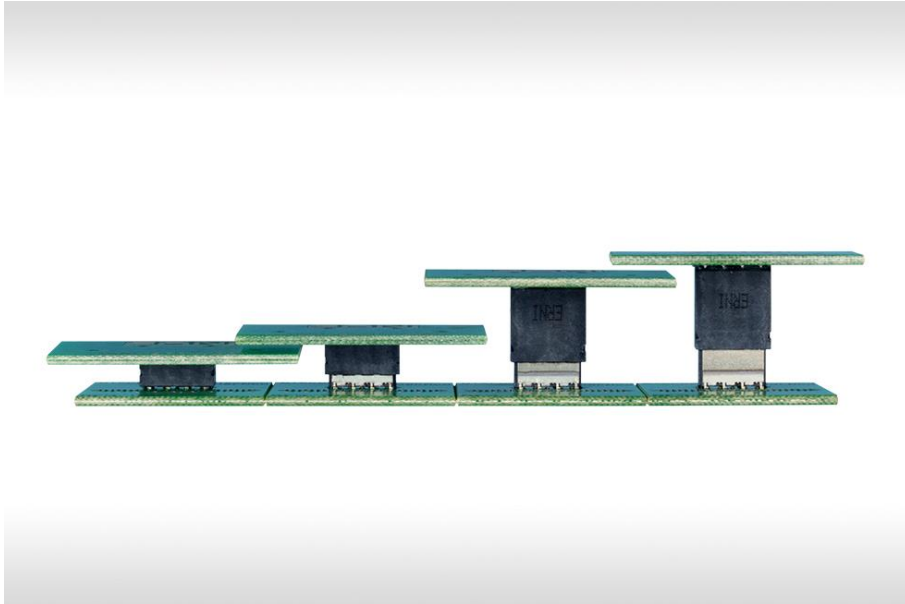
Blind mate version

- Lengthwise insert angle of 4°
(1° in combination with center offset)
- Crosswise insert angle of 2°



Blind mate version

- Center offset of 0.7 mm



Flexible board stacking heights

- Vertical versions with 4 different heights
 - Female 10 mm, 8 mm, 6 mm, 4 mm
 - Male 10 mm, 9 mm, 2 mm, 1 mm
- Allow flexible board stacking from 5 mm to 20 mm



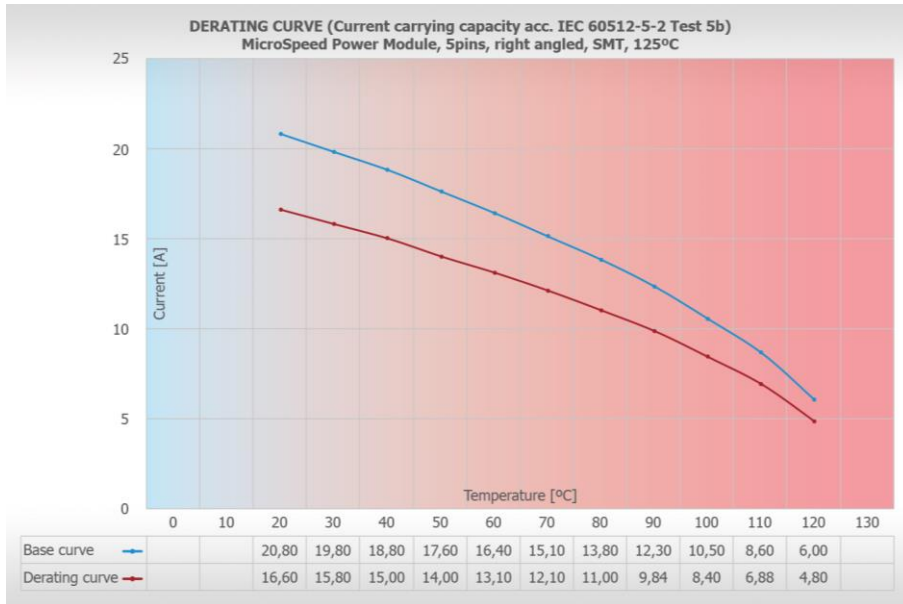
Power modules with high-current contacts for the power supply of flat assemblies

- Shielded non-blind mate versions 5-pin
- Shielded blind mate versions 5-pin

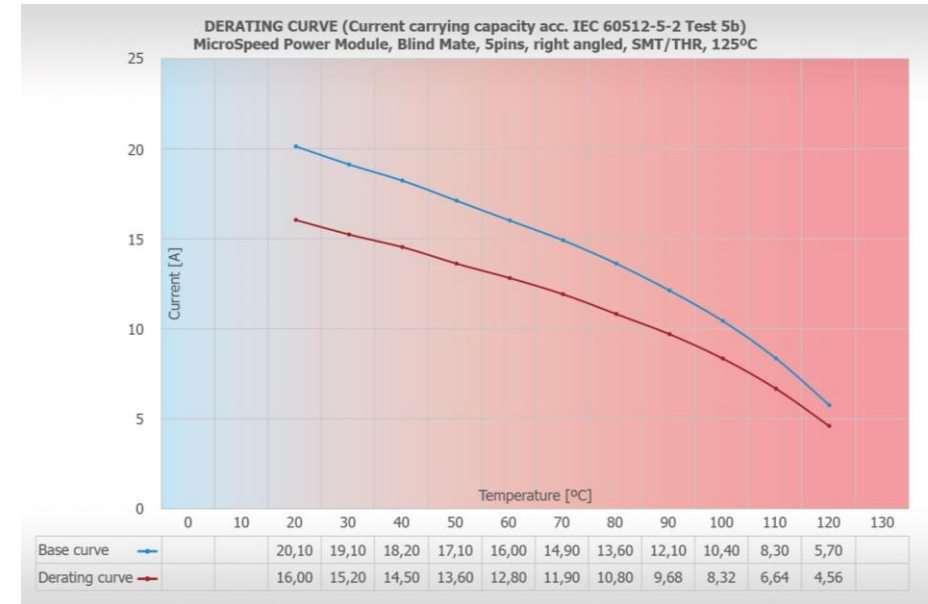
TECHNICAL CHARACTERISTICS

Performance level 1		> 500 mating cycles
Contact resistance	[mΩ]	< 4
Insulation resistance	[MΩ]	> 10 ⁴
Rated voltage	[V]	The permissible operating voltages depend 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 creepage 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.
Contact test voltage	[V _{eff}]	500 V (contact – contact) 500 V (contact – ground)
Current carrying capacity	A at 20 °C	up to 16 A (at 125 °C limit temperature) up to 18 A (at 150 °C limit temperature)
Insertion and withdrawal force	[N] typ.	5 N per contact
Temperature range	°C	from –55 to +125
Flame rating		UL94 V-0

Current Carrying Capacity



Standard



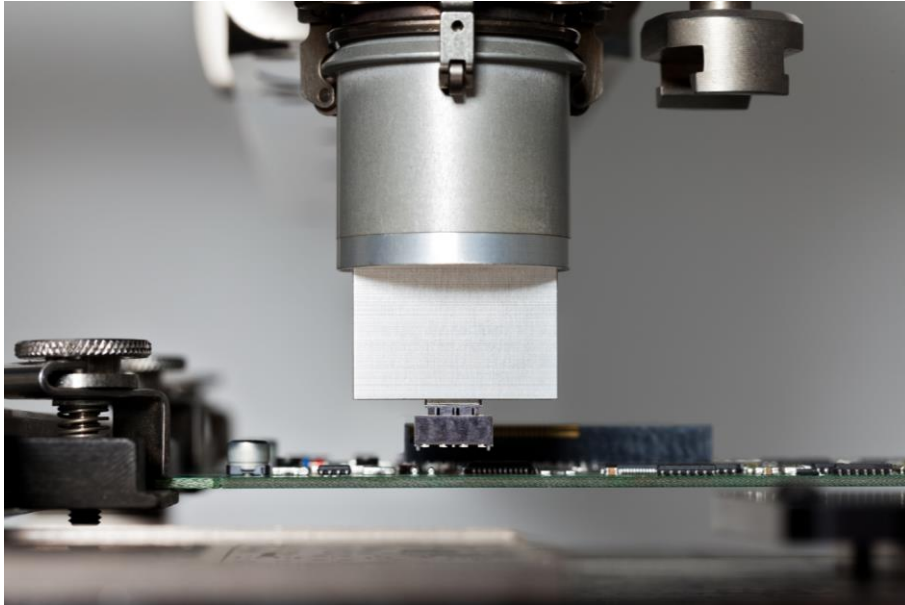
Blind mate

- Current rating varies for connectors having different orientation, pin count, termination, etc.
- The sum of the ambient temperature and the temperature increase caused by the current load must not exceed the limit temperature (e.g. 125 °C)
- ERNI's derating curves are done with simple single-layer boards (conservative)

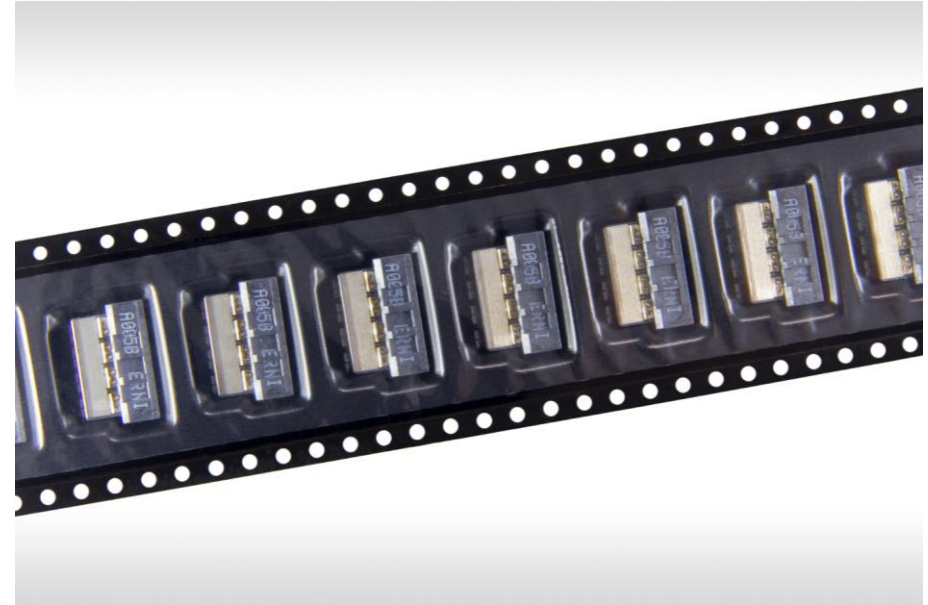
PROCESSING & RELIABILITY

Board Assembly

Packaging, Board Assembly

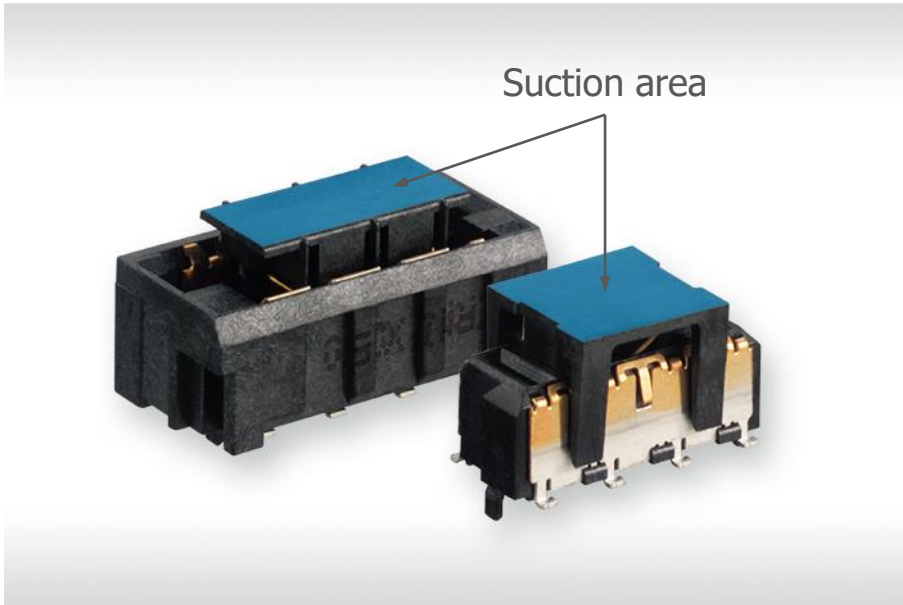


- Fully automated board assembly with pick-and-place machines
- Precisely placed into the solder paste with consistent pressure/without damage to the leads

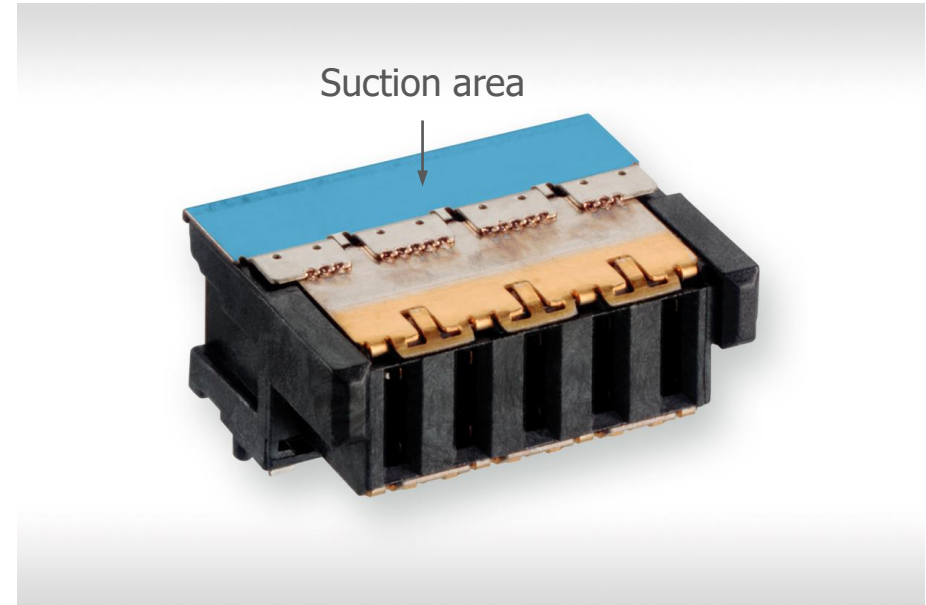


- Transport safe packaging due to tape & reel
- Allow for efficient processing/assembly

Pick & Place Pad

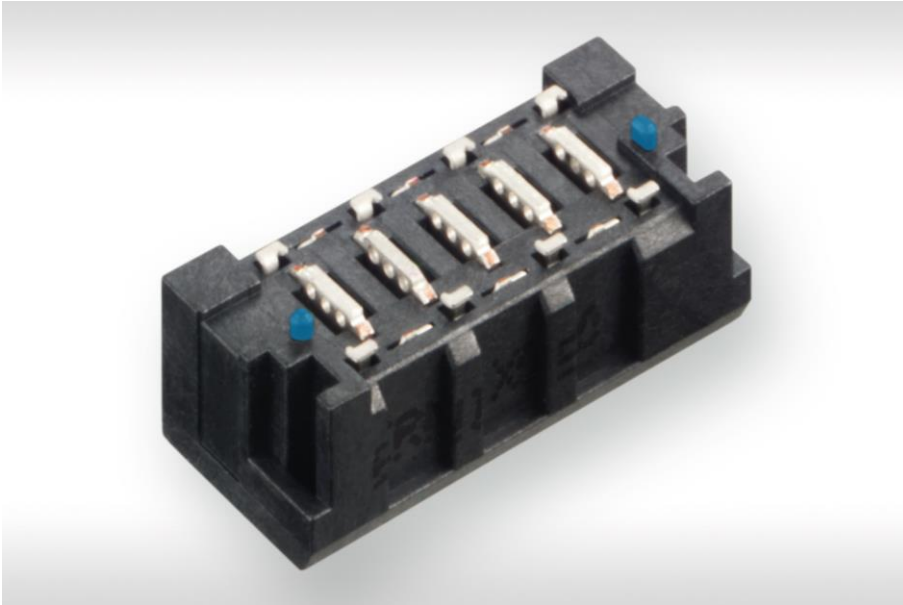


- Pick and place pad for vacuum pick-up nozzles provided for vertical connectors
- High-temperature plastic to withstand reflow solder temperatures



- Right angled versions are commonly picked up at the smooth shield surface

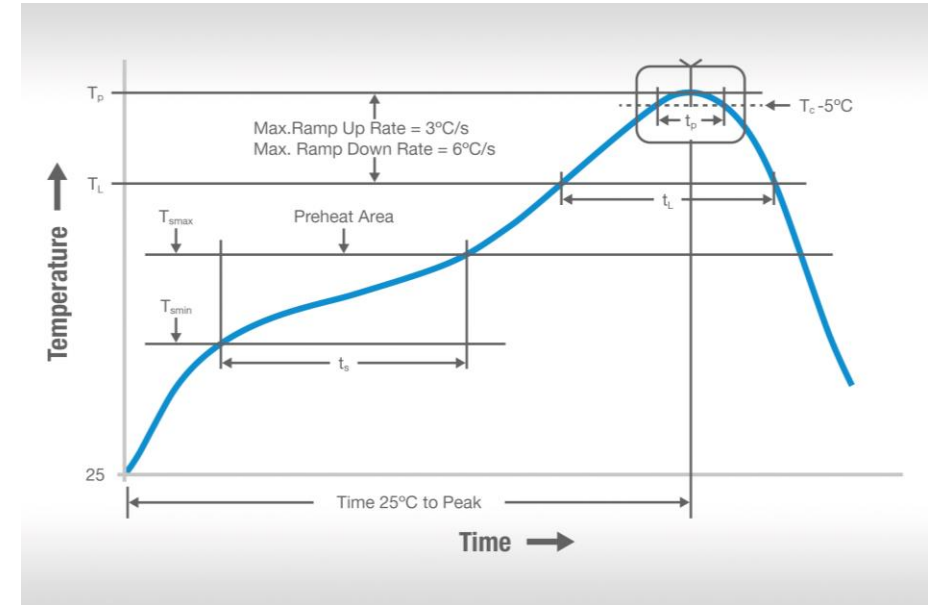
Positioning



- Round and oval positioning peg for tolerance compensation on the PCB

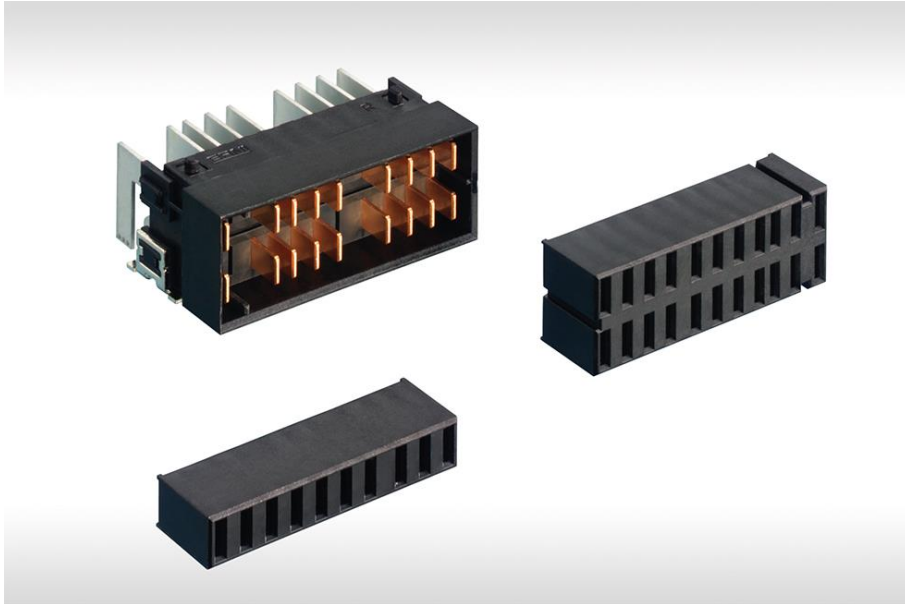


- Paste printing: recommended stencil 150 μm
- Reflow / vapor phase soldering for SMT / THR components
- Soldering profile acc. to IPC/JEDEC J-STD-020
- Withstands peak temperatures of up to 260 $^{\circ}\text{C}$



- Suitable for overhead soldering (straight low-profile SMT male and female connectors)
- Tin-plated SMT pads / THR terminals with nickel underplating

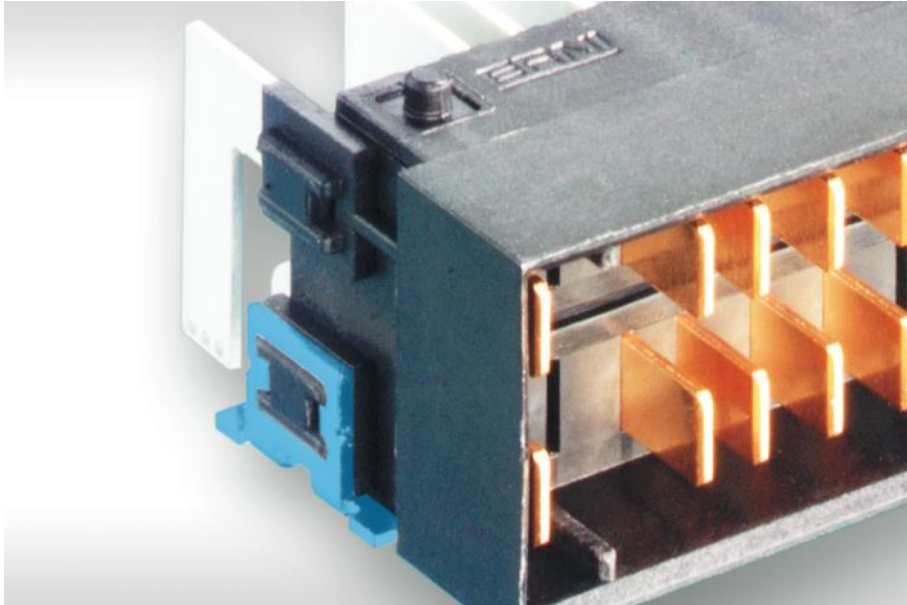
POWER CONNECTORS



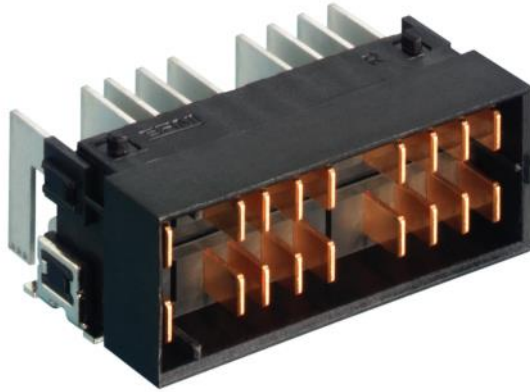
- Miniaturized design with high power blade contacts
- No. of pins:
 - 7 (up to 10 possible)
 - 9 (up to 22 possible)
 - 18 (up to 22 possible)
 - 20
 - 32 (up to 44 possible)
- Current carrying capacity up to 15 A per contact at 125 °C limit temperature
- Temperature range: -55 °C to 125 °C
- Termination technology: SMT
- Capabilities:
 - Orthogonal
- Variants:
 - Male 90°
 - Female 180°
 - Unshielded
 - 1 and 2-row



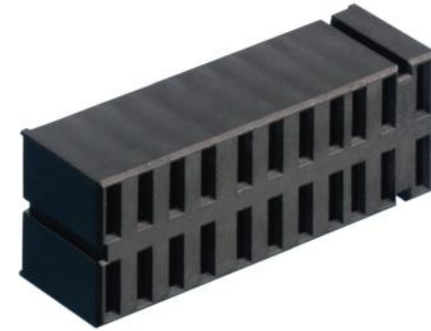
- SMT high power blade contacts



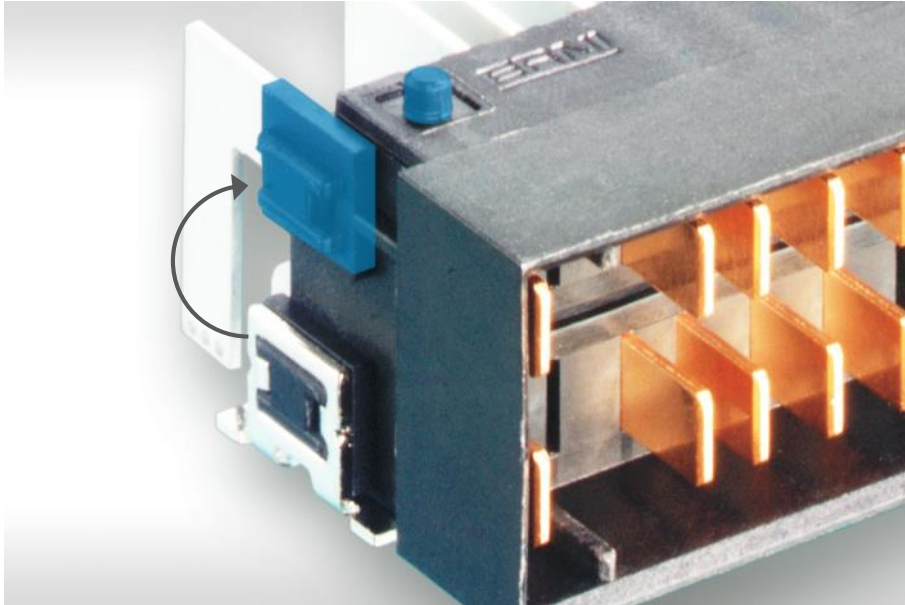
- Robust SMT soldered clips with 90° male connectors
- Extremely high shear forces due to form-fitting fastening in the housing
- Strain relief



- Selective assembly possible



- Increased contact gaps enable larger clearance and creepage distances



- Inverse assembly possible with selected double-row male multipoint connectors

ERNI
