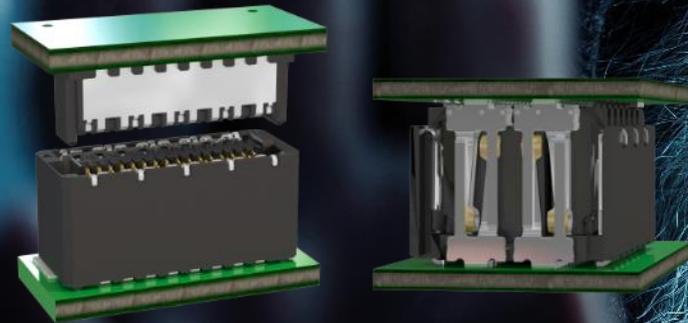


# Zero8



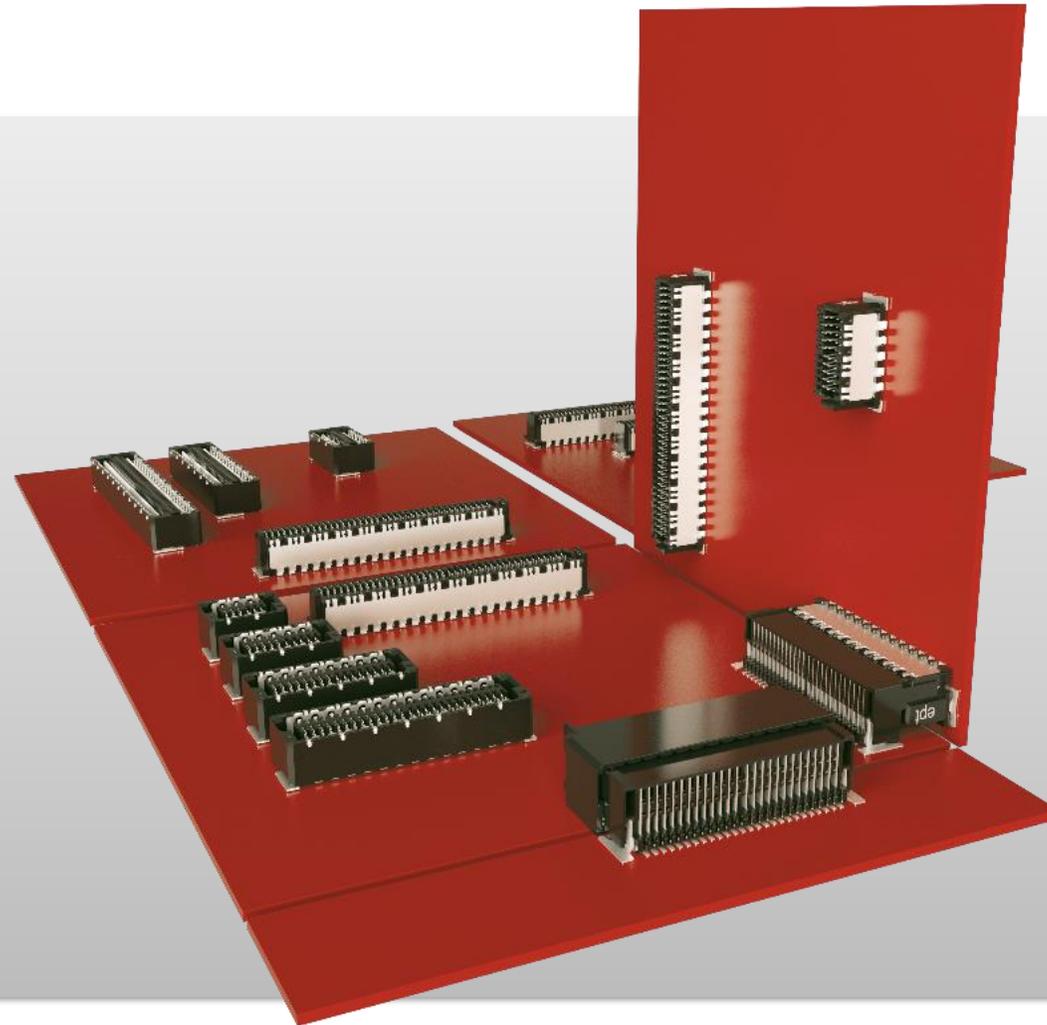
Board-to-board connector with 0.8mm pitch  
with ScaleX technology

# Zero8

Product family



- Board-to-board-connector
- 12 to 80 pins with 0.8 mm pitch
- 6 - 21 mm PCB distance
- Designs:
  - straight
  - right angled
  - shielded & unshielded
- SMT soldering
- 16 Gbps data transmission rate



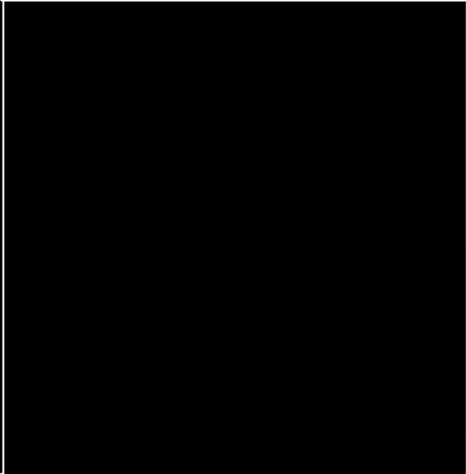
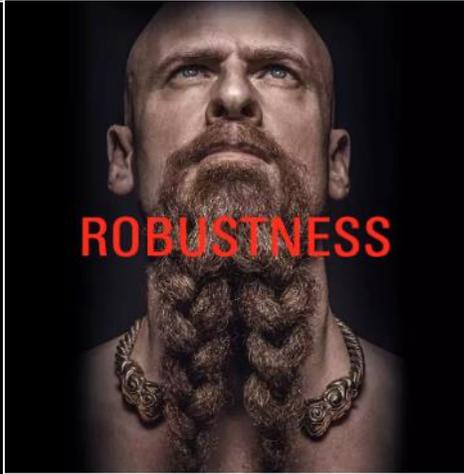
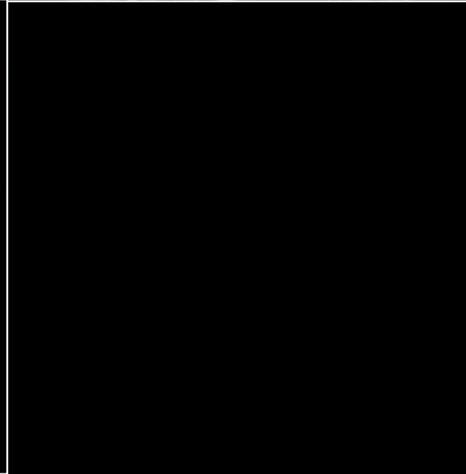
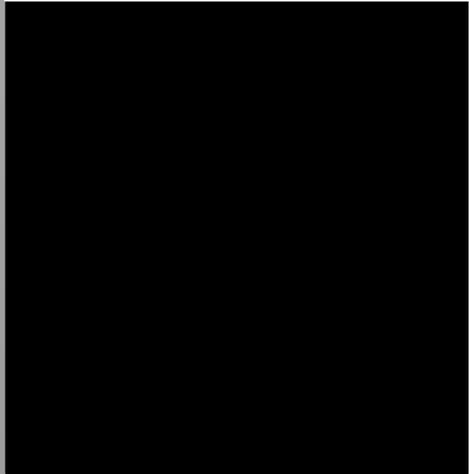
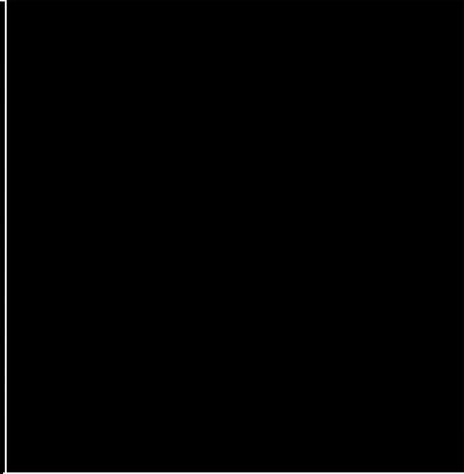
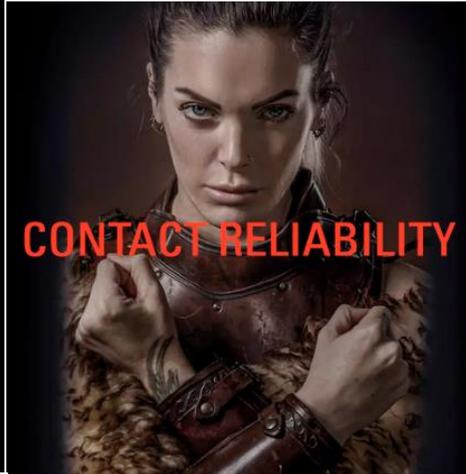
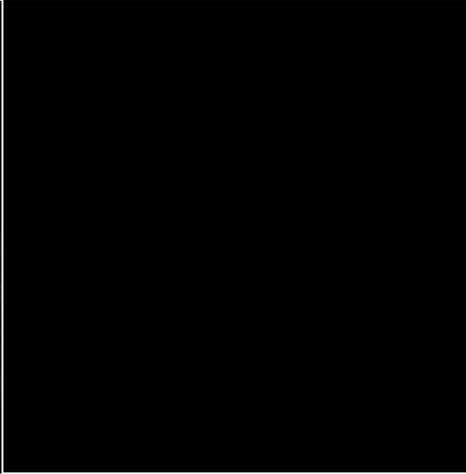
Zero8

[Video on YouTube](#)

Zero8 - Board-to-board connector with 0.8mm pitch with ScaleX technology

# Zero limits

Discover the Zero8 product family's 5 Superpowers!



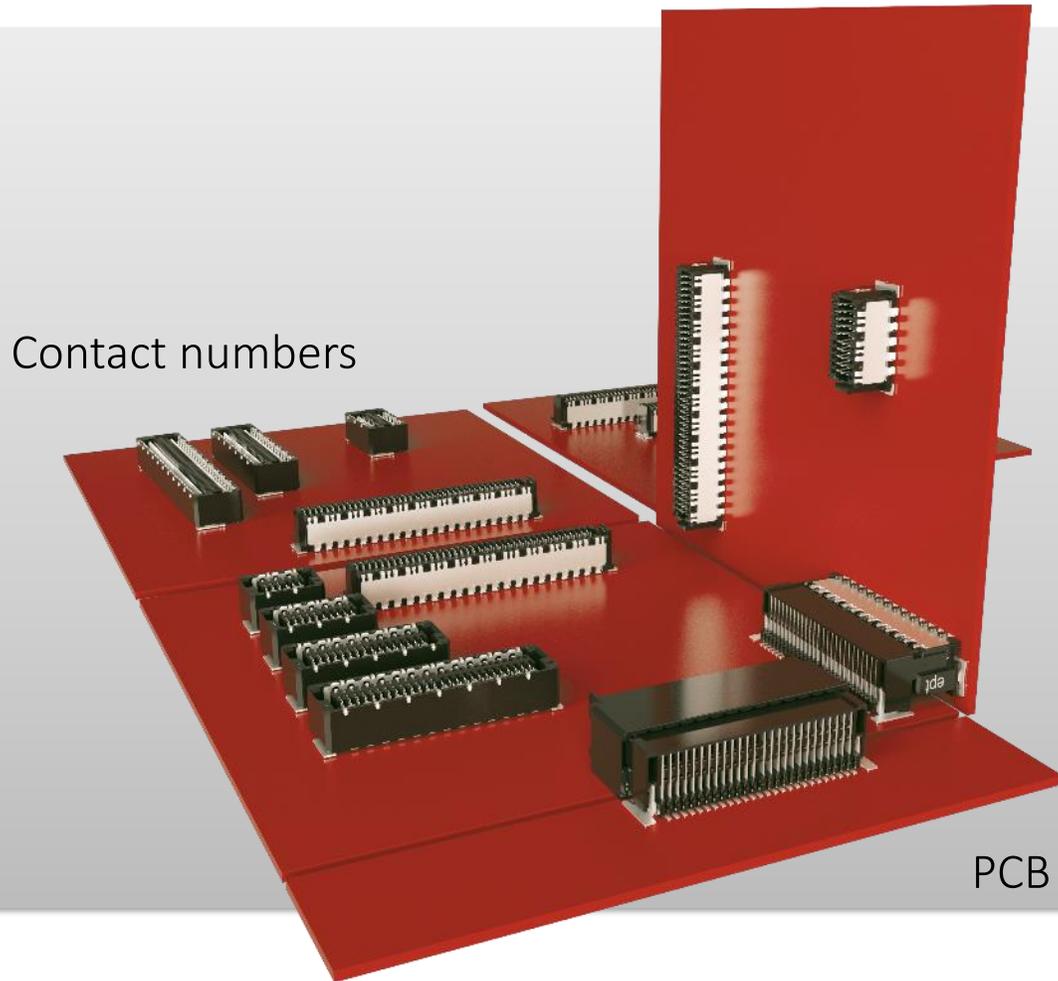
# SUPERPOWER EFFICIENCY

- Saves space thanks to 0.8 mm pitch
- Variable number of contacts from 12 to 80
- Available with or without shielding
- Stack heights from 6 to 21 mm
- Angled types for 90° and 180° applications

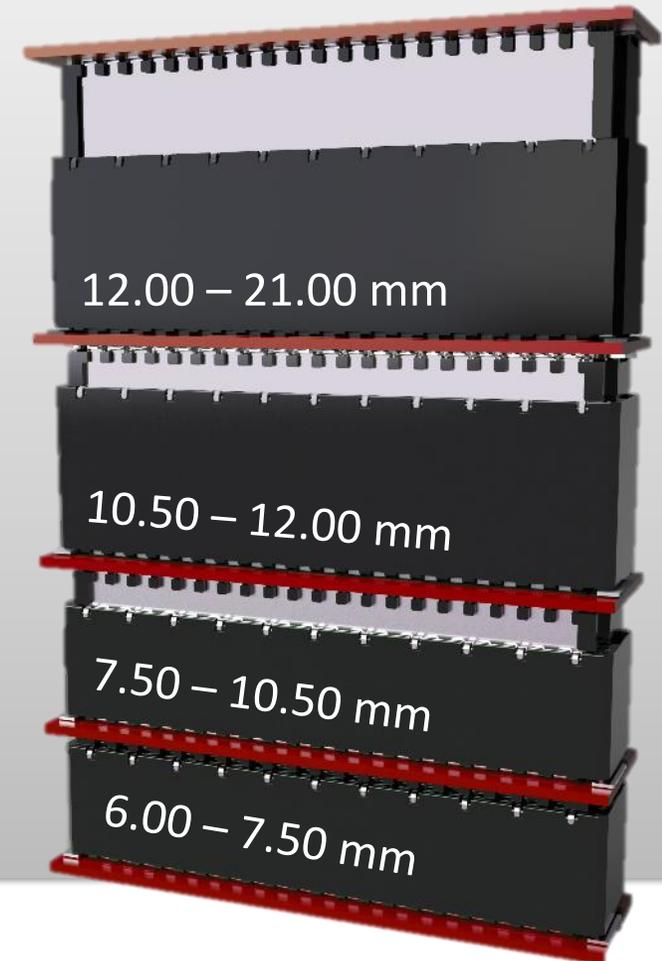


# »Zero limits«

Countless combinations



PCB distances



# Zero8

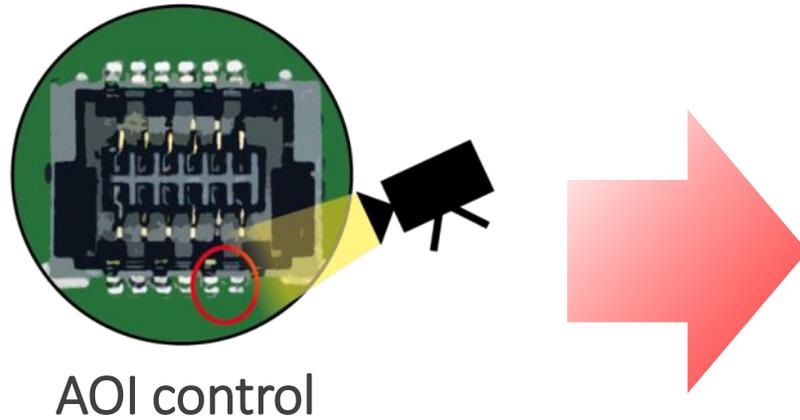
## Stacking heights



		plug			
		plug low	plug mid	plug high	plug x-high
socket	socket low	6.00 – 7.50 mm	7.50 – 9.00 mm	12.00 – 13.50 mm	13.50 – 15.00 mm
	socket mid	9.00 – 10.50 mm	10.50 – 12.00 mm	15.00 – 16.50 mm	16.50 – 18.00 mm
	socket high	12.00 – 13.50 mm	13.50 – 15.00 mm	18.00 – 19.50 mm	19.50 – 21.00 mm

# Zero8

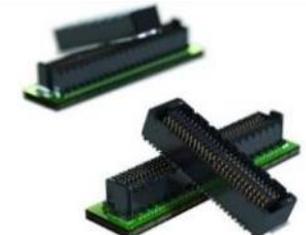
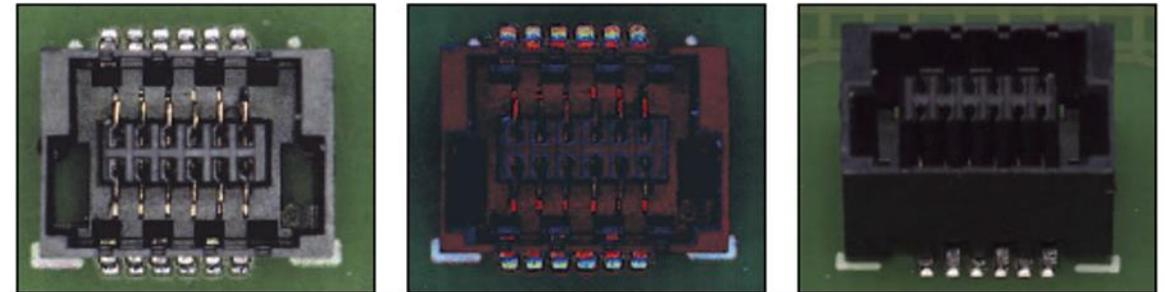
AOI unshielded version



## AOI-optimized design for miniaturized connectors

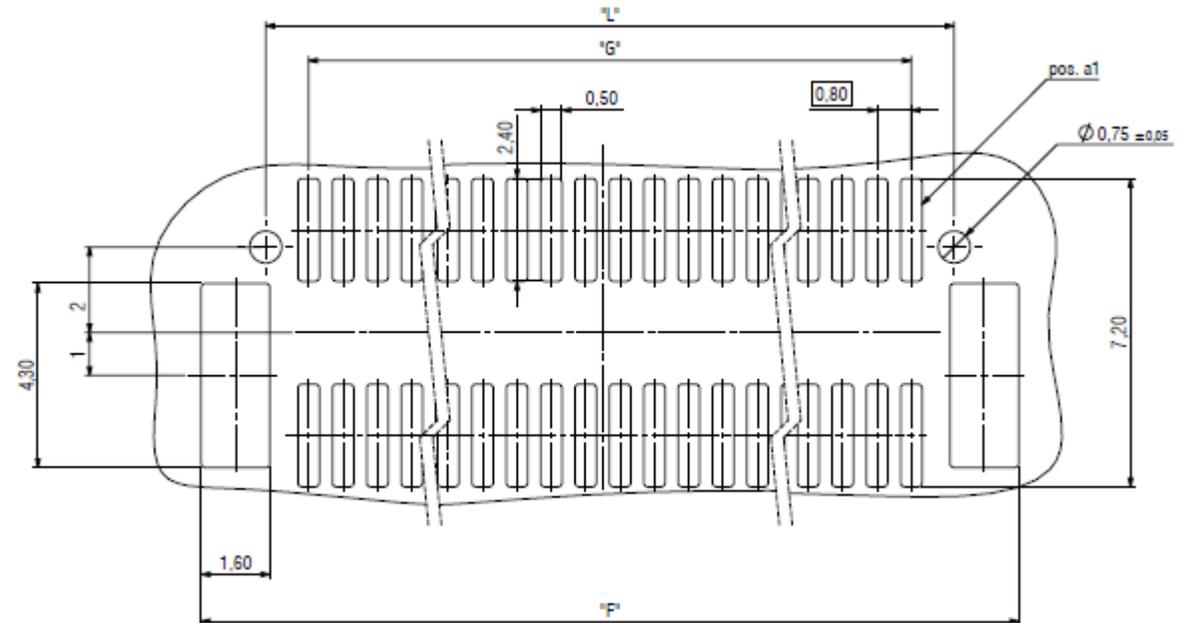
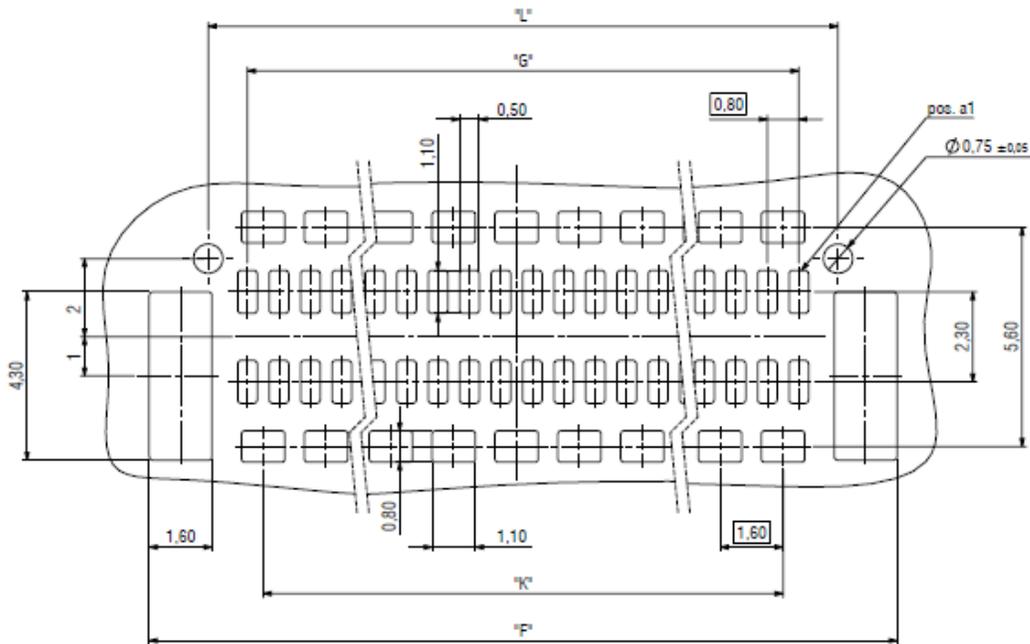
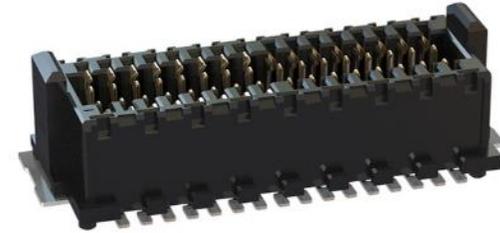
High defect detectability: Establishing criteria during the development phase

To find out which contact design is suitable for the automatic optical inspection (AOI), ept and Viscom collaborated on the development of a connector. Adherence to the resulting specifications simplified the inspection process. It also reduced manufacturing costs.



# Zero8

Footprints Plug: shielded / unshielded, straight versions

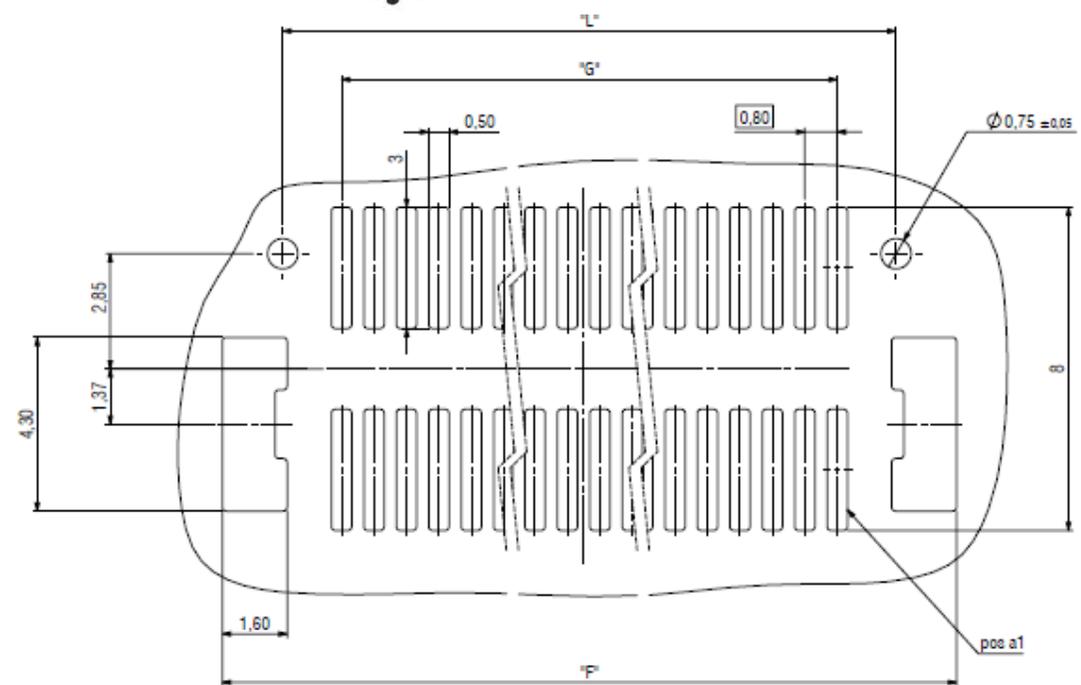
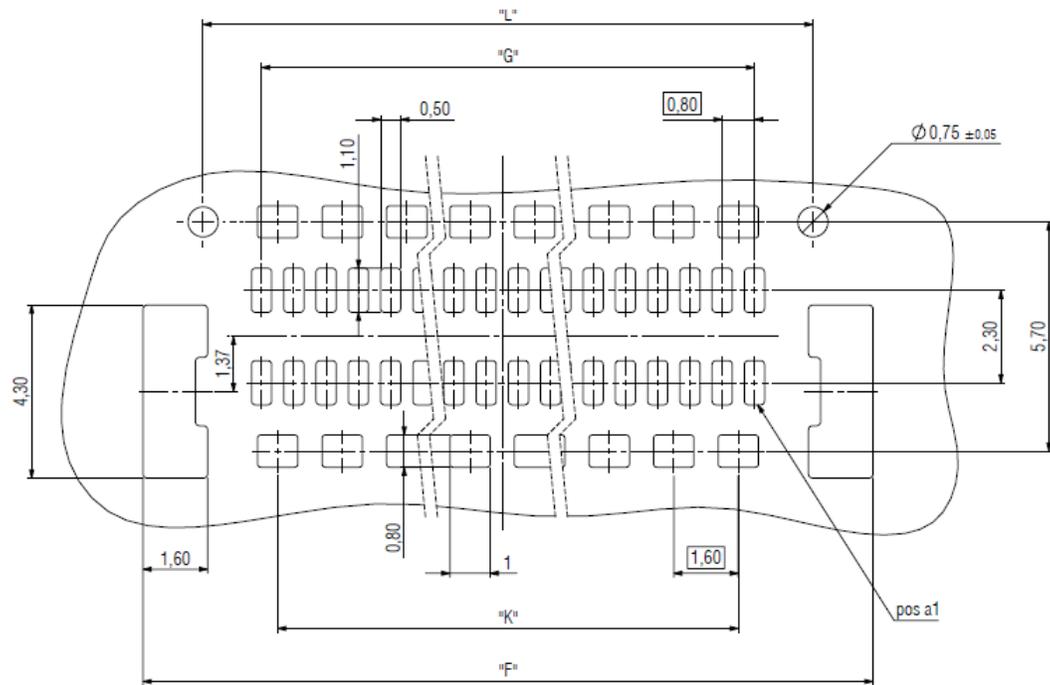
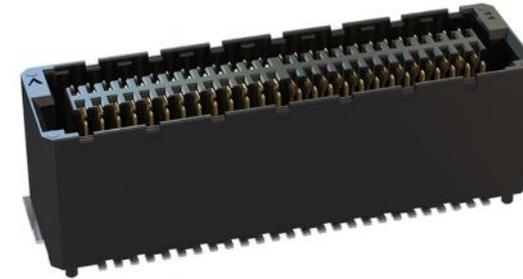
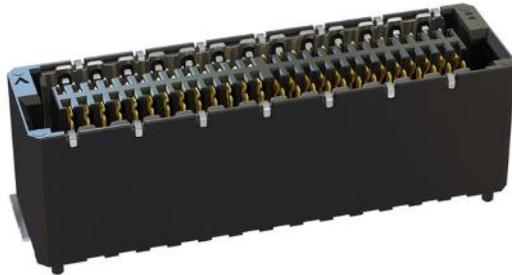


Zero8 - Board-to-board connector with 0.8mm pitch with ScaleX technology



# Zero8

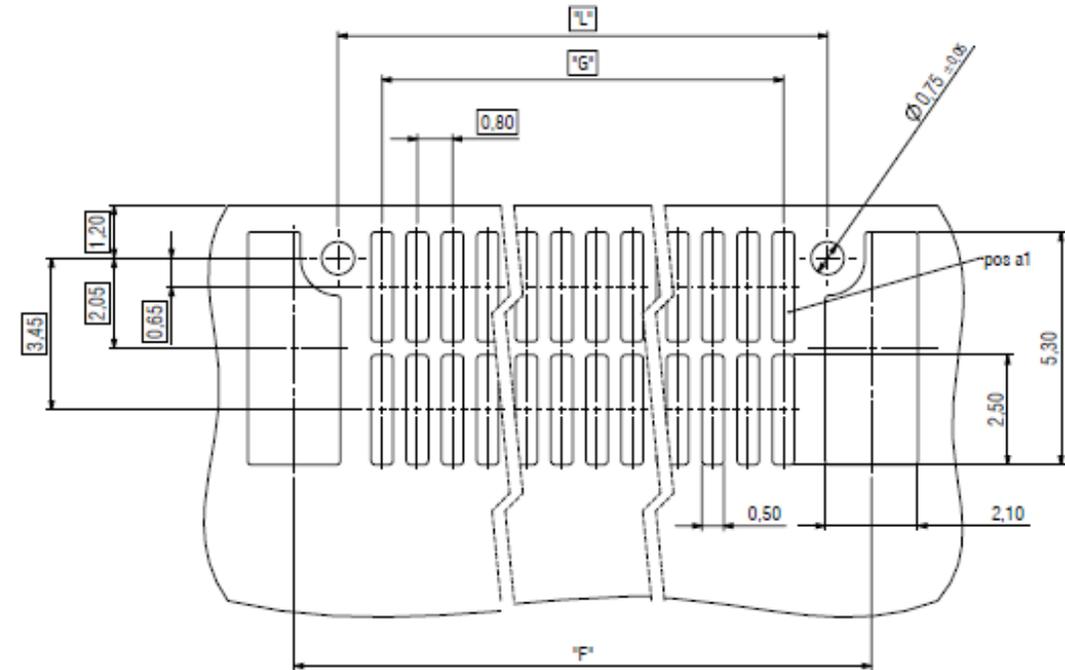
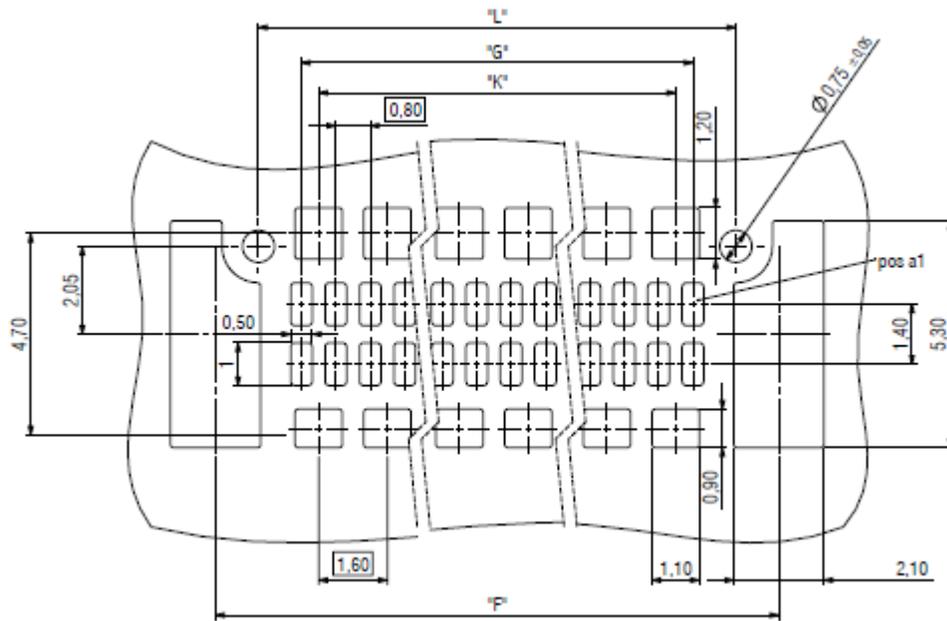
Footprints Socket: shielded / unshielded, straight versions



Zero8 - Board-to-board connector with 0.8mm pitch with ScaleX technology

# Zero8

Footprints Plug: shielded / unshielded, angled versions



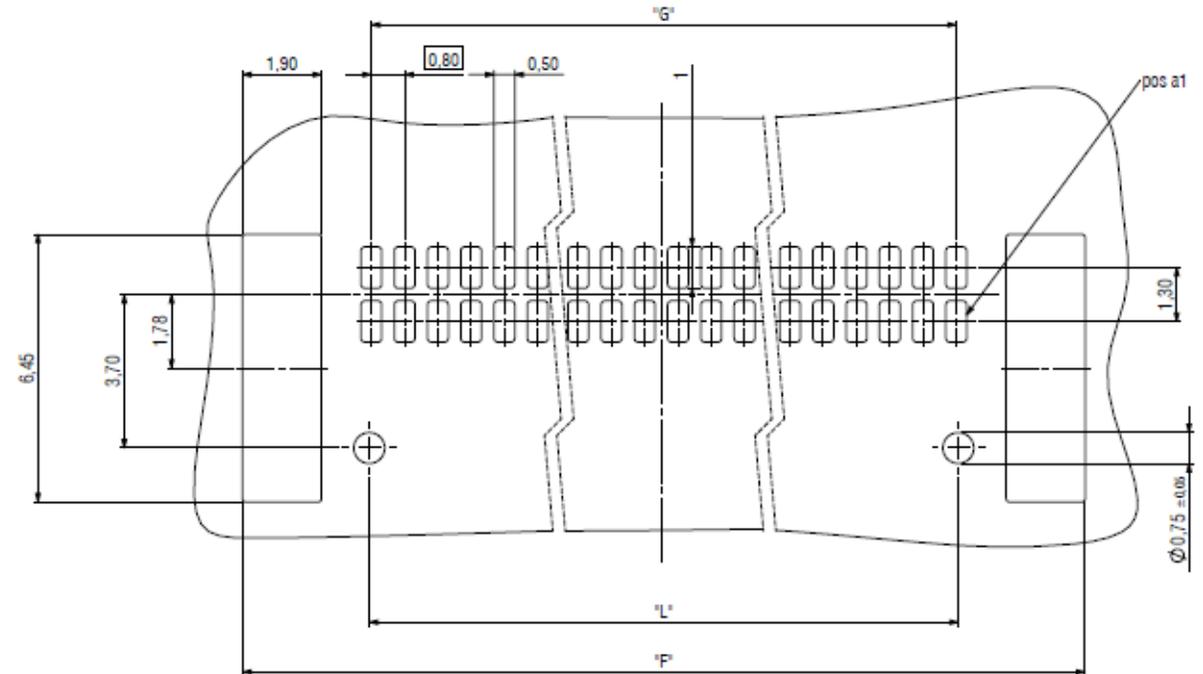
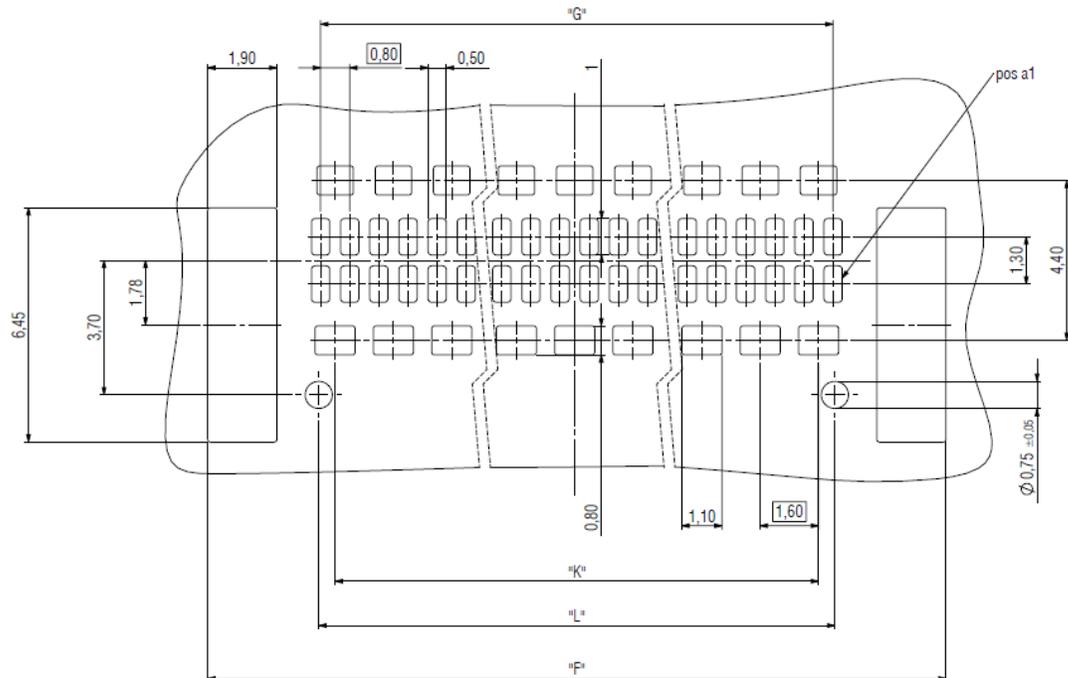
Zero8 - Board-to-board connector with 0.8mm pitch with ScaleX technology

# Zero8

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Footprints Socket: shielded / unshielded, angled versions -> same layout signal contacts



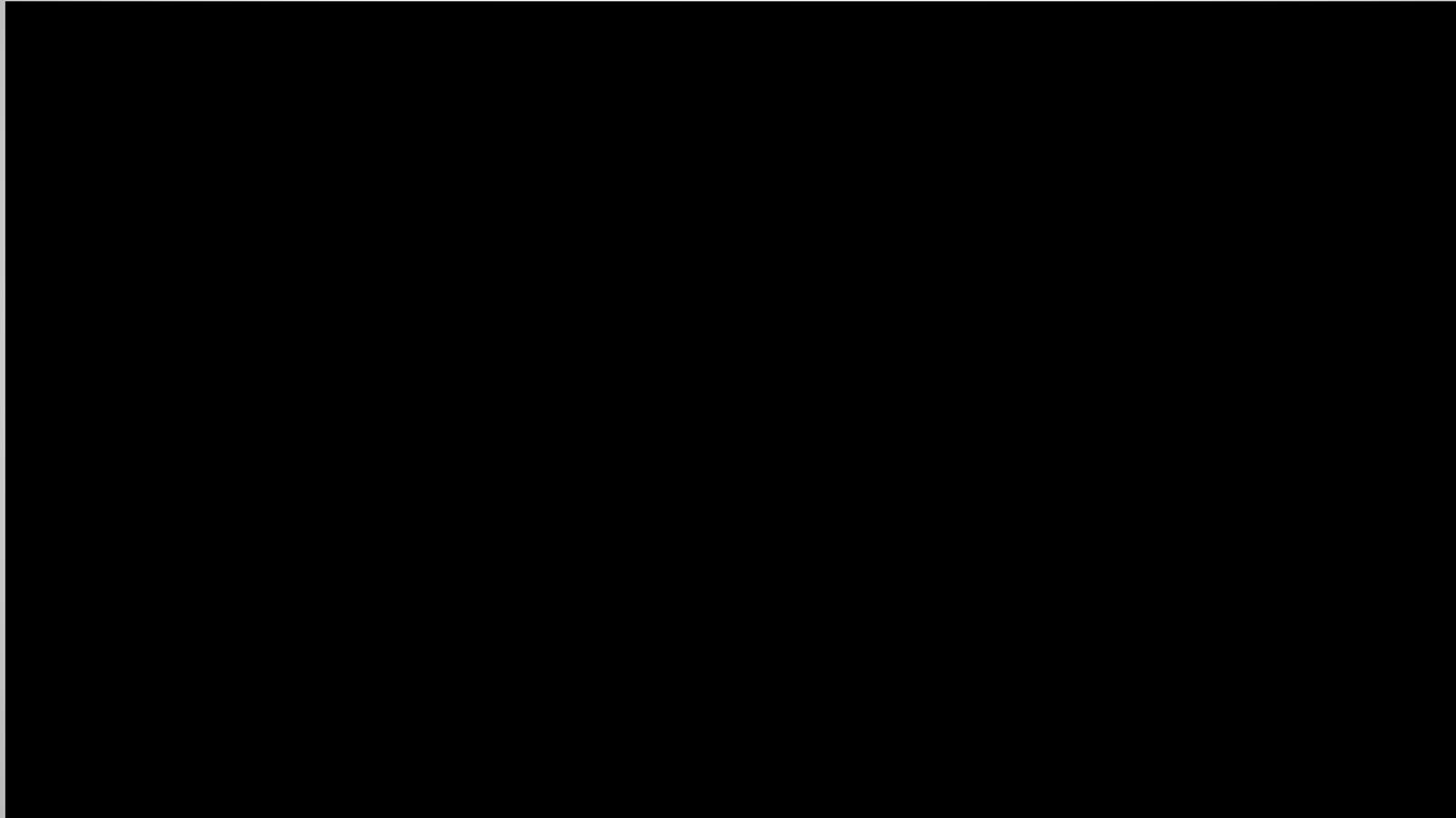
# SUPERPOWER CONTACT RELIABILITY

- Innovative ScaleX contact system
- Two contact areas per pin
- Resistance to shock and vibration
- Absolutely secure mating
- Able to withstand at least
- 500 mating cycles



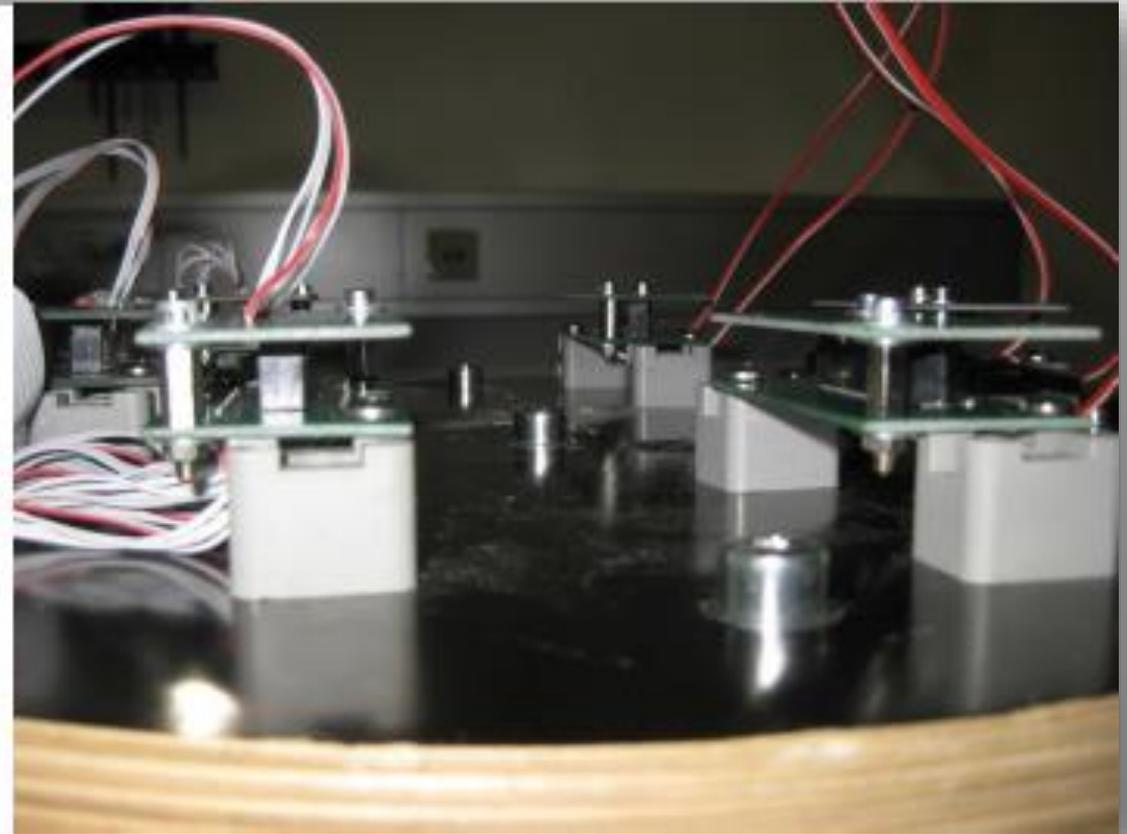
# Zero8

Double Sided Contact System



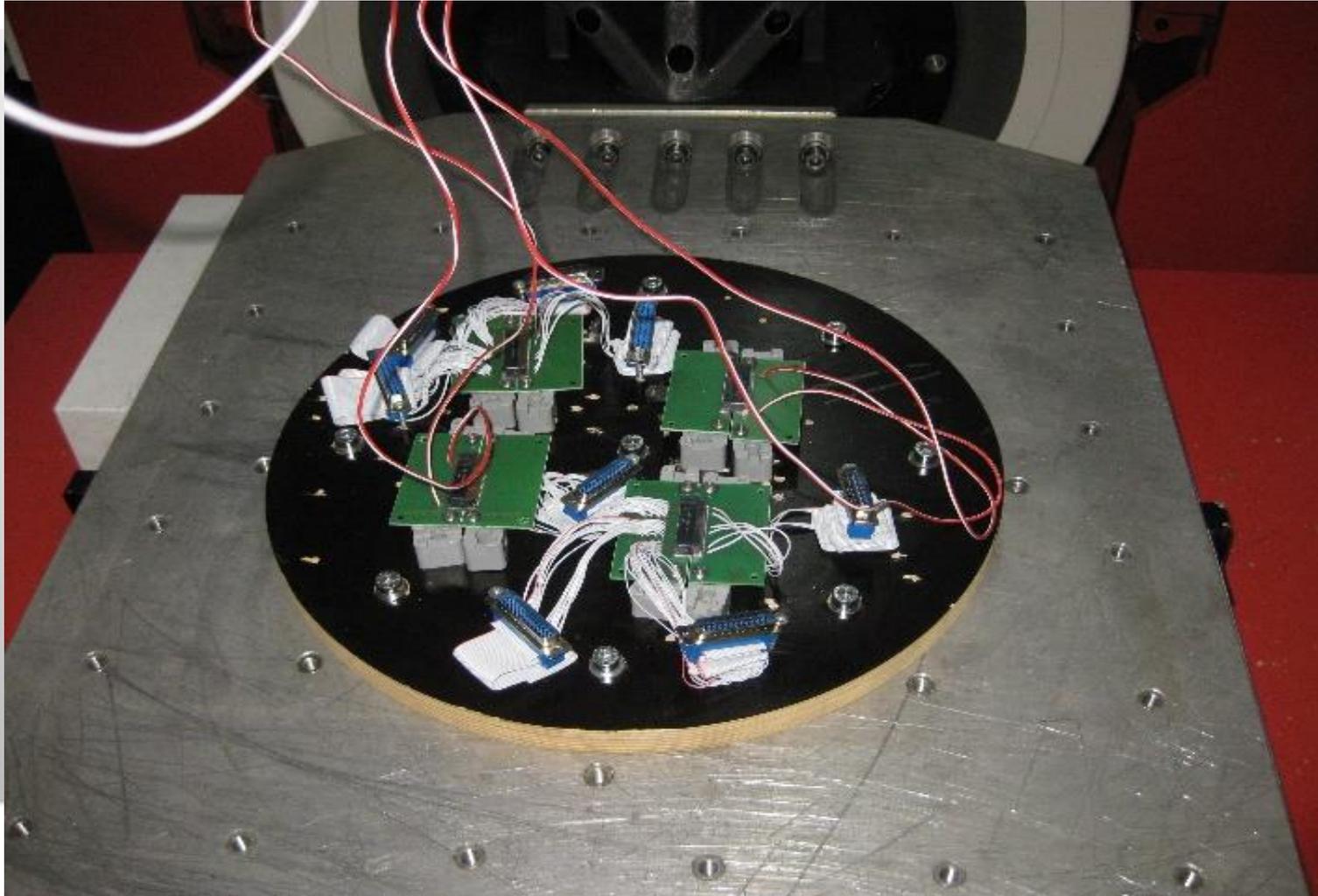
# Zero8

Vibration & Shock: Testing setup straight versions



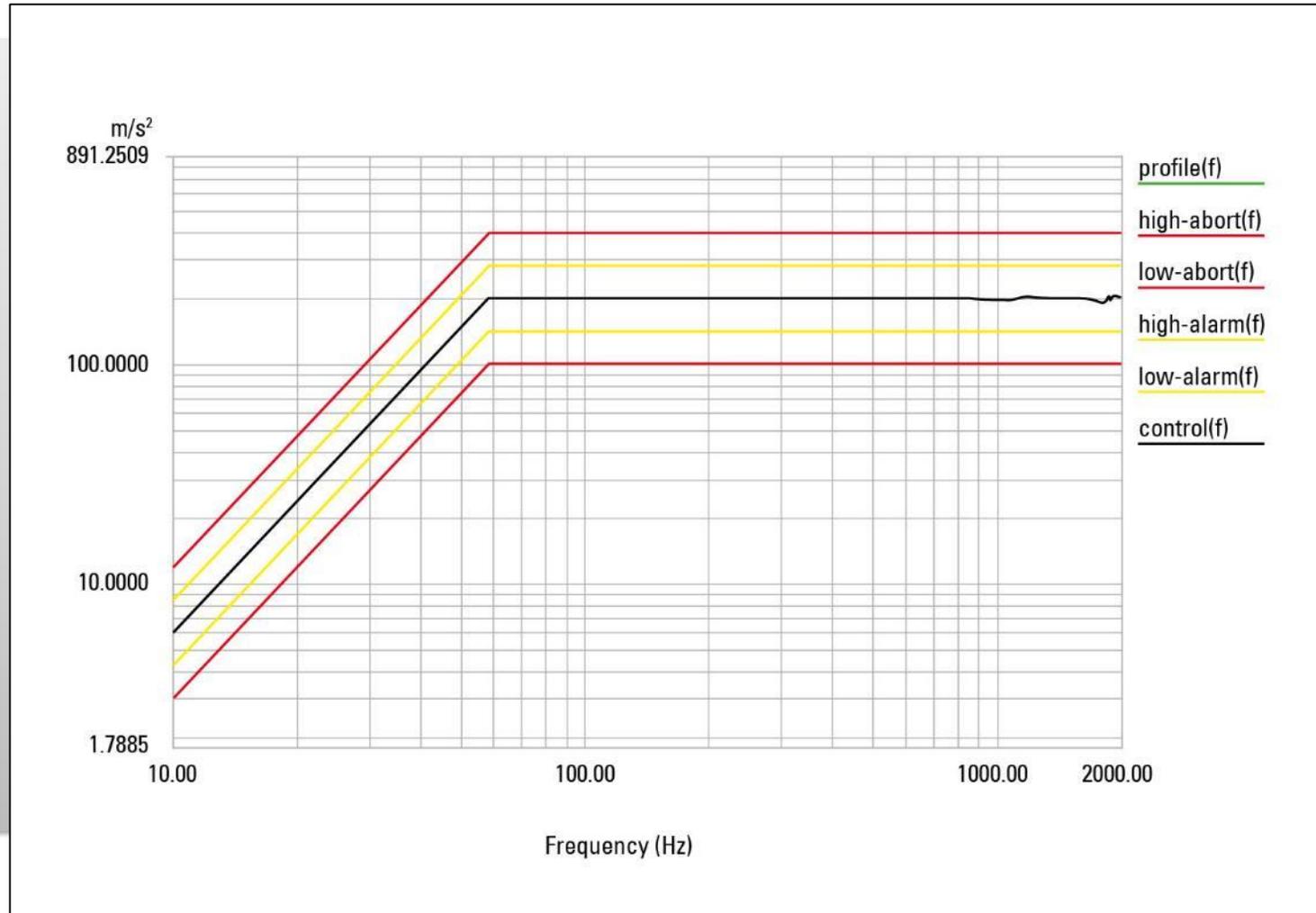
# Zero8

Vibration & Schock train norm: Testing setup angled versions



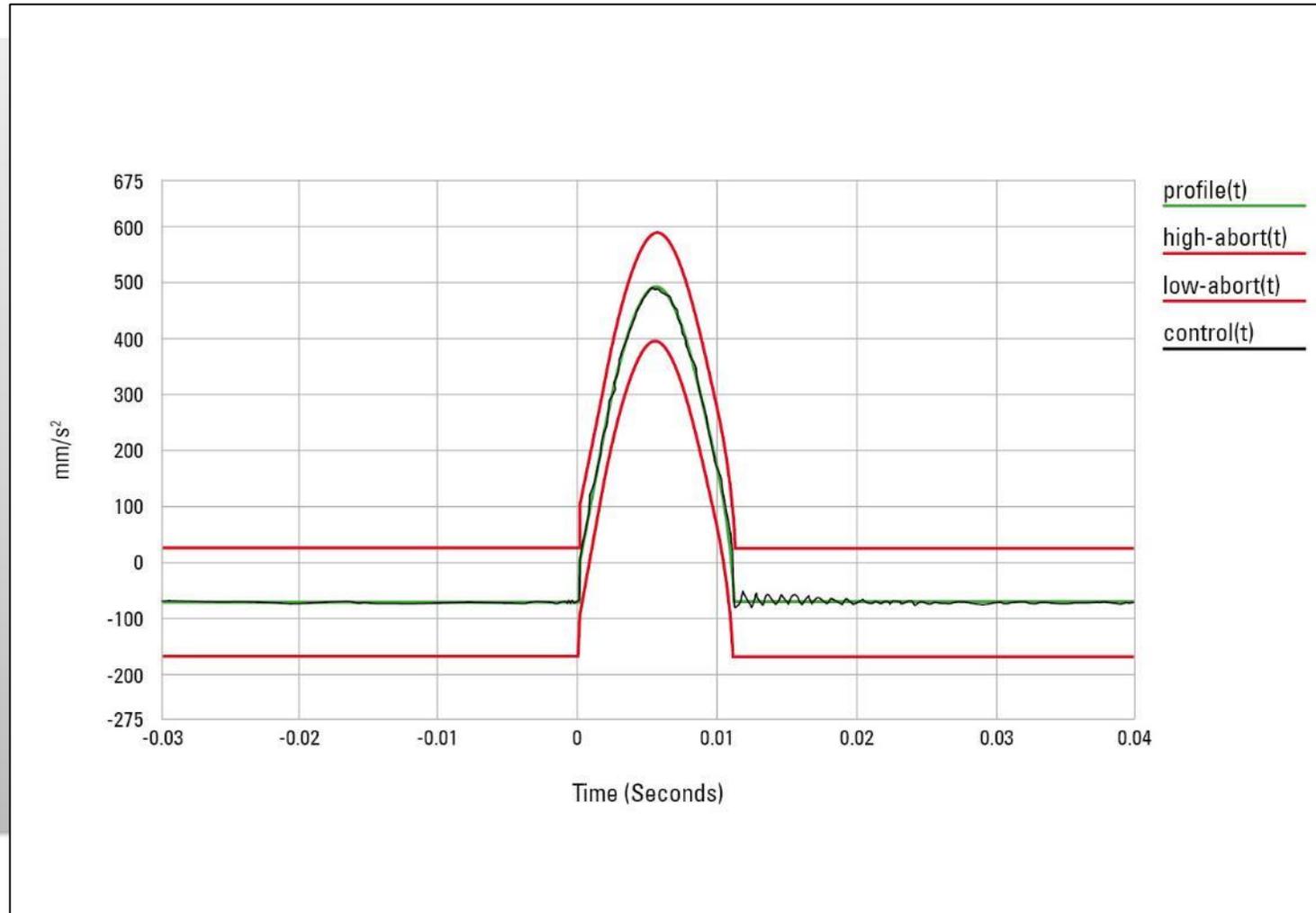
# Zero8

Vibration: Profile



# Zero8

Shock: Profile



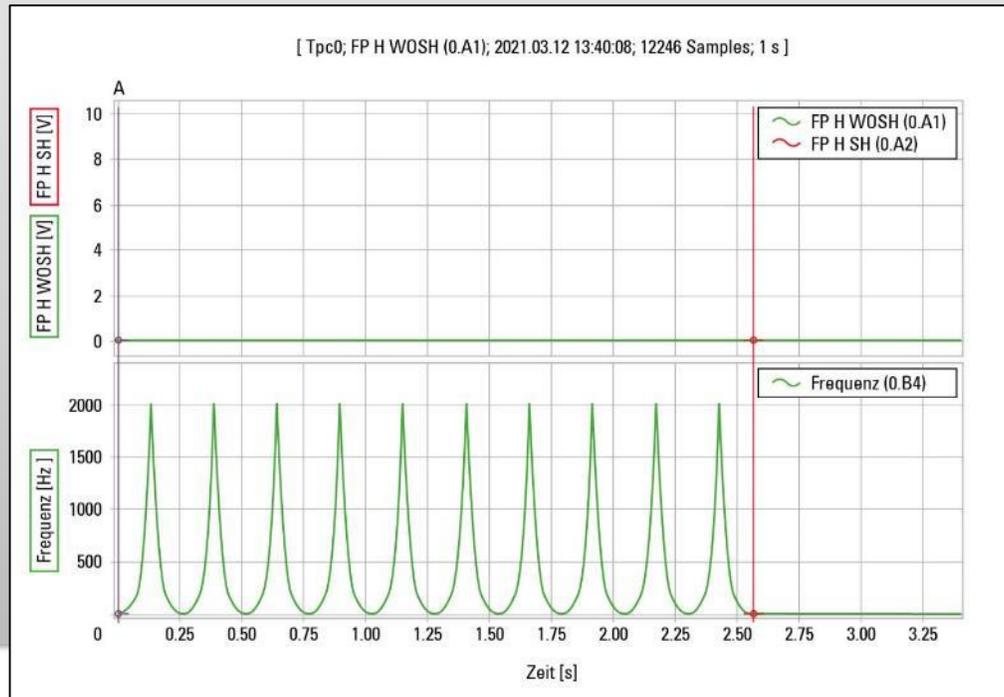
# Zero8

## Vibration & Shock: Test results

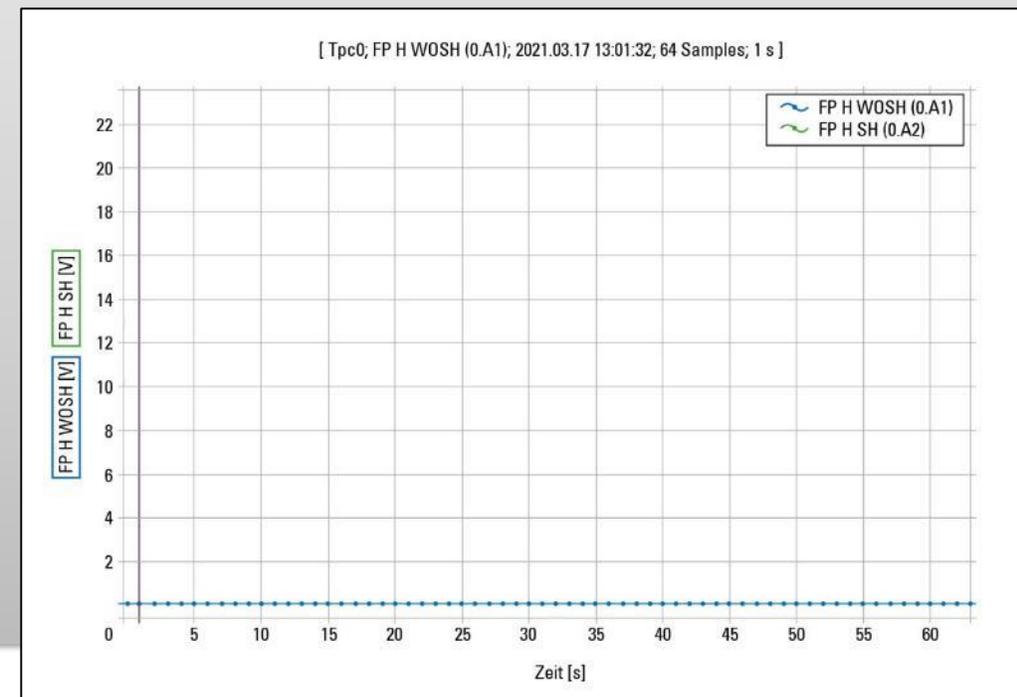


sample		1	2
R initial (no. 1) in mΩ	max	8,58	5,43
R final (no. 4) in mΩ	max	7,28	5,32

Vibration

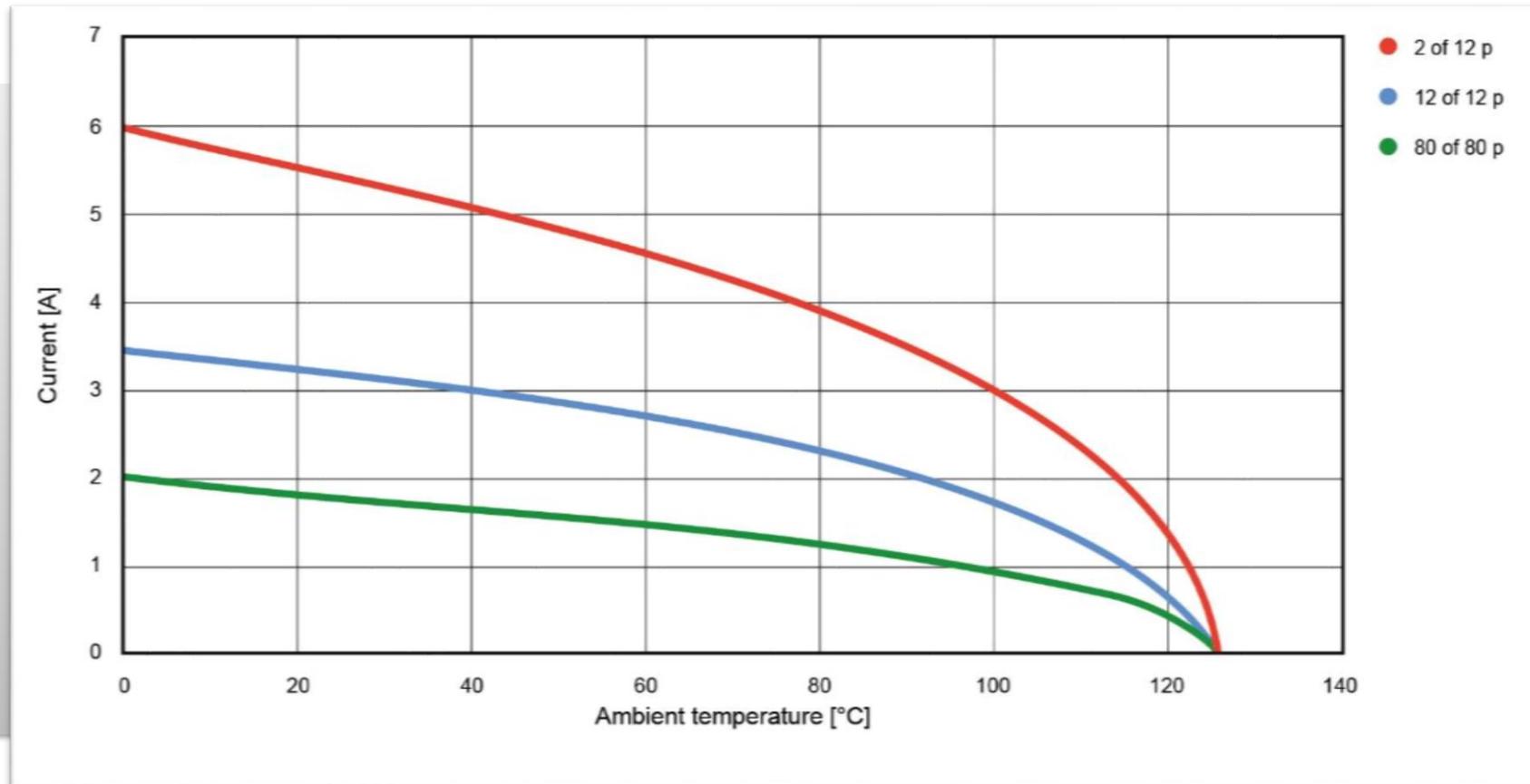


Shock



# Zero8

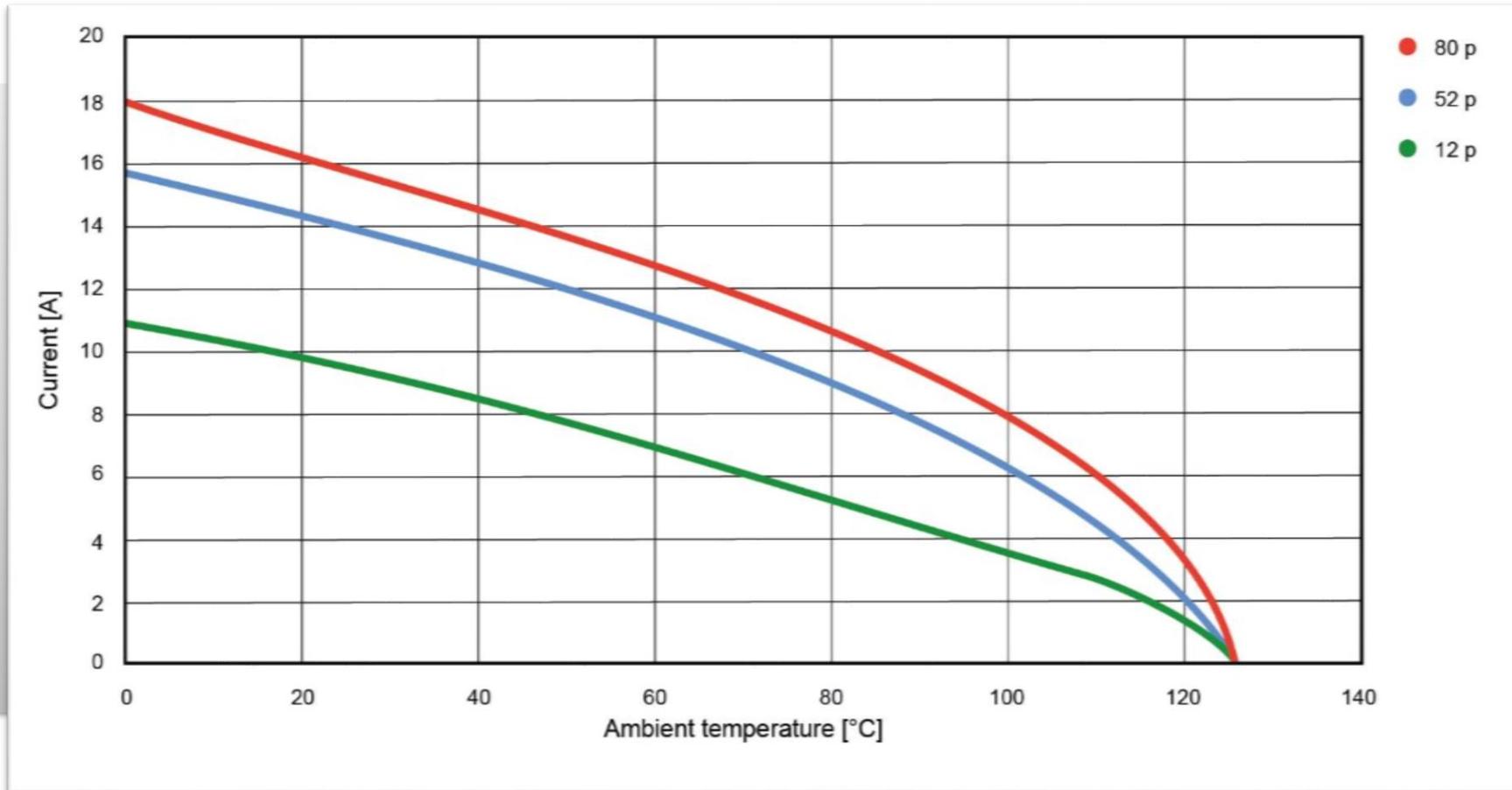
Current carrying capacity depending on contact number and pinout



# Zero8

Current carrying capacity shield – type low

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# SUPERPOWER SIGNAL PROTECTION

- Newly developed EMC shielding concept
- Optimal discharge of interference currents
- Coupling inductance of max. 10 picohenry
- Without shielding - as an alternative



# EMC

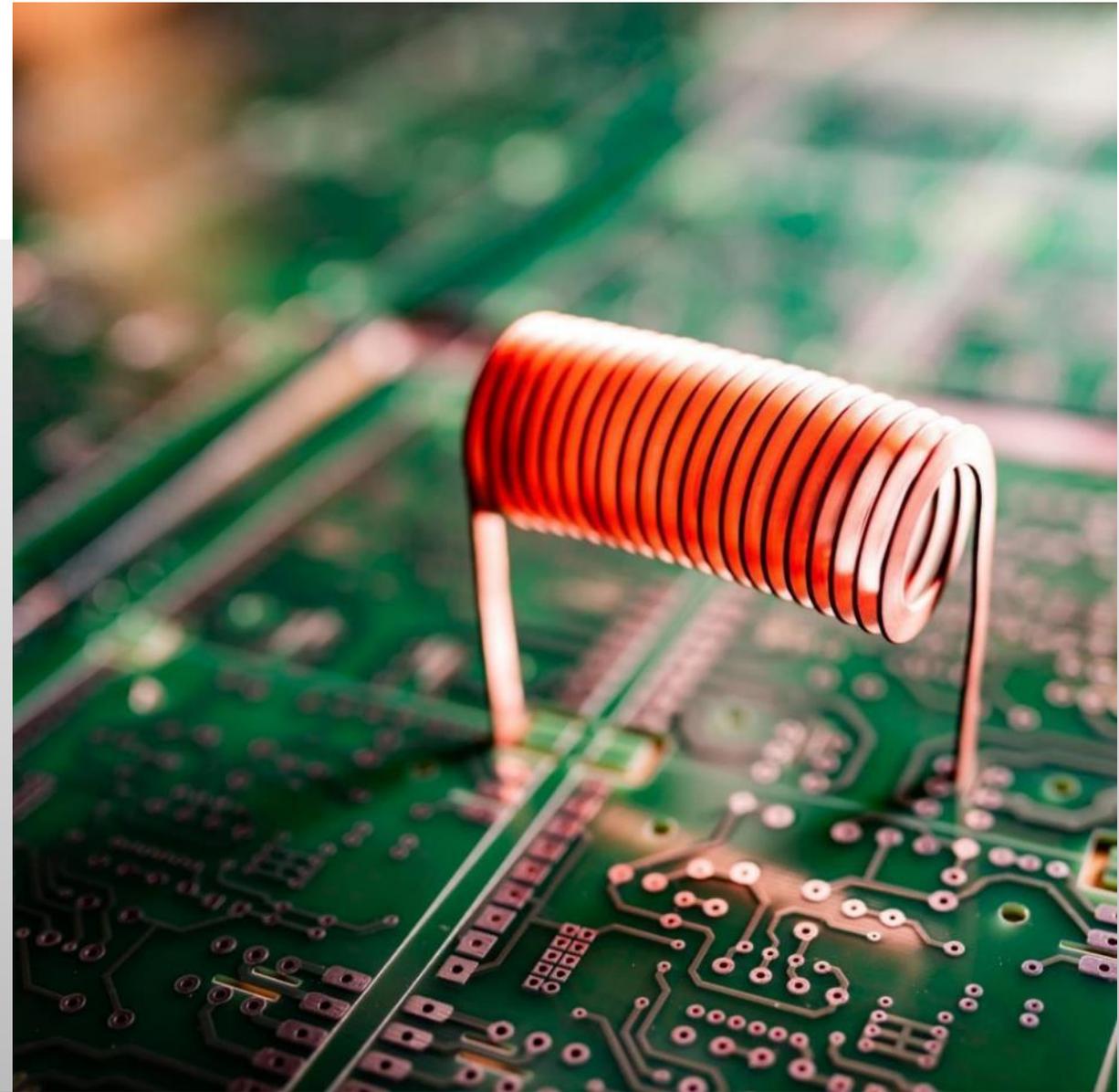
Disturbing source and susceptible device

## Sink and source

- IC's
- processor
- antenna
- connector

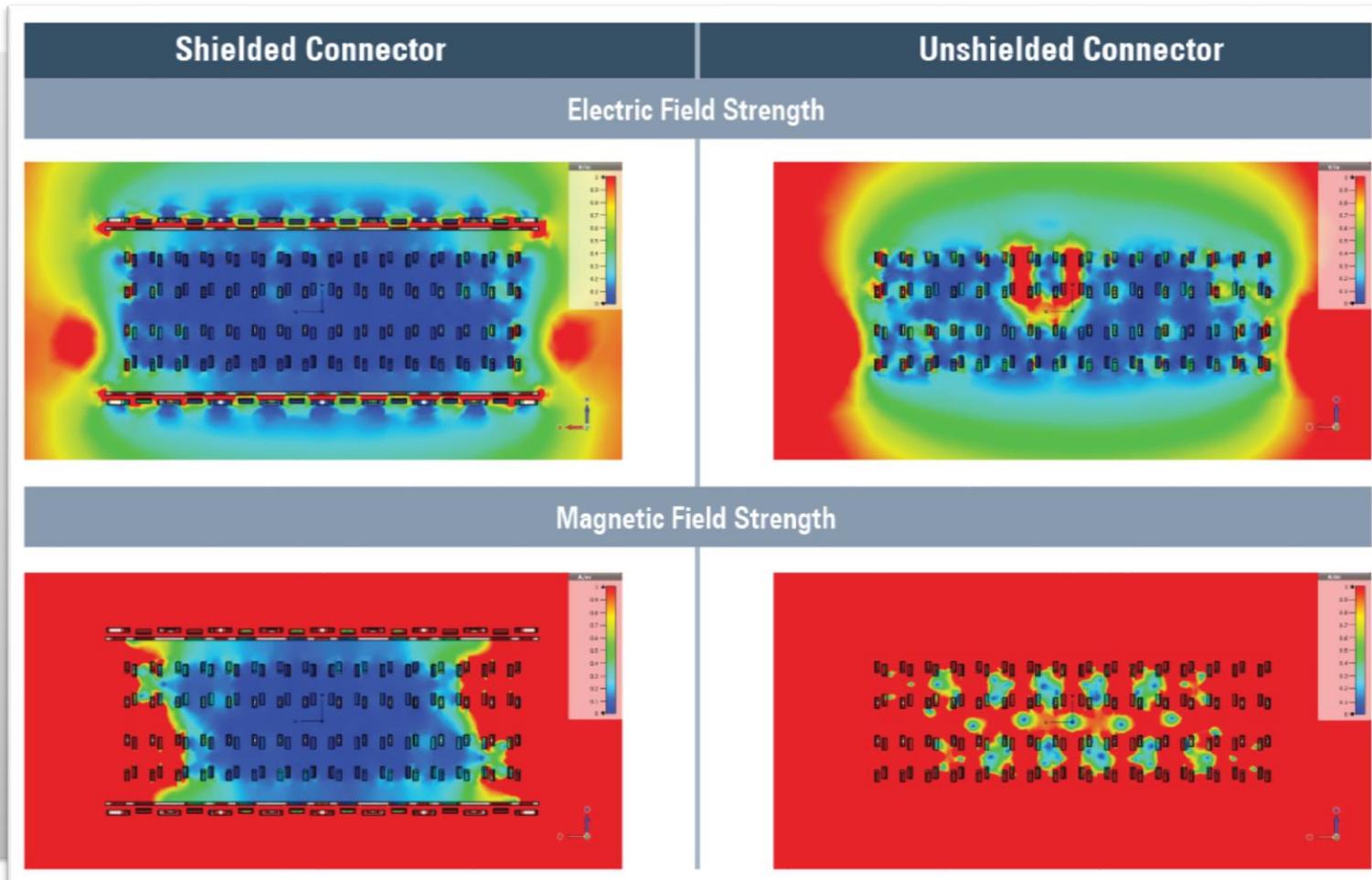
## Source

- Frequency-converter
- Power supply & transformers
- engines
- fans & pumps
- relays
- condensers



# EMC

## Connectors

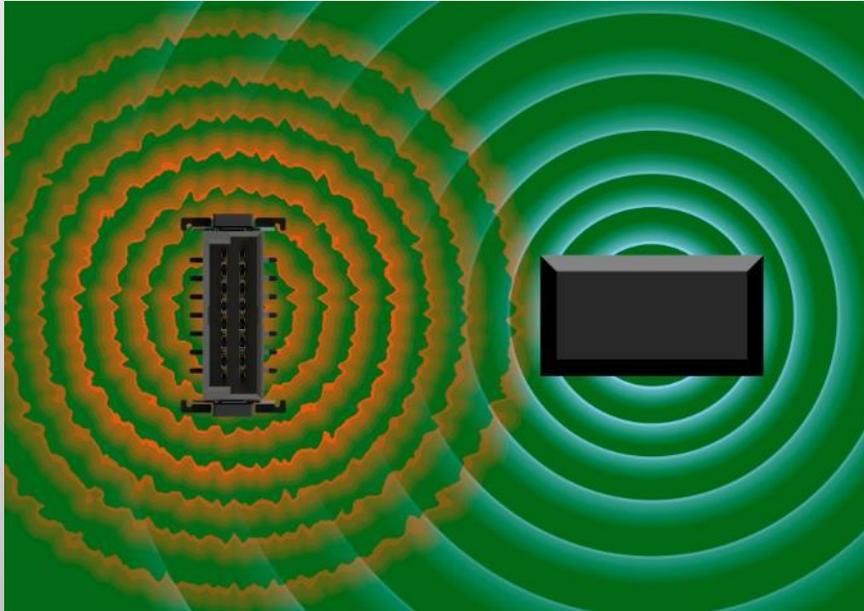


# EMC

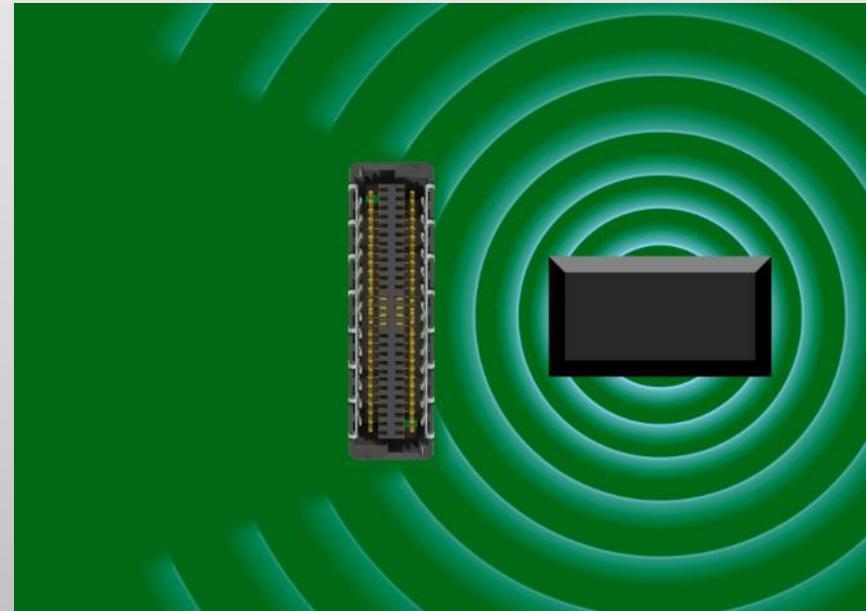
## Connectors



Shielded connectors allow the individual components to be positioned more closely.



unshielded connector



shielded connector

# Zero8



Video – Comparison of shielded and unshielded connectors



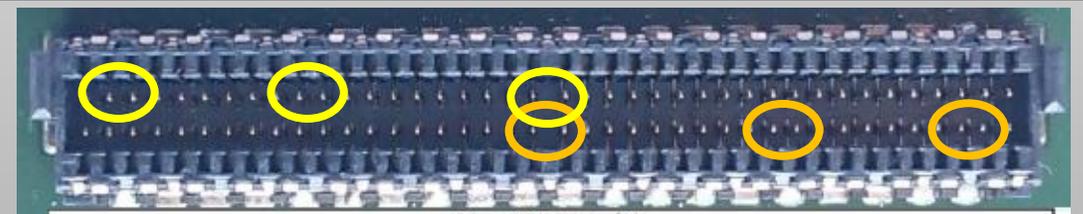
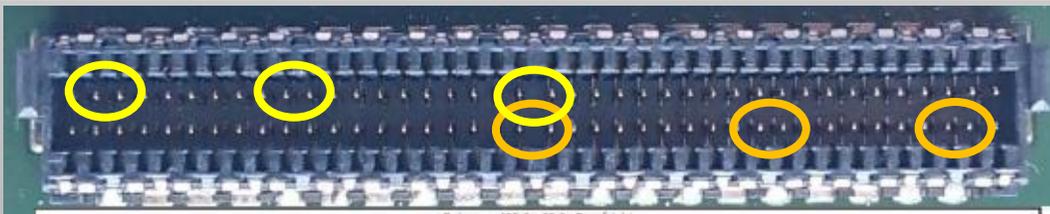
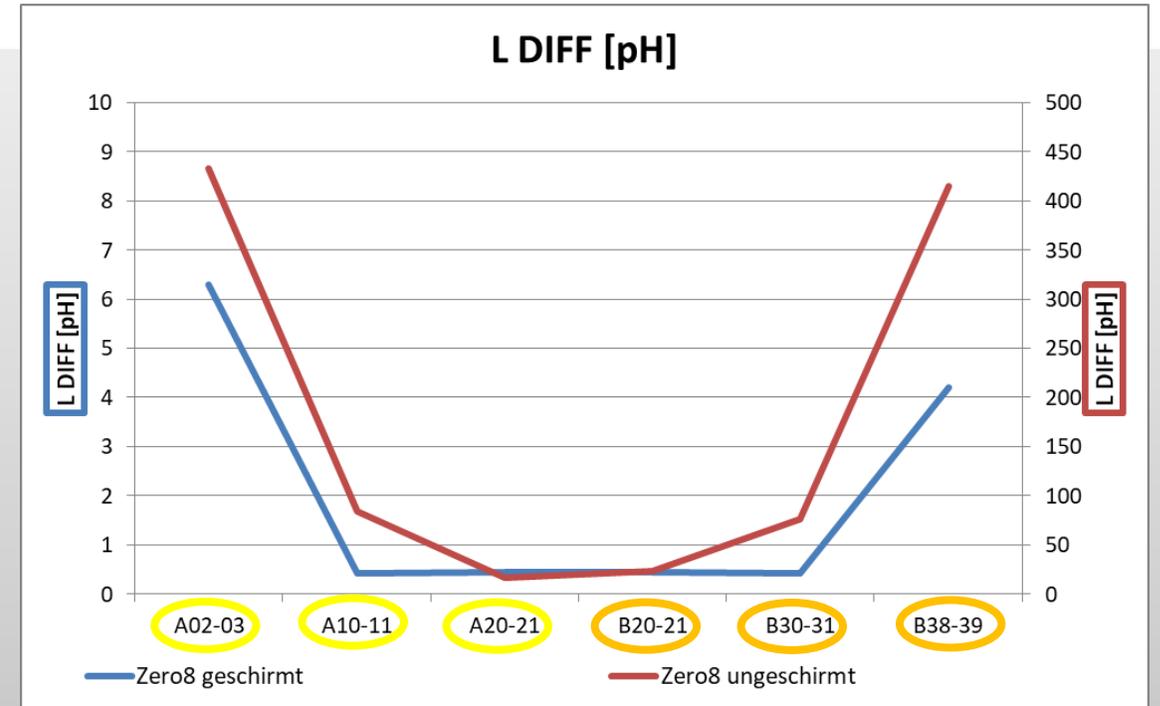
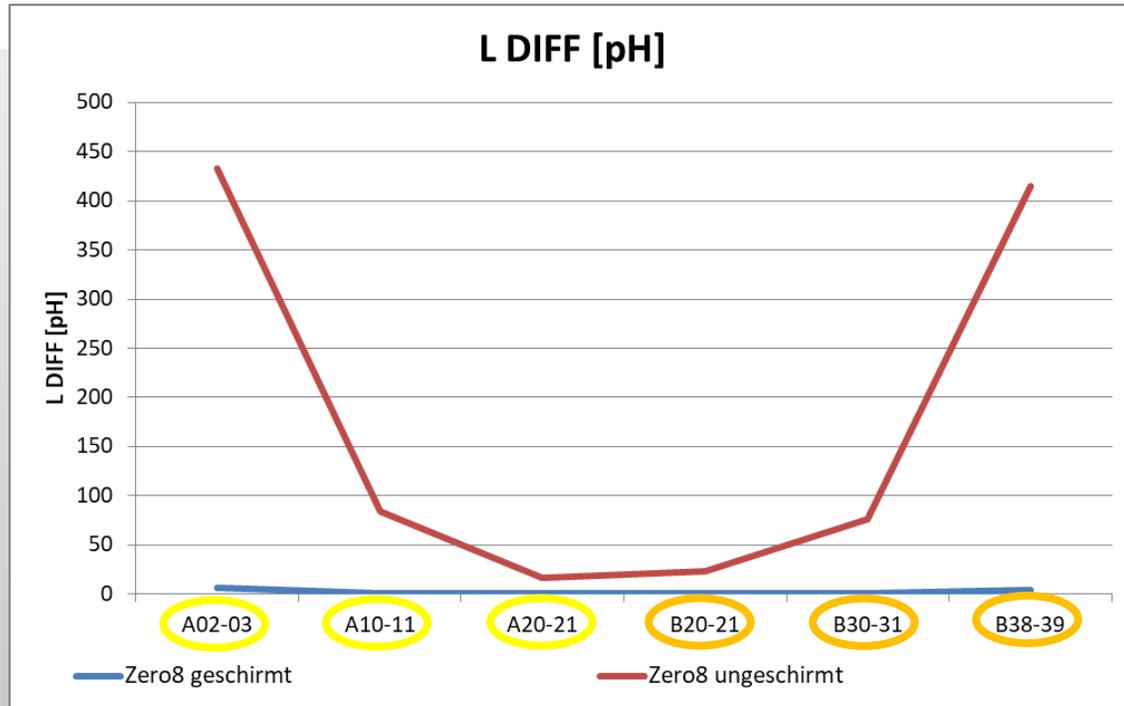
Zero8 - Board-to-board connector with 0.8mm pitch with ScaleX technology



# Zero8



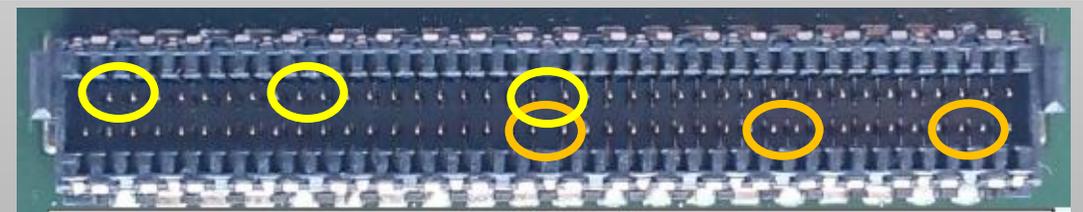
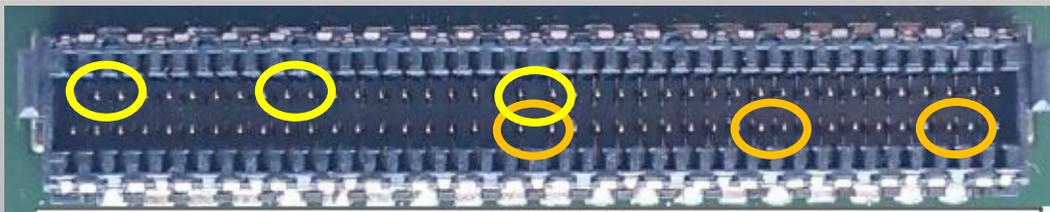
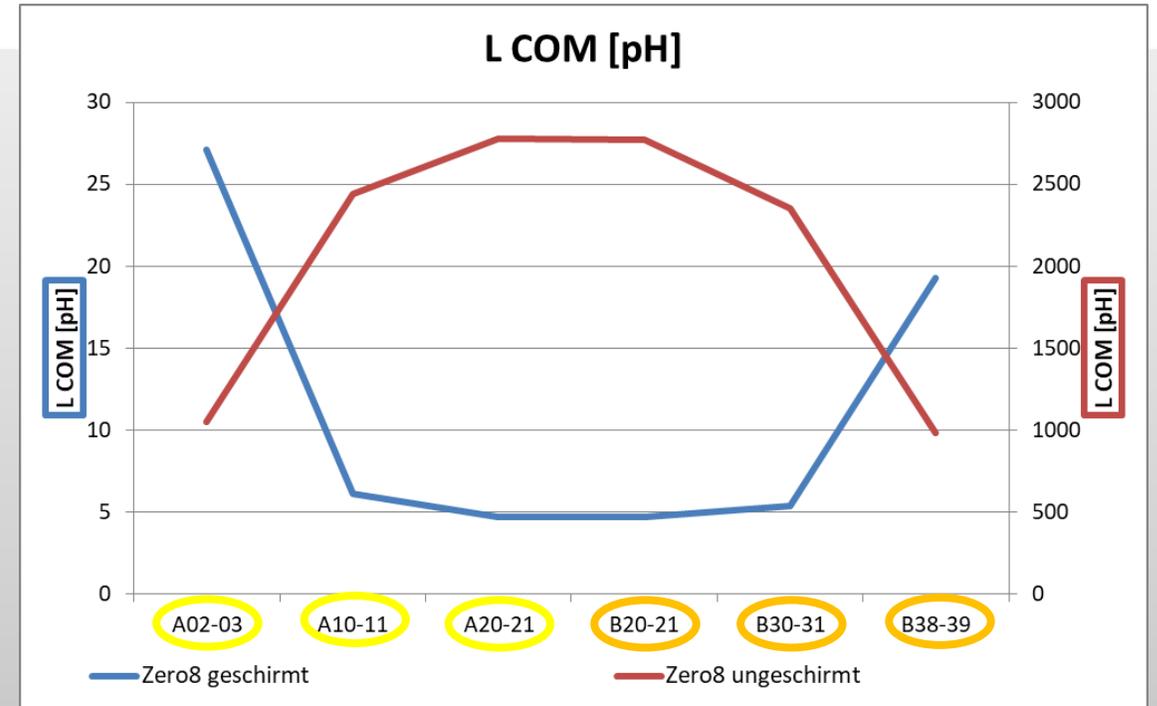
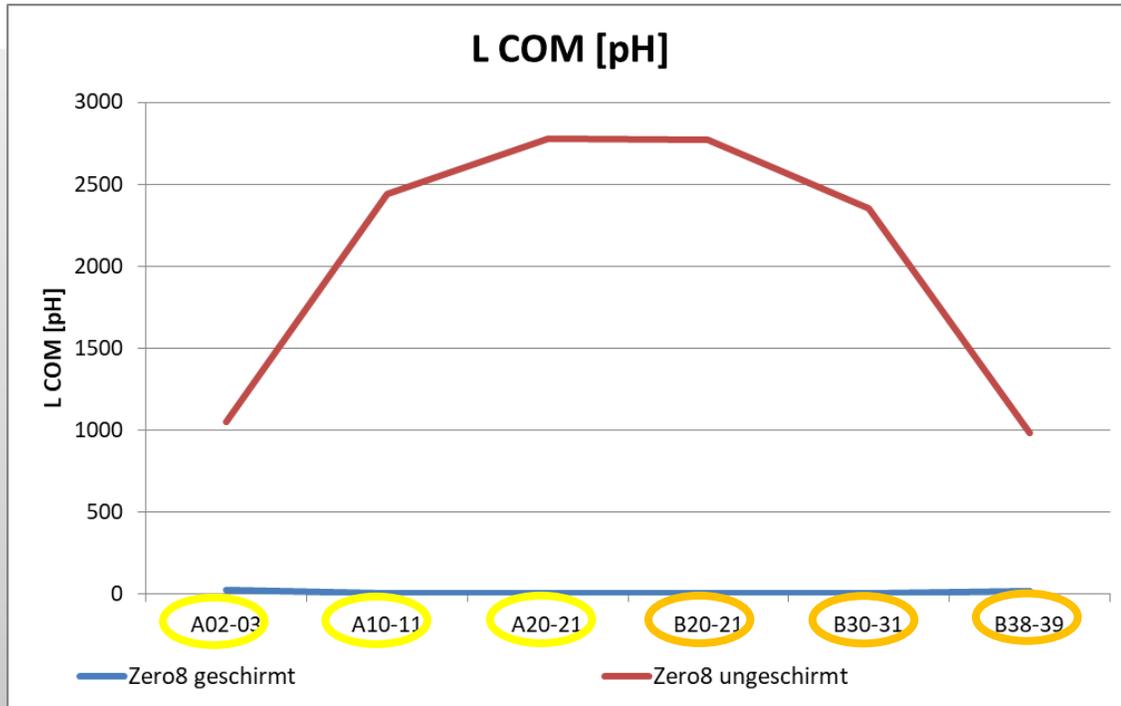
## EMV Langer – Coupling Inductivity: Overview Differential Mode



# Zero8



## EMV Langer – Coupling Inductivity: Overview COM Mode



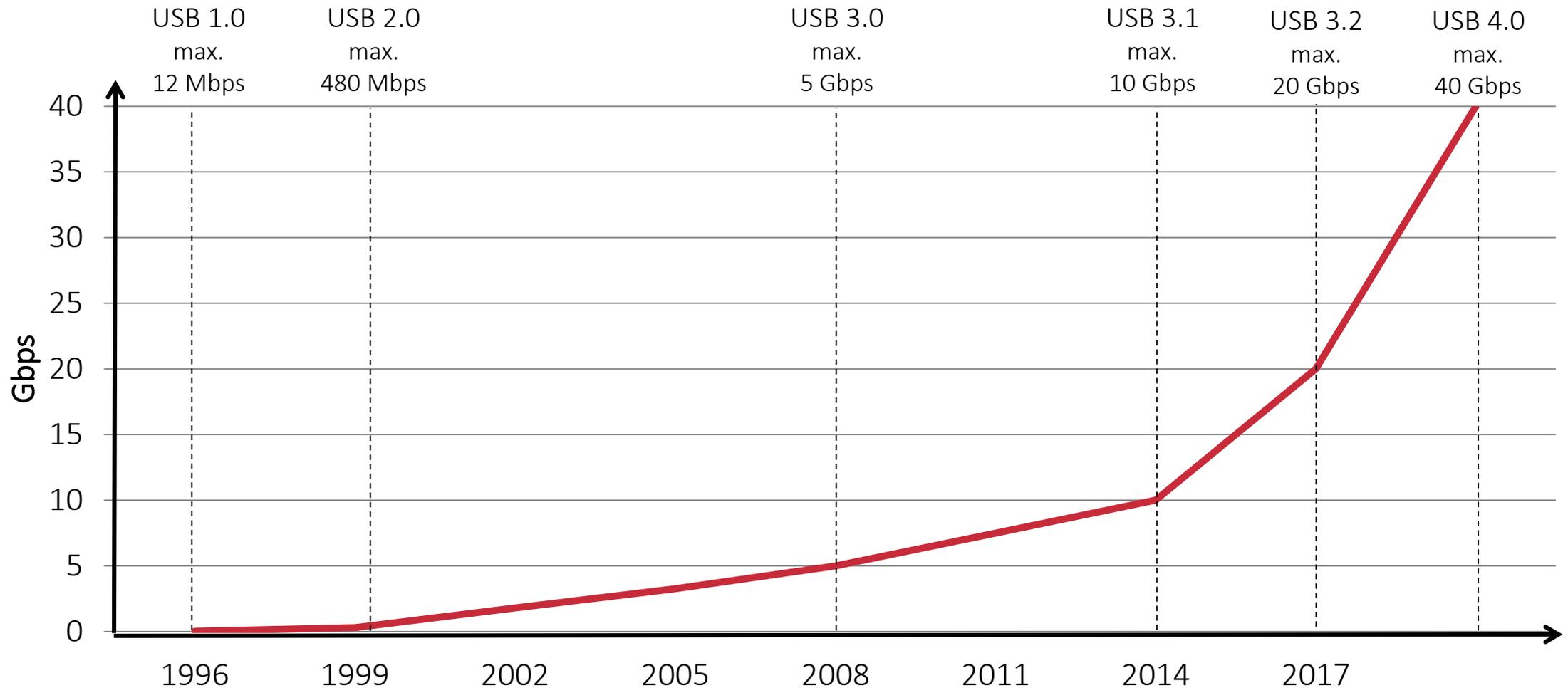
# SUPERPOWER SPEED

- Suitable for PCIe 4.0 and Industrial Ethernet
- RF signal transmission of 16 Gbps +
- Additional signal protection through shielding
- SI models available



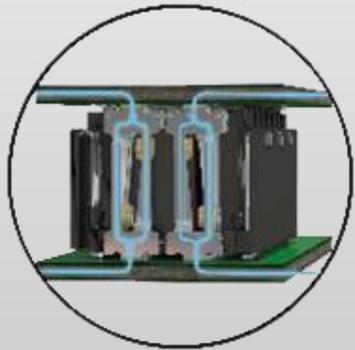
# Definition

What does Highspeed even mean?

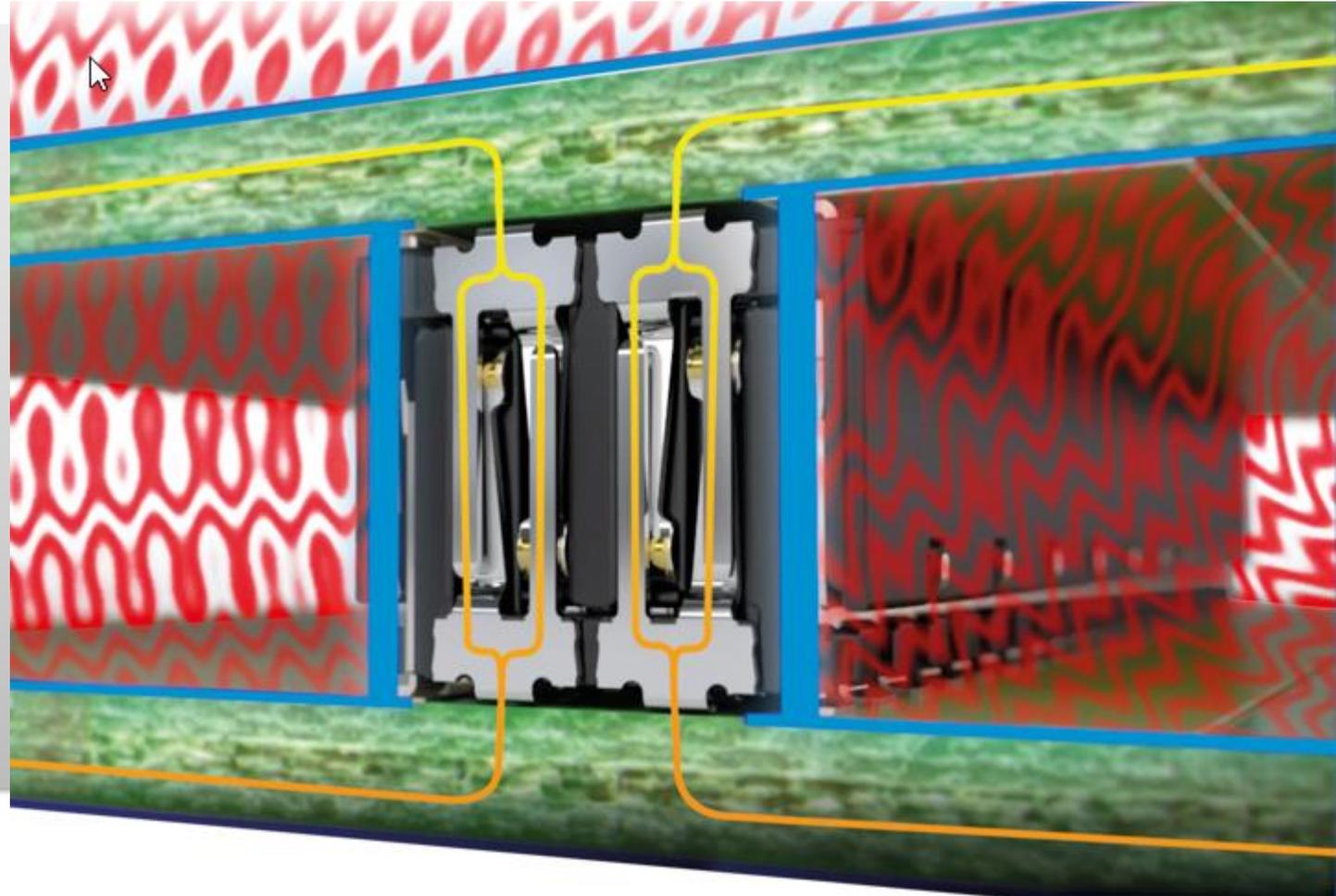
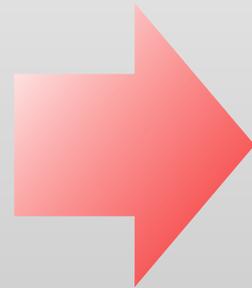


# Zero8

HF-optimized contact geometry



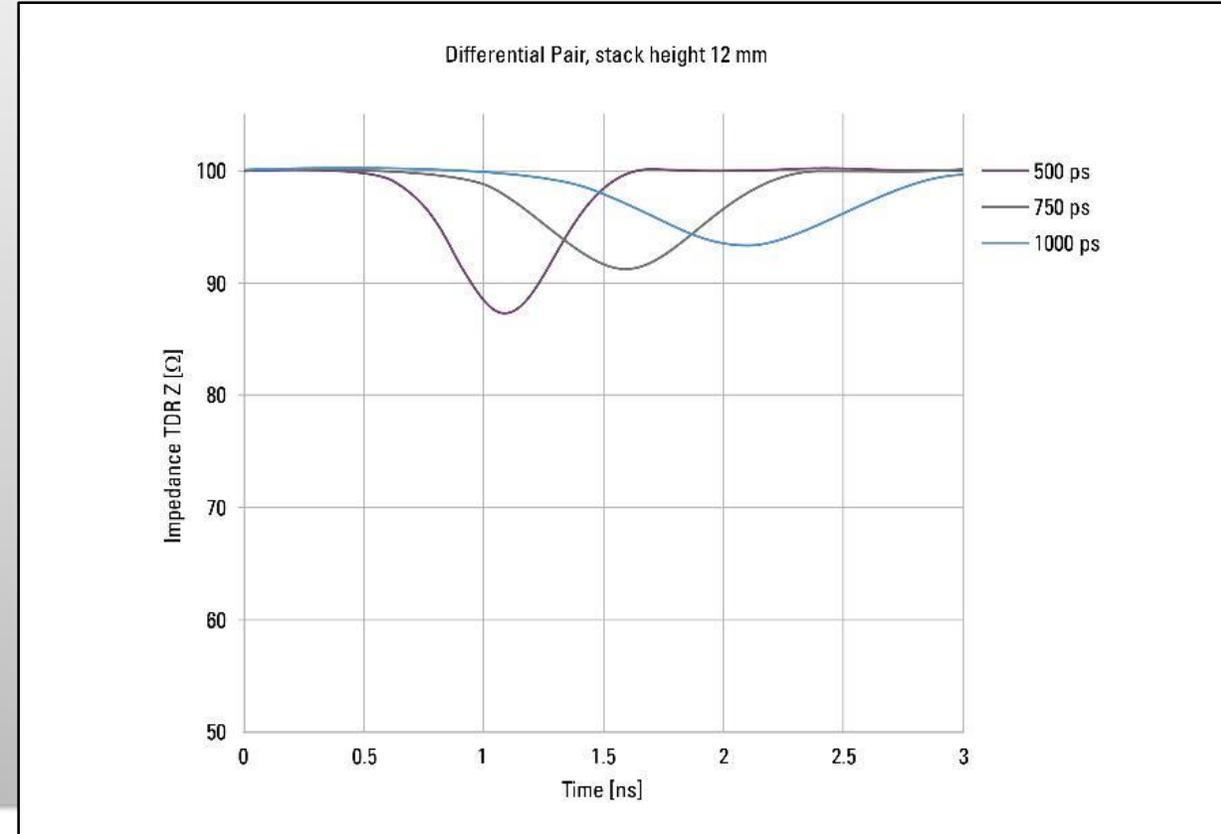
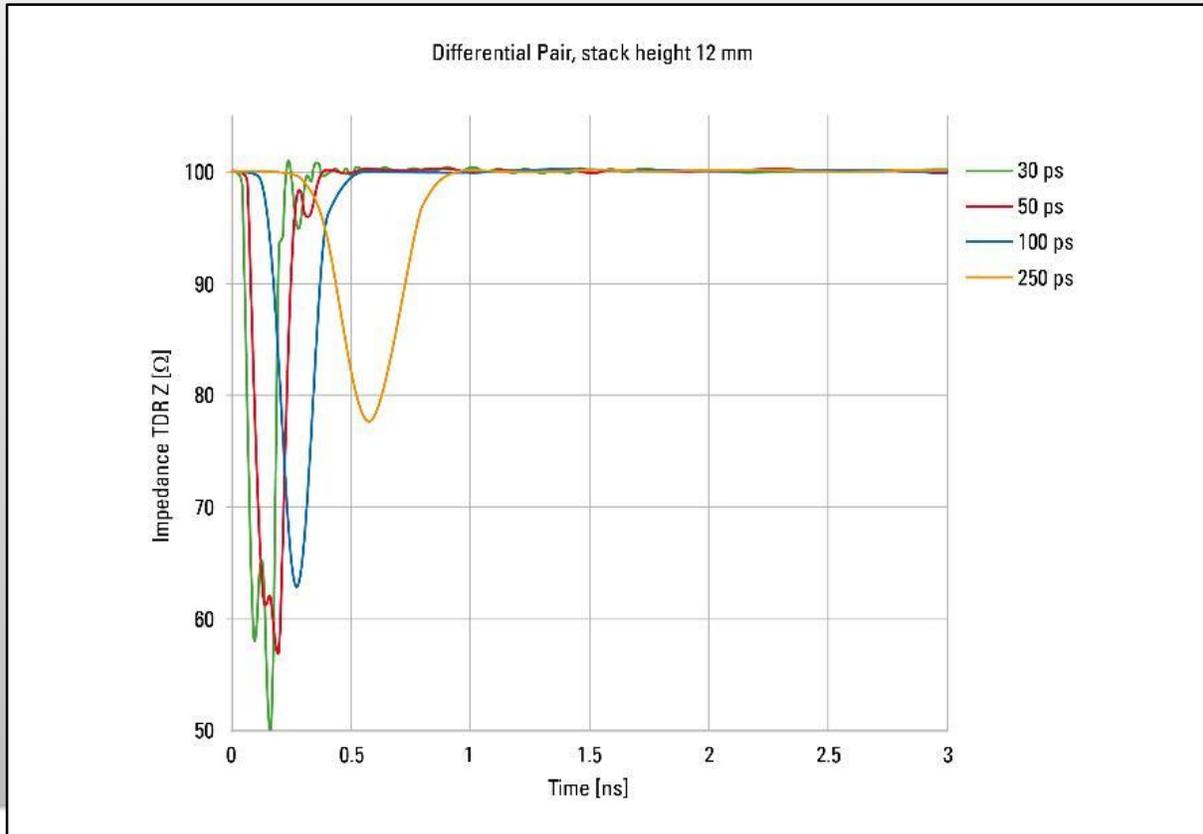
Data transfer



# Zero8

Impedance curve depending on rise time

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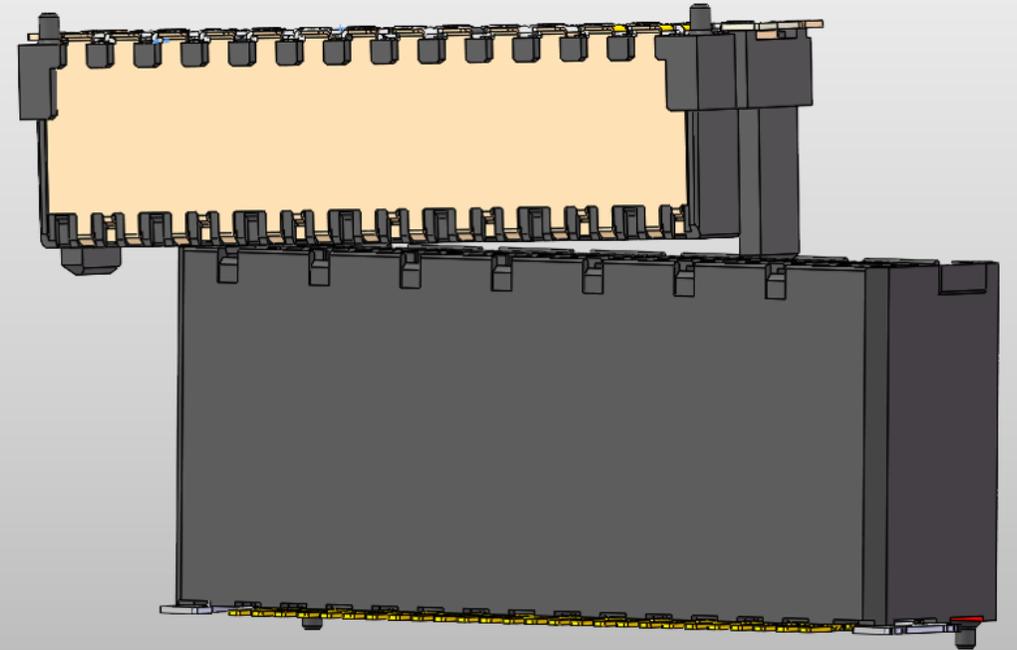
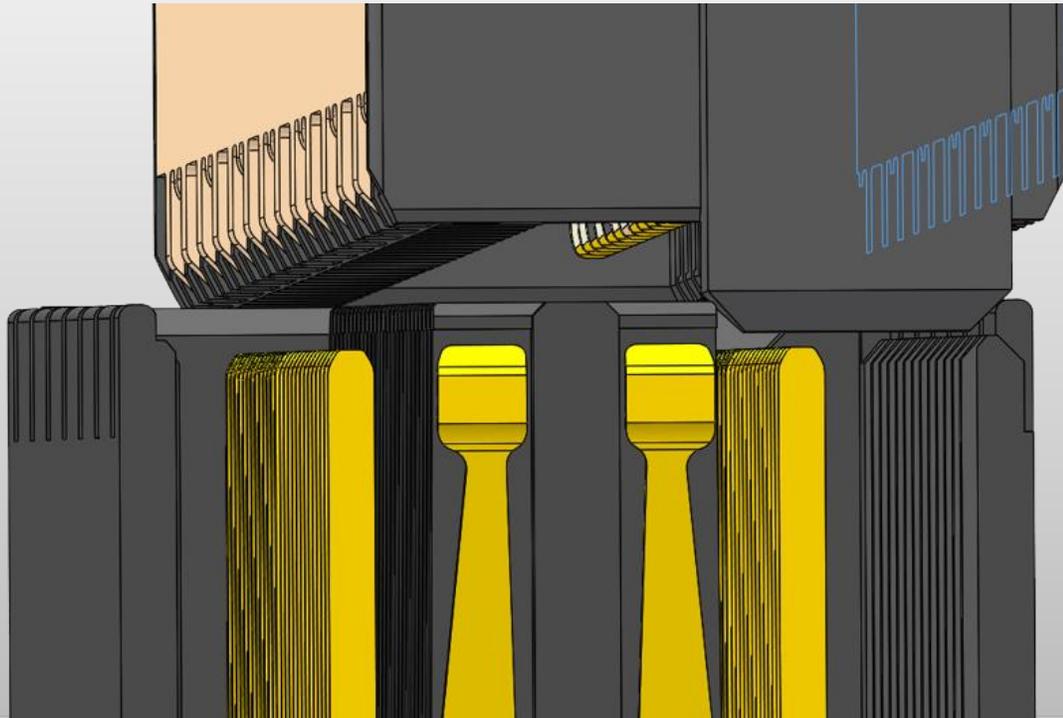
# SUPERPOWER ROBUSTNESS

- All contacts are protected
- Anti-twist protection during mating
- Mechanical relief provided by two board locks
- Offset compensation of up to 0.7 mm during installation
- High tolerance compensation during operation



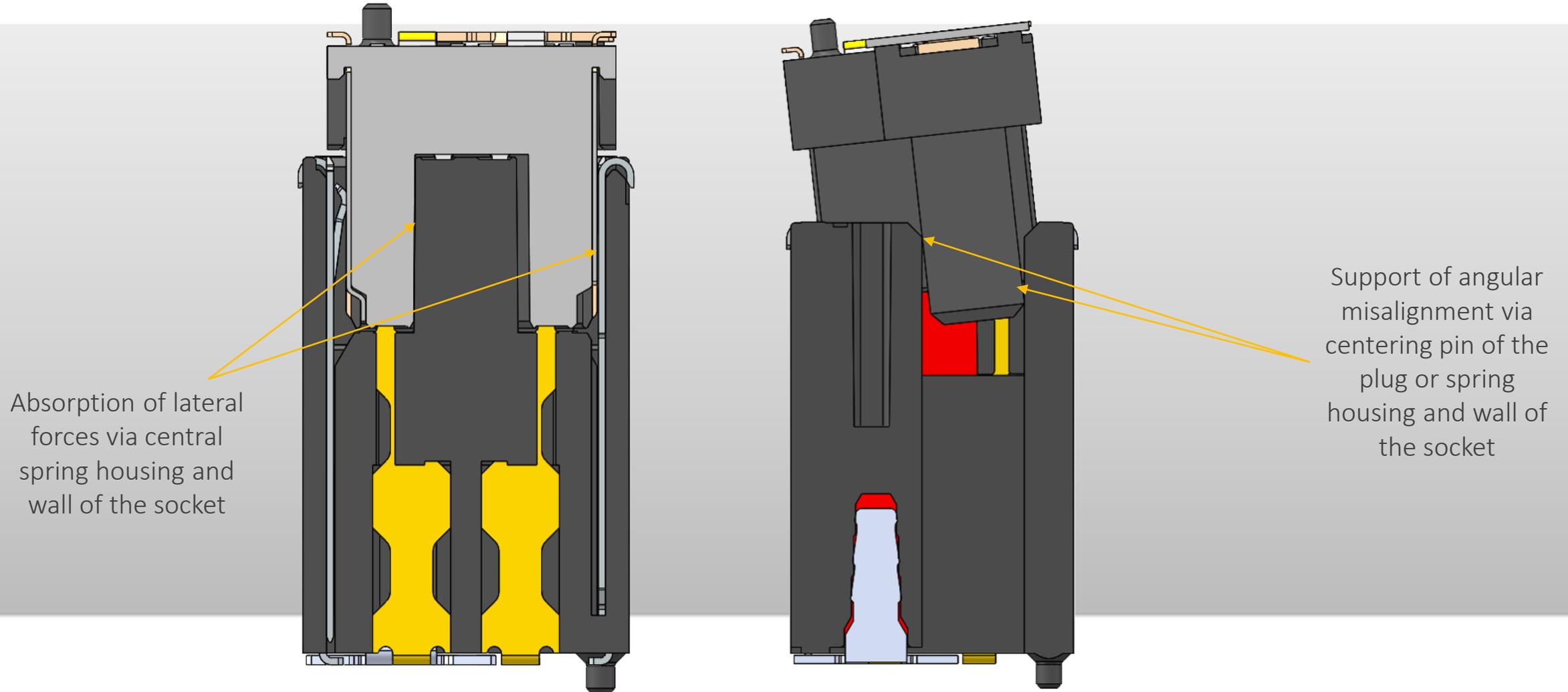
# Zero8

Robustness – Mismatching prevented by design



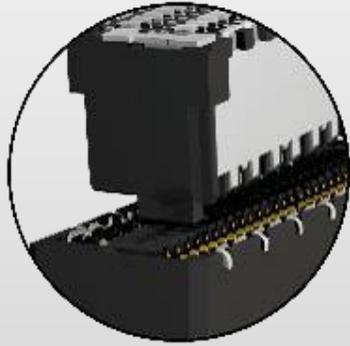
# Zero8

Robustness due to basic structure



# Zero8

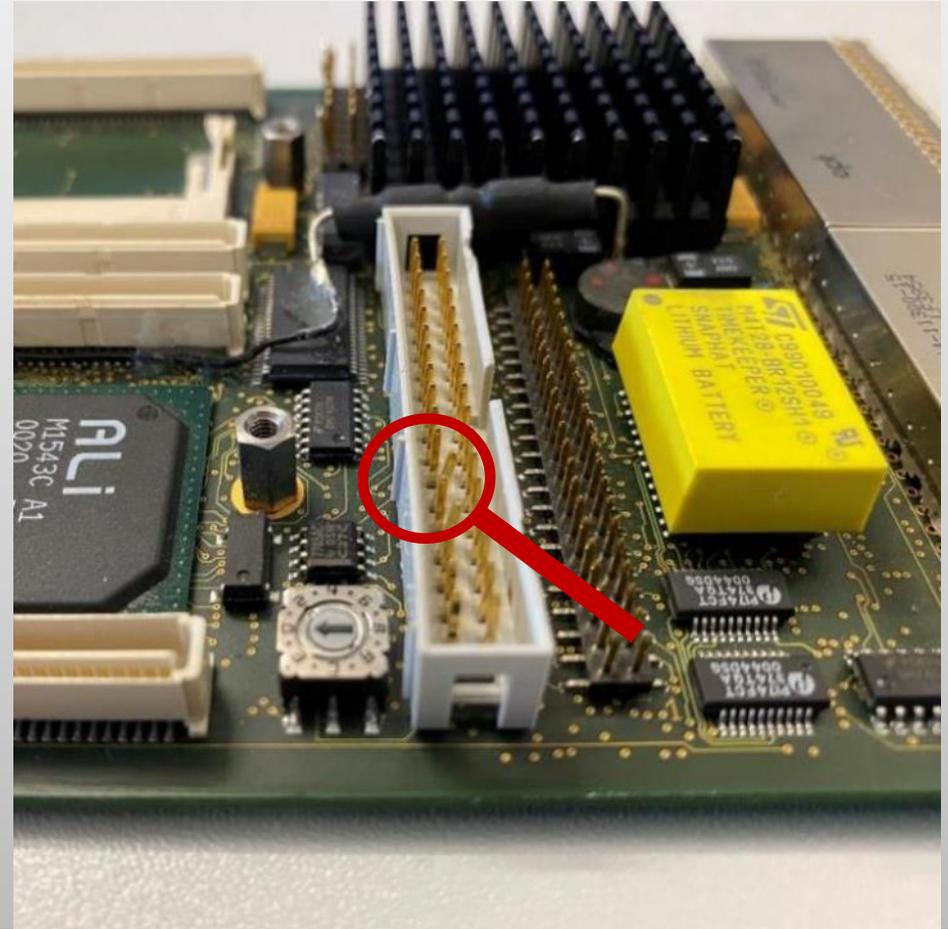
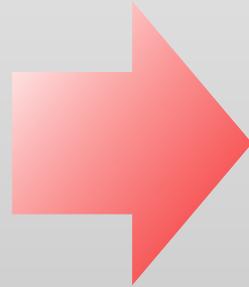
Robustness



protected contacts

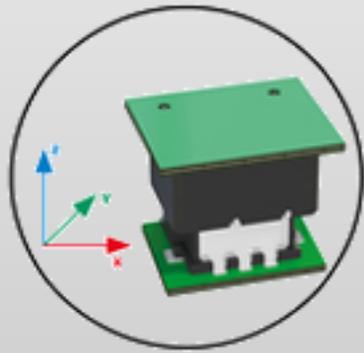


double sided contact system

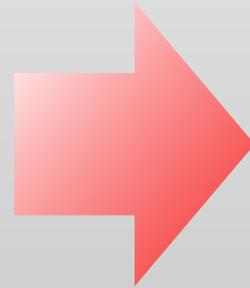


# Zero8

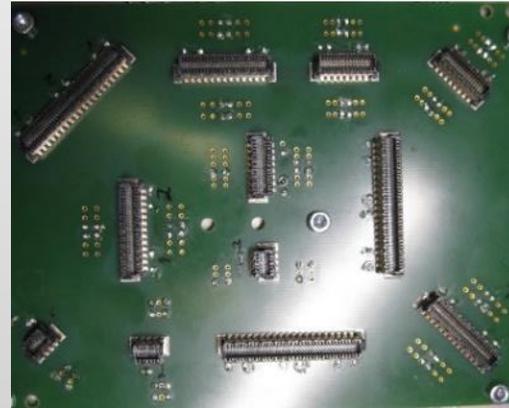
Robustness



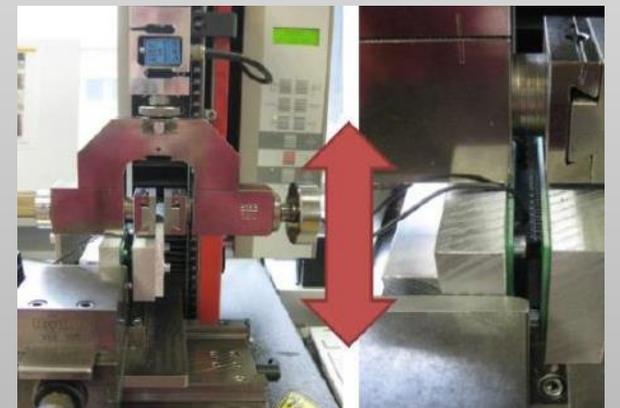
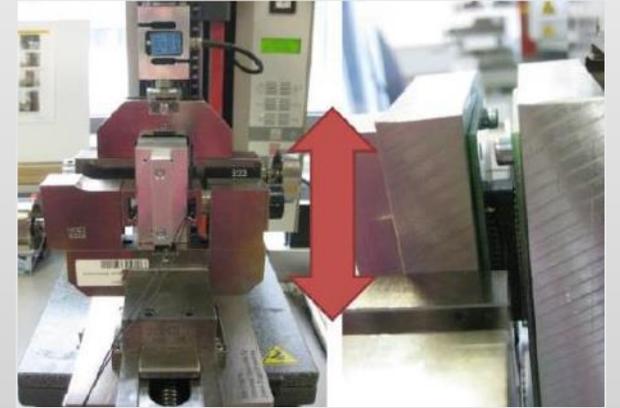
tolerance compensation



500 mating cycles  
15 connectors



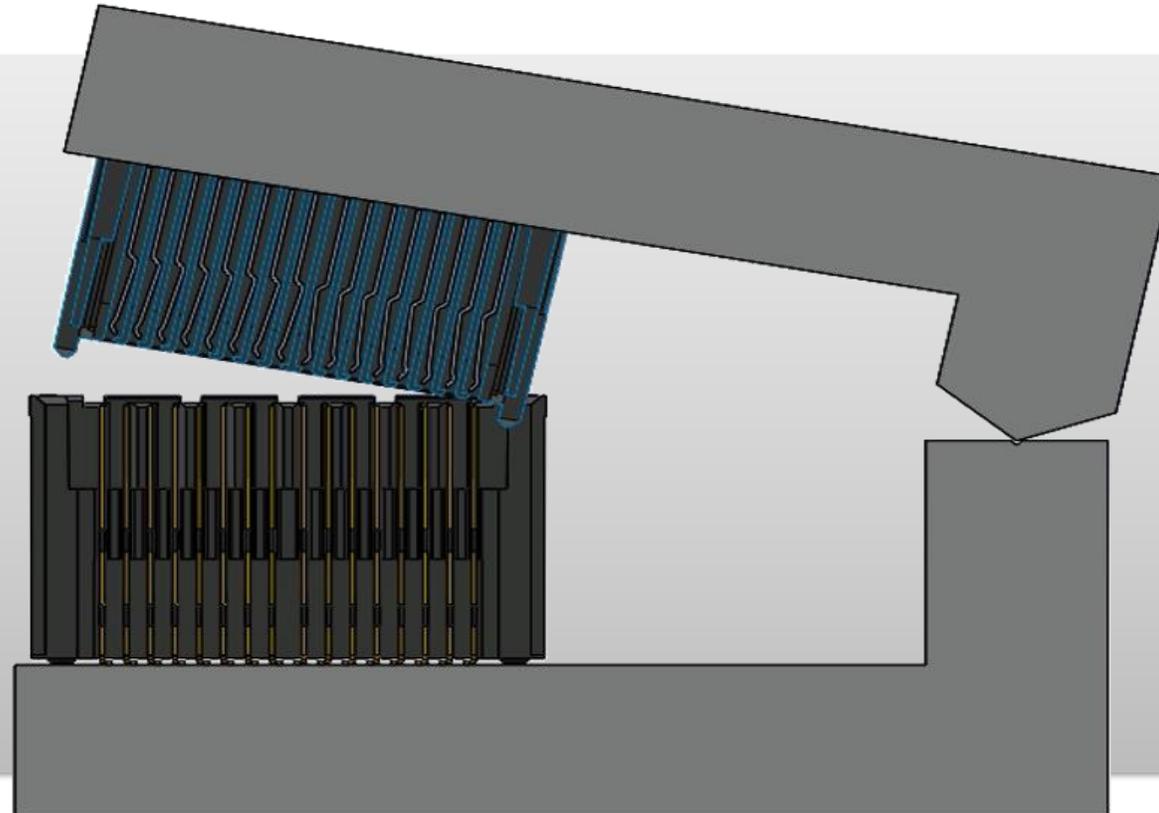
$\pm 0,4$  mm punching  
in connected condition



# Zero8

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Robustness – Angular misalignment: simulation of plugging 11°



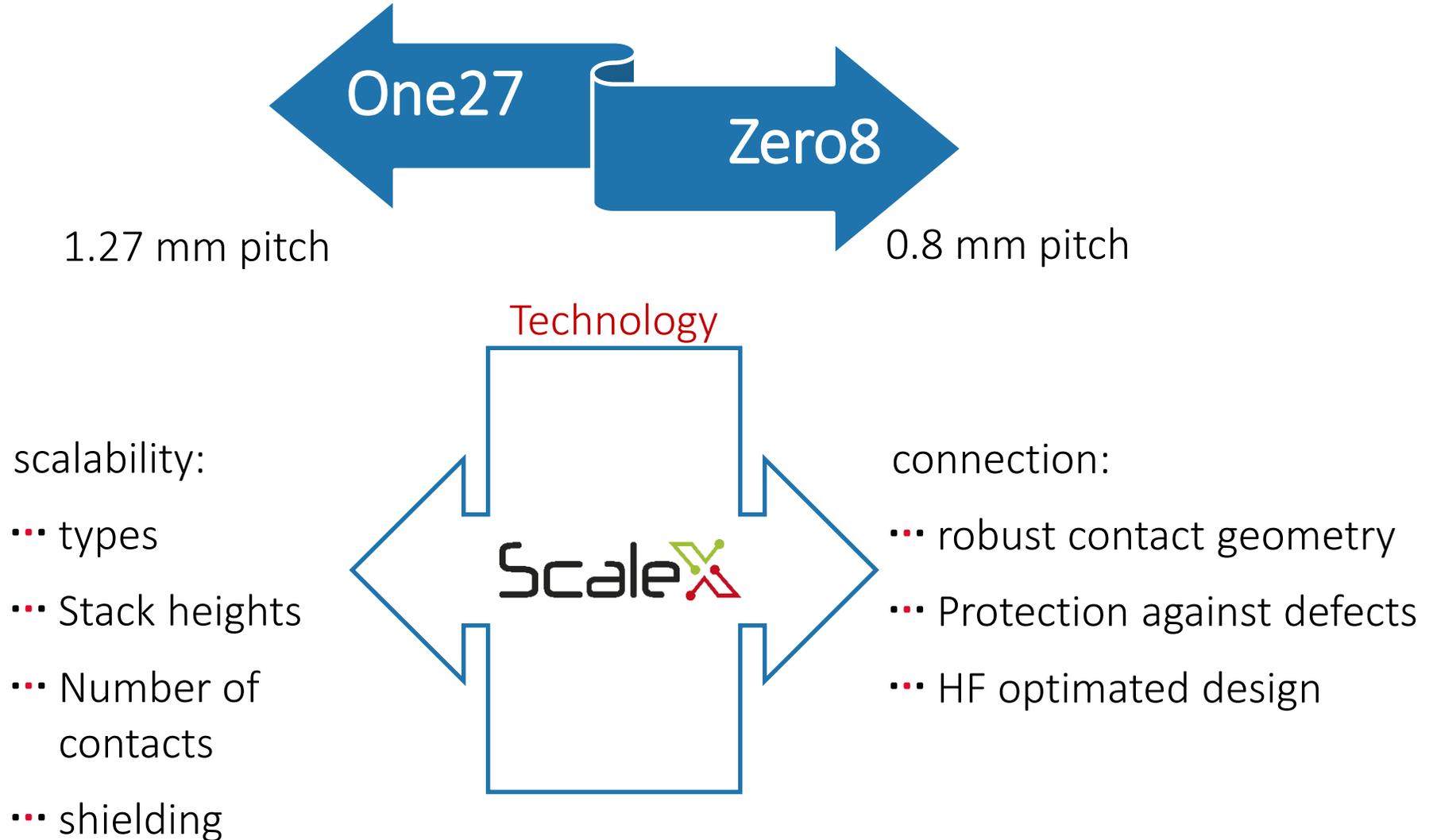
# Zero8

Applications – The Search



# Zero8

## Comparison & Advantages

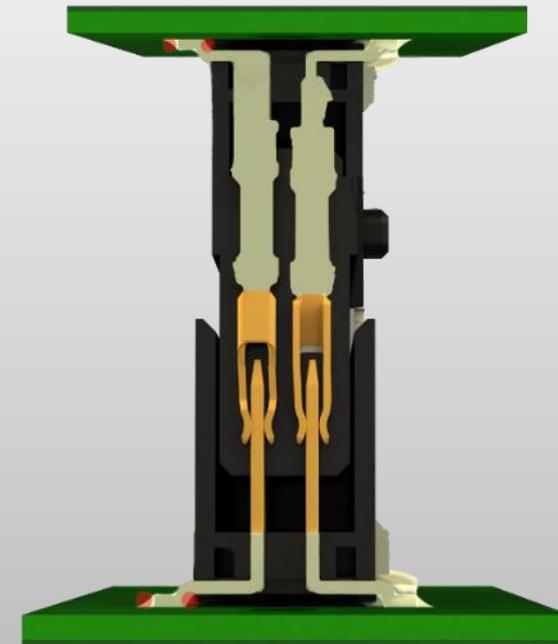


# Zero8 vs. One27

Termination technology



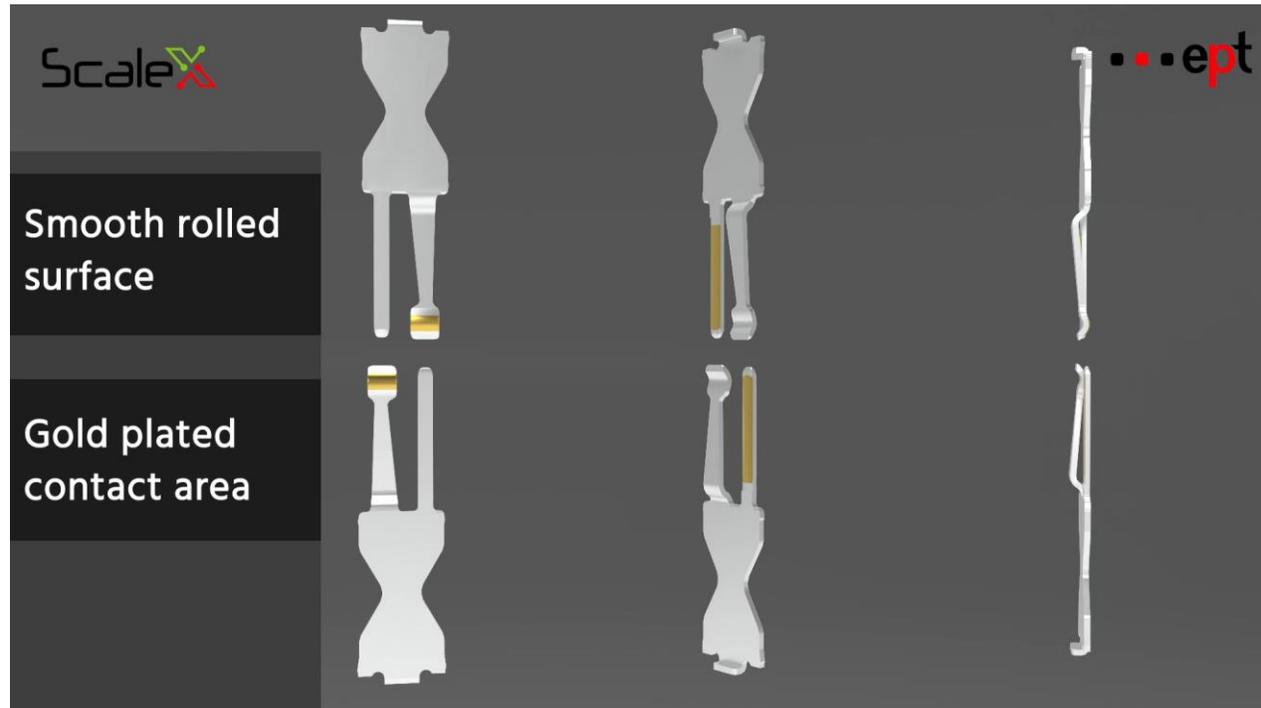
- Pitch: 0,8 mm
- Band thickness: 0,15 mm
- Material: CuNiSi



- Pitch: 1,27 mm
- Band thickness: FL 0,17 mm / ML 0,3 mm
- Material: CuSn6

# Zero8 vs. One27

Termination technology



- Pitch: 0,8 mm
- Band thickness: 0,15 mm
- Material: CuNiSi

29/11/2022

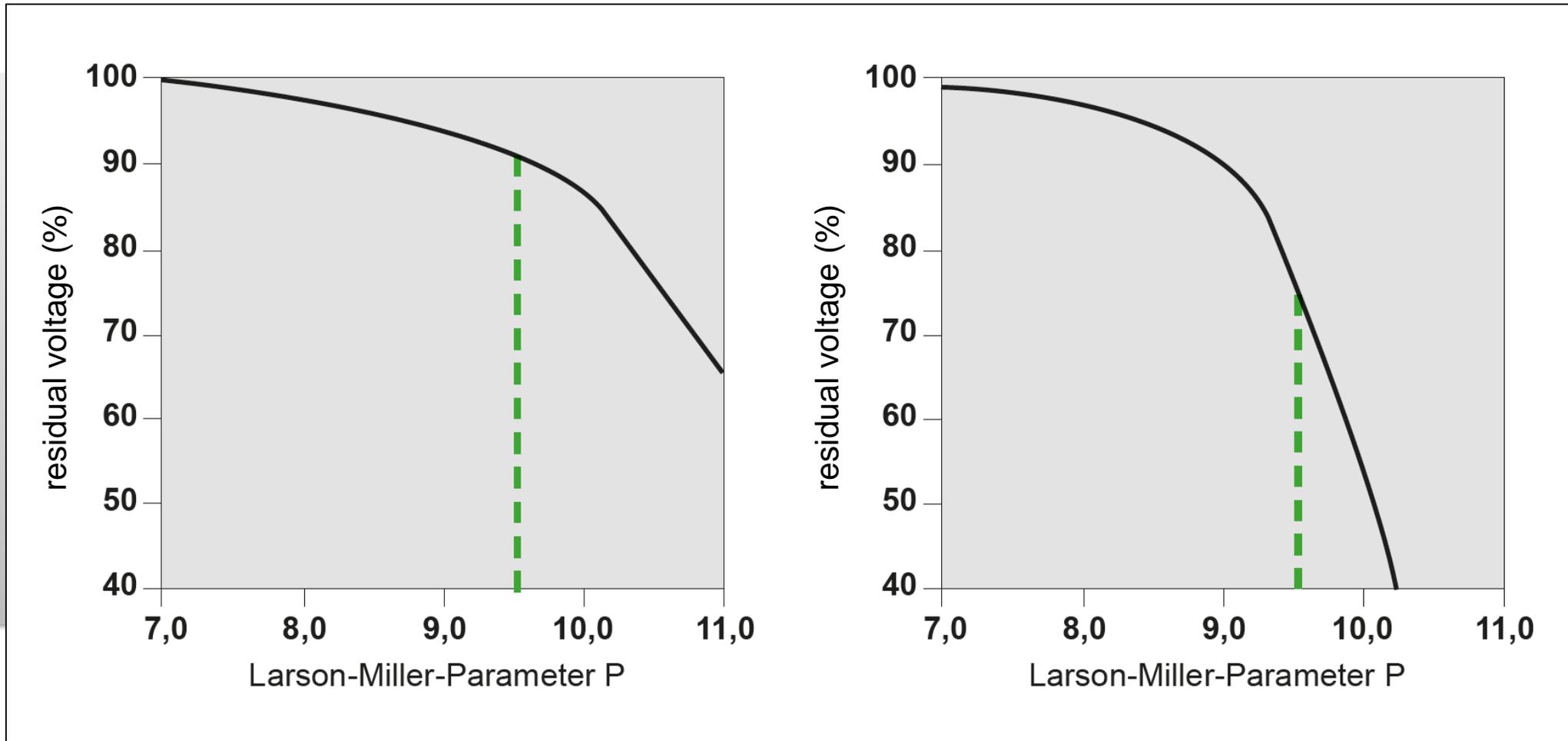


- Pitch: 1,27 mm
- Band thickness: FL 0,17 mm / ML 0,3 mm
- Material: CuSn6



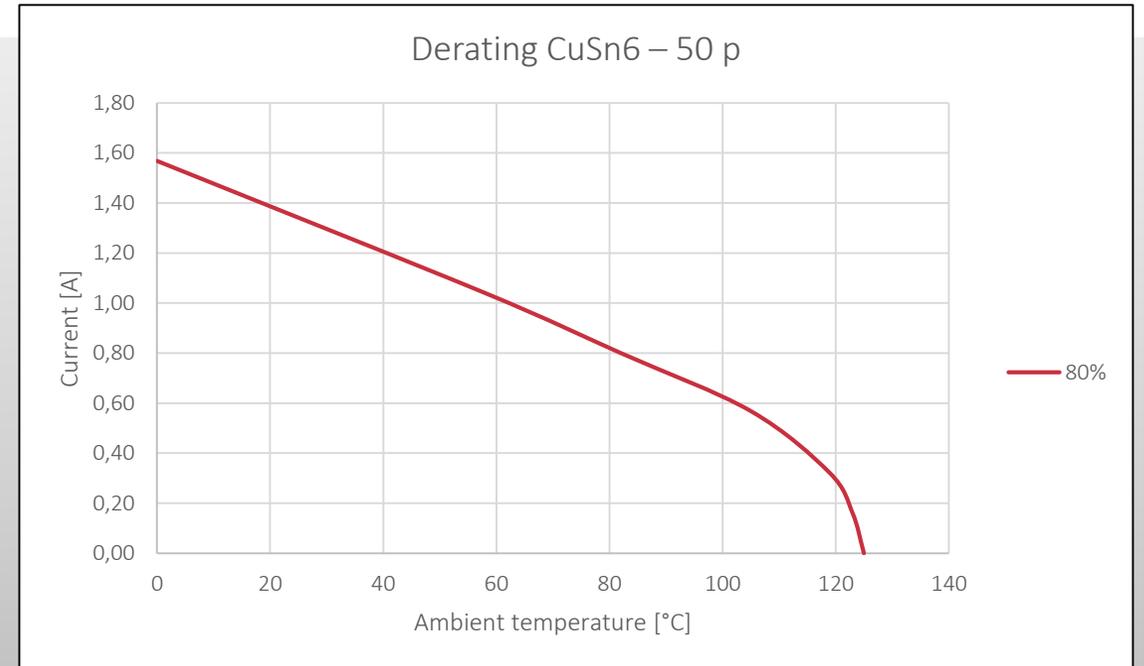
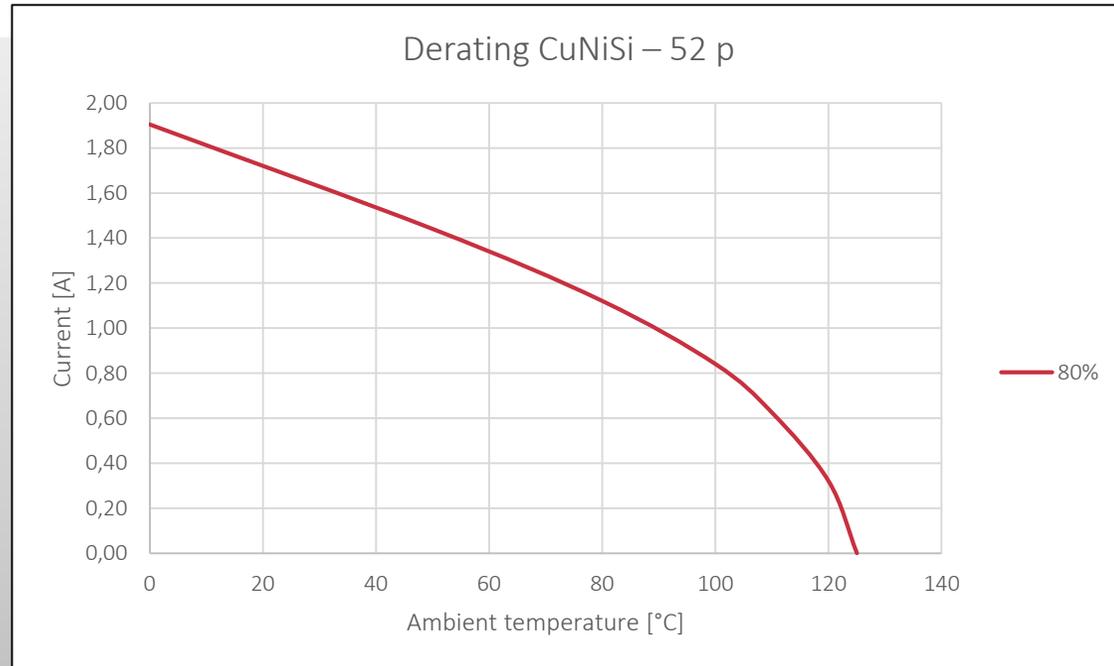
# Zero8 vs. One27

Thermal stress relaxation: CuNiSi vs. CuSN6



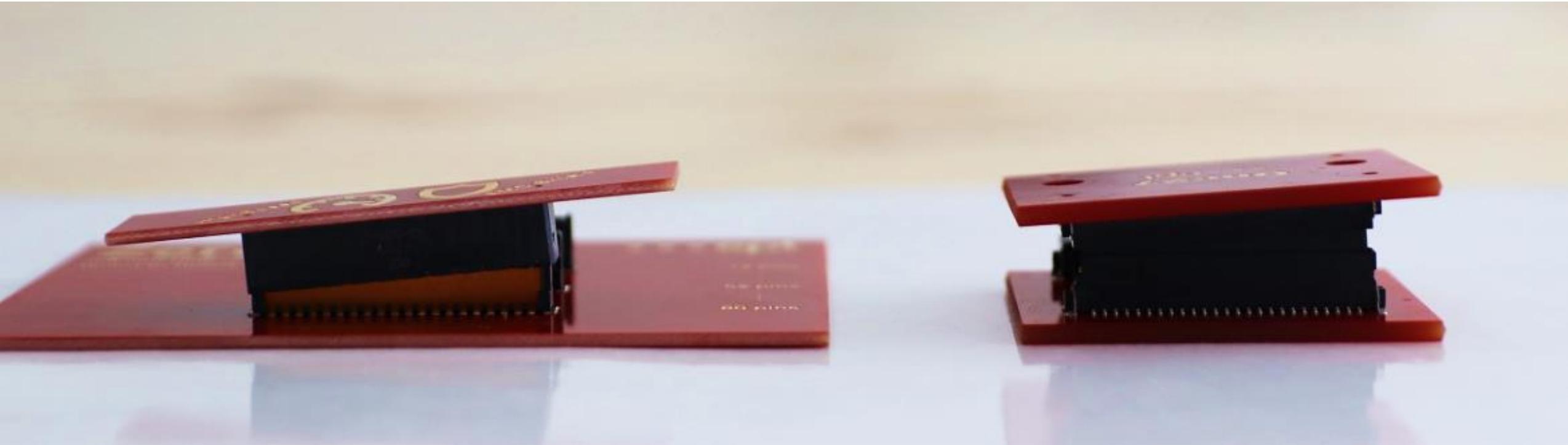
# Zero8 vs. One27

Current carrying capacity



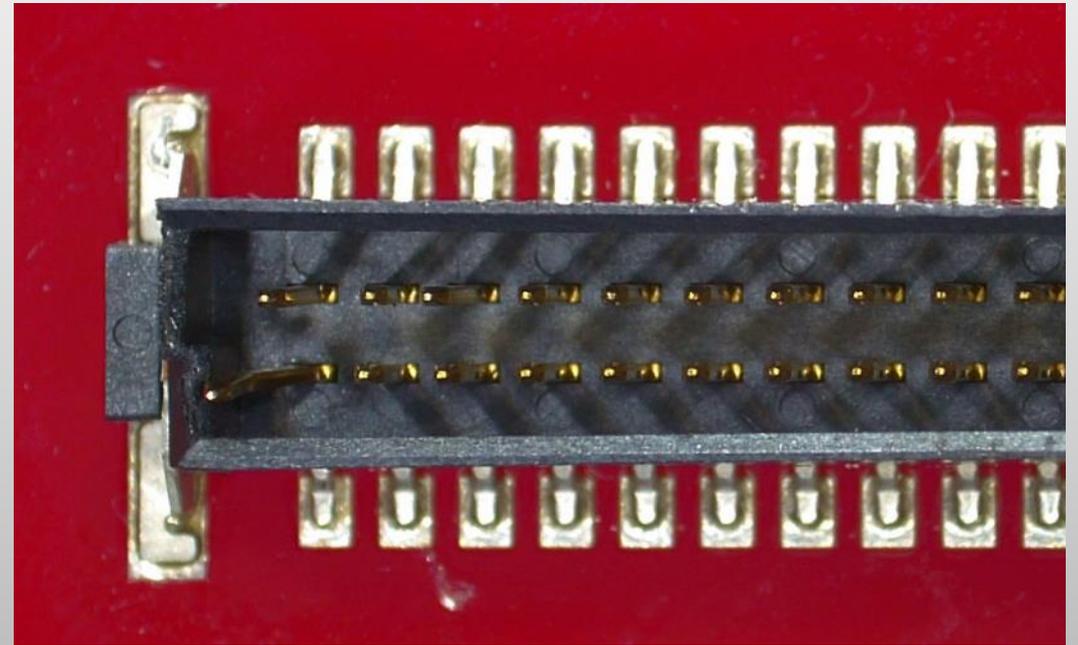
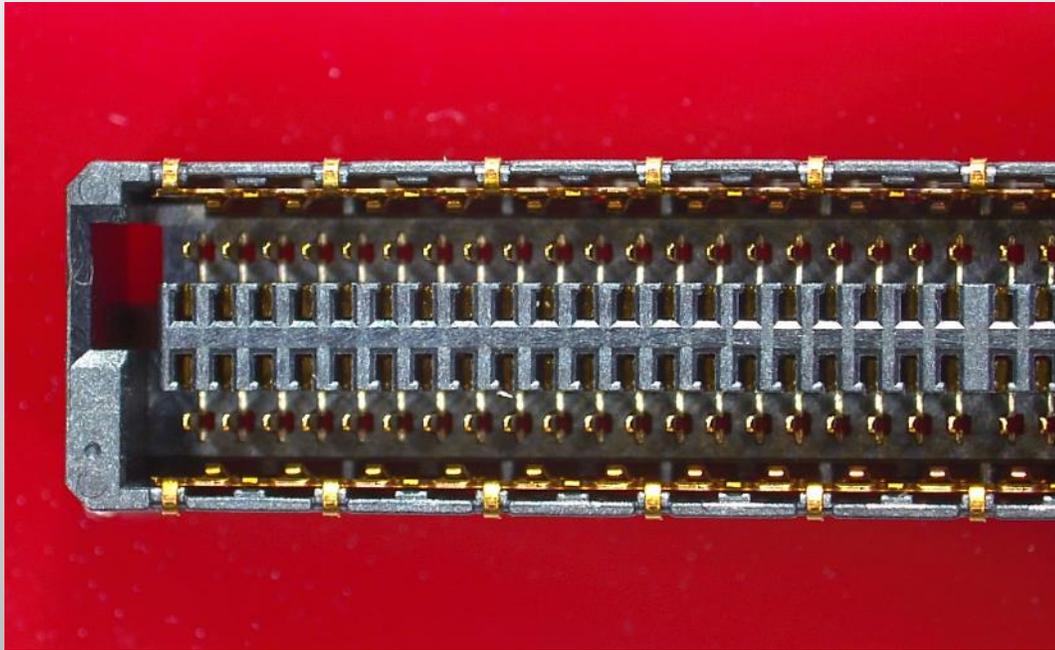
# Zero8 vs. One27

Robustness



# Zero8

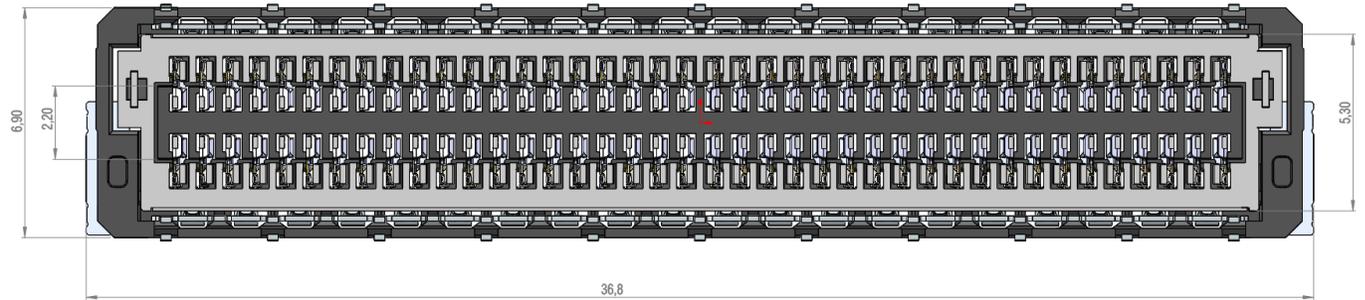
Robustness



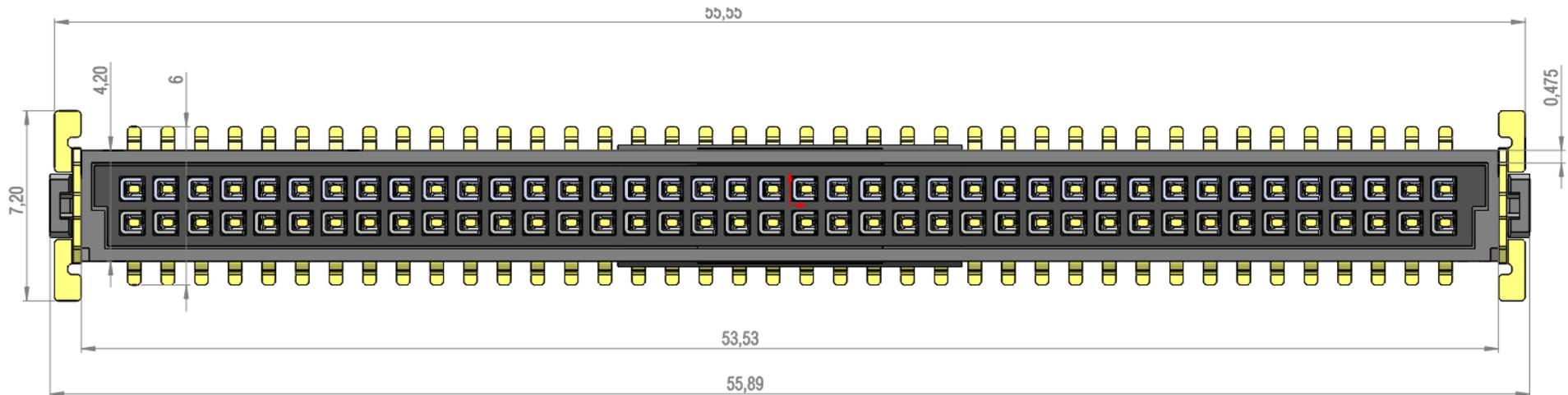
# Zero8

Robustness due to basic structure

Zero8 – 80p shielded  
dimensions  
36,8mm x 6,9mm



One27 - 80p  
unshielded  
dimensions  
55,9mm x 7,2mm



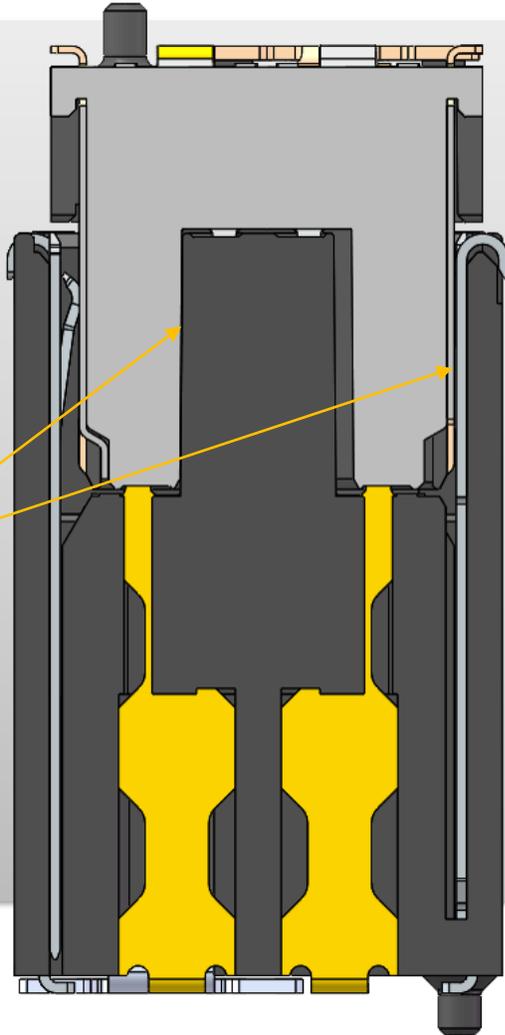
# Zero8

Robustness due to basic structure

Zero8 – shielded

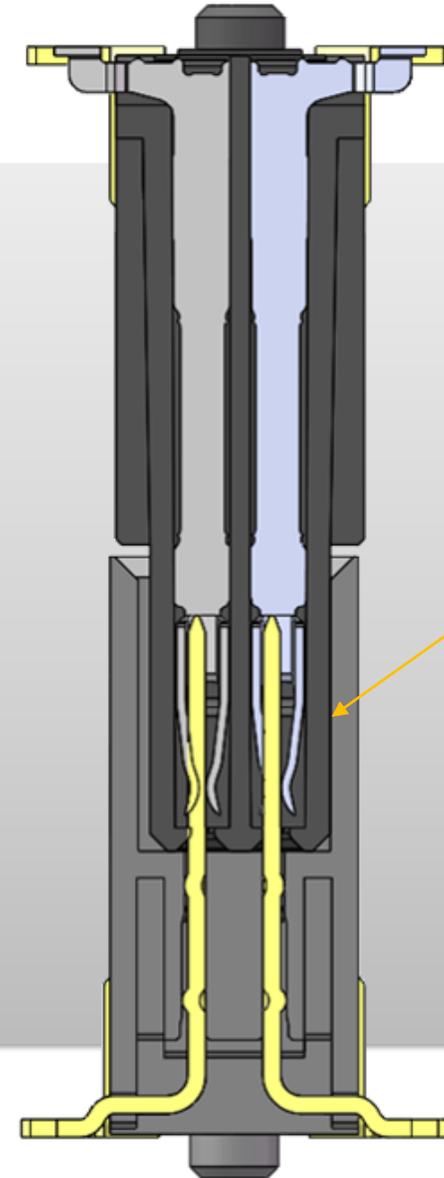
Plug mid profile  
Socket high profile

Absorption of lateral forces via central spring housing and wall of the socket



One27 unshielded  
Female- &  
Male  
high profile

Absorption of lateral forces only via wall of the Male



# Any questions?

We would be happy to help you!

