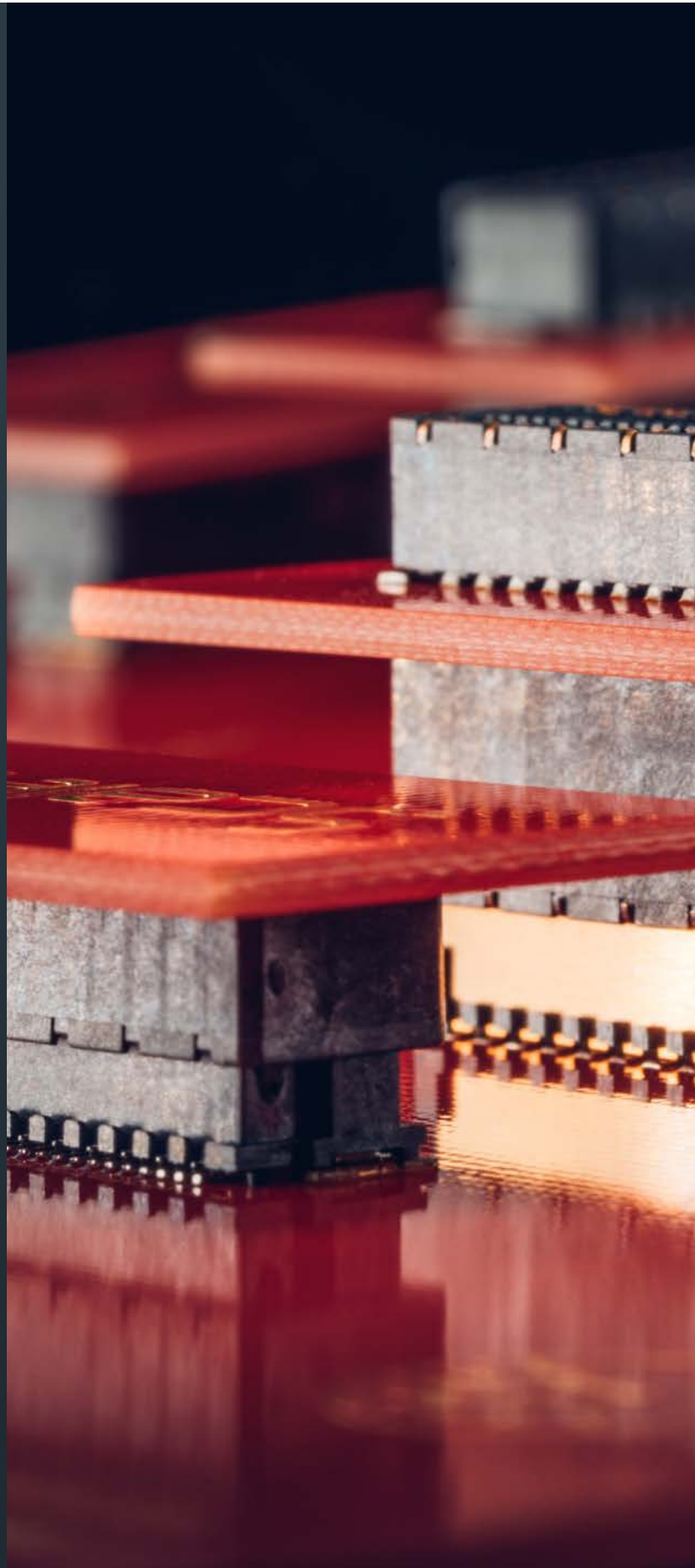


0.8 mm SMT Board-to-Board connector

ZERO8.



Zero8

Discover the 5 superpowers of the Zero8 product family!



SIGNAL PROTECTION

The monk. Faith in the good and protection for the community characterize his work. Under the cross, he strengthens an omnipresent connection to the church. Zero8 is dedicated to the integrity of data and signals and provides secure protection against external influences such as electromagnetic interference. An undisturbed focus on consistency in transmission is the attribute of Zero8.



ROBUSTNESS

The knight. His virtues include bravery and robustness on the battlefield. His distinguishing mark - the armor. Similarly, Zero8 performs reliably and robustly on the PCB, especially in demanding environments. The Zero8 is sure to withstand extreme conditions based on its mechanical properties, which predestine the connector for its task.





CONTACT RELIABILITY

The Melusine. This mythical, fairy-like figure enchants her surroundings with her mysterious mutability. With its perfect form, Zero8 is absolutely adaptable to its periphery - without revealing any „inner secret“. Zero8 reliably and faithfully maintains a protective connection to the transmitted data and signals.



EFFICIENCY

The Viking. His experience and strength are decisive for his appearance. He is characterized by navigation, manual skills, physicality and strategy. Zero8 offers maximum efficiency to individually solve board-to-board connections with its wealth of variants. Based on ScaleX, facts are created that are the key to a contemporary connection.



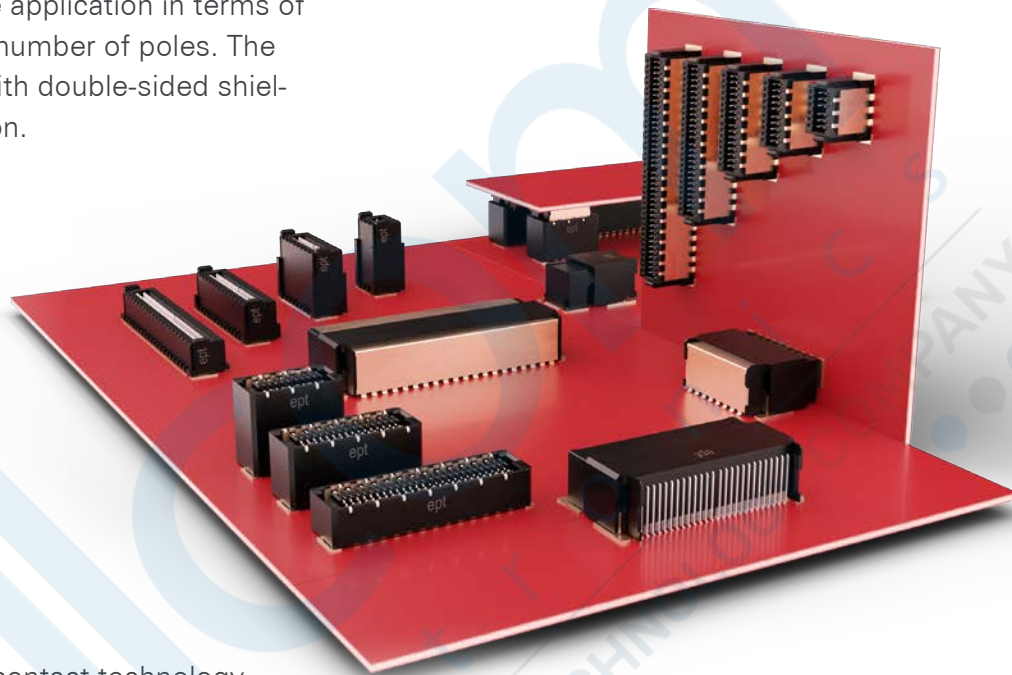
SPEED

The warrior. She moves quickly, decisively and skillfully. Hitting the bull's eye and keeping an eye on a new situation - both are the hallmarks of a good warrior. Like Zero8, she needs to work with other comrades. In context, Zero8 unconditionally transfers data, adapts to the required data volumes and contributes to real-time decisions.



Scalable & Robust

The Zero8 product family with ScaleX technology offers maximum scalability in the application in terms of designs, stacking heights and number of poles. The connector series is available with double-sided shielding or as an unshielded version.



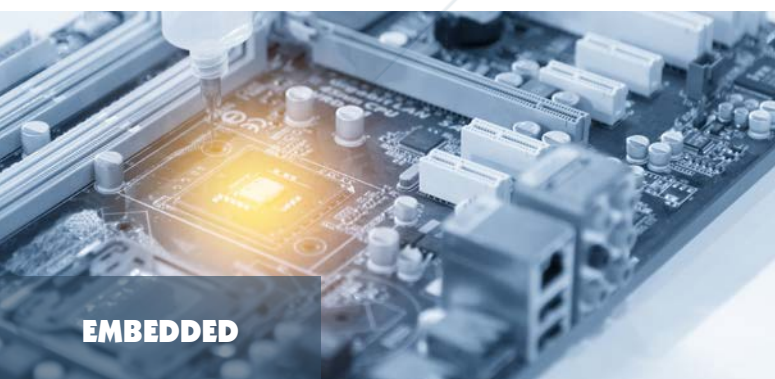
ScaleX - Double-sided, robust contact technology in a variable and scalable connector system



ENERGY TECHNOLOGY



SENSORS



EMBEDDED



INVERTER

Key Features

- up to 16 Gbps
- 12 to 80 contacts
- 1.7 A current carrying capacity
- 500 mating cycles
- Maximized contact reliability
- Optimized mating protection
- Packaged in tape & reel
- Board-to-Board from 6 to 21 mm
- Parallel and right-angled connections
- Shielded and unshielded versions

Watch the Zero8 video:



https://www.youtube.com/watch?v=_qPIL78i1sk



Parallel



Horizontal



Angled



SMT



High-Speed



High Density



EMC

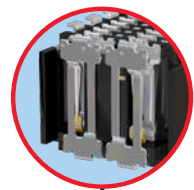


Rugged

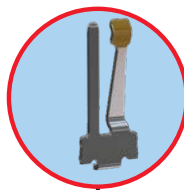


Variability

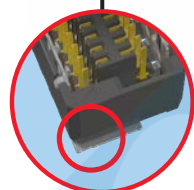
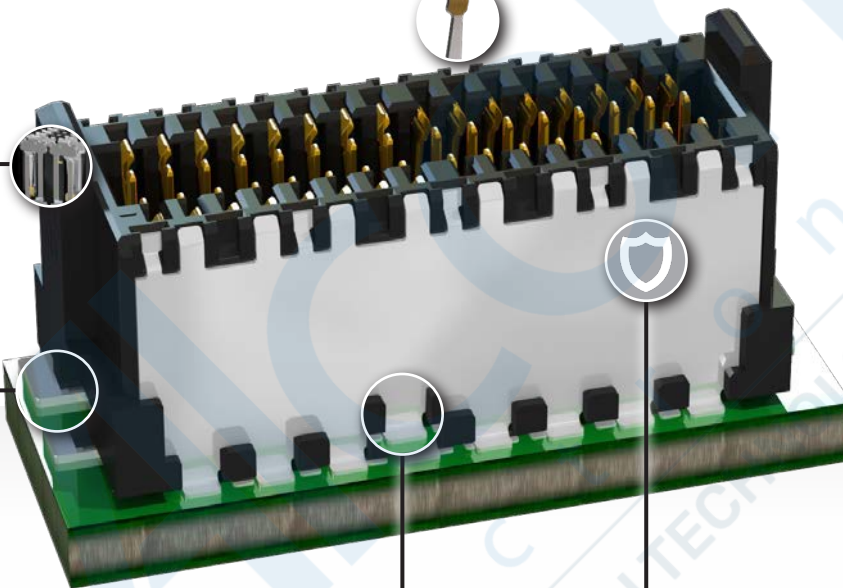




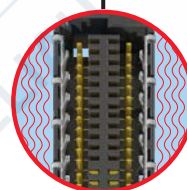
Double-Sided Contact System
For reliable contacting in industrial environments



Smooth Contact Surface
Contacting on the smooth rolled side enables up to 500 mating cycles



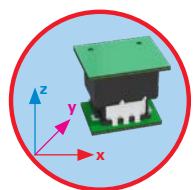
Boardlock
For a robust connection to the circuit board



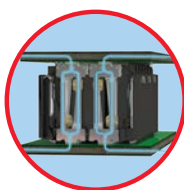
Shielding EMC
Double-sided shielding for optimal signal integrity



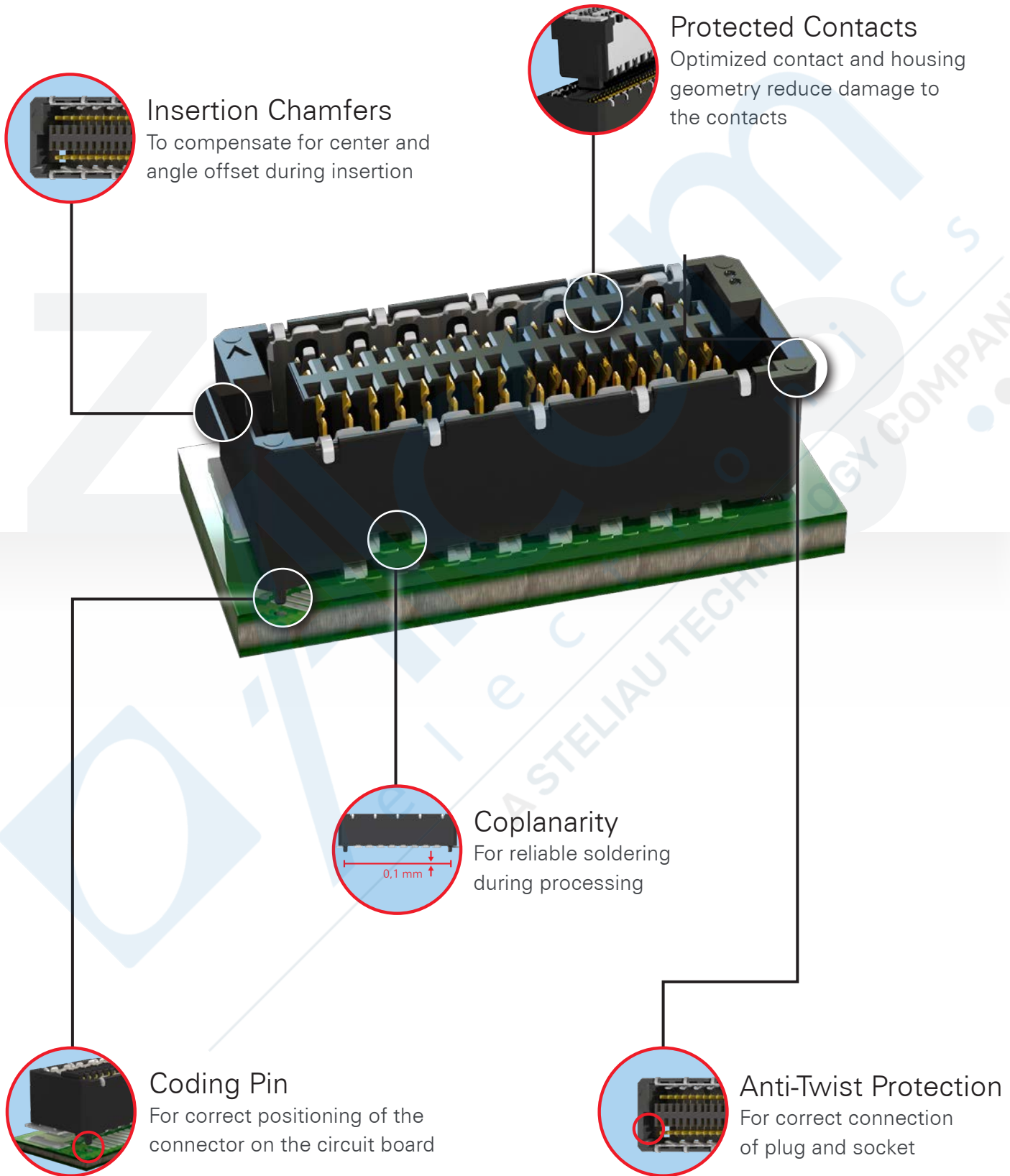
Solder Miniscus
Guarantees a robust surface mount connection



Tolerance
High reliability due to high tolerance compensation

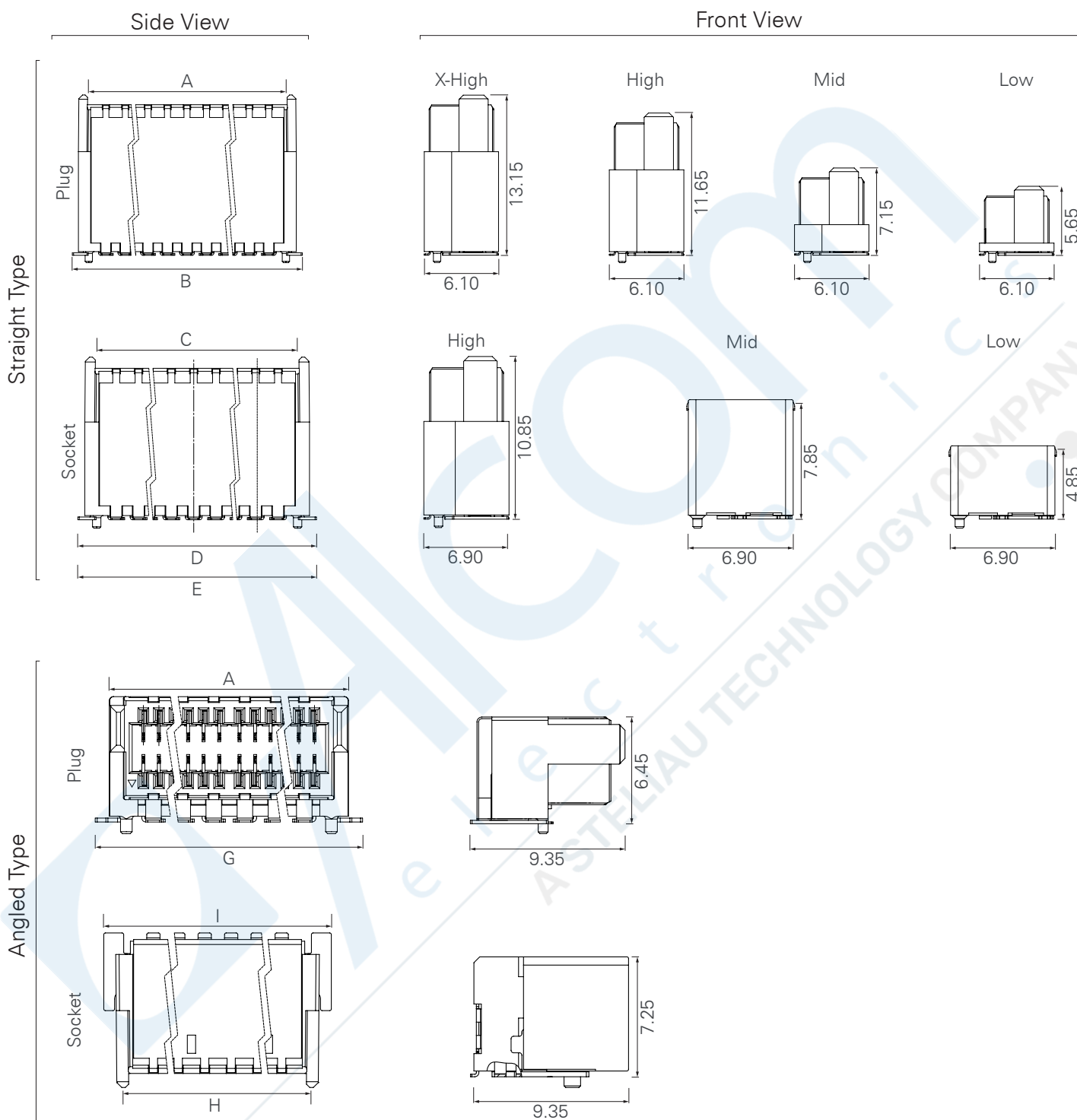


Dataflow
HF-optimized contact geometry ensures data speeds of up to 16 Gbps



Zero8

Dimensions



Connector lengths in mm:

Pins	A	B	C	D	E	G	H	I
12	6.00	8.70	6.90	9.88	9.58	9.20	4.10	9.60
20	9.20	11.90	10.10	13.08	12.78	12.40	7.30	12.80
32	14.00	16.70	14.90	17.88	17.58	11.20	12.10	17.60
52	22.00	24.70	22.90	25.88	25.58	19.20	20.10	25.60
80	33.20	35.90	34.10	37.08	36.78	30.40	31.30	36.80



Detailed drawings as well as a layout recommendation are available on www.ept.de after selecting the corresponding article.

Basics		
Number of pins	12 / 20 / 32 / 52 / 80	
Termination	SMT	
Operating temperature range	-55°C to +125°C	

Material		
Insulator material	LCP, UL 94 V-0	
CTI	150	IEC 60112
Contact material	Copper alloy	
Contact surface	Au over Ni	
Termination area	Sn over Ni	

Mechanical		
Pitch	0.8 mm	
Mating and separating force per pin shielded / unshielded	$\leq 0.5 \text{ N} / \leq 0.4 \text{ N}$	
Durability	Performance I: 500 mating cycles	IEC 60512-9-1:2010
Coplanarity	max. 0.1 mm	
Vibration, sinusoidal	10 - 2000 Hz 20 g	IEC 60512-6-4:2002
Contact mating problems if vibrations occur, sinusoidal	$< 1 \mu\text{s}$	IEC 60512-2-5:2003
Shock, semi-sinusoidal	50 g, 11 ms	IEC 60512-6-3:2002
Contact mating problems if shocks occur, semi-sinusoidal	$< 1 \mu\text{s}$	IEC 60512-2-5:2003

Electrical		
Operational current	max. 1.7 A at 20°C (52 pins) max. 5.5 A at 20°C (2 of 52 pins)	IEC 60512-5-2:2002
Contact resistance	max. 25 mΩ	IEC 60512-2-1:2002
Clearance and creepage	min. 0.25 mm	
Insulation resistance	max. 5 GΩ	IEC 60512-3-1:2002
Test voltage	500 VAC	IEC 60512-4-1:2003
Data transfer rate	16 Gbps	
Coupling inductivity	10 pH	

Processing		
Soldering temperature	260°C	JEDEC J-STD-020E
MSL	1	JEDEC J-STD-020E
Packaging	Tape and Reel	
Assembly	Pick and place	

Approval		
UL file	E130314	
Environment	RoHS compliant	



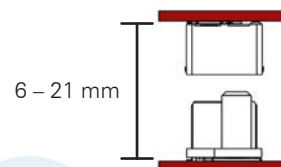
Detailed test reports are available at www.ept.de after selecting the corresponding article.

Zero8

Part Numbers for B-t-B Applications



Parallel Connector Pairs



Board-to-Board Distance in mm

6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
A 6.0 - 7.5	B 7.5 - 9.0	C 9.0 - 10.5	D 10.5 - 12.0	E 12.0 - 13.5	F 13.5 - 15.0	G 15.0 - 16.5	H 16.5 - 18.0	I 18.0 - 19.5	J 19.5 - 21.0						



Please refer to the connector combinations table on page 11

Part Number Key

Type

405 Plug
406 Socket

Profile

51 Angled
52 Low
53 Mid
54 High
55 X-High Plug only

Shielding

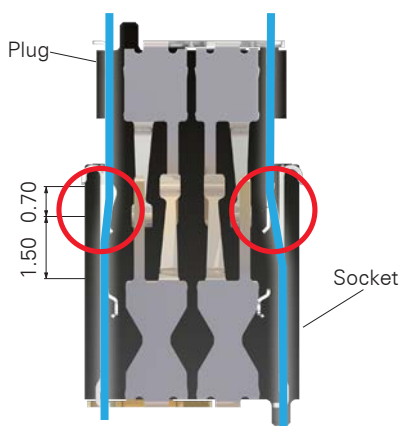
0 unshielded for A01
1 shielded
2 unshielded

XXX - **XX** **X** **NN** - **5 1**

12, 20, 32, 52, 80

Pins

For individual PCB distances of 6 to 21 mm, the shielding concept with an overmating range of 2.2 mm always guarantees a reliable connection.



























Available Options:

- Custom pin counts
- Other performance levels
- Custom variants



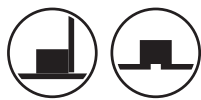
Connector Combinations Table

	Plug straight			Socket straight		
Pairing	Part number			Part number		
A	Low		405-52XNN-51	Low		406-52XNN-51
B	Mid		405-53XNN-51	Low		406-52XNN-51
C	Low		405-52XNN-51	Mid		406-53XNN-51
D	Mid		405-53XNN-51	Mid		406-53XNN-51
E	High		405-54XNN-51	Low		406-52XNN-51
E	Low		405-52XNN-51	High		406-54XNN-51
F	X-High		405-55XNN-51	Low		406-52XNN-51
F	Mid		405-53XNN-51	High		406-54XNN-51
G	High		405-54XNN-51	Mid		406-53XNN-51
H	X-High		405-55XNN-51	Mid		406-53XNN-51
I	High		405-54XNN-51	High		406-54XNN-51
J	X-High		405-55XNN-51	High		406-54XNN-51

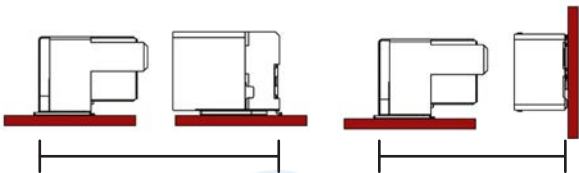
Packaging Tape & Reel

Low	500 pcs.	500 pcs.
Mid	250 pcs.	250 pcs.
High	300 pcs.	250 pcs.
XHigh	250 pcs.	250 pcs.

Zero8
Part Numbers for B-t-B Applications



Angled Connector Pairs



Required Installation Space in mm

10	11	12	13	14	15	16	17	18	19	20
A 10.65 - 12.15		C 12.15 - 13.65		E 14.3 - 15.8		G 16.65 - 18.15		I 18.15 - 19.65		
B 10.85 - 12.35		D 12.35 - 13.85		F 14.5 - 16.0		H 16.85 - 18.35		J 18.35 - 19.85		



Please refer to the connector combinations table on page 13

Part Number Key

Type

- 405 Plug
- 406 Socket

Profile

- 51 Angled
- 52 Low
- 53 Mid
- 54 High
- 55 X-High Plug only

Shielding

- 0 unshielded for A01
- 1 shielded
- 2 unshielded

XXX

-

XX

X

NN

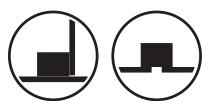
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12, 20, 32, 52, 80

Pins



Connector Combinations Table

Pairing	Unshielded					
	Plug straight			Socket angled		
	Part number			Part number		
A	Low		405-52XNN-51	90°		406-51XNN-51
C	Mid		405-53XNN-51	90°		406-51XNN-51
E	High		405-54XNN-51	90°		406-51XNN-51
G	X-High		405-55XNN-51	90°		406-51XNN-51
	Shielded					
	Plug straight			Socket angled		
	Part number			Part number		
B	Low		405-521NN-51	90°		406-511NN-51
D	Mid		405-531NN-51	90°		406-511NN-51
F	High		405-541NN-51	90°		406-511NN-51
H	X-High		405-551NN-51	90°		406-511NN-51
	Plug angled unshielded			Socket angled unshielded		
	Part number			Part number		
I	90°		405-51XNN-51	90°		406-51XNN-51
	Plug angled shielded			Socket angled shielded		
	Part number			Part number		
J	90°		405-511NN-51	90°		406-511NN-51

Packaging Tape & Reel

angled	400 pcs.	400 pcs.
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Zero8

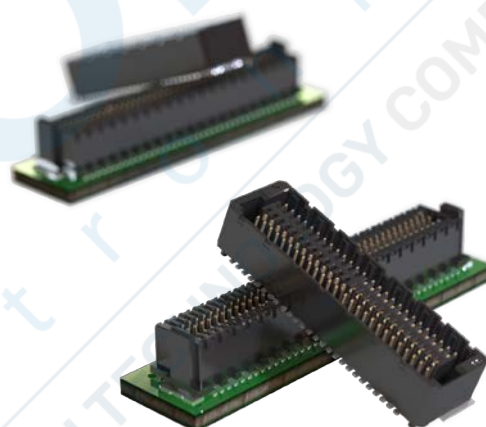
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At six locations worldwide, connectors are manufactured in-house using highly automated processes across four manufacturing steps (stamping, electroplating injection molding and assembly). Over five decades, we have formed trusting and successful partnerships with our customers, who are at the center of everything we do.

