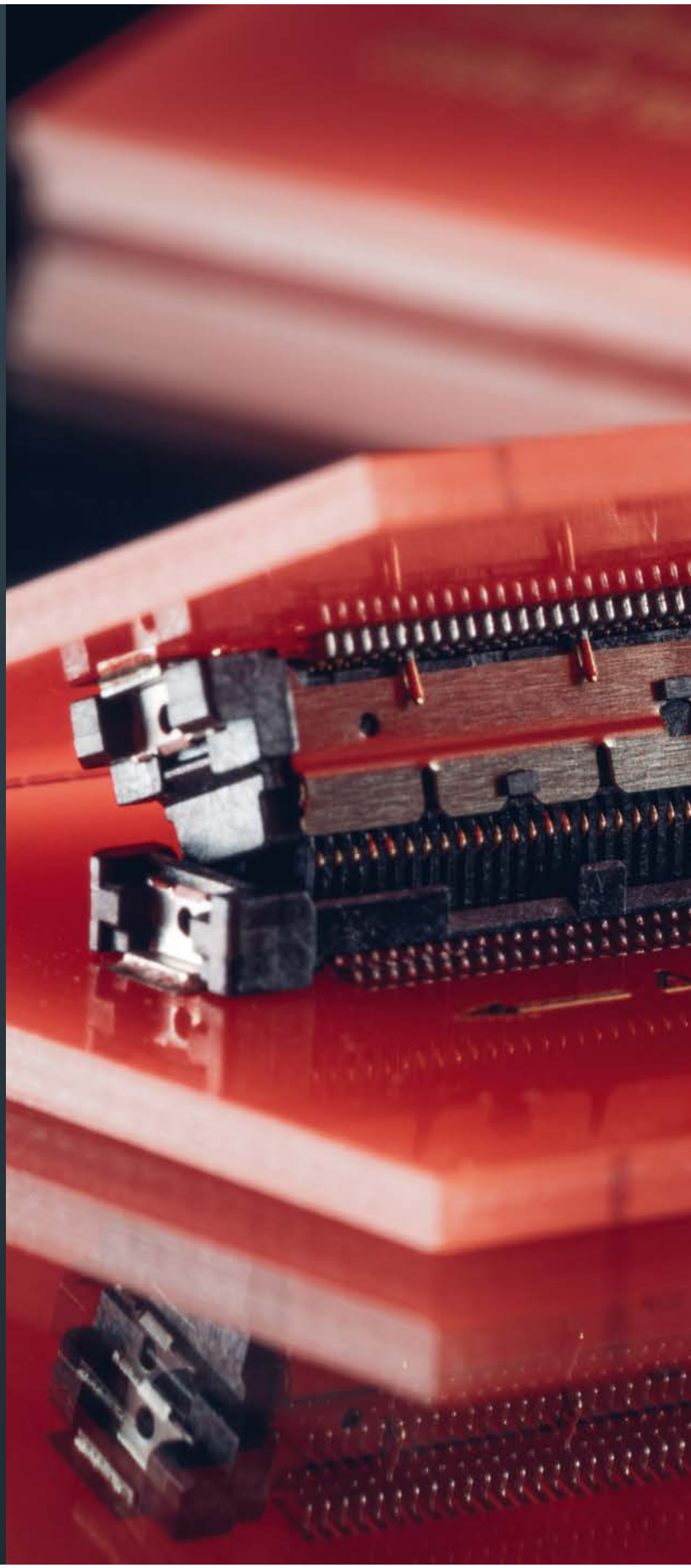
ept

High-Speed Connector up to 25+ Gbps

COLIBRI®



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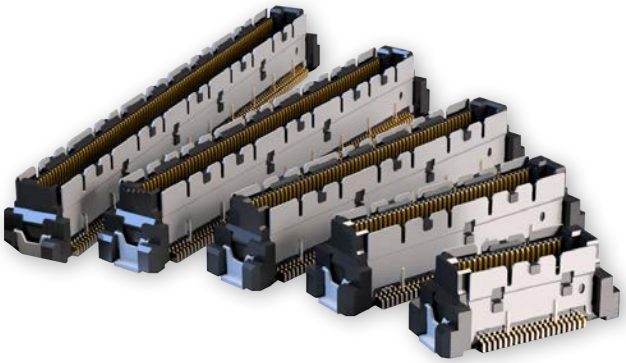
Colibri®
High Speed up to 25+ Gbps

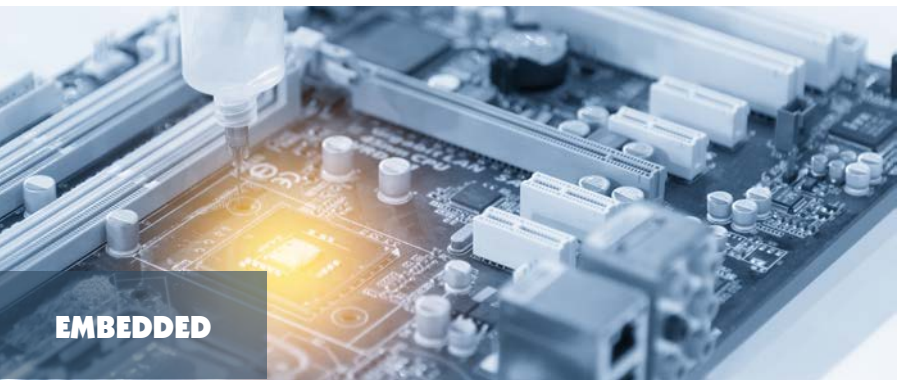
Small, Fast, Reliable

Colibri® is a shielded, two-row SMT connector system with a pitch of 0.5 mm, which is especially suitable for applications with high data transmission rates.

The product is available in different speeds, starting at 10 Gbps through 16 Gbps and up to 25 Gbps in the highest configuration. In addition to the available pin counts of 40, 80, 120 and 160, the versions with 220 and 440 contacts are primarily used for the now widespread COM Express® applications.



SMT | Parallel 5 or 8 mm | High Speed | High Density | EMC



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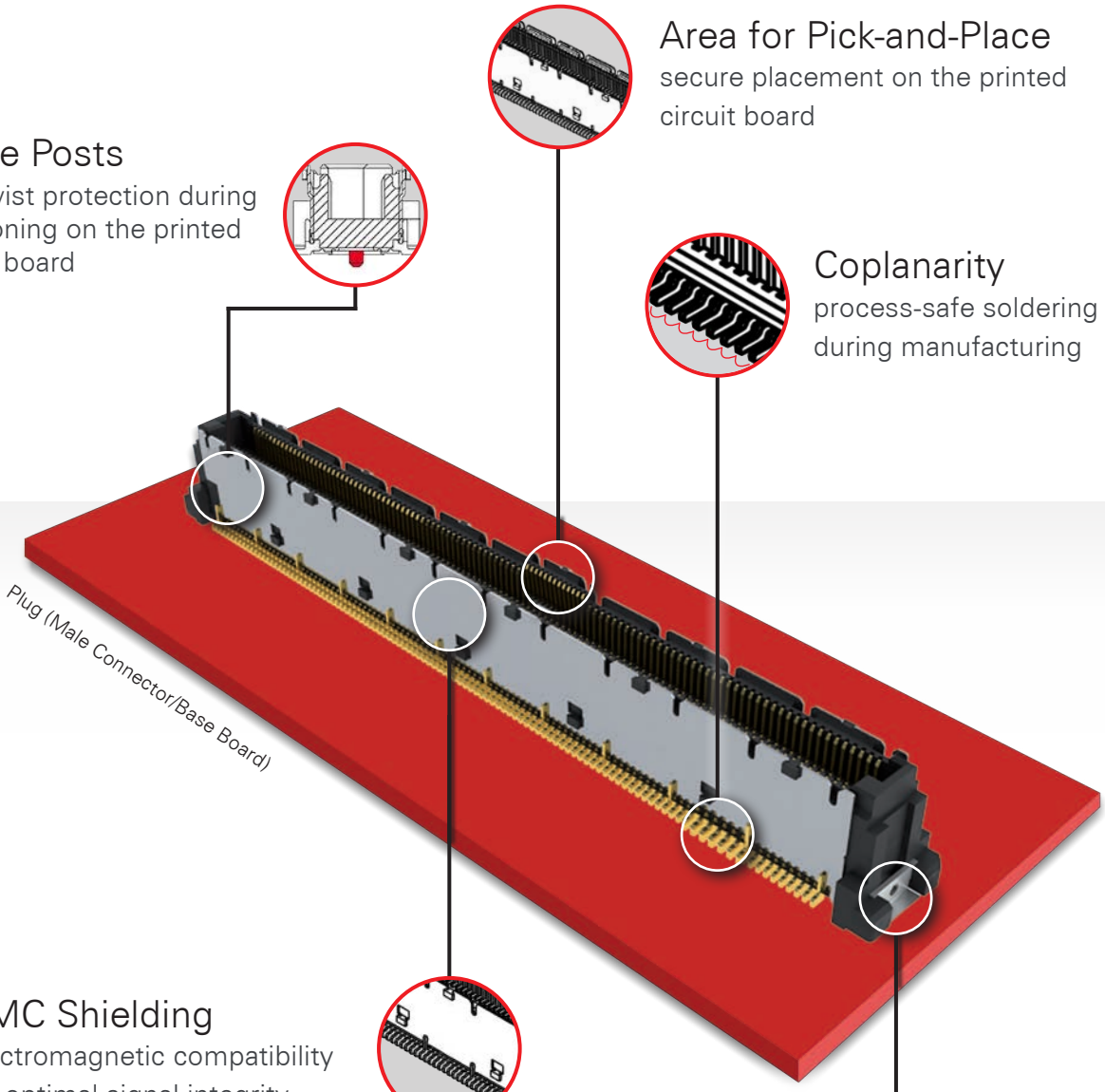
COM Express®

COM Express® is a specification developed by PICMG for x86-based Computer-on-Modules (COM). The basic concept of plugging a COM module onto a carrier board offers the advantages of reducing development times and costs. In addition, the life cycle of products can not only be extended but also upgraded by plugging newer COM Express modules with higher performance onto the carrier board.

The Colibri connectors offered by ept are specified in the PICMG® design guide and the COM.0 specification. In addition, the 16+ and 25+ versions of Colibri® are suitable for applications requiring higher data transfer rates, in particular 16+ for PCI Express Gen. 4 and 25+ for 100 Gigabit Ethernet or USB 4.0.

Our Colibri Video:

https://youtu.be/rBry52V774Y



Area for Pick-and-Place

secure placement on the printed circuit board

Guide Posts

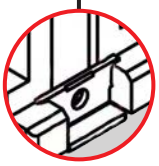
anti-twist protection during positioning on the printed circuit board

Coplanarity

process-safe soldering during manufacturing

EMC Shielding

electromagnetic compatibility for optimal signal integrity



Board Lock

safe and robust connection to the printed circuit board

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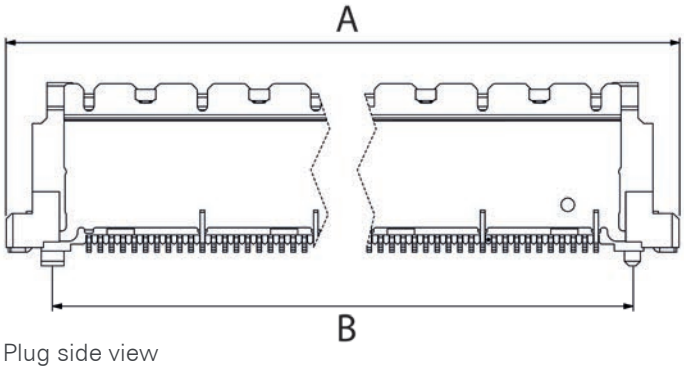
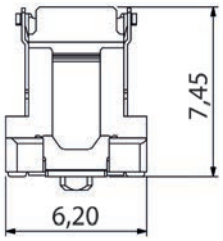
Other Features:

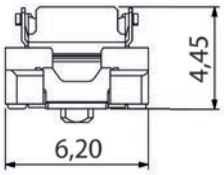
- Packaged in tape and reel or alternatively in tray
- Plug-in compatibility with other manufacturers
- SI models and extensive test reports available
- Plug optionally available with pick-and-place cap



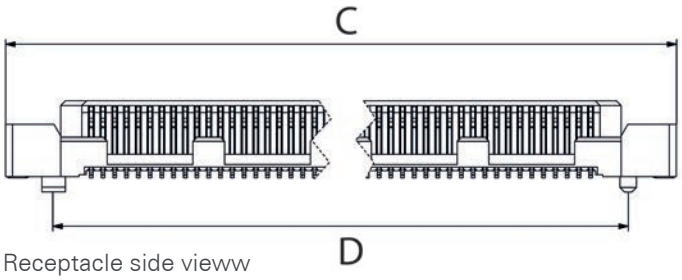
Plug side view



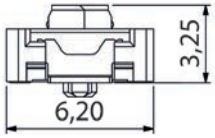
Plug 8 mm front view



Plug 5 mm front view



Receptacle side vieww



Receptacle front view

Connector lengths in mm:

Pins	A	B	C	D
40	16,80	12,20	16,80	12,10
80	26,80	22,20	26,80	22,10
120	36,80	32,20	36,80	32,10
160	46,80	42,20	46,80	42,10
220	61,80	57,20	61,80	57,10
440	61,80	57,20	61,80	57,10

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

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Basics		
Specification	PICMG COM.0	
Number of pins	40 / 80 / 120 / 160 / 220 / 440	
Termination	SMT	
Operating temperature range	-40°C to +125°C	

Material		
Insulator material	LCP	
CTI	175	IEC 60112
Contact material	Copper alloy	
Contact surface	Au over Ni	

Mechanical			
Pitch		0.5 mm	
Mating force per pin		≤ 0.9 N	
Separating force per pin		≥ 0.1 N	
Durability		30 mating cycles	IEC 60512-9-1
Coplanarity		≤ 0.1 mm	
Vibration, sinusoidal:	10 - 55 - 10 Hz, 18,5 g	Contact disturbance ≤ 1 µs	IEC 60512-2-5
Shock, semi-sinusoidal:	50 g, 11 ms	Contact disturbance ≤ 1 µs	IEC 60512-2-5

Electrical		
Operating current	0.5 A at 85°C (220 pins)	IEC 60512-5-2
Operating voltage	50 VAC	
Contact resistance	≤ 75 mΩ	IEC 60512-2-1
Isolation resistance	> 100 MΩ	IEC 60512-3-1
Test voltage	200 VAC	IEC 60512-4-1
Data transfer rate	10 Gbps, 16 Gbps, 25 Gbps	

Processing		
Soldering temperature	20 - 40 s at 260°C	JEDEC J-STD-020
MSL	1	JEDEC J-STD-020
Packaging	Tape & Reel or Tray	
Assembly	Pick and place	

Approval		
UL file	E130314	
Environment	RoHS compliant	

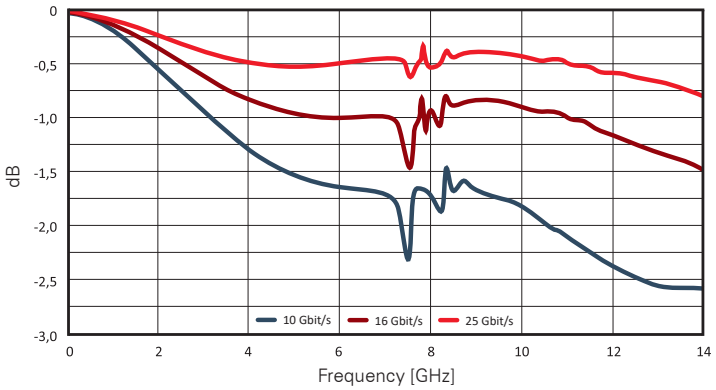
Detailed test reports are available at www.ept.de
after selecting the corresponding article.

However Fast You Want to Go, Our Colibri is Faster

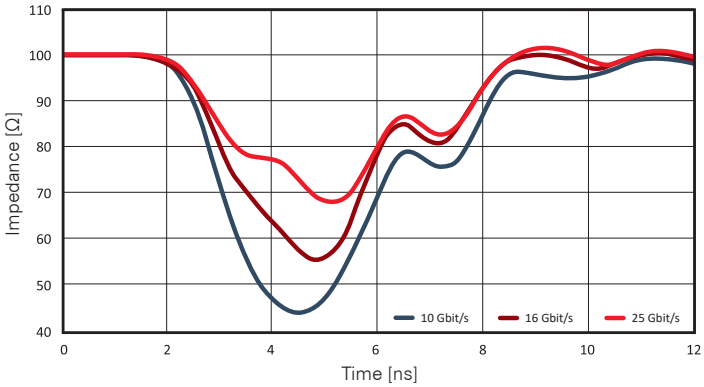
The Colibri connectors were specifically designed to meet the requirements of high-speed applications.

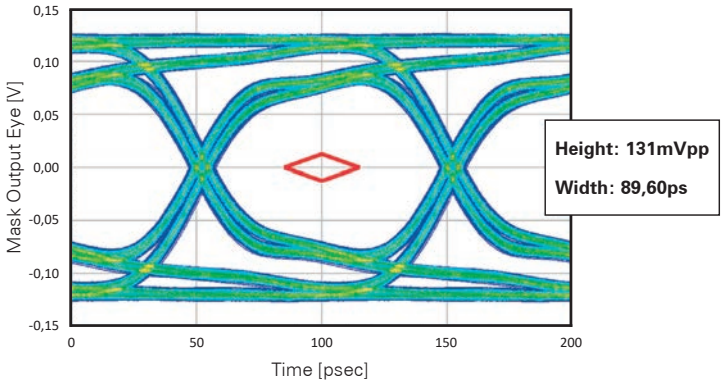
Through consistent further development, the plug is available in three different high-speed variants. To achieve the best signal integrity, ept's signal-transmission-optimized receptacle, should be used as part of the connector pair.

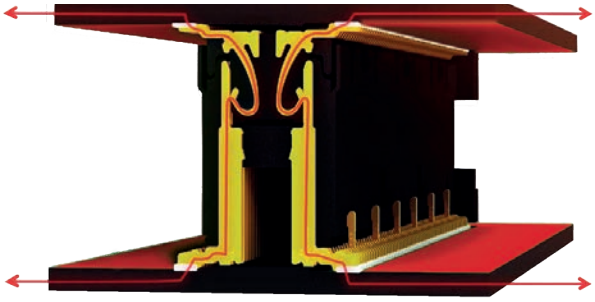
Insertion loss of the three variants: 10+, 16+ and 25+



Differential impedance of the three variants: 10+, 16+ and 25+







S-parameters and detailed test reports can be provided by ept for simulation and validation purposes.

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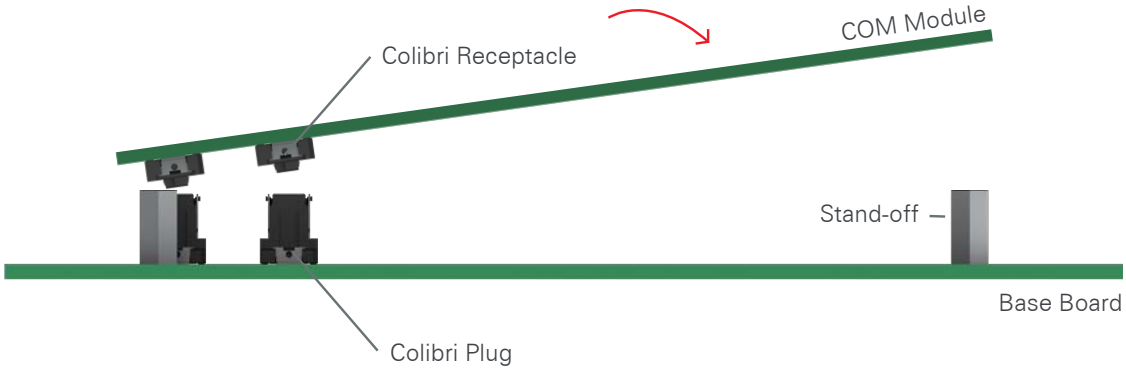
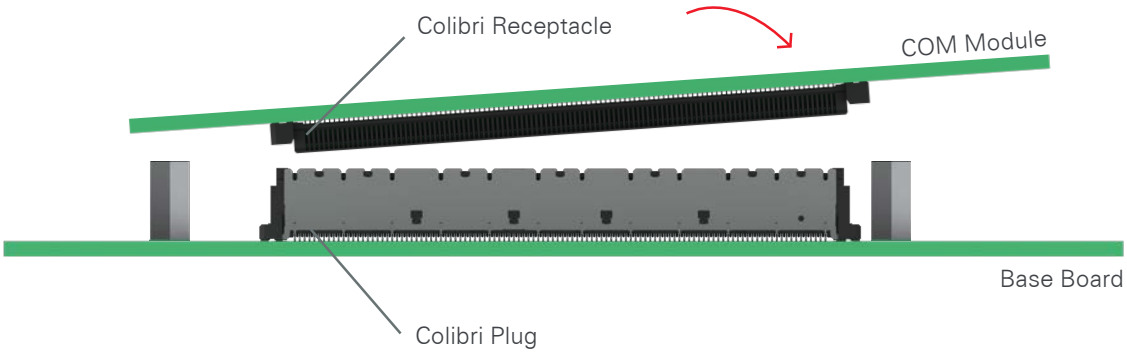
How to Plug and Unplug COM Express® Modules

When plugging in a COM Express® module of the sizes basic, compact or extended, comparatively high plug-in forces are generated due to the high number of 440 pins.

The same applies to high pulling forces that occur when the module is removed from the baseboard. To prevent possible malfunctions, ept provides the following recommendations.

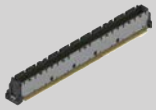
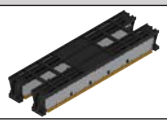
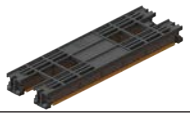
Position the COM module with the Colibri Receptacle tilted and without pressure on the Colibri Plug.





A detailed recommendation for mating and unmating Colibri connectors - COM Express® form factor Compact and Basic can be found on our website:

5 mm Board-to-Board Distance

		Plug		Receptacle	
Pins	Data transfer rate		Part number		Part number
220	10+		401-51101-51		402-51101-51
	16+		401-51103-51		
440	10+		401-51501-51		402-51501-51
	16+		401-51503-51		

Packaging Tape & Reel - 220p	875 pcs.	1.050 pcs.
Packaging Tape & Reel - 440p	350 pcs.	400 pcs.

Part Number Key

Type
401 Plug
402 Receptacle

b-t-b distance
51 Plug 5 mm
51 Receptacle
55 Plug 8 mm

Pick & place cap
0 without pick & place cap
5 with pick & place cap (Plug only)

Optional tray packaging
220p and 440p only

X X X - X X X X X - X X VP1

Pins
1 220p
3 160p
4 120p
5 440p
6 80p
7 40p

Variant
1 Standard version
3 16+ plug only
4 25+ plug only

Coating
51 Standard version
52 Heavy Au

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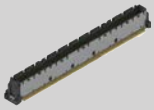
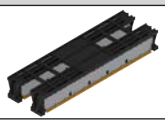
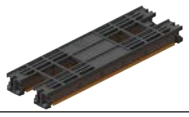
8 mm Board-to-Board Distance

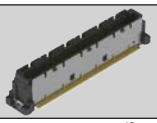
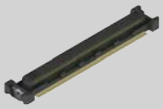
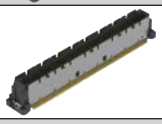
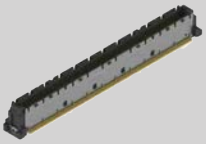
		Plug		Receptacle	
Pins	Data transfer rate		Part number		Part number
220	10+		401-55101-51		402-51101-51
	16+		401-55103-51		
440	10+		401-55501-51		402-51501-51
	16+		401-55503-51		

Packaging Tape & Reel - 220p	600 pcs.	1.050 pcs.
Packaging Tape & Reel - 440p	240 pcs.	400 pcs.

Available options:

- Pins with 0.76 μm gold plating
- Packaging in tray
- Plug with pick-and-place cap

5 mm Board-to-Board Distance

		Plug		Receptacle	
Pins	Data transfer rate		Part number		Part number
40	10+		401-51701-51		402-51701-51
	16+		401-51703-51		
80	10+		401-51601-51		402-51701-51
	16+		401-51603-51		
120	10+		401-51401-51		402-51701-51
	16+		401-51403-51		
160	10+		401-51301-51		402-51701-51
	16+		401-51303-51		
220	10+		401-51101-51		402-51101-51
	16+		401-51103-51		
	25+		401-51104-51		

Packaging Tape & Reel	875 pcs.	1.050 pcs.

Part Number Key

Type
401 Plug
402 Receptacle

b-t-b distance
51 Plug 5 mm
51 Receptacle
55 Plug 8 mm

Pick & place cap
0 without pick & place cap
5 with pick & place cap (Plug only)

Optional tray packaging
220p and 440p only

X X X - X X X X X - X X VP1

Pins
1 220p
3 160p
4 120p
5 440p
6 80p
7 40p

Variant
1 Standard version
3 16+ plug only
4 25+ plug only

Coating
51 Standard version
52 Heavy Au

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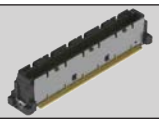
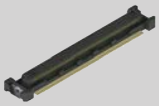
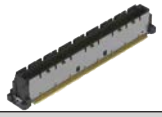
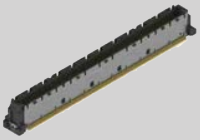
8 mm Board-to-Board Distance

		Plug		Receptacle	
Pins	Data transfer rate		Part number		Part number
40	10+		401-55701-51		402-51701-51
	16+		401-55703-51		
80	10+		401-55601-51		402-51601-51
	16+		401-55603-51		
120	10+		401-55401-51		402-51401-51
	16+		401-55403-51		
160	10+		401-55301-51		402-51301-51
	16+		401-55303-51		
220	10+		401-55101-51		402-51101-51
	16+		401-55103-51		
	25+		401-55104-51		

Packaging Tape & Reel	600 pcs.	1.050 pcs.

Available options:

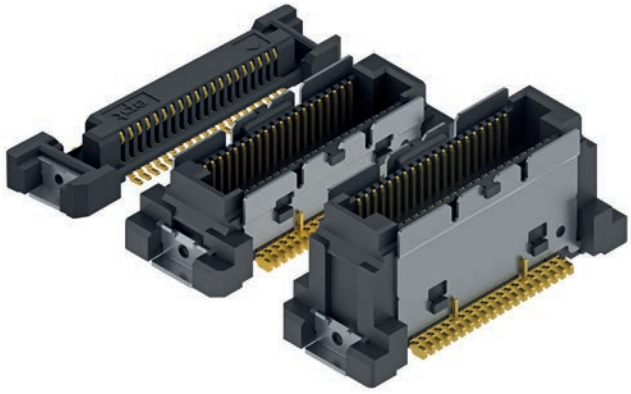
- Pins with 0.76 μm gold plating
- Packaging in tray
- Plug with pick-and-place cap

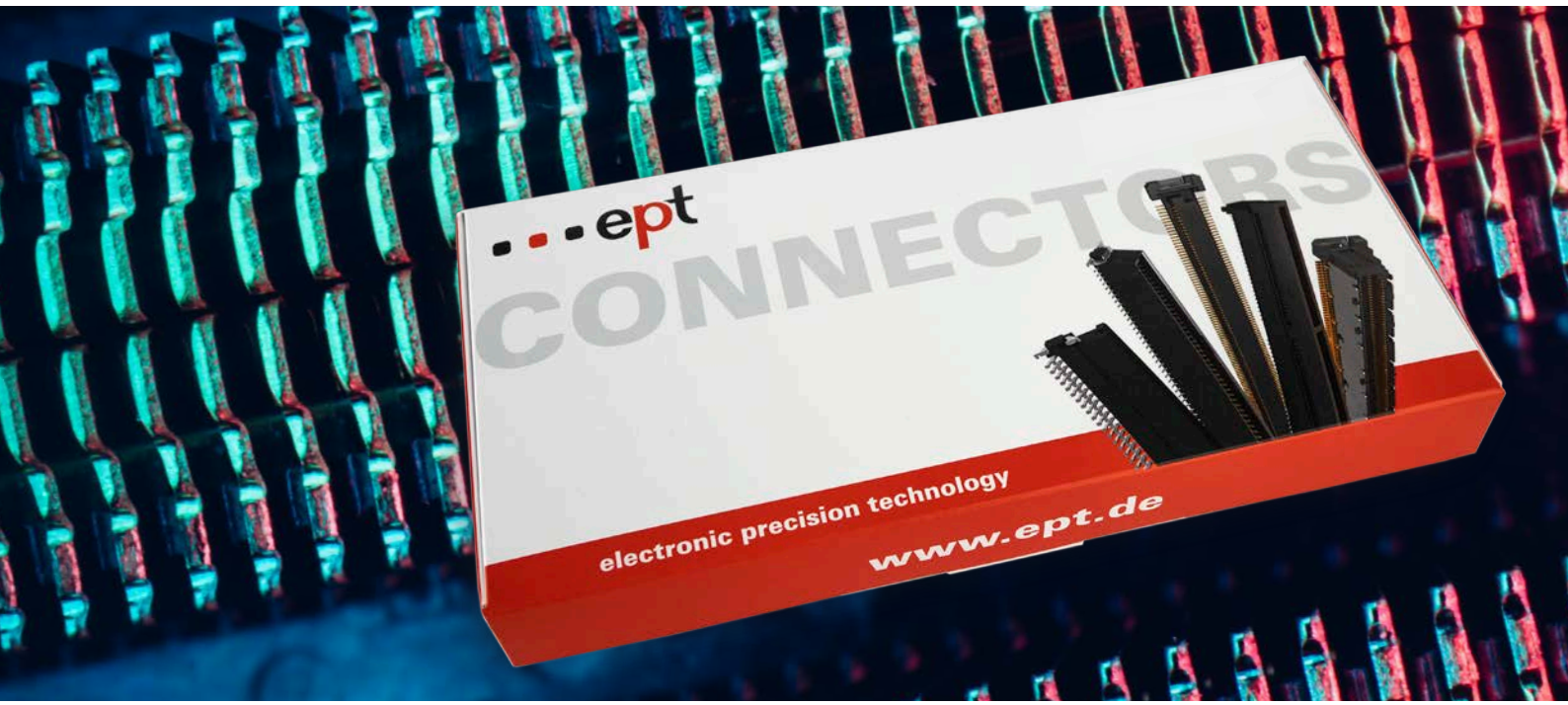
Fast and Simple

You can receive product samples from ept quickly, easily and free of charge. Either with a few easy steps on www.ept.de or by contacting us directly under +49-8861-2501-0 (recommended for special features, such as modifications).

For detailed coordination as well as individual consultation, you can choose between our sales representative in your area, our service representative in Peiting or a local sales partner or distributor.

Order your product samples here:





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One Stop Supplier

ept is a German quality supplier with sophisticated products in the field of electrical connectivity. Our products and capabilities are used in high-quality and demanding applications such as industrial automation, healthcare, measurement and traffic technology as well as automotive electronics.

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.

ept GmbH

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Distributors Worldwide

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