Molex Mezzanine Product Solutions

Copper Solutions Business Unit
December 2018

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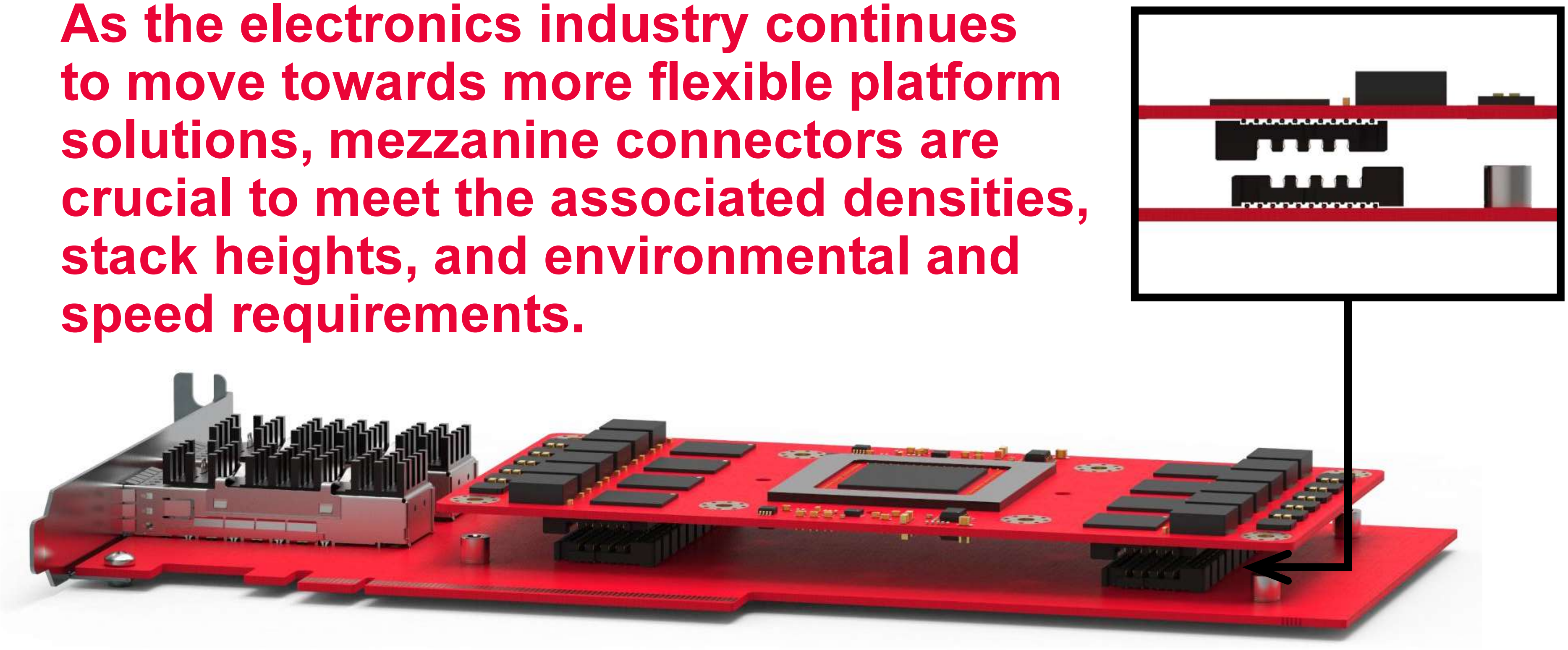
one company › a world of innovation

Molex Mezzanine Solutions Introduction

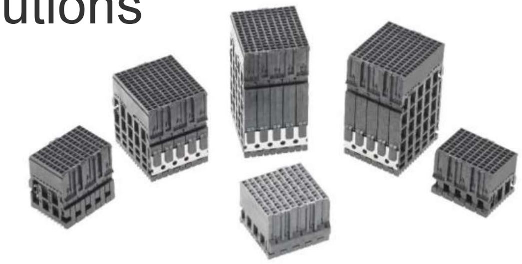
As the electronics industry continues to move towards more flexible platform solutions, mezzanine connectors are crucial to meet the associated densities, stack heights, and environmental and speed requirements.



Why Molex Mezzanine Connectors?

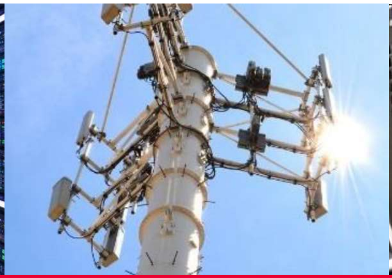
Molex offers a broad selection of mezzanine connectors with consistent quality

- Wide range of circuit sizes, stack heights and speeds
- Ruggedized designs, modular structures, low-profile mated heights and hermaphroditic features included within our portfolio
- Products capable of providing solutions across many customer applications and platforms
- Flexible options for tiered solutions



Mezzanine Markets and Applications

Computing/ Data



Telecommunications/ Networking

Industrial Automation

Aerospace/ Defense

Automotive

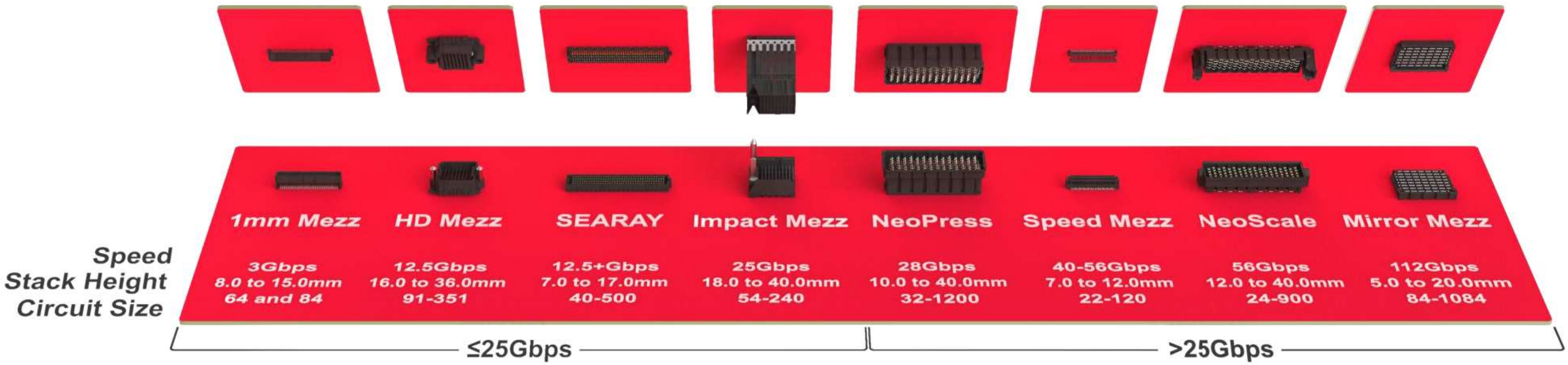
Medical

Consumer Electronics

Security

Internet of Things

Mezzanine Product Roadmap

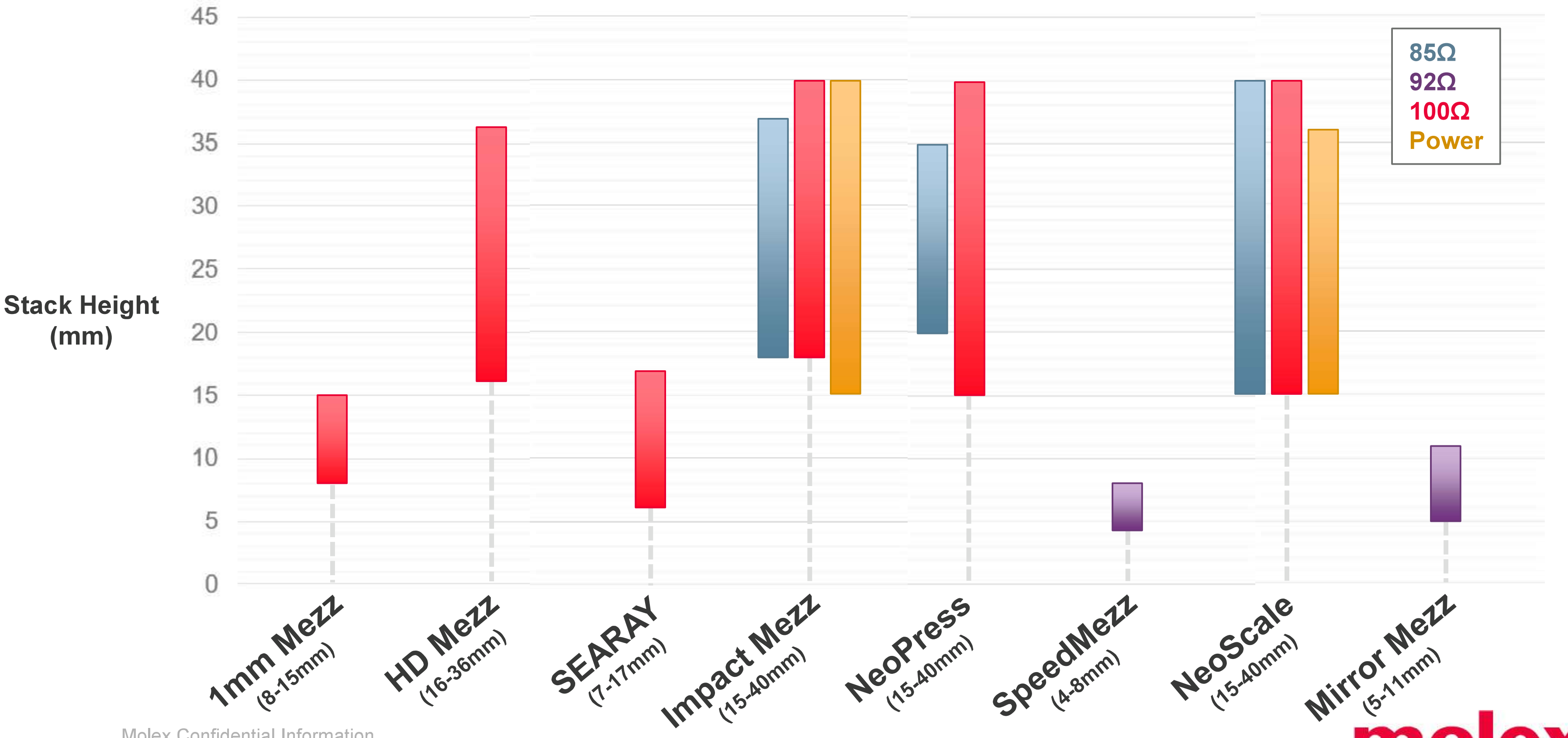


	1mm Mezz	HD Mezz	SEARAY	Impact Mezz	NeoPress	Speed Mezz	NeoScale	Mirror Mezz
Speed	3Gbps	12.5Gbps	12.5+Gbps	25Gbps	28Gbps	40-56Gbps	56Gbps	112Gbps
Stack Height	8.0 to 15.0mm	16.0 to 36.0mm	7.0 to 17.0mm	18.0 to 40.0mm	10.0 to 40.0mm	7.0 to 12.0mm	12.0 to 40.0mm	5.0 to 20.0mm
Circuit Size	64 and 84	91-351	40-500	54-240	32-1200	22-120	24-900	84-1084

1mm Mezz HD Mezz SEARAY Impact Mezz NeoPress Speed Mezz NeoScale Mirror Mezz

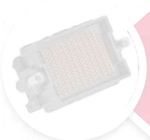
molex.com/mezzanine

Molex Mezzanine Stack Heights

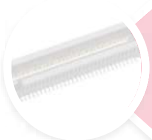


1.00mm Mezzanine

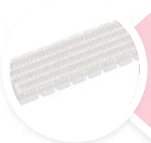
NeoPress



HD Mezz

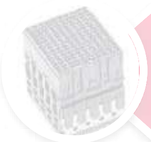


SpeedMezz

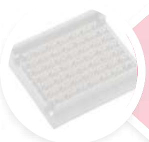


Searay

NeoScale



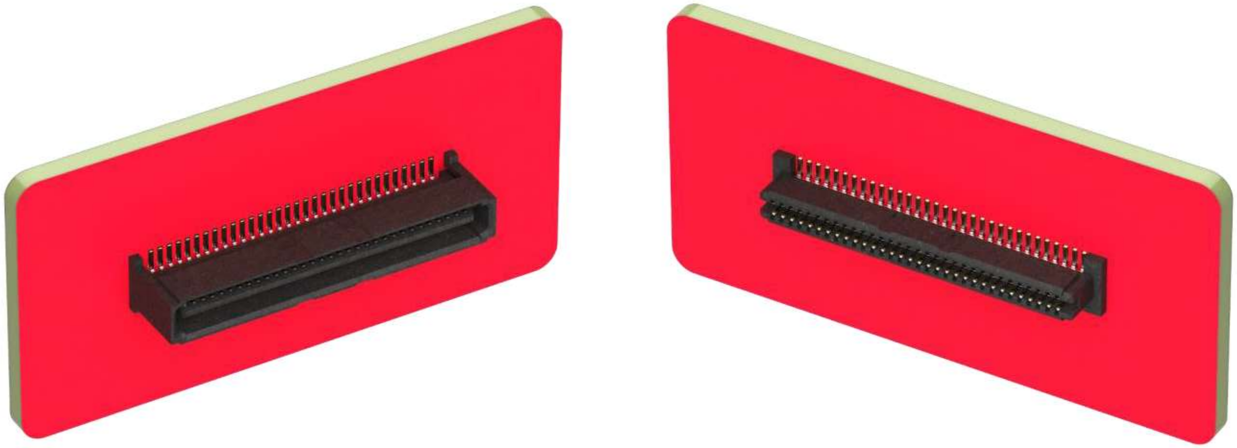
Impact Mezz



Mirror Mezz

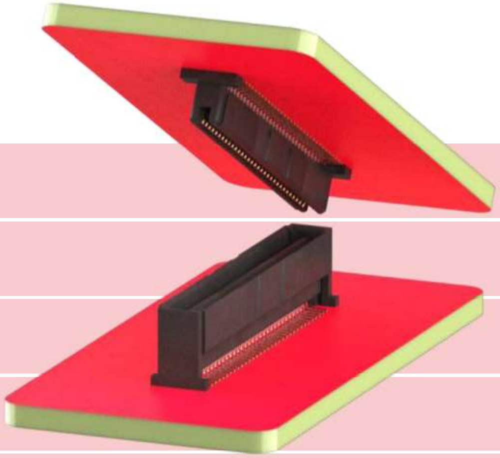
1.00mm Mezzanine (PMC IEEE 1386) Introduction

1.00mm Mezzanine is an industry-standard solution that adds parallel board stacking functionality and is widely recognized for its mechanical and electrical reliability



1.00mm Mezzanine (PMC IEEE 1386)

Overview

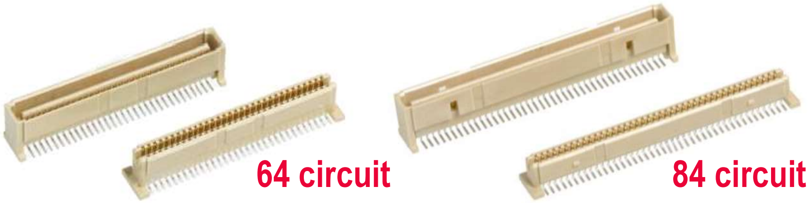


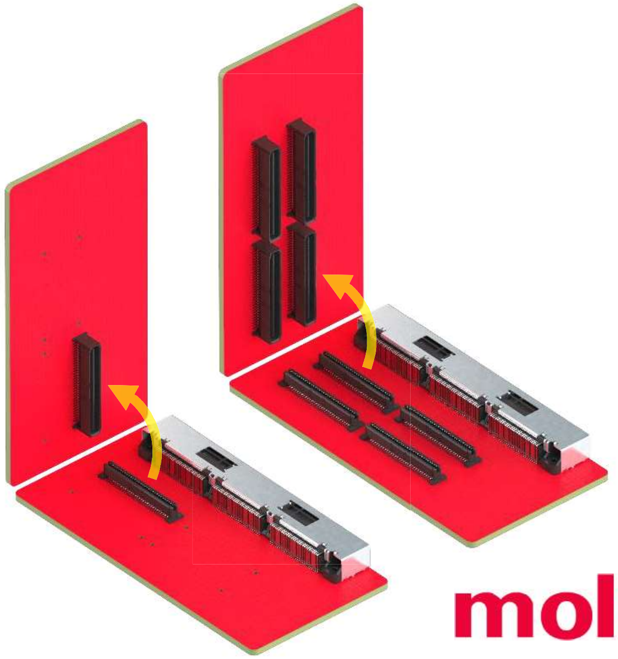
Speeds	3Gbps
Stack Height	8-15mm
Circuit Size	64 and 84
Pitch	1.00mm
Surface Mount	SMT (solder tails)
Other	64-pin connector standardized as IEEE 1386 Proven automotive application

1.00mm Mezzanine (PMC IEEE 1386)

Features and Advantages

- Optional pick and place caps and/or locating pegs
- Multiple options for packaging (tape and reel or tube)
- Low mating force to prevent stress on PCB or contact solder joints
- Can be arrayed up to 4 mated pairs based on industry standard spec
- Narrow-body housing maximizes airflow for better thermal performance

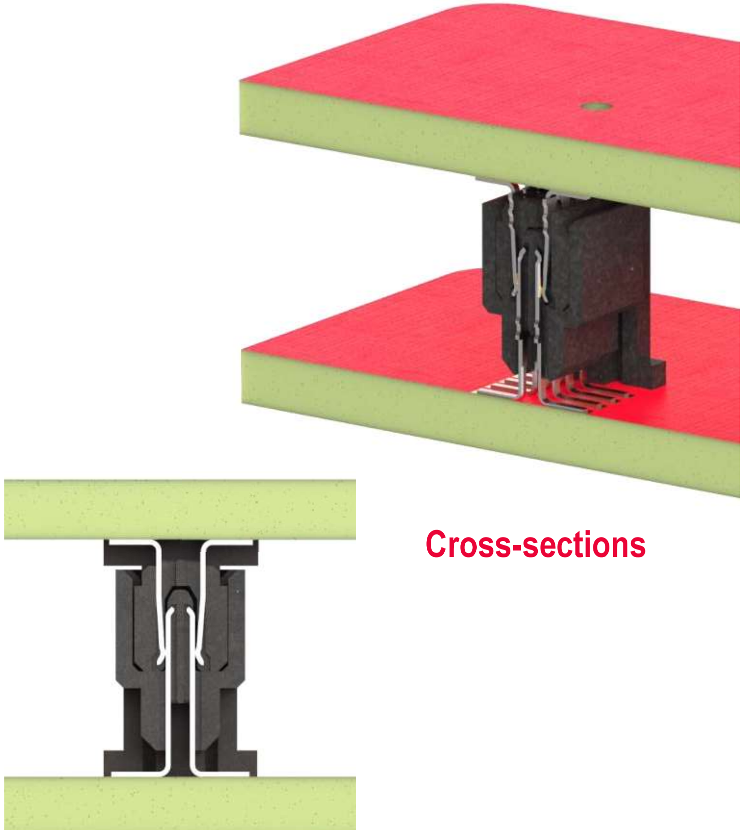




1.00mm Mezzanine (PMC IEEE 1386)

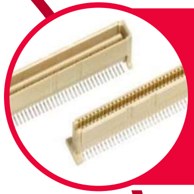
Features and Advantages

- Housings are fully shrouded to prevent contact damage when handling
- Leaf-style contact design prevents stubbing when mating
- Plug terminal is a flat blade supported and protected by housing on three sides
- Only the surface of the receptacle contact is exposed, virtually eliminating bent pins

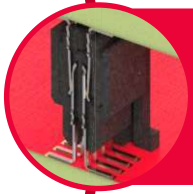


Cross-sections

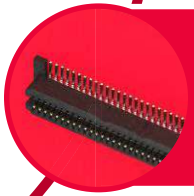
1.00mm Mezzanine Takeaways



Industry standard product qualified for PMC applications as part of the IEEE 1386 standard

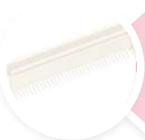


Rugged housing with protected pin interface for reliable contact engagement



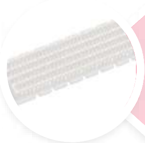
Slim-body housing minimizes airflow obstruction

Return to Roadmap

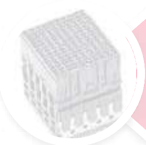


1.00mm Mezzanine

HD Mezz



Searay

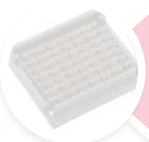


Impact Mezz

NeoPress

SpeedMezz

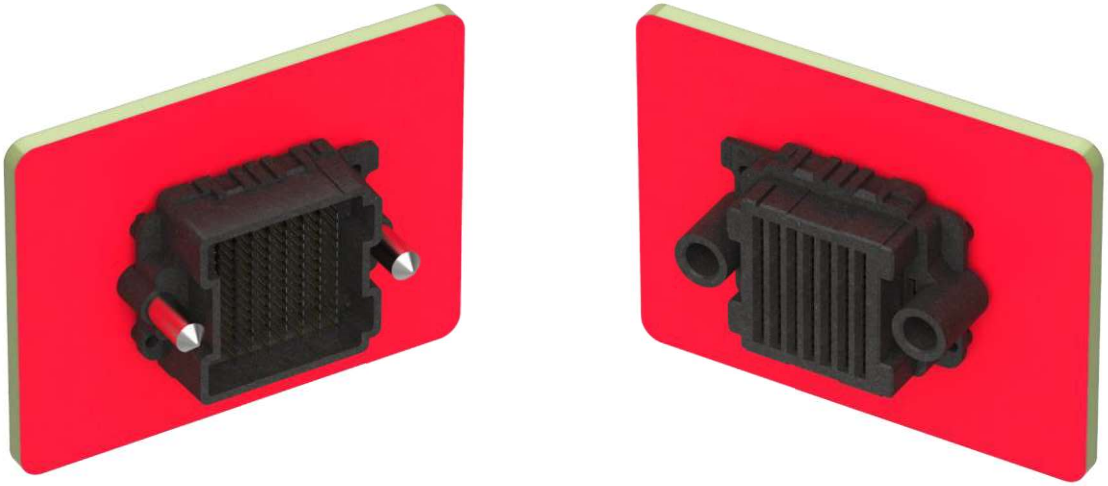
NeoScale



Mirror Mezz

HD Mezz Introduction

HD Mezz is the most robust solution within the Molex Mezzanine Portfolio featuring an enforced waferized design, guide pins and lead-in geometry

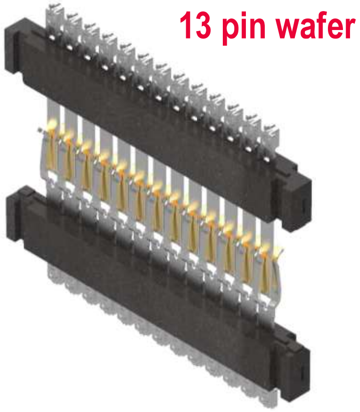


HD Mezz

Overview

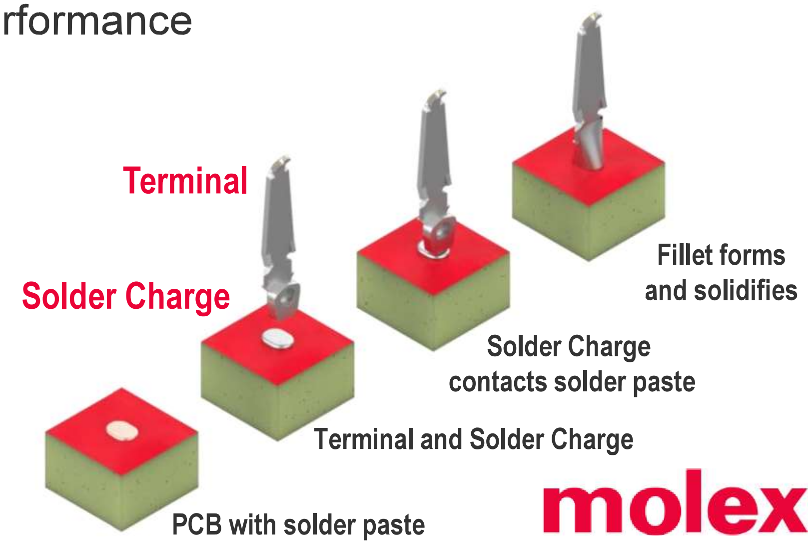
Speed	12.5Gbps
Stack Height	16-36mm
Circuit Size	91-351
Pitch	1.2mm x 2.0mm
Surface Mount	SMT (solder charge)
Other	Ruggedized design Proven automotive application

HD Mezz



Features and Advantages

- Most robust of the mezzanine connectors
- Open pin field design for flexibility in pinout
  - Single-ended performance, differential performance and/or power (2A/circuit)
- High-density: 60 diff pairs per in^2
- Waferized design: 13 pins per wafer
- Solder-Charge board termination

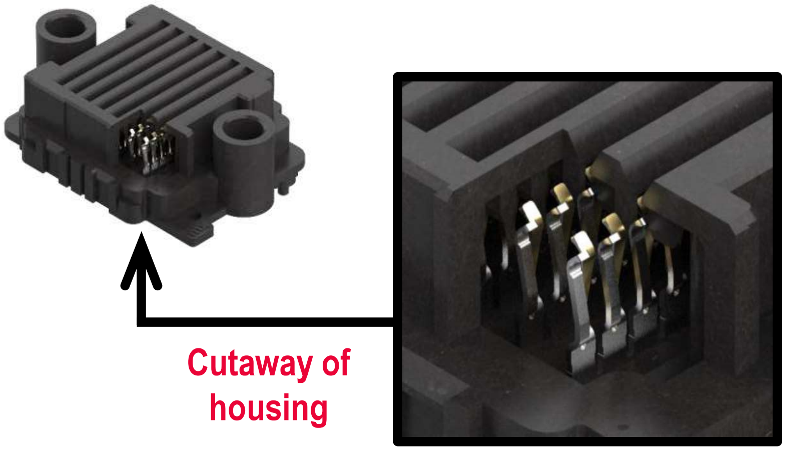


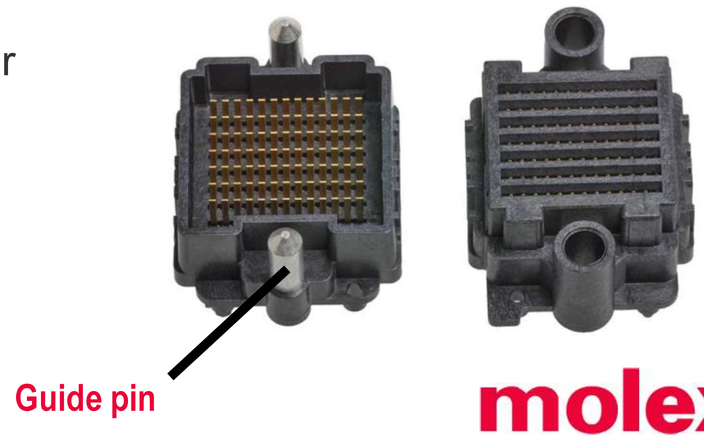
HD Mezz

Features and Advantages

Robust Design

- 2 points of contact with 2mm wipe
- Guide pins for rough alignment
- Anti-stubbing housing
  - Housing chamfers act as lead-in feature with 1.68mm gathering to center plug contact over receptacle contacts
- Polarized and blind mateable
- Solder nails on receptacle

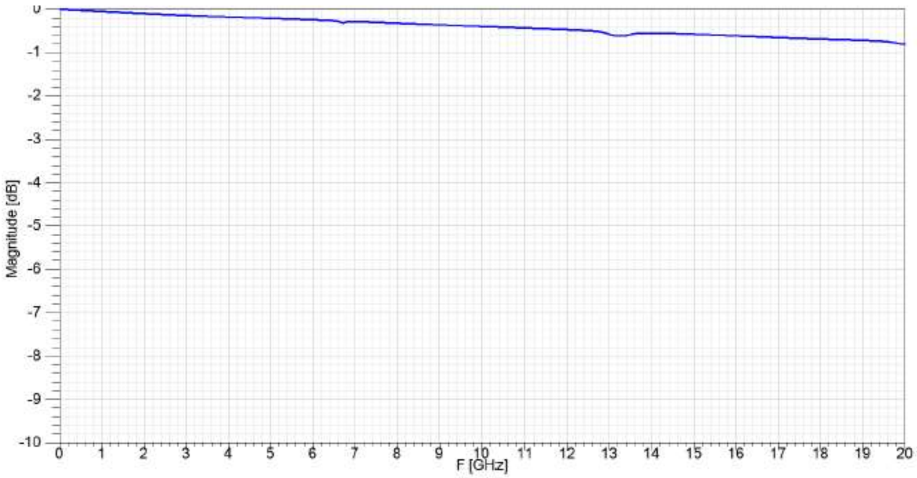




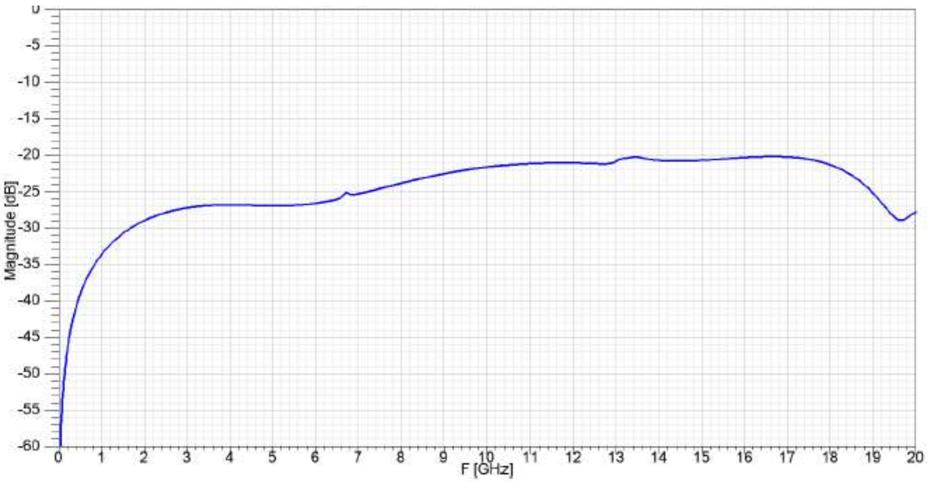
HD Mezz Measured SI Data

16mm Differential

Insertion Loss



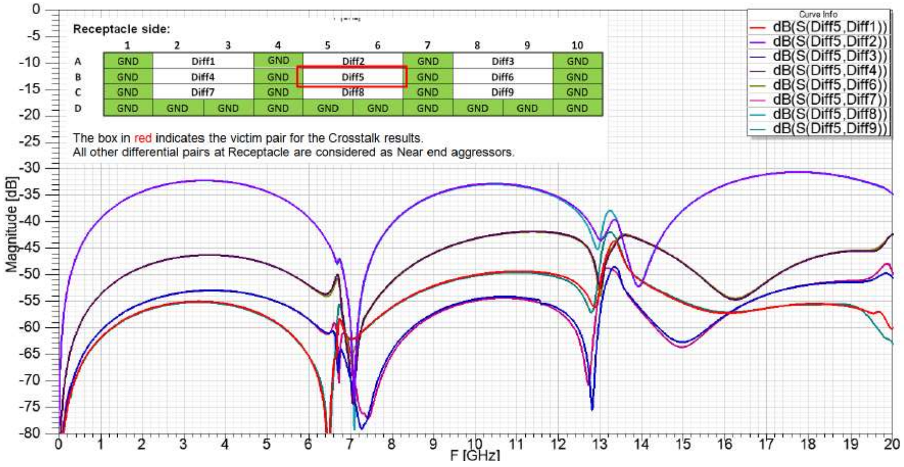
Return Loss



HD Mezz Measured SI Data

16mm Differential

NEXT

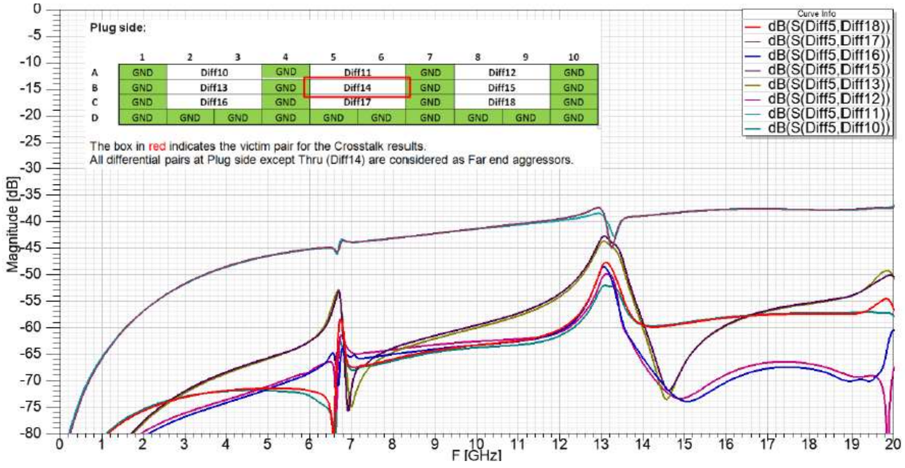


Receptacle side:

	1	2	3	4	5	6	7	8	9	10
A	GND	Diff1		GND	Diff2		GND	Diff3		GND
B	GND	Diff4		GND	Diff5		GND	Diff6		GND
C	GND	Diff7		GND	Diff8		GND	Diff9		GND
D	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND

The box in red indicates the victim pair for the Crosstalk results.
All other differential pairs at Receptacle are considered as Near end aggressors.

FEXT



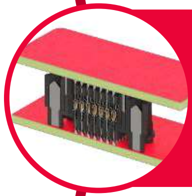
Plug side:

	1	2	3	4	5	6	7	8	9	10
A	GND	Diff10		GND	Diff11		GND	Diff12		GND
B	GND	Diff13		GND	Diff14		GND	Diff15		GND
C	GND	Diff16		GND	Diff17		GND	Diff18		GND
D	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND

The box in red indicates the victim pair for the Crosstalk results.
All differential pairs at Plug side except Thru (Diff14) are considered as Far end aggressors.

HD Mezz Takeaways

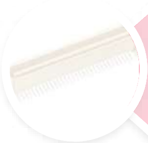
Open pin field for versatility in signal layout for high-speed, low-speed and power



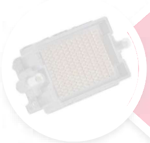
Proven design for rugged automotive applications and harsh environment testing

Robust housing design with sturdy guidance features for alignment applications

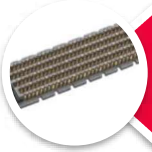
Return to Roadmap



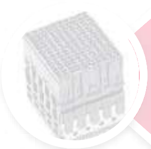
1.00mm Mezzanine



HD Mezz



Searay

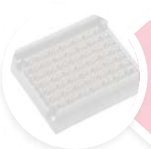


Impact Mezz

NeoPress

SpeedMezz

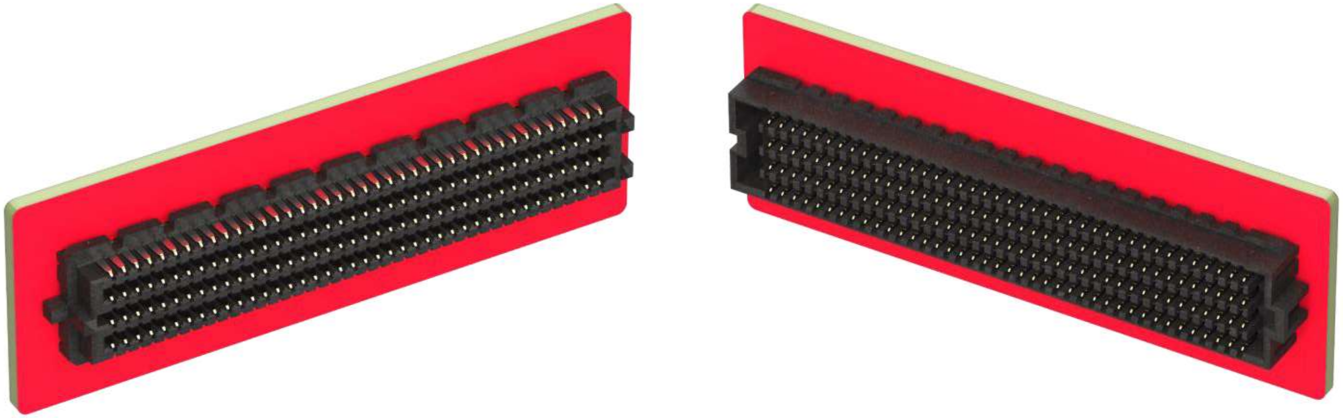
NeoScale



Mirror Mezz

SEARAY Introduction

A dense mezzanine connector with a robust, low-profile mechanical design, SEARAY provides flexibility for customers' applications with its open pin field array and large offering of tooled options



SEARAY is a trademark of Samtec, Inc.

SEARAY

Overview

Speed	12.5+Gbps
Stack Height	7-17mm
Circuit Size	40-500
Pitch	1.27mm x 1.27mm
Surface Mount	SMT (solder charge)
Other	Ruggedized design Proven automotive application

SEARAY

Features and Advantages

- Large number of pin counts and stack heights tooled
  - SEARAY Slim: 4-row
  - SEARAY: 8-row and 10-row
- High-density: 60 diff pairs per in^2
- Open pin field design for flexibility in pinout
  - Single-ended performance, differential performance and/or power (up to 2.7A/circuit)
- Low-profile design
- Solder-Charge board termination

SEARAY Slim
4-row

SEARAY
8-row

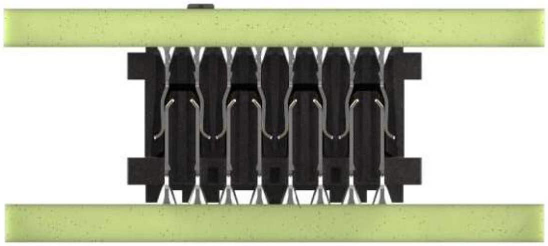
SEARAY
10-row

SEARAY

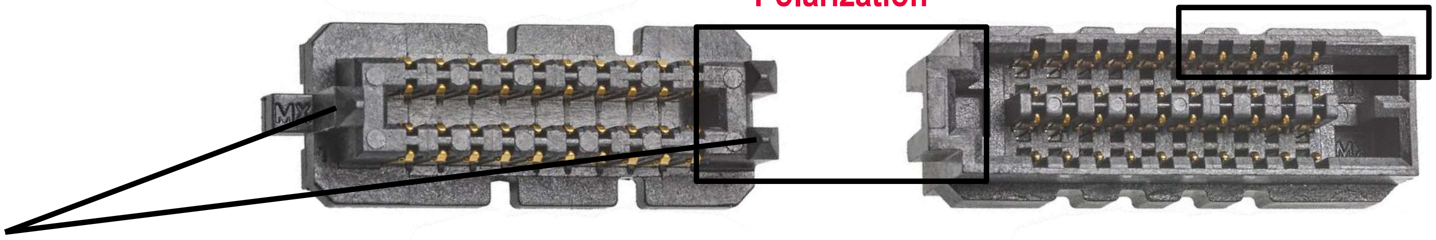
Features and Advantages

Robust Design

- Guide features and polarization for rough alignment
- Lead-in feature and shrouding to prevent stubbing
- Can handle up to 10º longitudinal zippering when mated
- Blind mateable

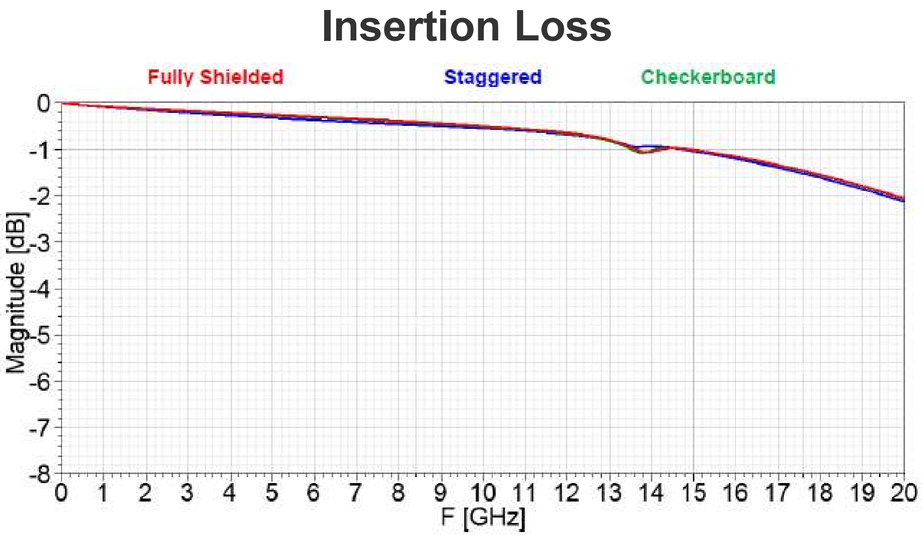


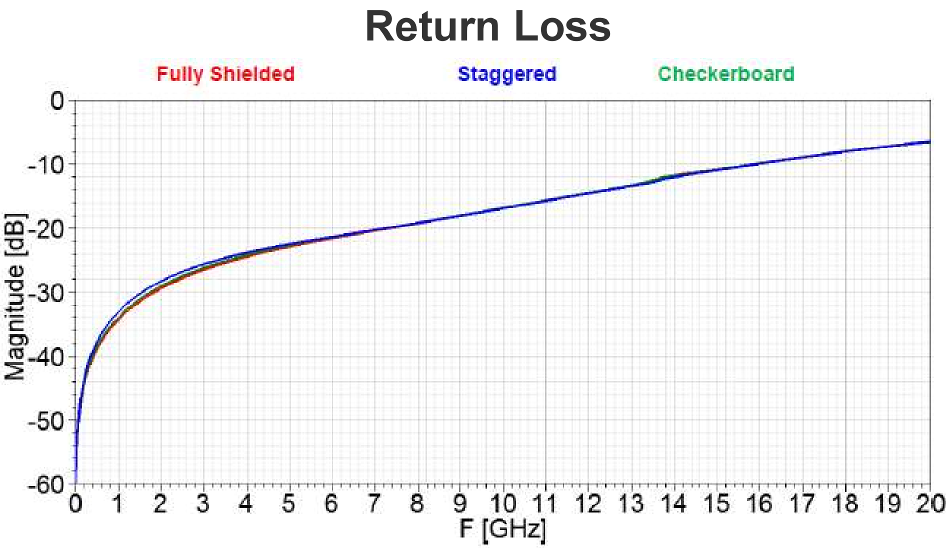
Cross-section



SEARAY Measured SI Data

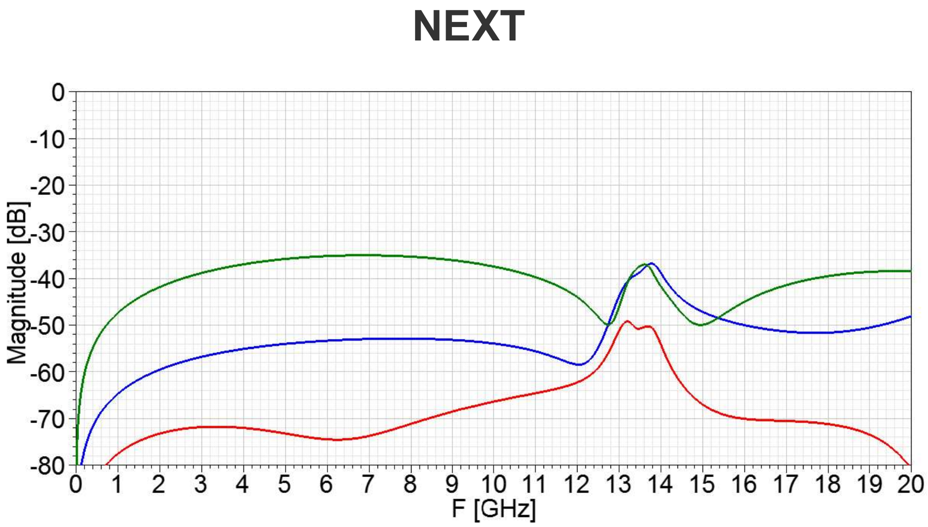
7mm Differential

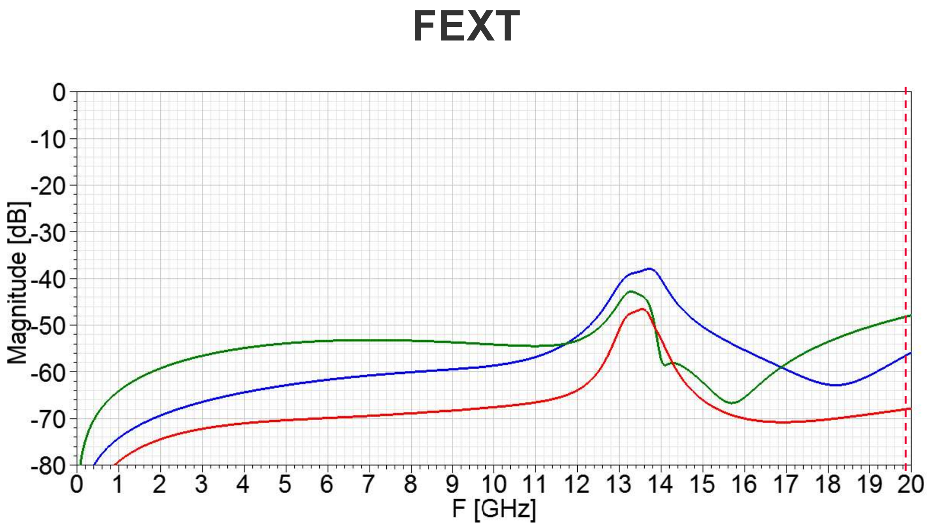




SEARAY Measured SI Data

7mm Checker Board Layout





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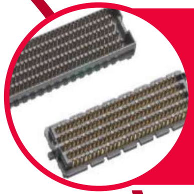
Molex SEARAY Takeaways

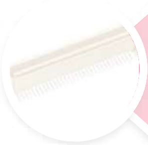


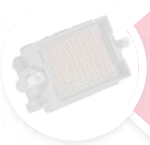
12.5+Gbps connector with open pin field design

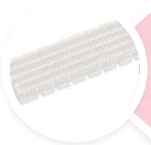
Large portfolio of available, tooled products for various applications

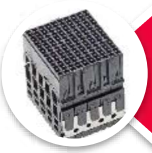
Robust housing design with polarization features for ease of mating

Return to Roadmap


1.00mm Mezzanine


HD Mezz

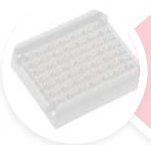

Searay


Impact Mezz


NeoPress

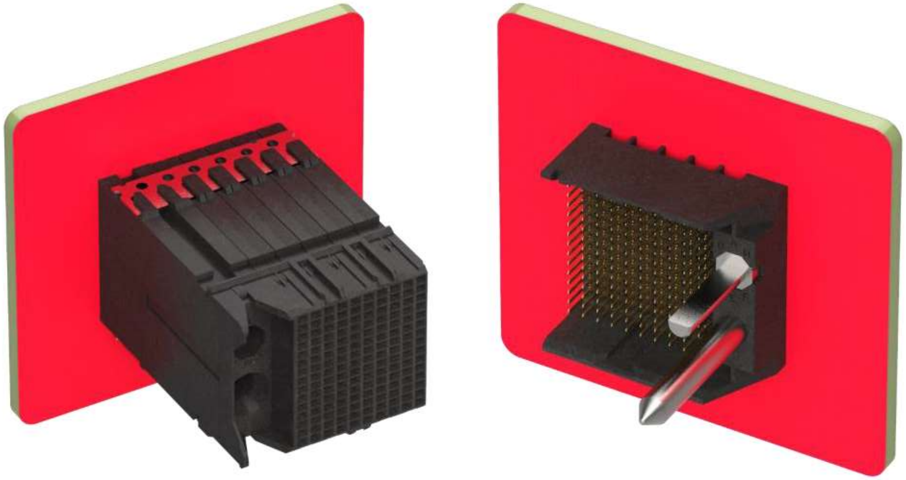

SpeedMezz


NeoScale


Mirror Mezz

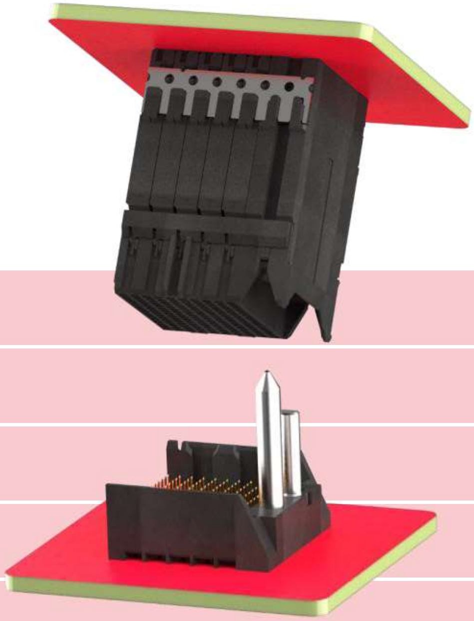
Impact Mezz Introduction

Leveraging the known and successful Impact family design, Impact Mezz utilizes backplane headers mated to vertical female receptacles to create a 25Gbps capable mezzanine product line



Impact Mezz

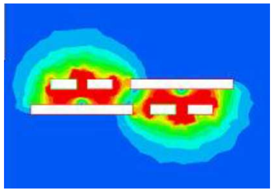
Overview



Speed	25Gbps
Stack Height	18-40mm
Circuit Size	54-240
Pitch	1.35mm x 1.9mm
Surface Mount	Press-fit
Other	85Ω and 100Ω impedances and power options available End-to-end, on-pitch stackable solution

Impact Mezz

Features and Advantages



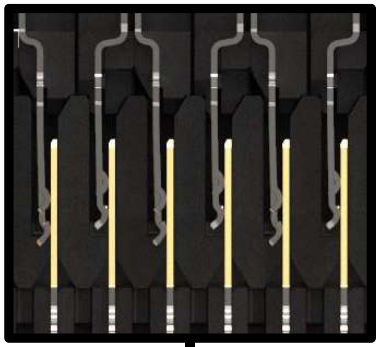
Broad-Edge Coupled Design

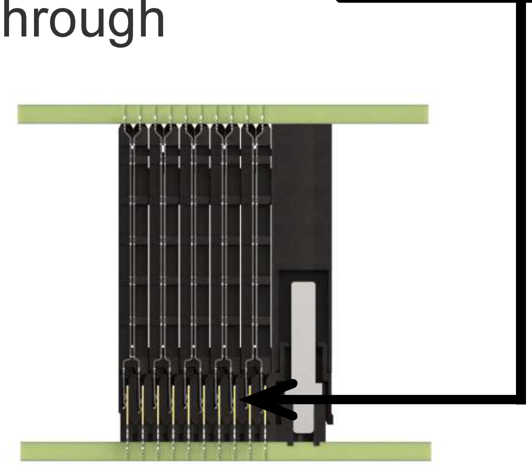
- Density and SI significantly improved over legacy backplane products
- Minimizes crosstalk and improves margin through DP isolation and coupling to grounds

Optimized Mating Interface

- Dual-point contact design reduces mating forces to best in industry

Dual-point contact





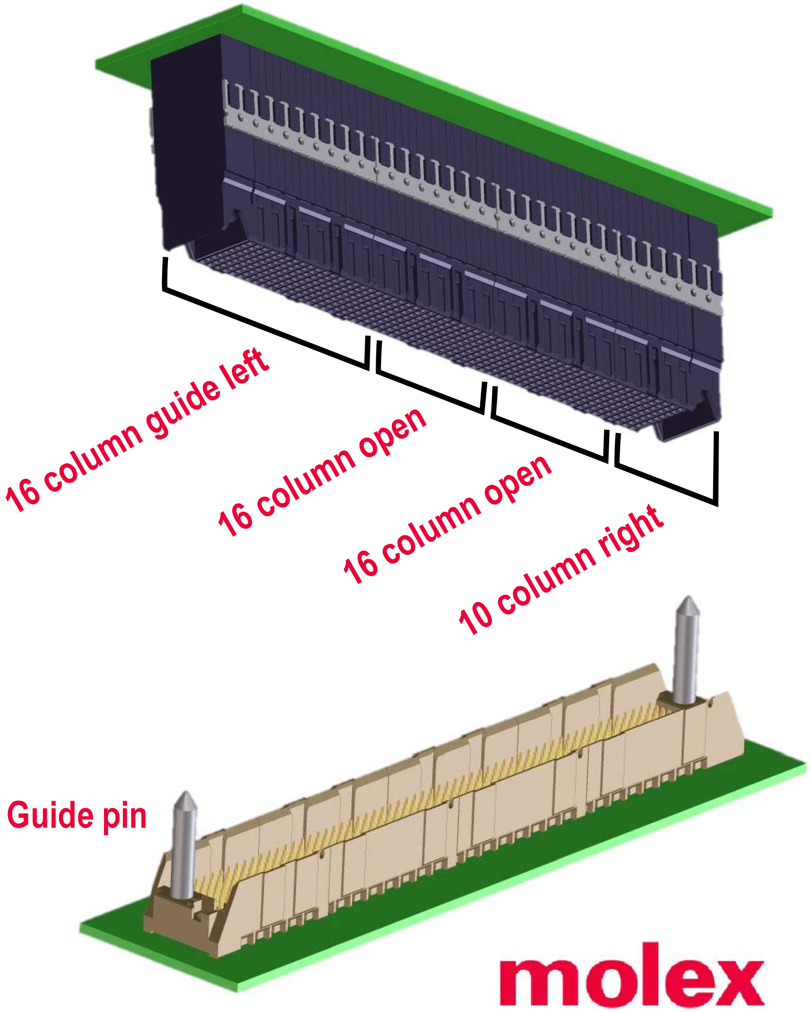
Cross-section

Impact Mezz

Features and Advantages

End-to-End Stackable

- Utilizing already-tooled versions, customers can stack Impact Mezz connectors end-to-end to create different length configurations without requiring new tooling
- All Impact connectors are "on-pitch" when stacked end-to-end



Impact Mezz

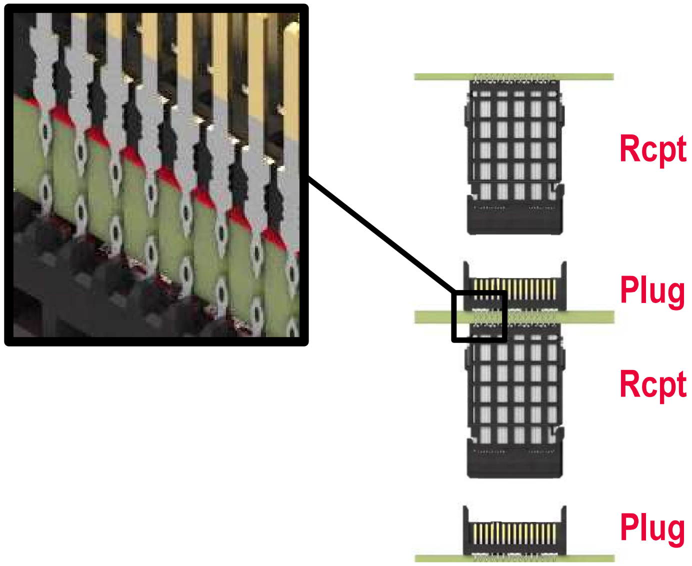
Features and Advantages

Shared Midplane Vias

- Vertical mezz receptacles and mating BP headers have mirror image layouts allowing for shared midplane vias when creating a multi-board “stacker” solution

Mezzanine Power Modules

- Tooled in multiple blade counts and stack heights to provide a power solution (60-120A/module) to compliment Impact Mezz signal connectors

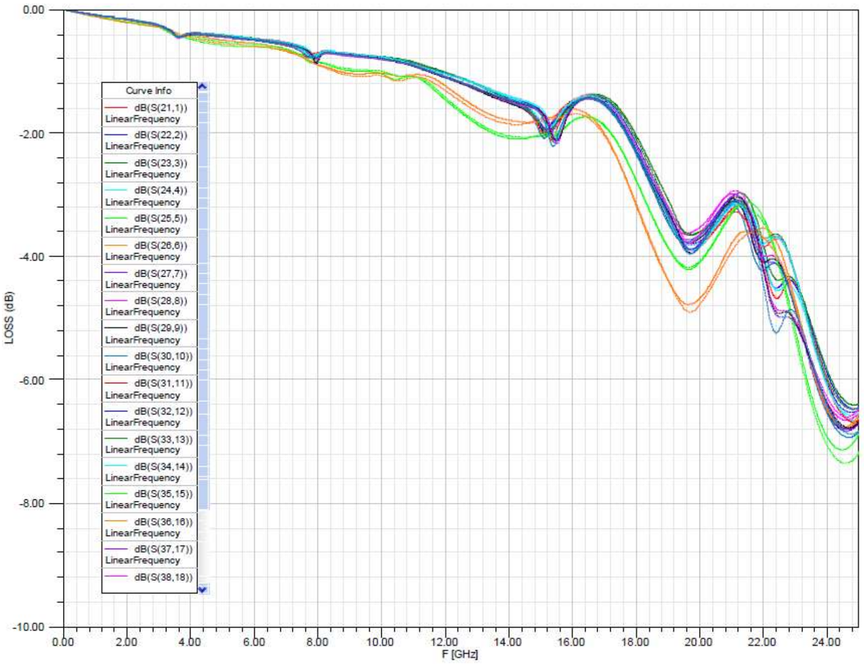



Power blades

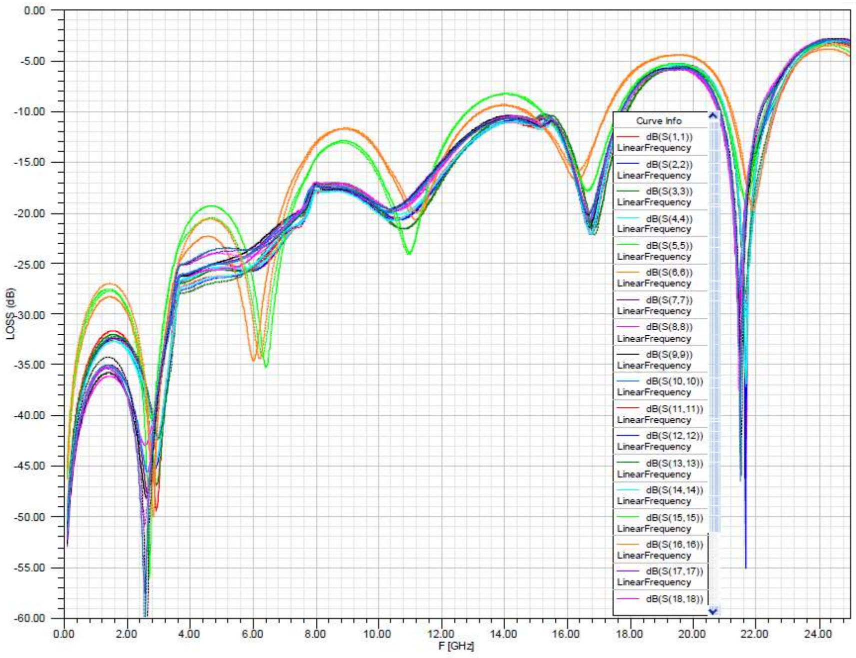
Impact Mezz SI Data

5 Pair 28mm, 100Ω

Insertion Loss



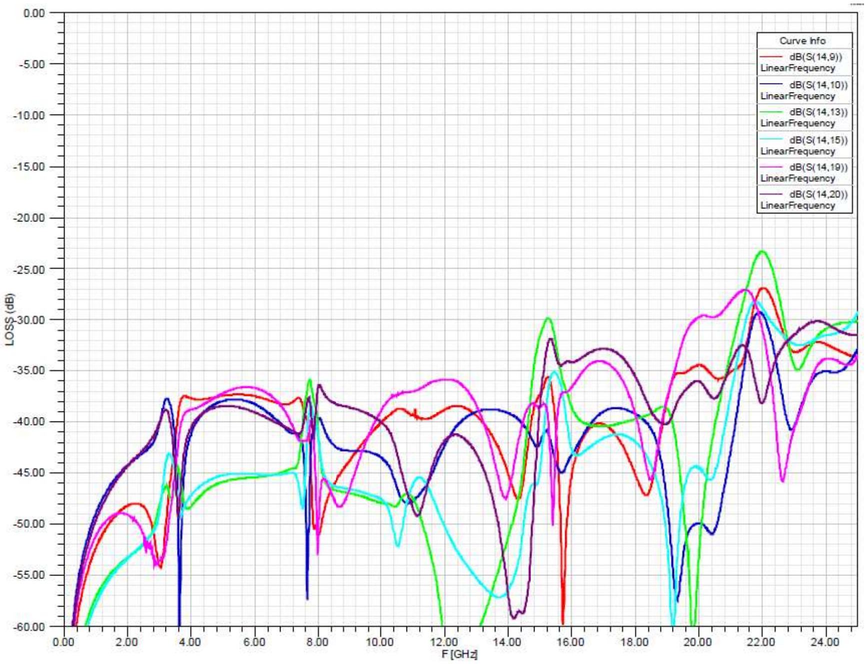
Return Loss



Impact Mezz SI Data

5 Pair 28mm, 100Ω

NEXT



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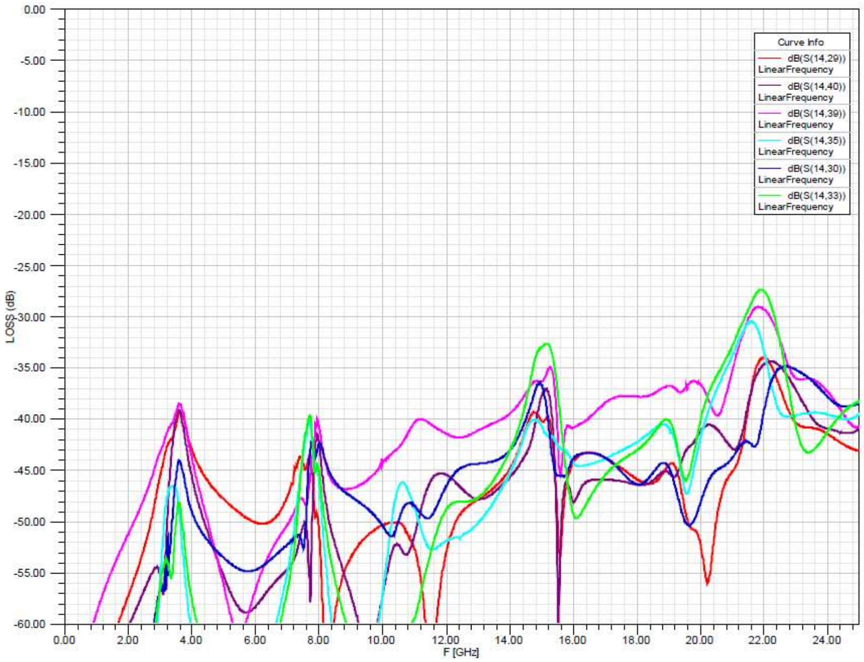
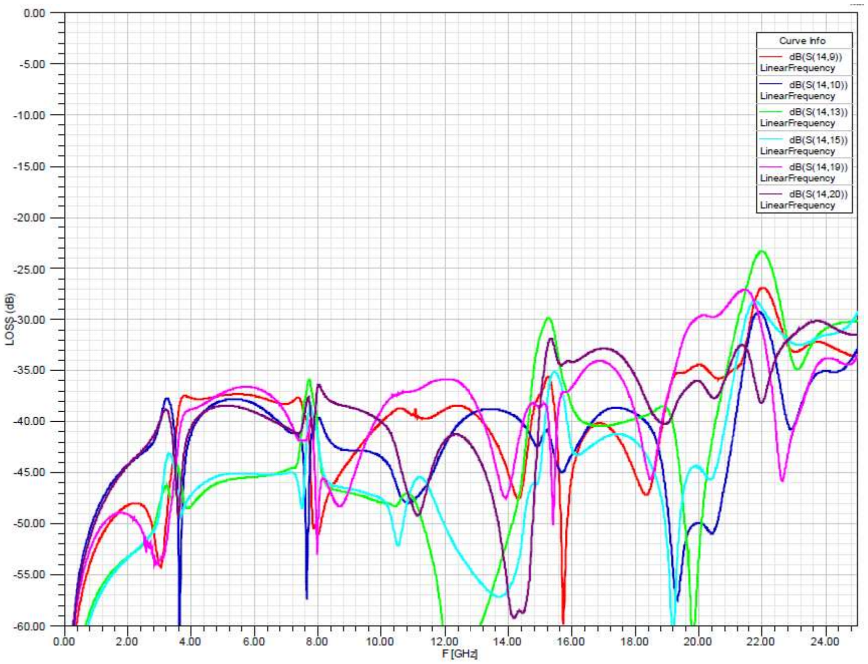


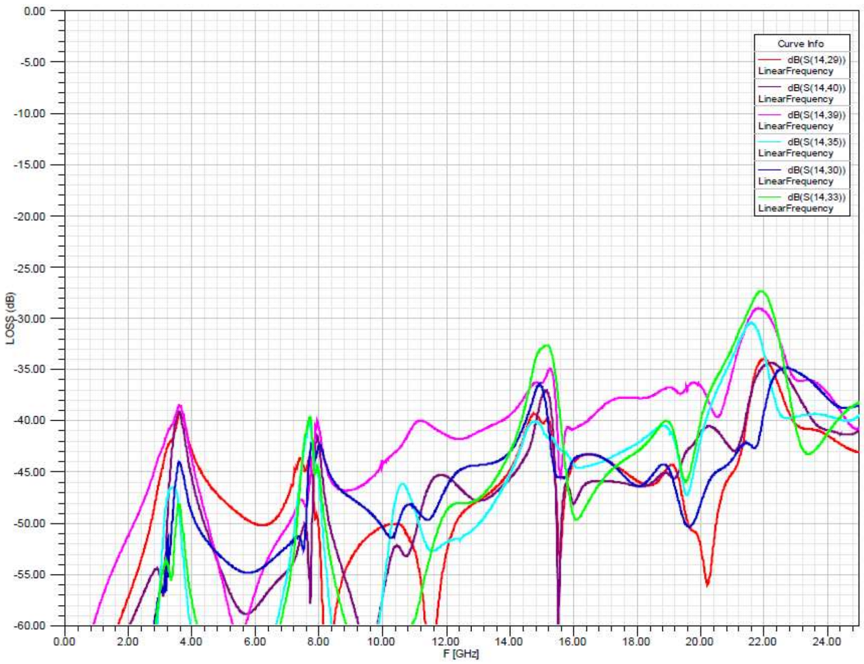
Impact Mezz SI Data

5 Pair 28mm, 100Ω

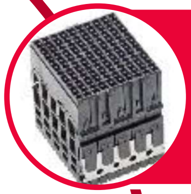
Insertion Loss



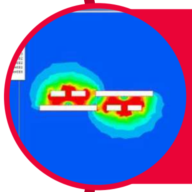
Return Loss



Impact Mezz Takeaways



Leverages Impact backplane connector design in a high-speed mezzanine solution



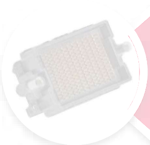
Up to 25Gbps signal speed achieved through coupled DP shielding

Easily scaled to support different lengths, stack heights and power demands with tooled options

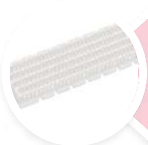
Return to Roadmap


1.00mm Mezzanine

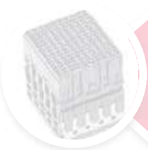

NeoPress

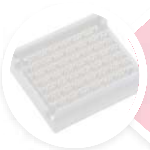

HD Mezz


SpeedMezz


Searay

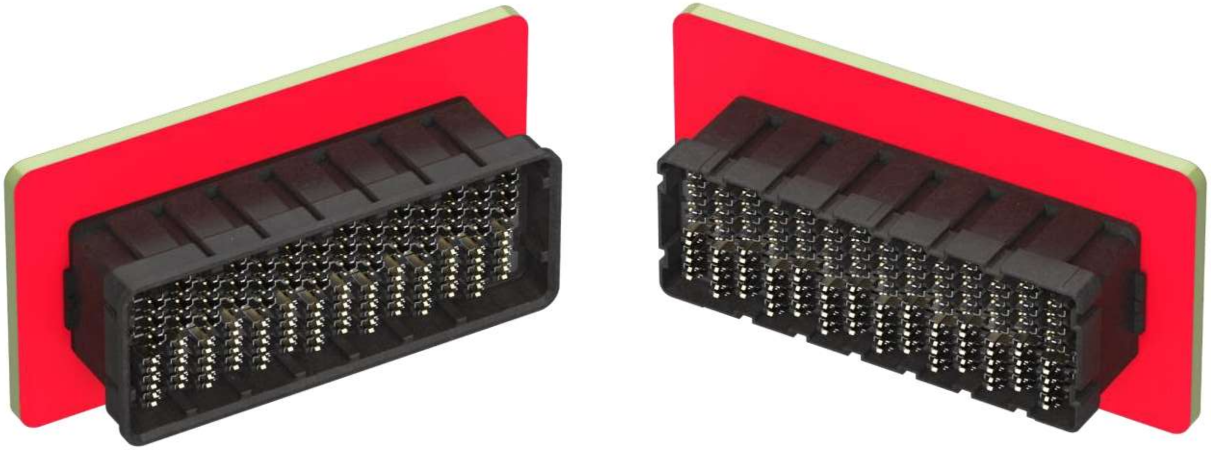

NeoScale


Impact Mezz


Mirror Mezz

NeoPress Introduction

NeoPress is a press-fit, high-speed mezzanine connector solution offering hermaphroditic “triad” designs that provide independent isolation for each high-speed differential pair



NeoPress

Overview

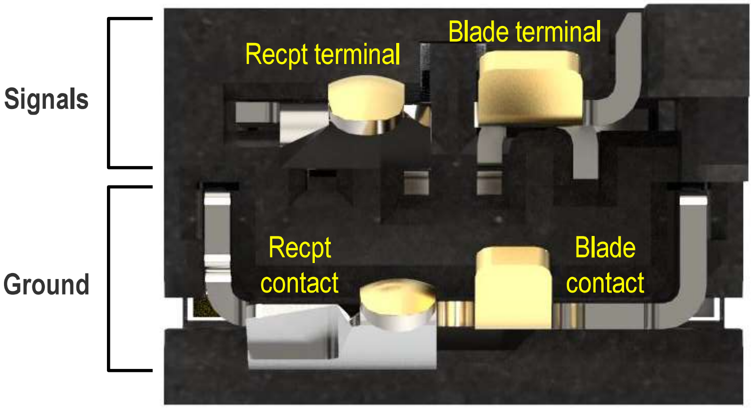
Speed	28Gbps
Stack Height	15-40mm
Circuit Size	32-1200
Pitch	3.5mm x 2.4mm
Surface Mount	Press-fit
Other	85Ω and 100Ω impedances, SE and power options available Modular flexible design

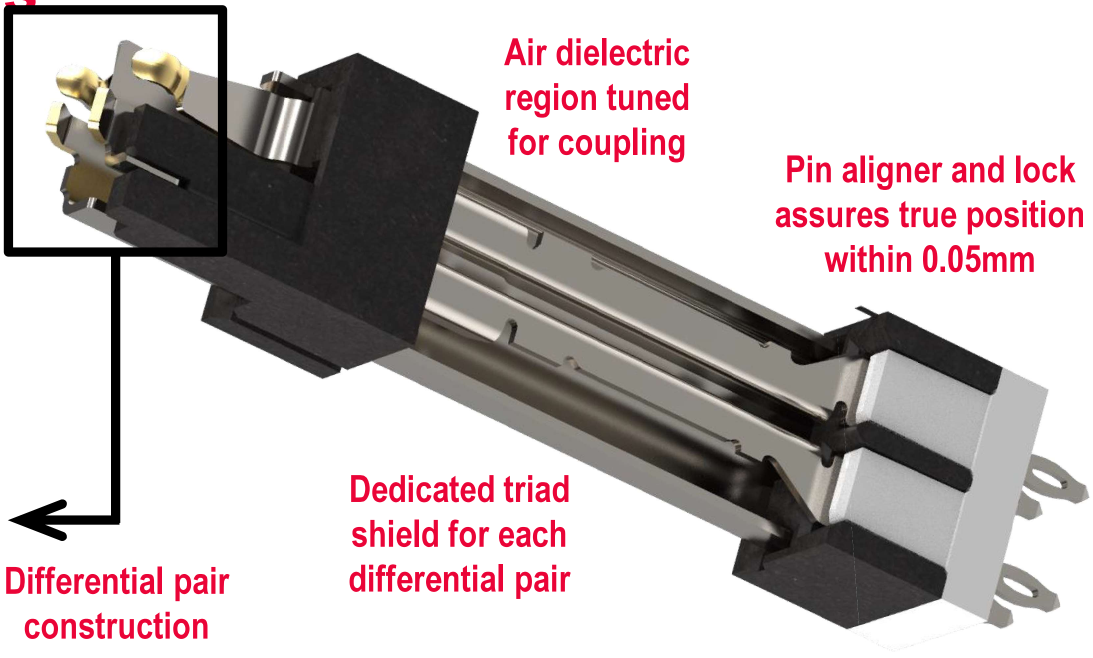
NeoPress

Features and Advantages

Press-Fit Triad Design

Proven IMPEL compliant pin design allows for easier termination and reworkability





Plug-nose plastic cover to protect mating interface

Air dielectric region tuned for coupling

Pin aligner and lock assures true position within 0.05mm

Differential pair construction

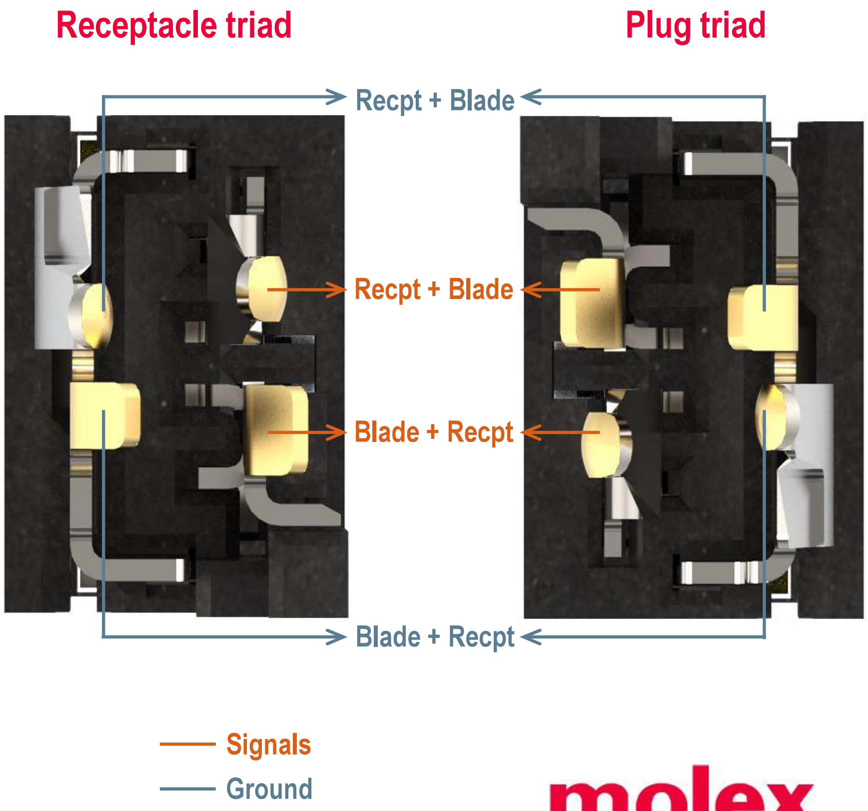
Dedicated triad shield for each differential pair

NeoPress

Features and Advantages

Hermaphroditic Contact Interface

- Plug connector and receptacle connector utilize the same terminal design, thus mating to itself



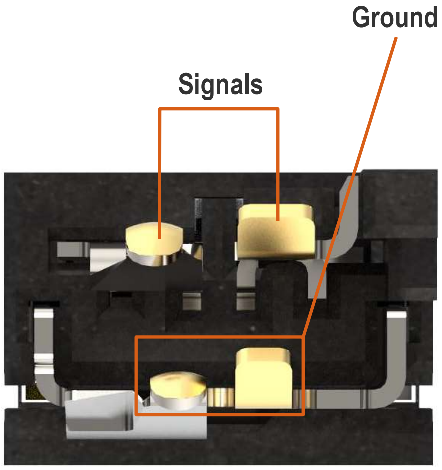
NeoPress

Features and Advantages

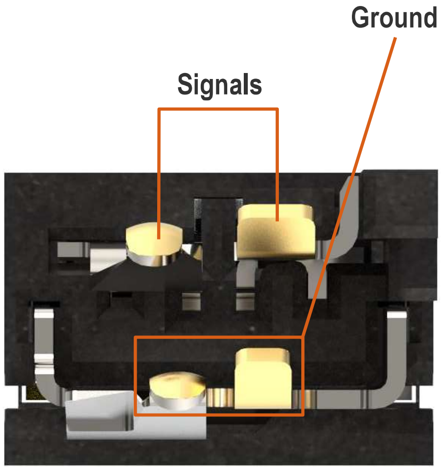
Flexible Modular Design

Four different triad designs tooled:

- High-speed differential pair 85Ω
- High-speed differential pair 100Ω
- Single-ended (3 signals/triad)
- Power (8A per triad)

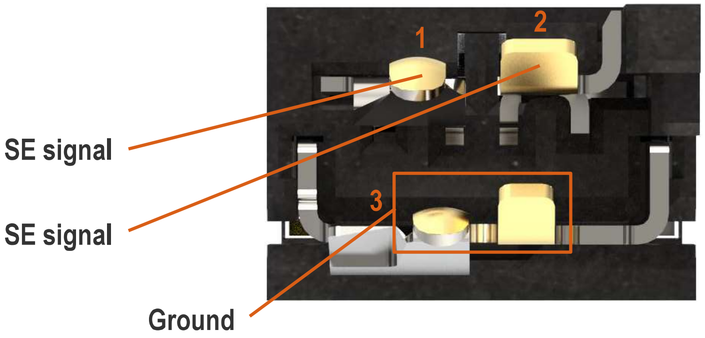


High-speed DP 85Ω

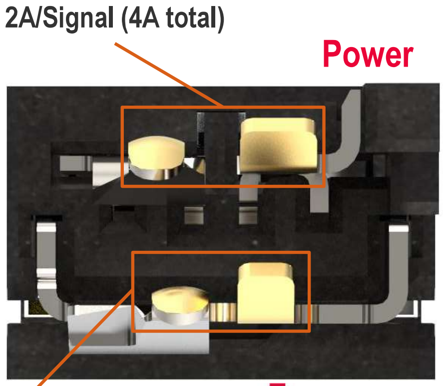


High-speed DP 100Ω

Single-ended



Power



NeoPress

6x14 circuit

Contact Structure

Features and Advantages

Protected Mating Interface

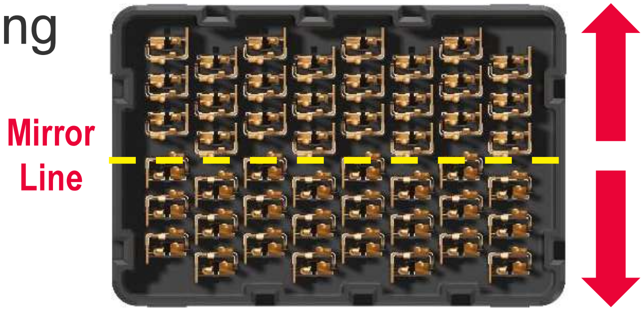
Contacts are recessed inside housing and receptacle beams are recessed below ground beams for multiple levels of contact protection

Staggered Footprint

Minimizes crosstalk and allows for zero skew routing

Mirror Line Contact Orientation

Connector utilizes “mirror line” design where contacts are oriented facing in opposite directions to allow for fewer routing layers

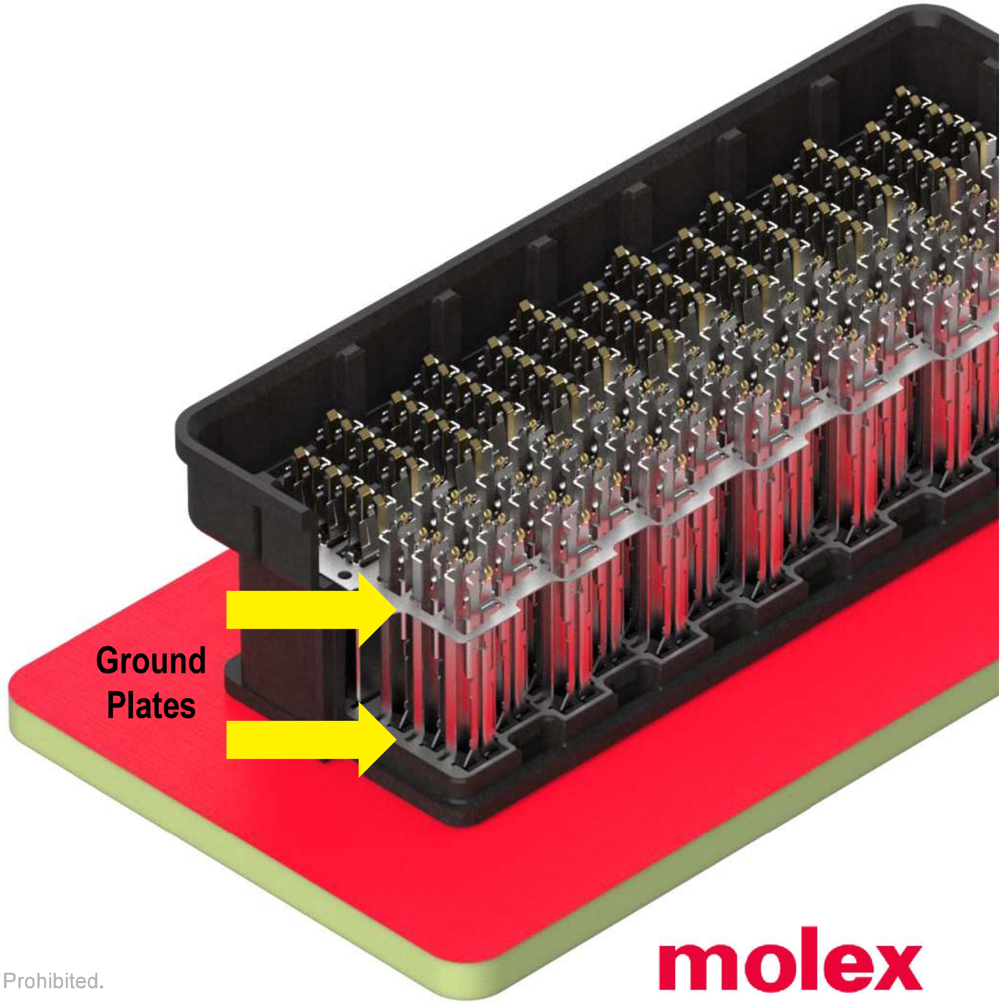


NeoPress

Features and Advantages

Integrated Ground Plates

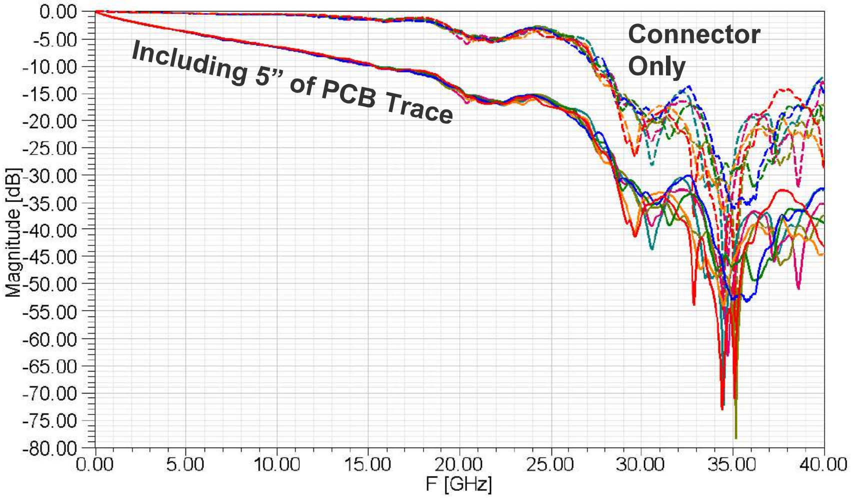
- Separate but commoned ground plates located in the upper and lower portions of the connector housing
- Provide ground return path for improved common mode performance
- Improve SI skew and assist in terminal stitching
- Customizable



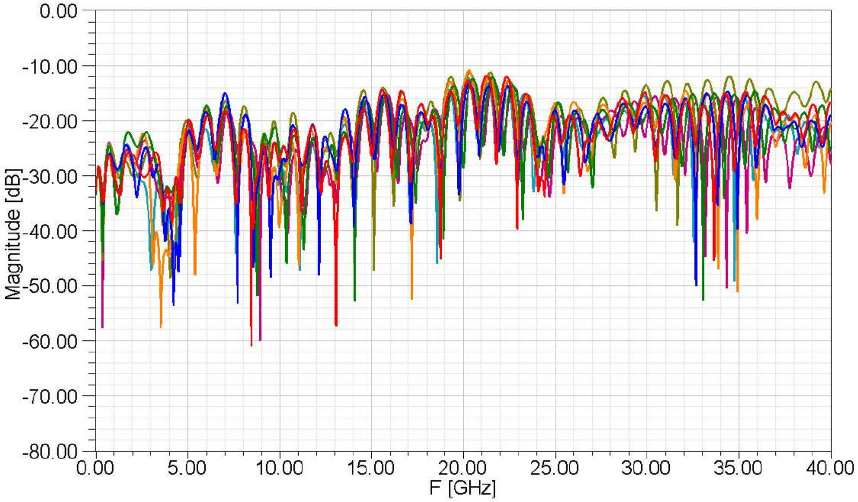
NeoPress Measured SI Data

27mm 6x14, 100Ω

Insertion Loss



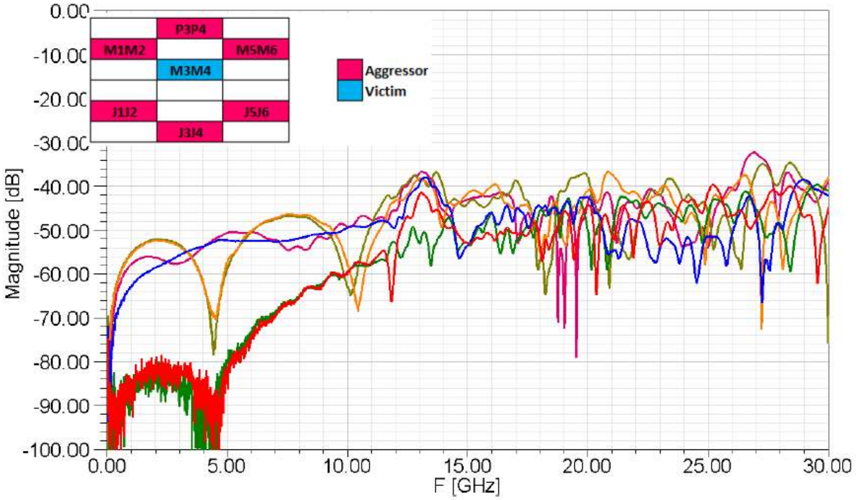
Return Loss



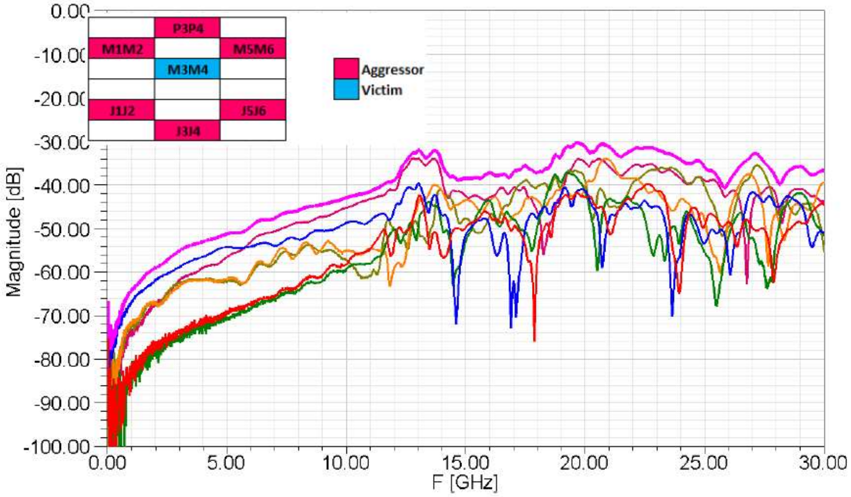
NeoPress Measured SI Data

27mm 6x14, 100Ω

NEXT



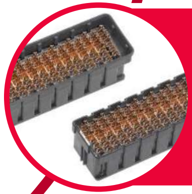
FEXT



NeoPress Takeaways

Compliant pin termination provides easier installation and reworkability

Independently shielded triads offer isolation for high-speed data transmission

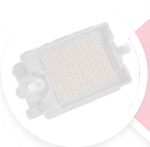


Customizable design allows triads to be stitched selectively to meet any requirement

Return to Roadmap

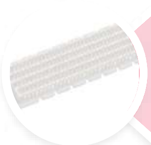
1.00mm Mezzanine

NeoPress



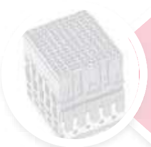
HD Mezz

SpeedMezz

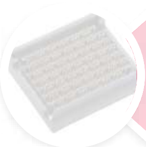


Searay

NeoScale



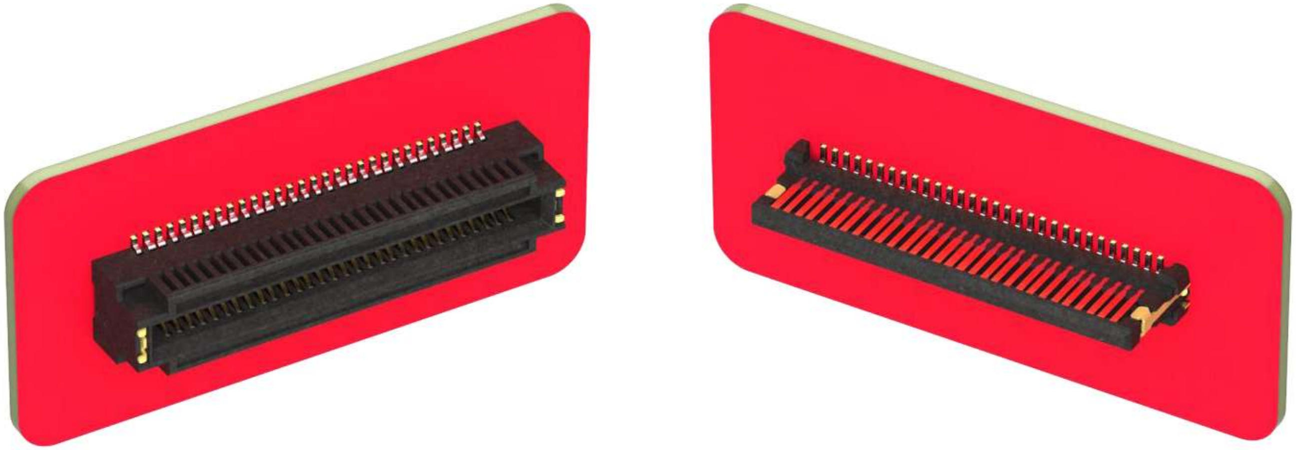
Impact Mezz



Mirror Mezz

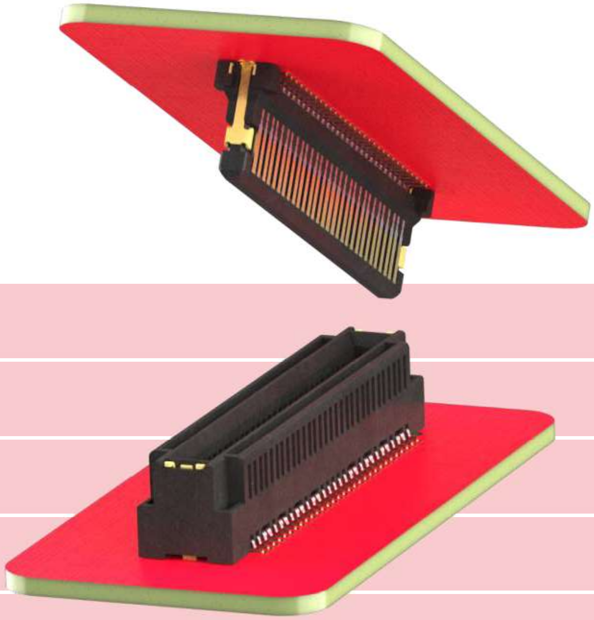
SpeedMezz Introduction

The SpeedMezz product family offers a wide range of solutions which all share a common receptacle that mates to a high-speed mezzanine plug or an edge card offering a flexible, tiered solution from 20-56Gbps



SpeedMezz – SpeedStack

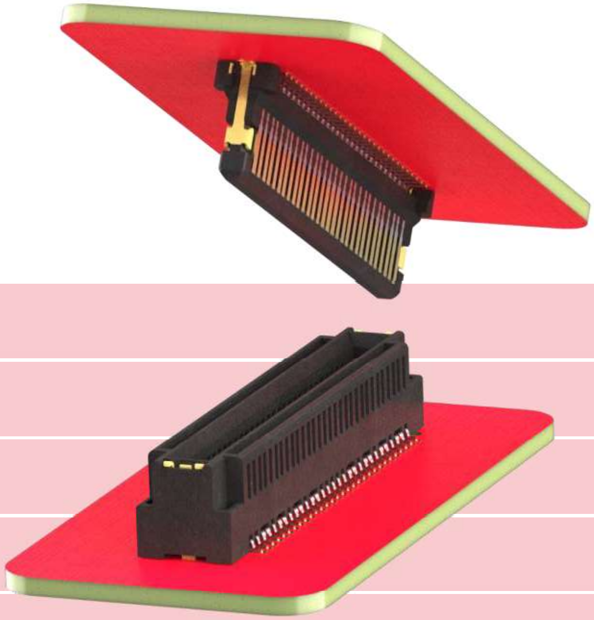
SpeedStack Overview



Speed	56Gbps PAM4
Stack Height	4-8mm
Circuit Size	22, 60 and 82
Pitch	0.8mm
Surface Mount	SMT (solder tails)
Other	Edge card compatible Shares footprint with SpeedEdge

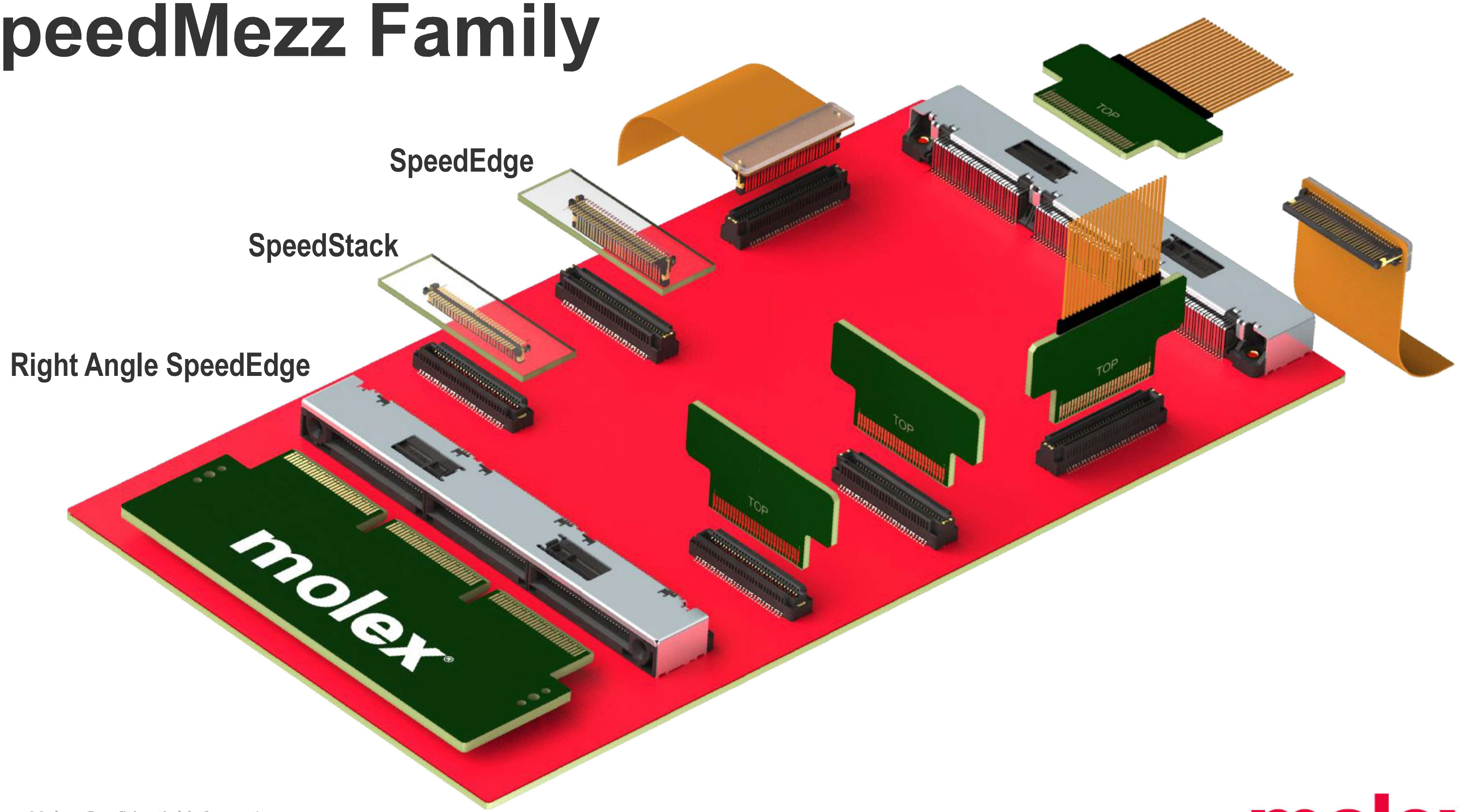
SpeedMezz – SpeedEdge

SpeedEdge Overview



Speed	40Gbps PAM4
Stack Height	7 and 8mm
Circuit Size	22, 60 and 82
Pitch	0.8mm
Surface Mount	SMT (solder tails)
Other	Edge card compatible Shares footprint with SpeedStack

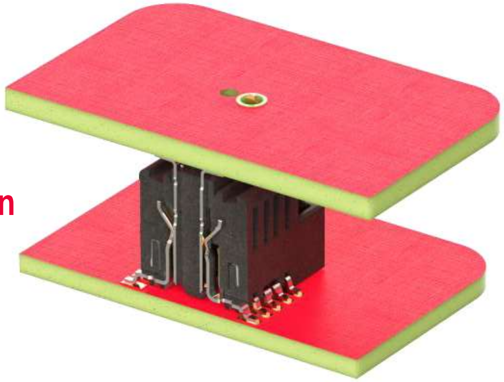
SpeedMezz Family



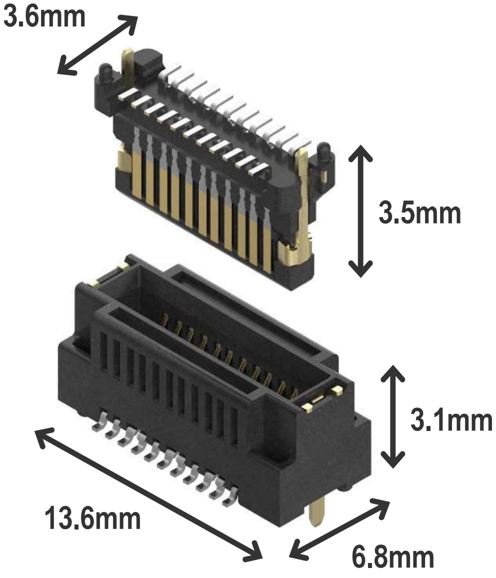
SpeedMezz – SpeedStack

Features and Advantages

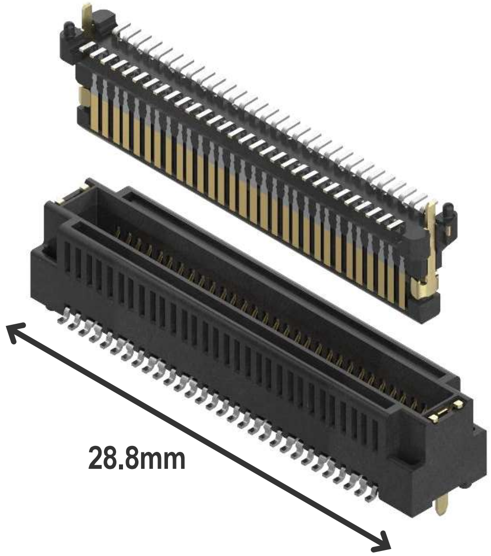
- High-speed performance
- Small form factor
- 2mm wipe



5mm mated cross-section



8 differential pairs,
2 single ended lines

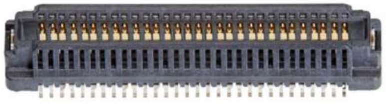


16 differential pairs,
8 single ended lines

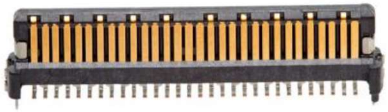
SpeedMezz Introduction

Features and Advantages

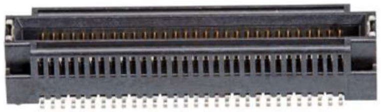
- Receptacles can be mated to a low-profile mezzanine or edge card
- Plugs are offered in two options (available in SpeedStack and SpeedEdge):
    - High-speed options with GSSG routing
    - Open pin field offering single-ended (SE) and power options (1A/circuit)
- Waferized design allows for a SpeedMezz plug to be assembled with high-speed and SE options



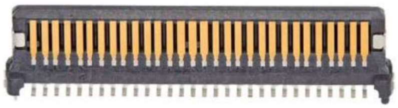
SpeedStack Receptacle



SpeedStack Plug



SpeedEdge Receptacle

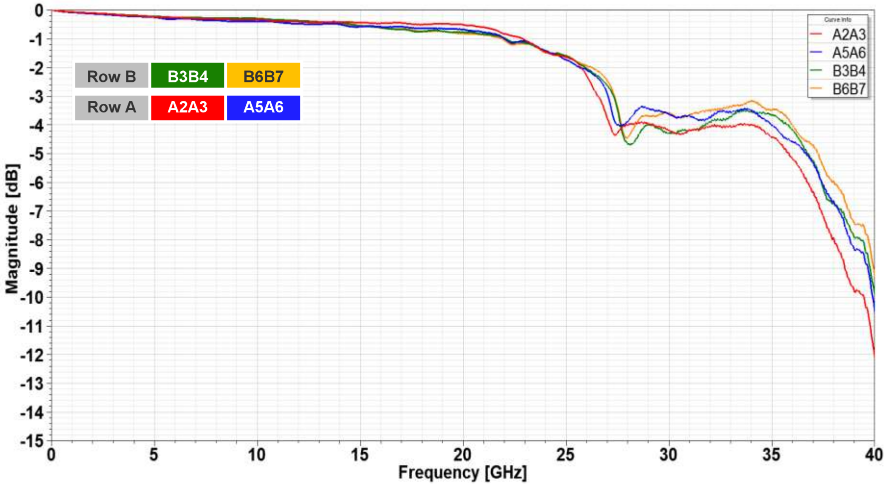


SpeedEdge Plug

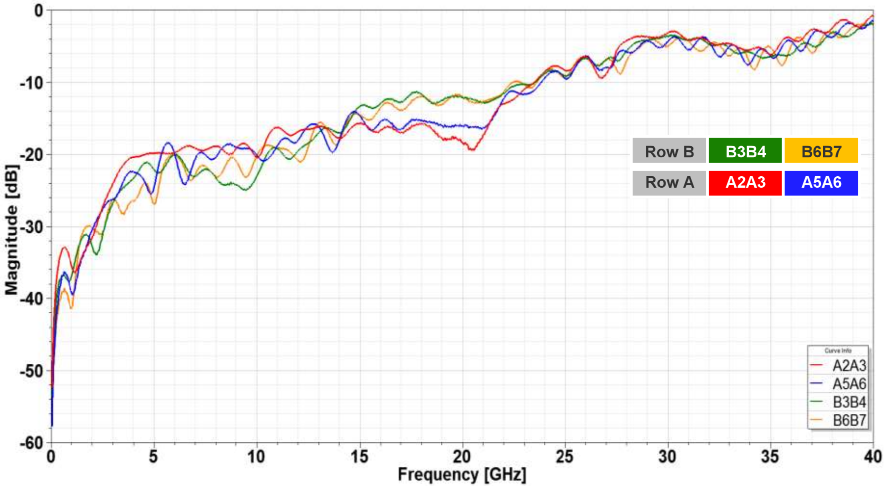
SpeedStack Measured SI Data

5mm, 1mm wipe

Insertion Loss

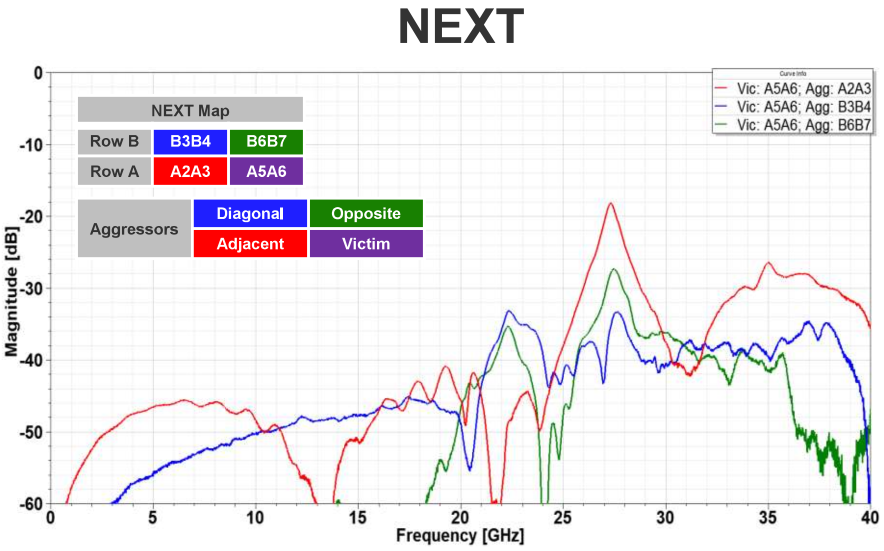


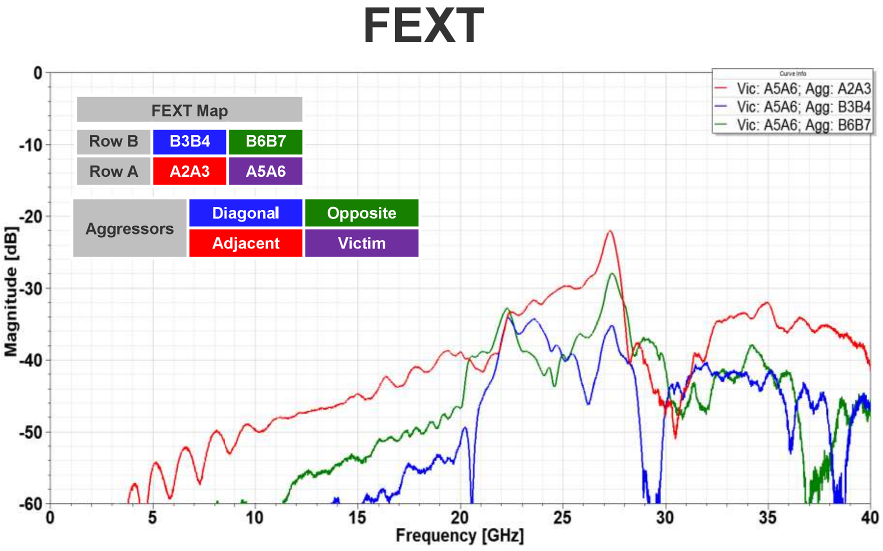
Return Loss



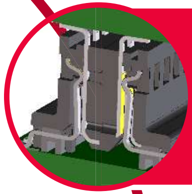
SpeedStack Measured SI Data

5mm, 1mm wipe



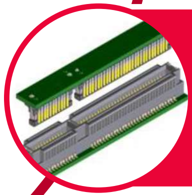


SpeedMezz Takeaways



Low-profile, high-speed mezzanine solution meeting 20-56Gbps data rates

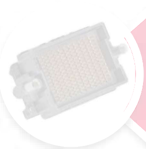
Common receptacle design mates to high-speed mezzanine plug or edge card



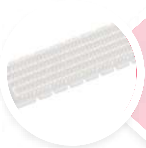
Small, robust form factor maximizes PCB real estate

Return to Roadmap

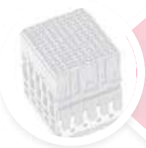
1.00mm Mezzanine



HD Mezz



Searay



Impact Mezz

NeoPress

SpeedMezz

NeoScale

Mirror Mezz

NeoScale Introduction

NeoScale is a flexible, high-speed mezzanine product line offering dedicated, unique “triad” designs to accommodate power, single-ended and high-speed 56Gbps PAM4 data rates in a single connector solution

NeoScale

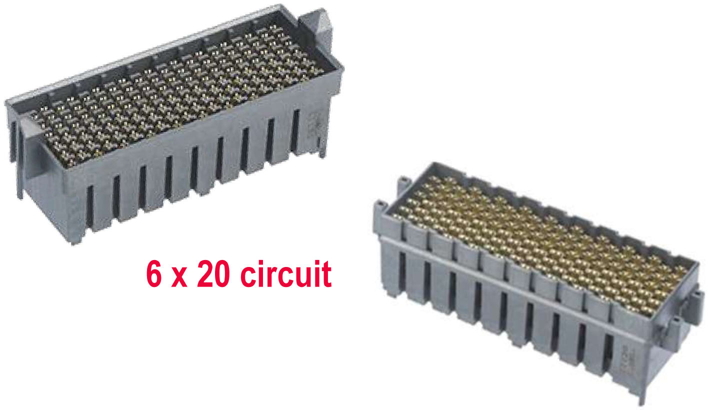
Overview

Speed	56Gbps PAM4
Stack Height	12-42mm
Circuit Size	96-528
Pitch	2.8mm x 2.8mm
Surface Mount	SMT (solder charge)
Other	85Ω and 100Ω impedances, SE and power options available Modular flexible design

NeoScale

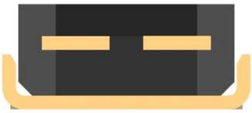
Features and Advantages

- Triad contact design with traditional male and female geometry
- Available in 32-180 DP count versions
- Density: 82 DPs/in^2
- Four different triad designs tooled:
  - High-speed diff pair 85Ω
  - High-speed diff pair 100Ω
  - Single-ended, low-speed
  - Power (8A total: 4A/blade and 4A/shield)



6 x 20 circuit

High-Speed Diff Pair 85Ω



High-Speed Diff Pair 100Ω

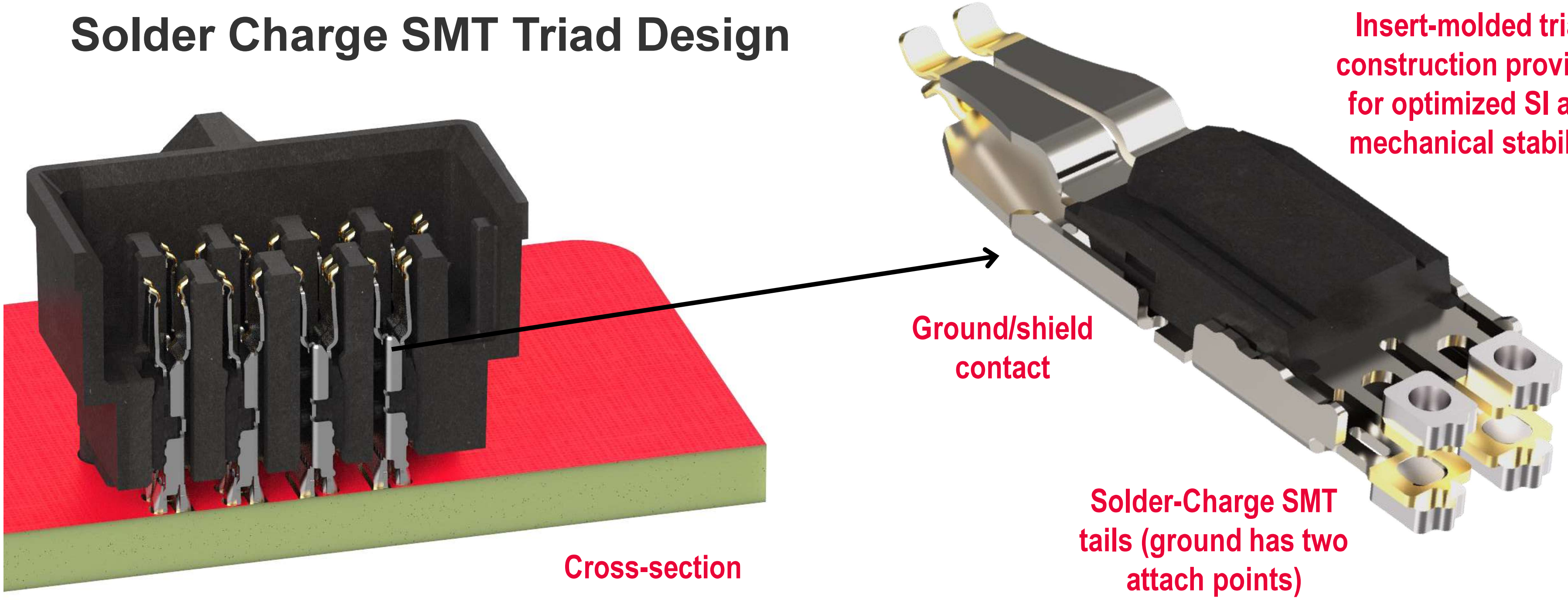
Single-ended

Power

NeoScale

Features and Advantages

Solder Charge SMT Triad Design



Two signal pins (2mm wipe)

Insert-molded triad construction provides for optimized SI and mechanical stability

Ground/shield contact

Solder-Charge SMT tails (ground has two attach points)

Cross-section

NeoScale Features

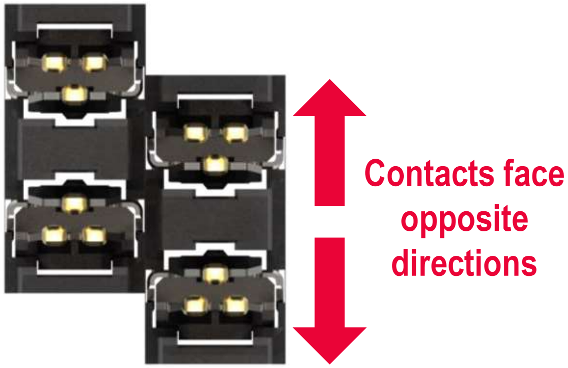
Features and Advantages

Honeycomb Housing Design

- "Tombstone" design protects contacts from handling damage
- Minimizes crosstalk through contact isolation
- Integrated keying and polarization features
- 2mm blind mate gatherability

"Mirrored" Footprint Structure

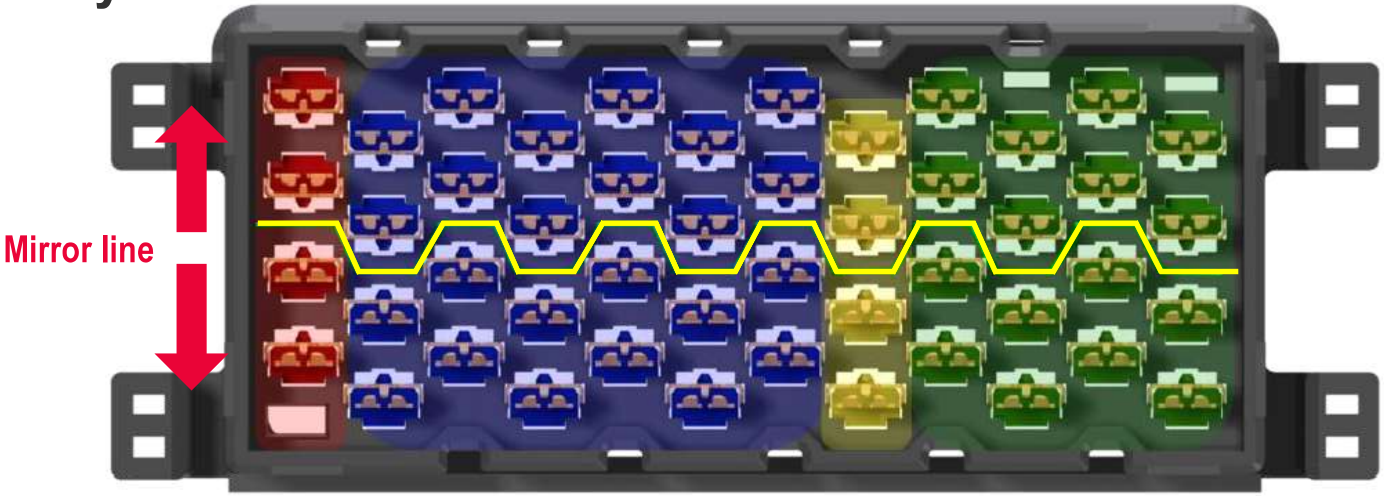
- Contact grid is arranged in mirror fashion
- Mirror line runs down center of connector layout
- Allows for routing in 1 or 2 layers



NeoScale

Features and Advantages

Customizable Layout



Power grouping 8A per triad

Group Tx and Rx across mirror line for 100Ω signals

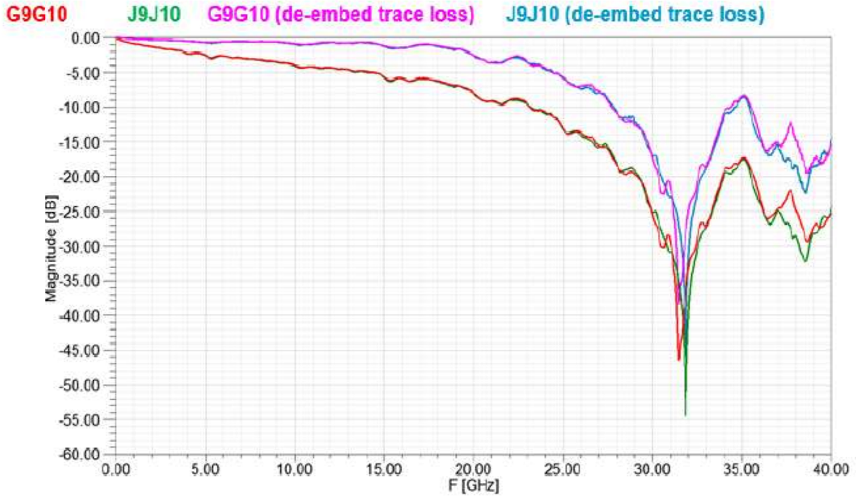
Low-speed single-ended

Group Tx and Rx across mirror line for 85Ω bus traces

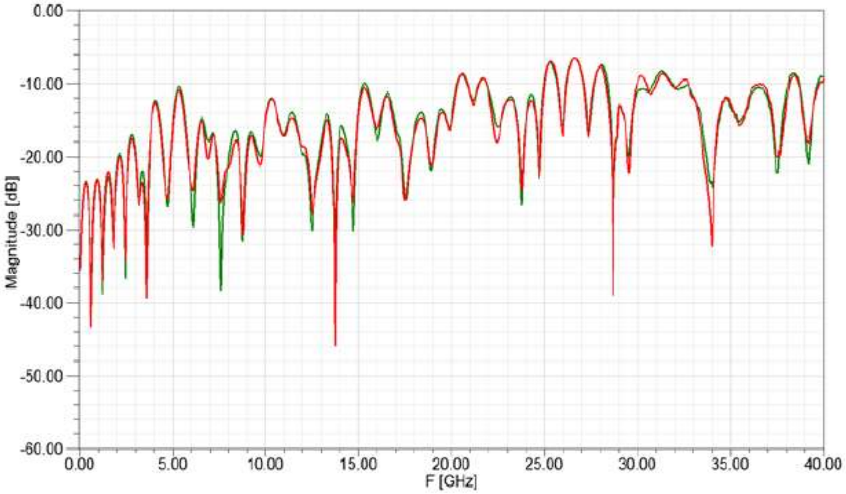
NeoScale Measured SI Data

15mm 4x18, 100Ω

Insertion Loss



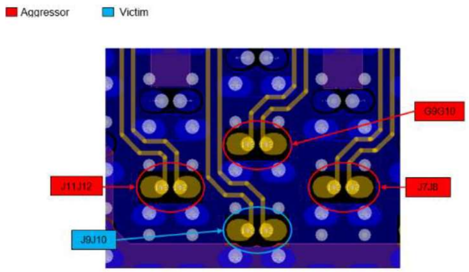
Return Loss



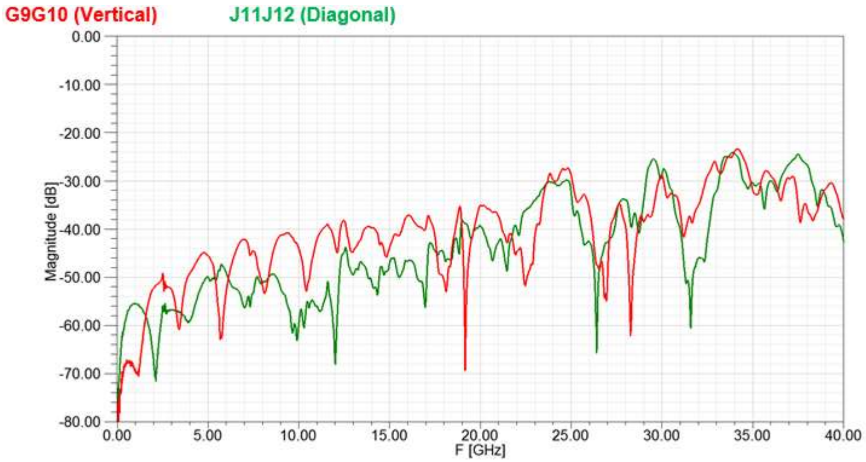
molex

NeoScale Measured SI Data

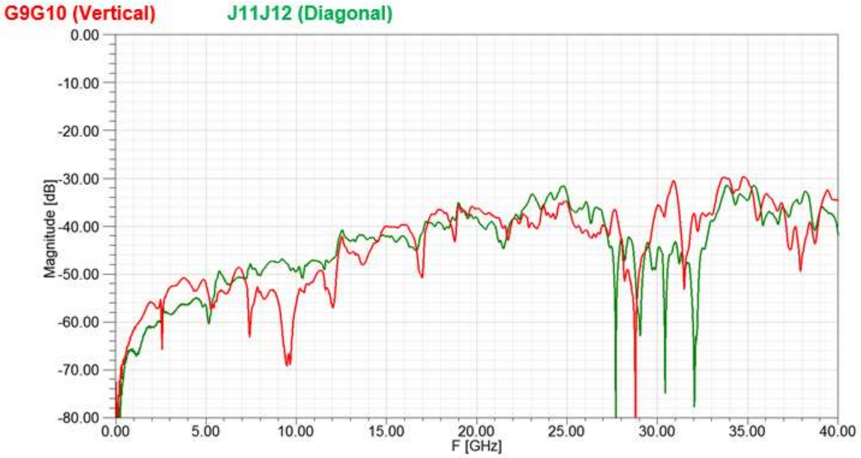
15mm 4x18, 100Ω



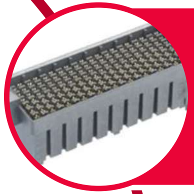
NEXT



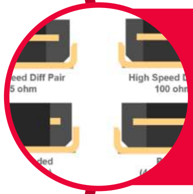
FEXT



NeoScale Takeaways



56Gbps PAM4 performance with 2mm wipe and blind mating capability

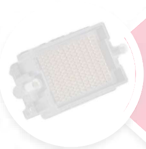


Multiple triad options in one SMT connector: 85Ω, 100Ω and power

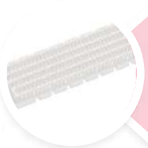
Customizable design allows triads to be stitched selectively to meet any requirement

Return to Roadmap

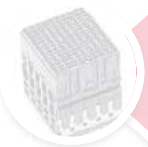
1.00mm Mezzanine



HD Mezz



Searay



Impact Mezz

NeoPress

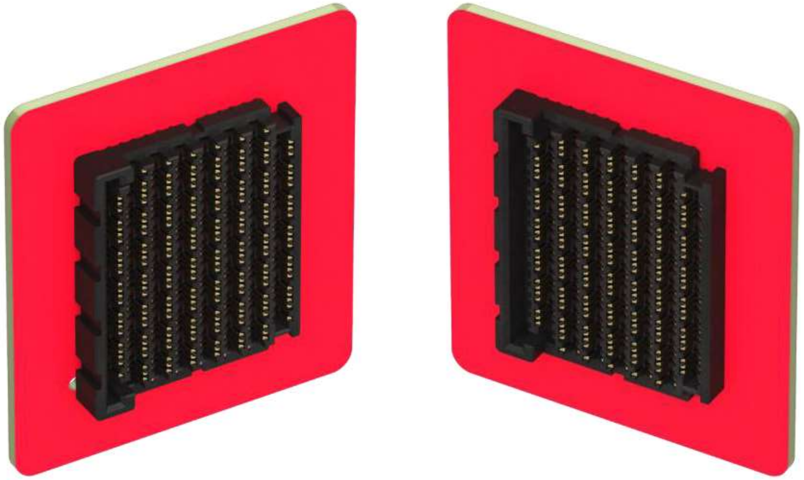
SpeedMezz

NeoScale

Mirror Mezz

Mirror Mezz Introduction

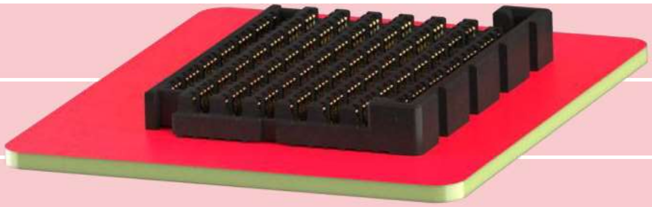
Mirror Mezz is a hermaphroditic connector which lowers application costs with stackable mating to support 112Gbps per differential pair for telecommunications, networking and other applications



Mirror Mezz

Overview

Speed	56Gbps NRZ, 112Gbps PAM4
Stack Height	5-11mm
Circuit Size	124-699
Pitch	1.50mm x 4.00mm
Surface Mount	BGA
Other	Hermaphroditic design

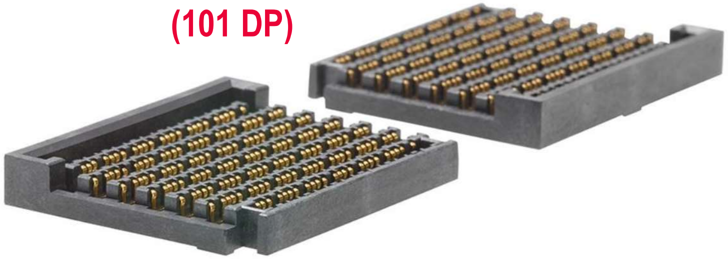


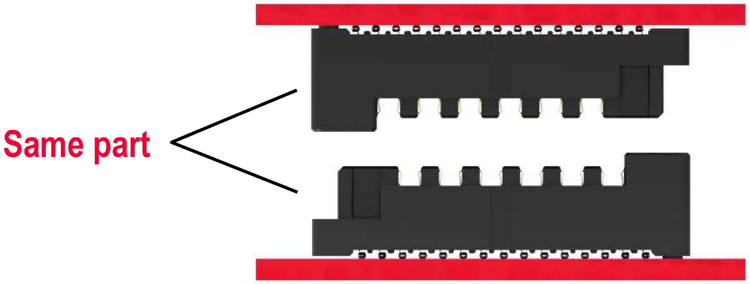
Mirror Mezz

Features and Advantages

Hermaphroditic/Genderless Design

- Only one part number needed for a mated set, because a part mates to itself
- Multiple stack heights easily enabled with minimal tooling





Mirror Mezz Features

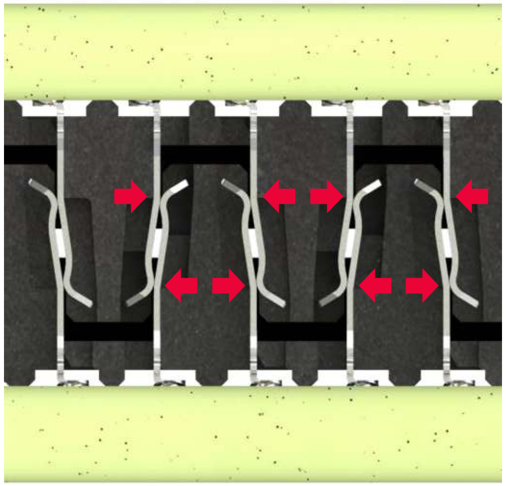
Features and Advantages

"Stubless" Contact Interface

Two points of contact on every beam for improved reliability and superior SI

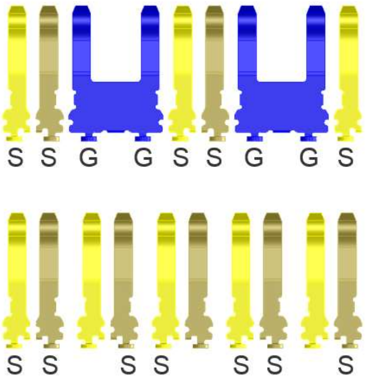
Opposing Beam Support

Mated beams are fully supported by housing structure at mated condition



Cross-section

Mirror Mezz Features



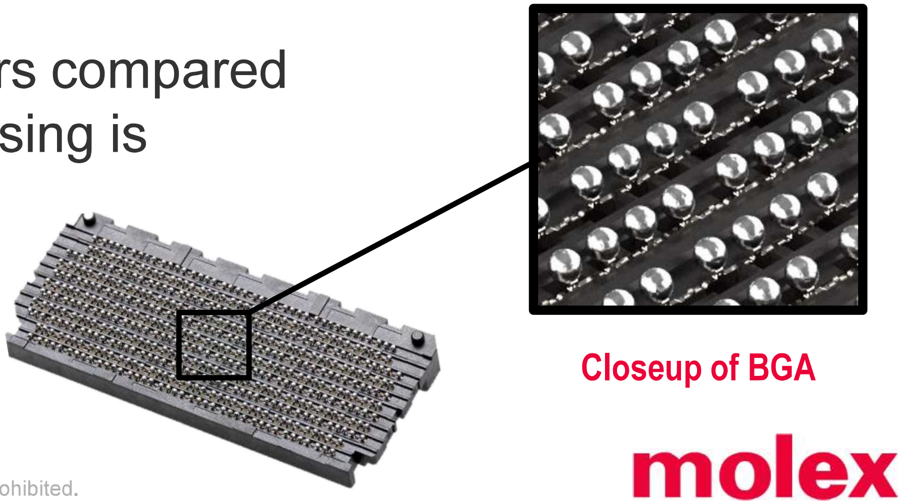
Features and Advantages

Open Pin Field (SE) Option

Open pin field can support differential signaling up to 20GHz with offset GSSG pinout

Stitched BGA Contacts

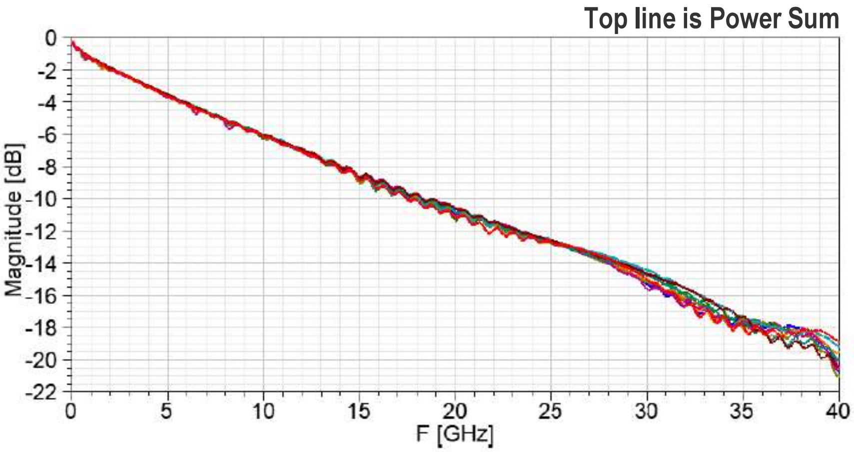
Offers more cost savings to customers compared to insert-molded wafers; BGA processing is familiar to ODMs and CMs



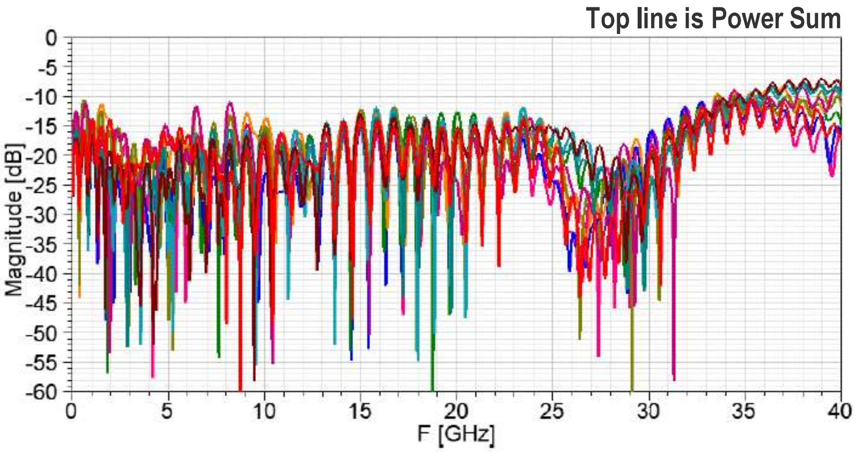
Closeup of BGA

Mirror Mezz Measured SI Data

5mm


Insertion Loss

Top line is Power Sum


Return Loss

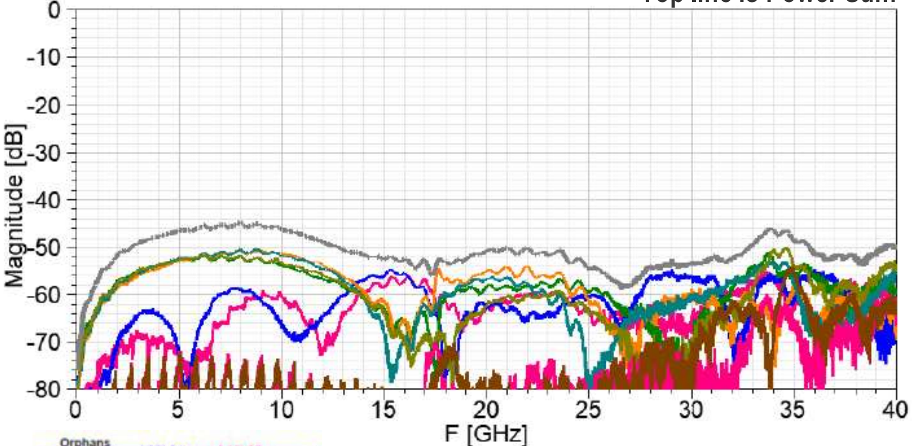
Top line is Power Sum

Mirror Mezz Measured SI Data

5mm

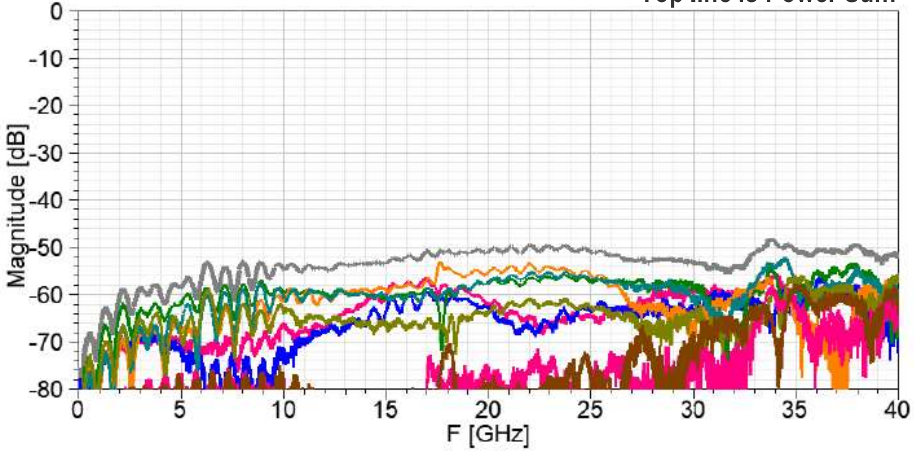
NEXT

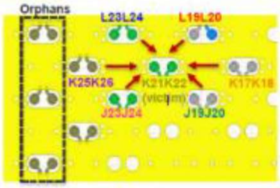
Top line is Power Sum



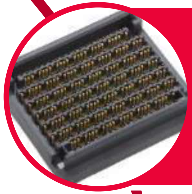
FEXT

Top line is Power Sum

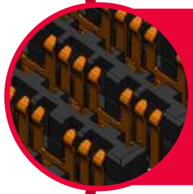




Mirror Mezz Takeaways



Stubless contact design tunes performance to 112Gbps



Hermaphroditic design creates cost savings and simplifies system design/qualification

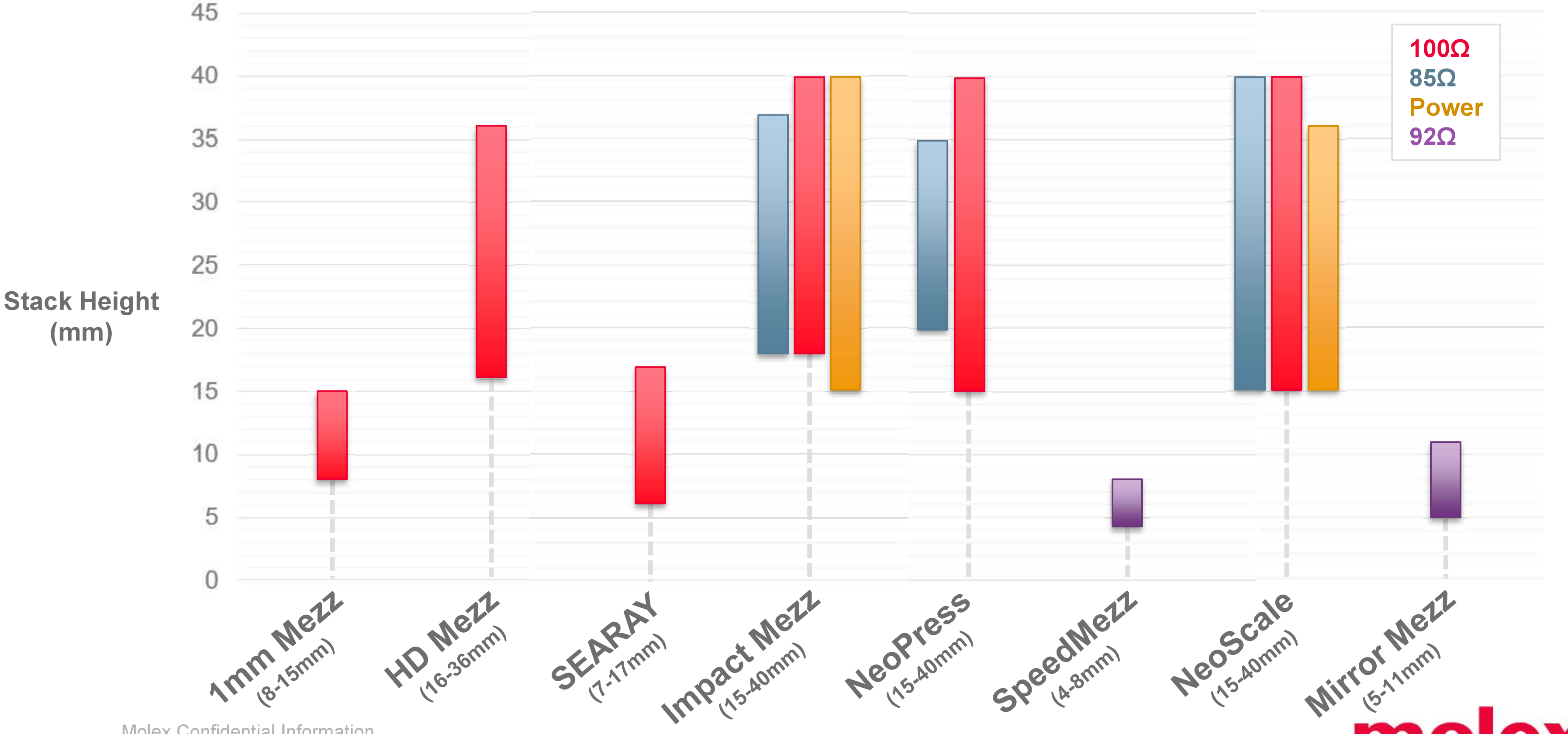
Diff pair and open pin field layouts support pin-out flexibility for designers

Return to Roadmap

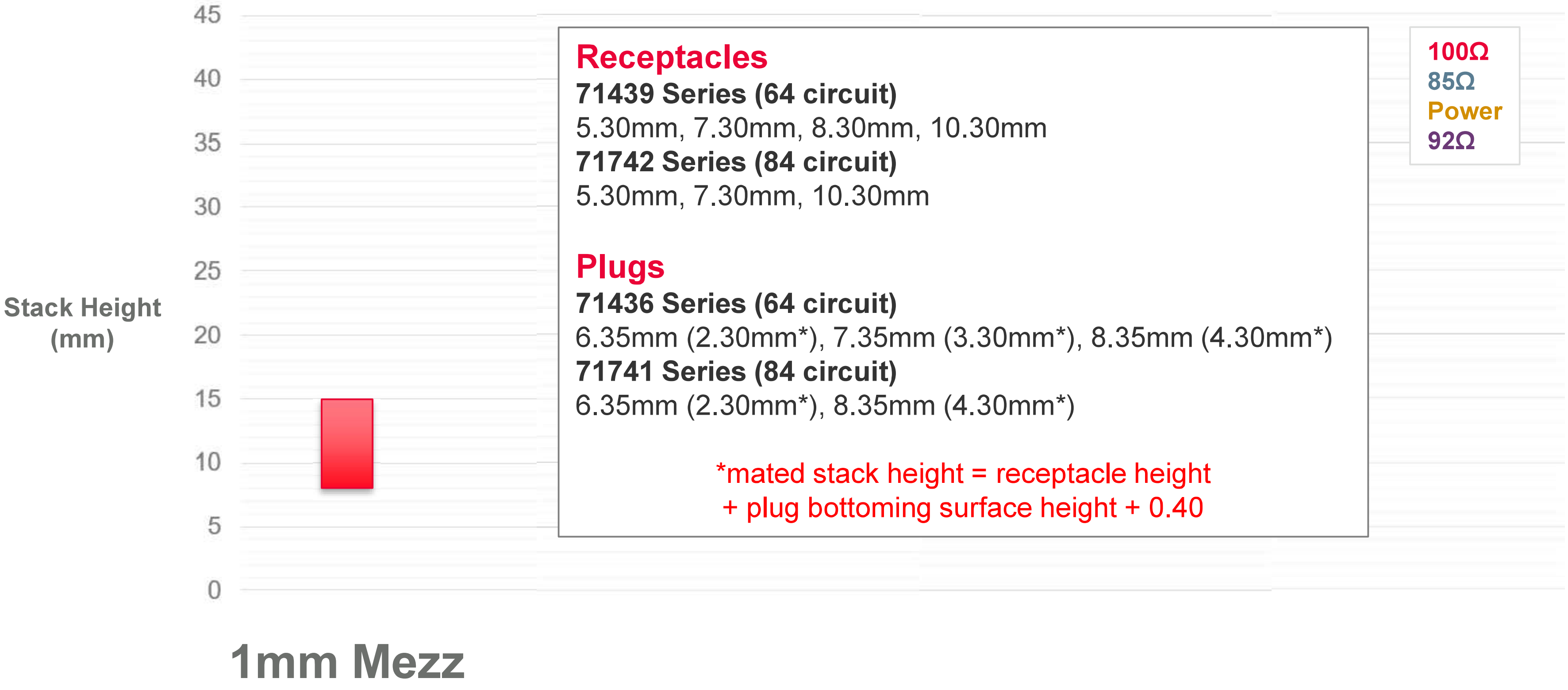
molex.com/mezzanine

Appendix

Molex Mezzanine Stack Heights



1mm Mezz Tooled Options



Receptacles

71439 Series (64 circuit)

5.30mm, 7.30mm, 8.30mm, 10.30mm

71742 Series (84 circuit)

5.30mm, 7.30mm, 10.30mm

Plugs

71436 Series (64 circuit)

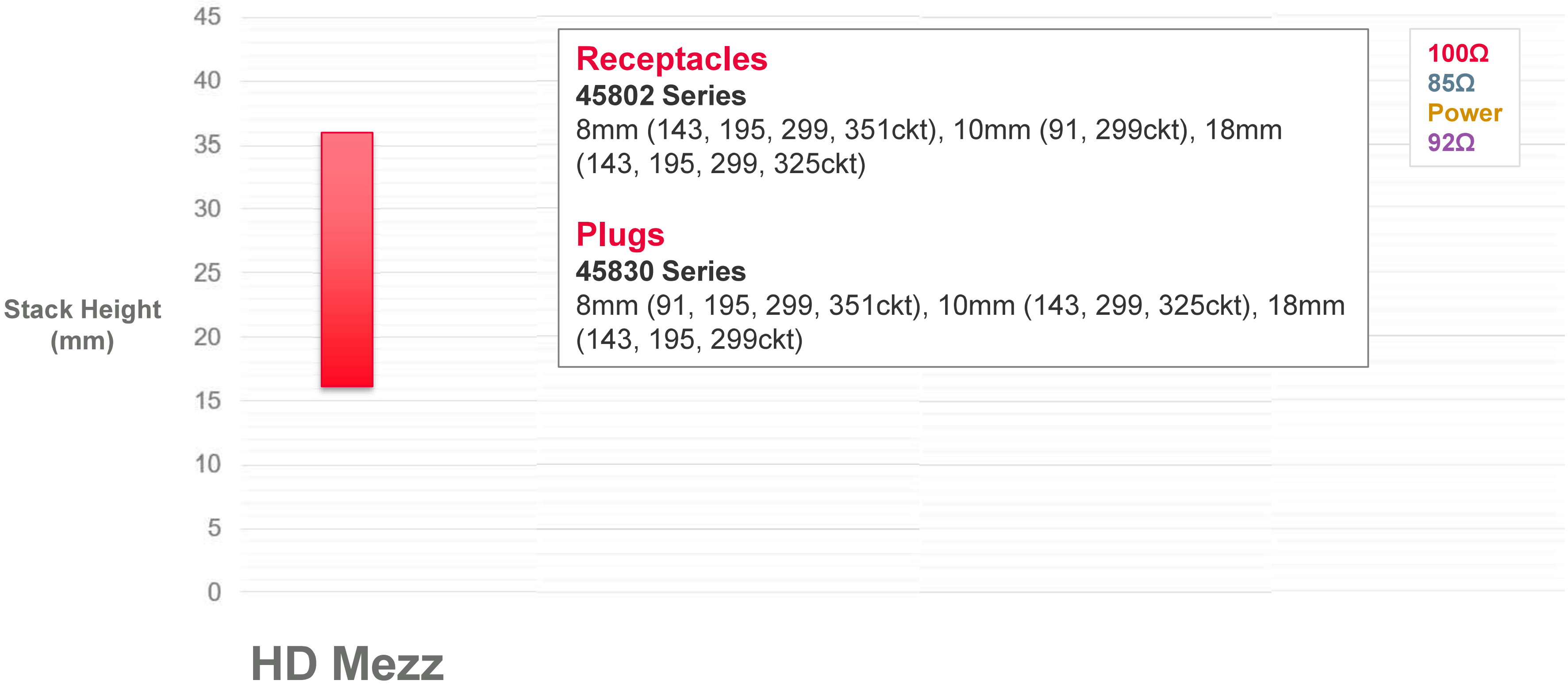
6.35mm (2.30mm*), 7.35mm (3.30mm*), 8.35mm (4.30mm*)

71741 Series (84 circuit)

6.35mm (2.30mm*), 8.35mm (4.30mm*)

*mated stack height = receptacle height
+ plug bottoming surface height + 0.40

HD Mezz Tooled Options



Receptacles

45802 Series

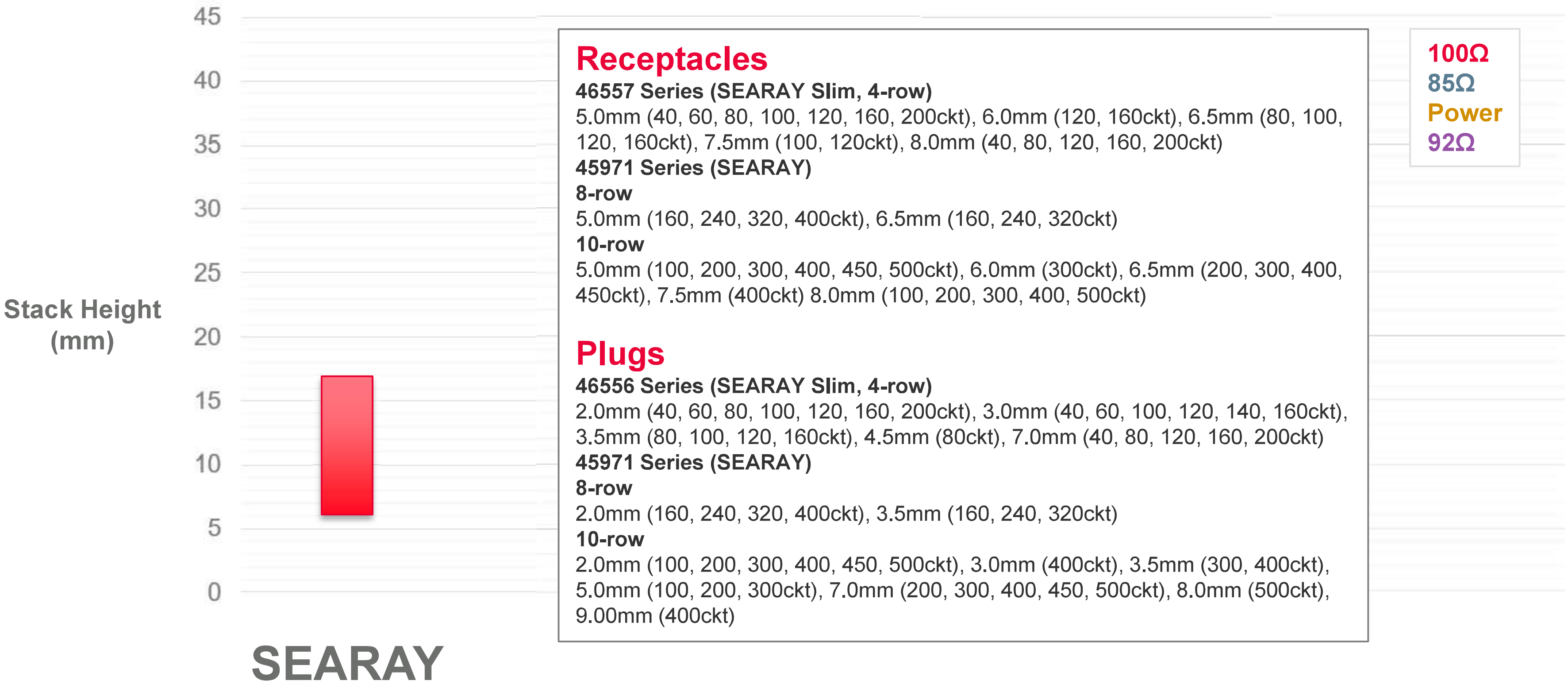
8mm (143, 195, 299, 351ckt), 10mm (91, 299ckt), 18mm (143, 195, 299, 325ckt)

Plugs

45830 Series

8mm (91, 195, 299, 351ckt), 10mm (143, 299, 325ckt), 18mm (143, 195, 299ckt)

SEARAY Tooled Options



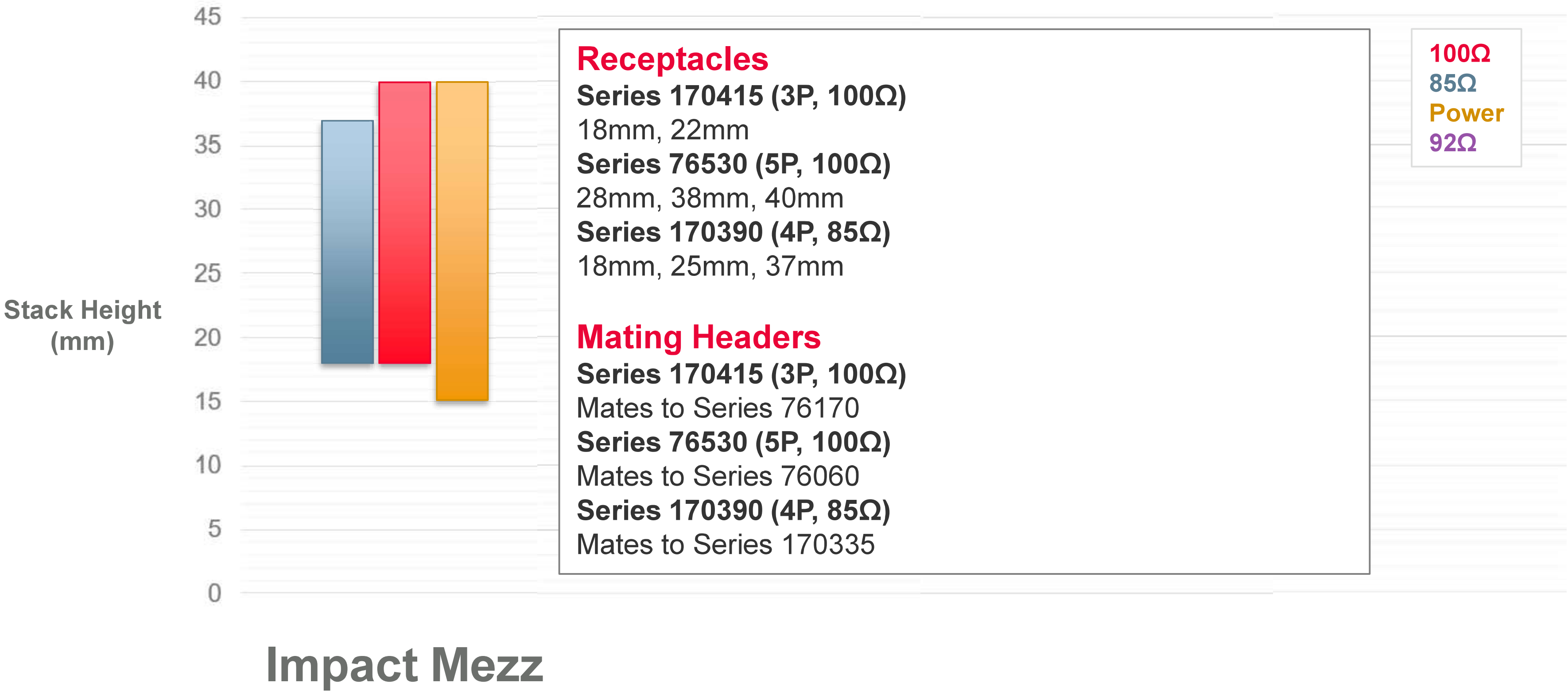
Receptacles

46557 Series (SEARAY Slim, 4-row)
5.0mm (40, 60, 80, 100, 120, 160, 200ckt), 6.0mm (120, 160ckt), 6.5mm (80, 100, 120, 160ckt), 7.5mm (100, 120ckt), 8.0mm (40, 80, 120, 160, 200ckt)
45971 Series (SEARAY)
8-row
5.0mm (160, 240, 320, 400ckt), 6.5mm (160, 240, 320ckt)
10-row
5.0mm (100, 200, 300, 400, 450, 500ckt), 6.0mm (300ckt), 6.5mm (200, 300, 400, 450ckt), 7.5mm (400ckt) 8.0mm (100, 200, 300, 400, 500ckt)

Plugs

46556 Series (SEARAY Slim, 4-row)
2.0mm (40, 60, 80, 100, 120, 160, 200ckt), 3.0mm (40, 60, 100, 120, 140, 160ckt), 3.5mm (80, 100, 120, 160ckt), 4.5mm (80ckt), 7.0mm (40, 80, 120, 160, 200ckt)
45971 Series (SEARAY)
8-row
2.0mm (160, 240, 320, 400ckt), 3.5mm (160, 240, 320ckt)
10-row
2.0mm (100, 200, 300, 400, 450, 500ckt), 3.0mm (400ckt), 3.5mm (300, 400ckt), 5.0mm (100, 200, 300ckt), 7.0mm (200, 300, 400, 450, 500ckt), 8.0mm (500ckt), 9.00mm (400ckt)

Impact Mezz Tooled Options



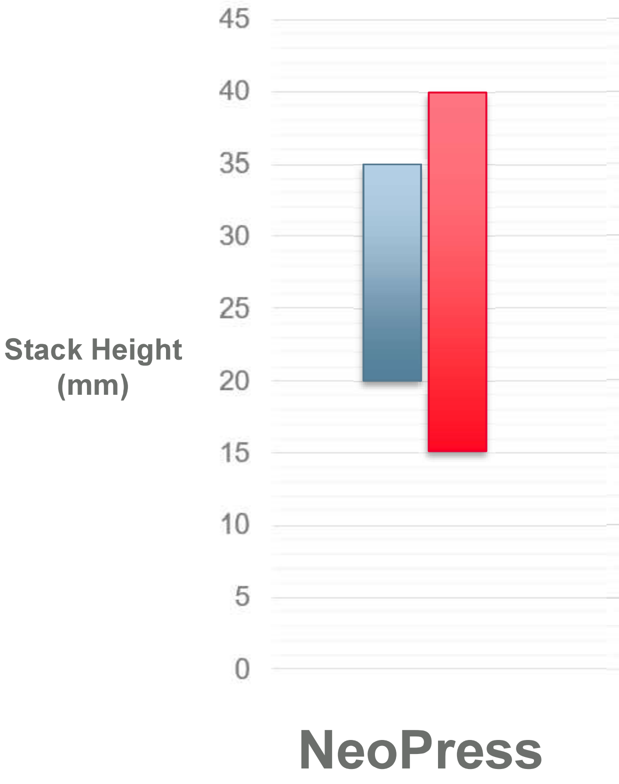
Receptacles

Series 170415 (3P, 100Ω)
18mm, 22mm
Series 76530 (5P, 100Ω)
28mm, 38mm, 40mm
Series 170390 (4P, 85Ω)
18mm, 25mm, 37mm

Mating Headers

Series 170415 (3P, 100Ω)
Mates to Series 76170
Series 76530 (5P, 100Ω)
Mates to Series 76060
Series 170390 (4P, 85Ω)
Mates to Series 170335

NeoPress Tooled Options



Receptacles

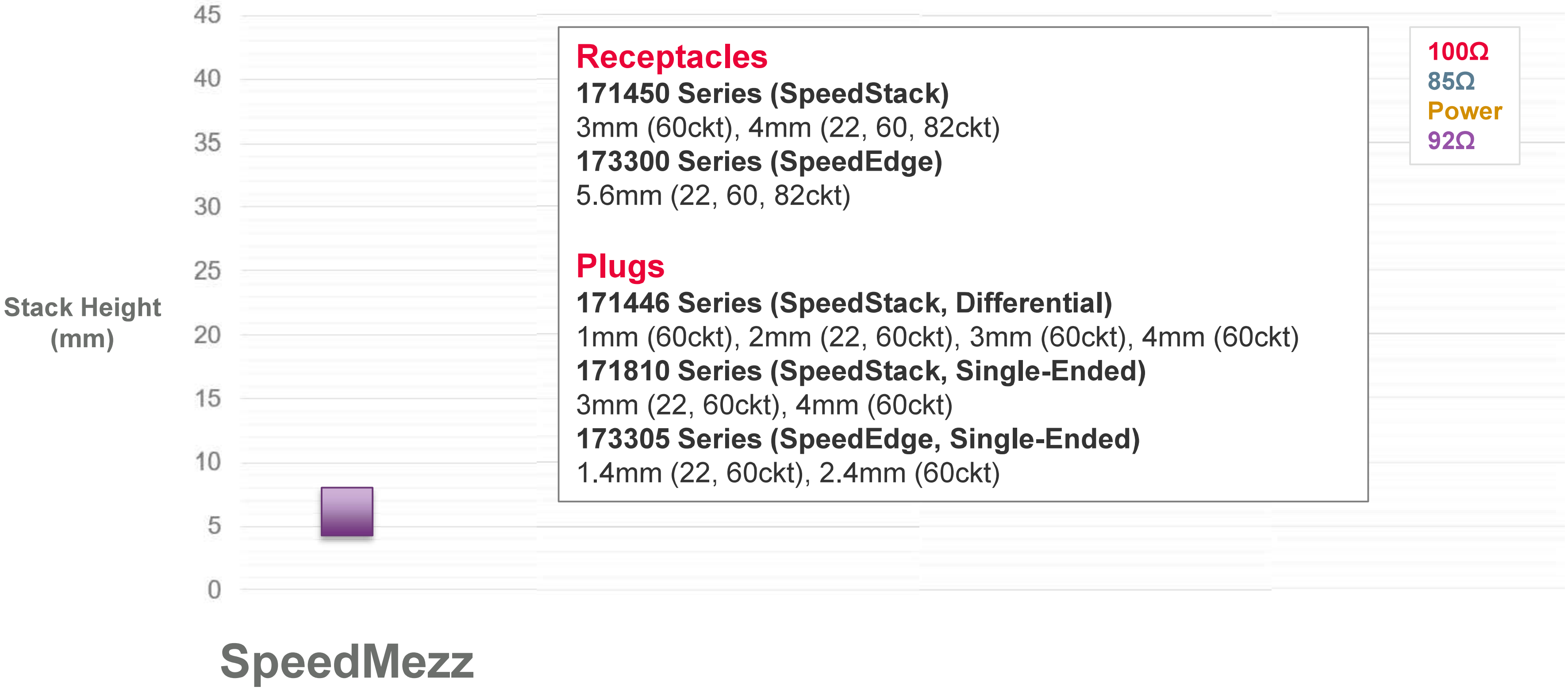
172832 Series (100Ω)
13.5mm (84 DPs), 18.5mm (60, 84, 96, 160 DPs)
173364 Series (100Ω)
7.5mm (60 DPs)
203340 Series (85Ω)
7.5mm (48 DPs), 22.5mm (48 DPs)

Plugs

172801 Series (100Ω)
13.5mm (50, 84 DPs), 18.5mm (84 DPs), 21.5mm (60, 120 DPs)
173363 Series (100Ω)
7.5mm (60 DPs)
203341 Series (85Ω)
12.5mm (48 DPs)

100Ω
85Ω
Power
92Ω

Speed Mezz Tooled Options



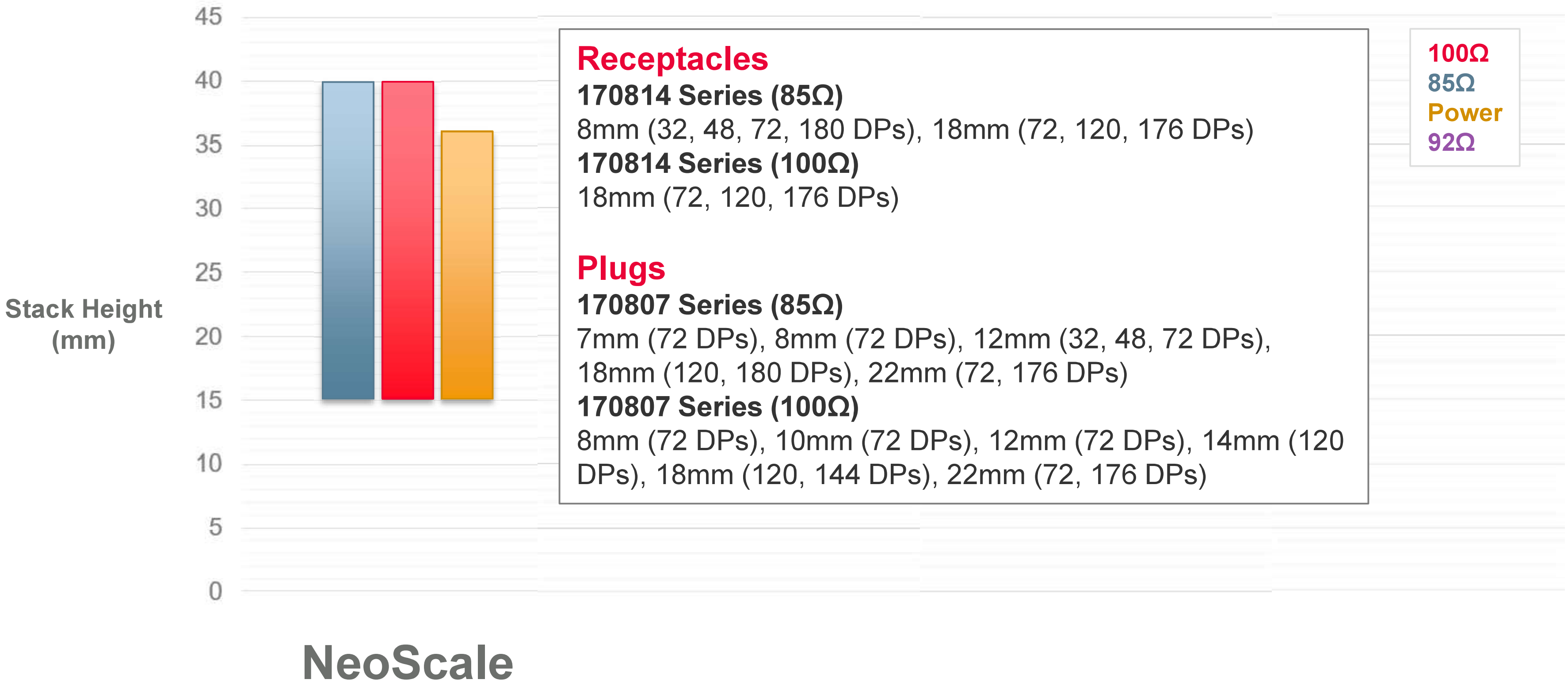
Receptacles

171450 Series (SpeedStack)
3mm (60ckt), 4mm (22, 60, 82ckt)
173300 Series (SpeedEdge)
5.6mm (22, 60, 82ckt)

Plugs

171446 Series (SpeedStack, Differential)
1mm (60ckt), 2mm (22, 60ckt), 3mm (60ckt), 4mm (60ckt)
171810 Series (SpeedStack, Single-Ended)
3mm (22, 60ckt), 4mm (60ckt)
173305 Series (SpeedEdge, Single-Ended)
1.4mm (22, 60ckt), 2.4mm (60ckt)

NeoScale Tooled Options



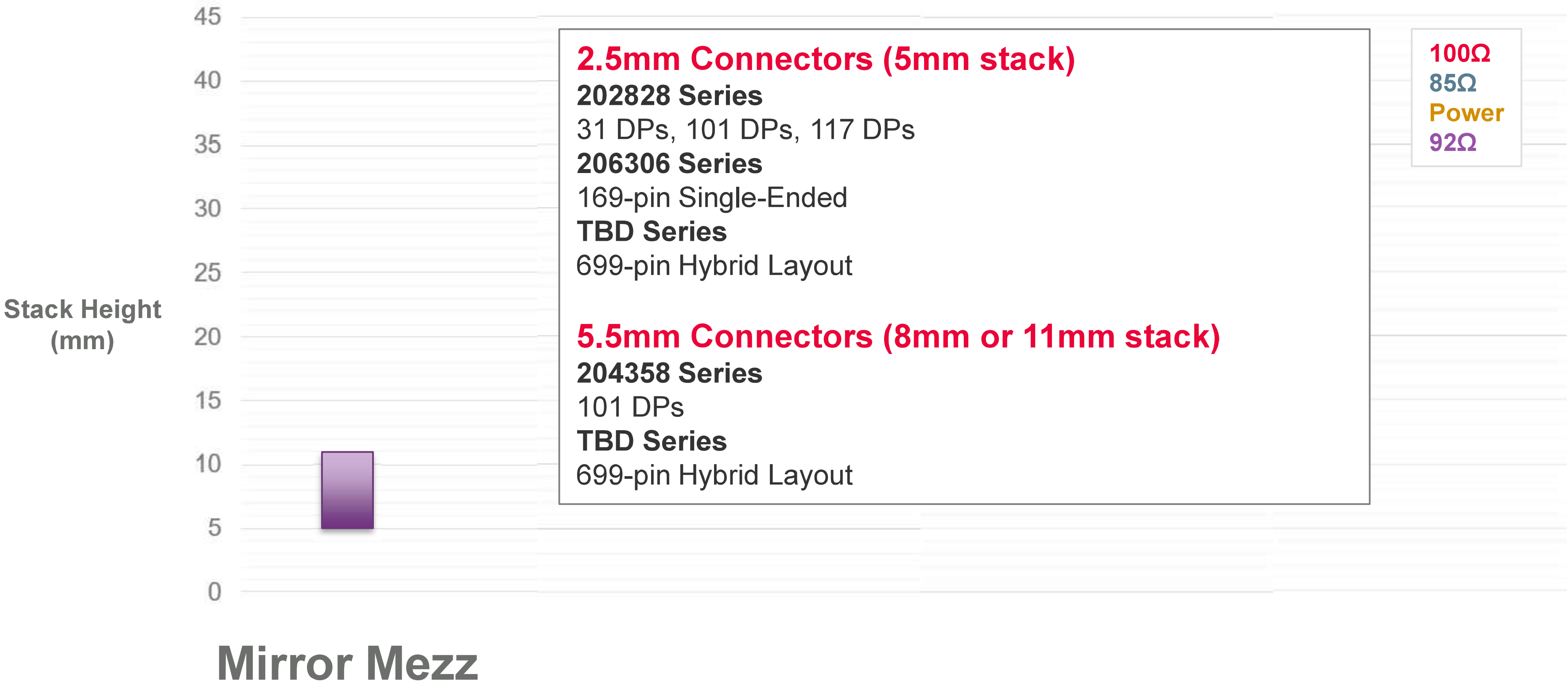
Receptacles

170814 Series (85Ω)
8mm (32, 48, 72, 180 DPs), 18mm (72, 120, 176 DPs)
170814 Series (100Ω)
18mm (72, 120, 176 DPs)

Plugs

170807 Series (85Ω)
7mm (72 DPs), 8mm (72 DPs), 12mm (32, 48, 72 DPs), 18mm (120, 180 DPs), 22mm (72, 176 DPs)
170807 Series (100Ω)
8mm (72 DPs), 10mm (72 DPs), 12mm (72 DPs), 14mm (120 DPs), 18mm (120, 144 DPs), 22mm (72, 176 DPs)

Mirror Mezz Tooled Options



2.5mm Connectors (5mm stack)

202828 Series

31 DPs, 101 DPs, 117 DPs

206306 Series

169-pin Single-Ended

TBD Series

699-pin Hybrid Layout

5.5mm Connectors (8mm or 11mm stack)

204358 Series

101 DPs

TBD Series

699-pin Hybrid Layout