

# BiPass I/O High-Speed Solutions



**BiPass I/O High-Speed Solutions with low-insertion-loss copper twinax cables serve as a PCB alternative to enable efficient and reliable implementation of 56 and 112 Gbps PAM-4 protocols**

## Features and Advantages

### BiPass serves as an alternative to expensive PCB traces and retimers

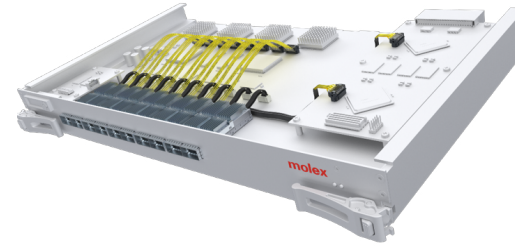
Delivers a 56 Gbps PAM-4 solution ready for immediate implementation. Provides high performance and lower insertion loss for greater channel margins as compared to PCB traces

	FR4	Megtron 6	Twinax
IL per Inch	1.7	0.8	0.25
IL for 4 inches	6.7	3.2	1
IL for 8 inches	13.3	6.3	2
IL for 12 inches	20	9.5	3
IL for 18 inches	30	14.2	4.5

*Insertion loss analysis @ 12.5 GHz, comparing FR4 and Megtron 6 printed circuit boards to twinax cables (as used in BiPass Cable Assemblies)*

### Low-insertion loss as compared to PCB traces, which is critical for PAM-4 protocol

Delivers high 56 Gbps PAM-4 performance as compared to PCB traces. Eliminates the need for expensive board materials and retimers



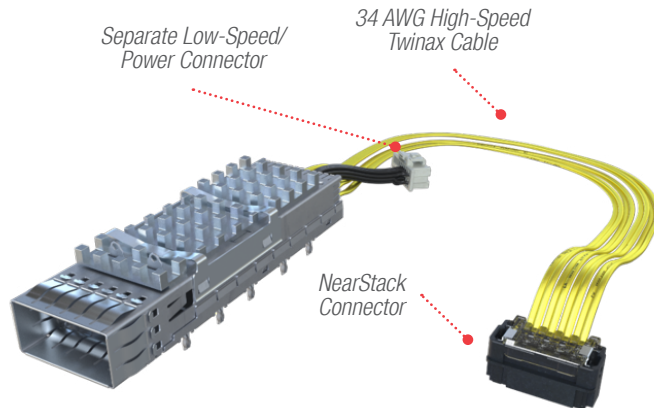
BiPass Solutions: QSFP+-to-NearStack-and-Power/Signal-Connector Assemblies in Tray

### Press-fit power-to-board option available

Enables belly-to-belly configurations



BiPass Press-Fit QSFP+-to-NearStack Assembly



*BiPass QSFP+ and QSFP-DD Assemblies Mate With Standard Optical Transceivers and Passive Copper Cables*

### Standalone cable assemblies are 100 percent tested

Ensures reliability. Eliminates the need for customers to conduct tests

### NearStack High-Speed Connector

#### Capable of 112 Gbps PAM-4 protocol

Offers cutting-edge performance

#### Larger circuit sizes: up to 42 differential pairs possible

Reduces PCB real estate. Increases density



8-DP Connector Shown

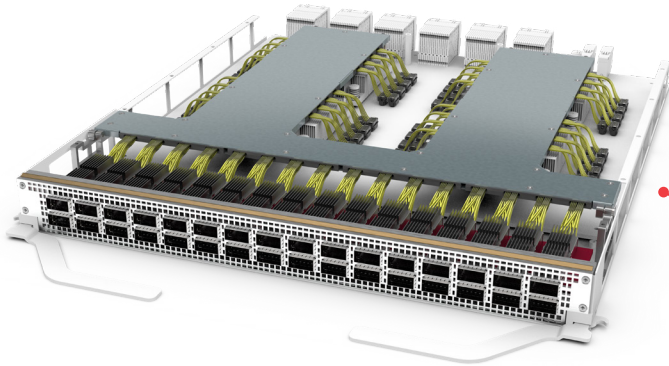


**0.60mm pitch and tight stacking on 9.00-by-19.00mm grid (high density with 30.2 differential pairs per square inch)**  
Alleviates space constraints by taking up less PCB real estate

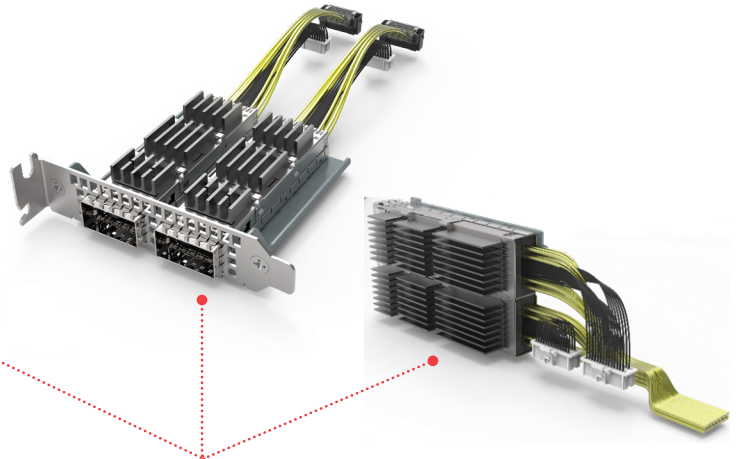
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## Features and Advantages



Customized Tray Solution Example: 12.8 Terabit 1 RU



**Easily customized to individual front-panel configurations**  
Separate low-power/signal connector frees I/O cage from PCB enabling vertical integration and greater port density

### Twinax cables enable routing to minimize airflow impedance

Improves thermal management and design flexibility. Delivers low insertion loss and, therefore, superior signal integrity performance



### Tray Assemblies

**Fully integrated, custom-designed wire management trays available**  
Offers a complete solution. Eases engineering resources. Simplifies the manufacturing process

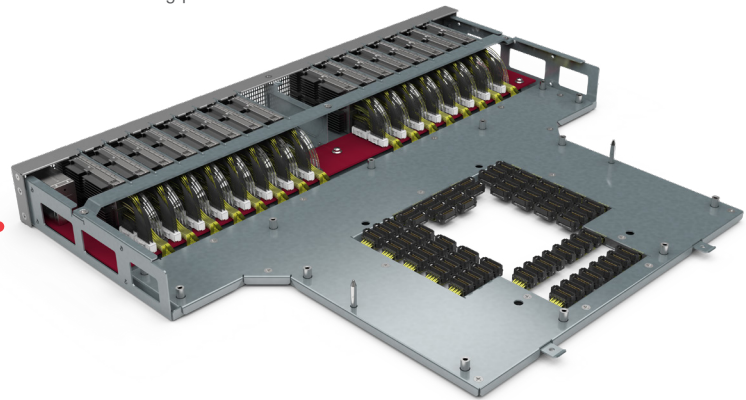
## Applications

### Data Center Solutions

- Data center switches
- Data center servers
- Data center routers

### Telecommunications/Networking

- Top-of-the-rack switches
- Core routers



NearStack Connectors

Vertically Orientated Tray Solution With Below-Board Near-ASIC Termination

## Ordering Information

Custom Product	Description
<a href="#">Contact Molex</a>	BiPass I/O High-Speed Solutions

[www.molex.com/link/bypass.html](http://www.molex.com/link/bypass.html)

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