**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

<table>
<thead>
<tr>
<th></th>
<th>FR4</th>
<th>Megtron 6</th>
<th>Twinax</th>
</tr>
</thead>
<tbody>
<tr>
<td>IL per inch</td>
<td>1.7</td>
<td>0.8</td>
<td>0.25</td>
</tr>
<tr>
<td>IL for 4 inches</td>
<td>6.7</td>
<td>3.2</td>
<td>1</td>
</tr>
<tr>
<td>IL for 8 inches</td>
<td>13.3</td>
<td>6.3</td>
<td>2</td>
</tr>
<tr>
<td>IL for 12 inches</td>
<td>20</td>
<td>9.5</td>
<td>3</td>
</tr>
<tr>
<td>IL for 18 inches</td>
<td>30</td>
<td>14.2</td>
<td>4.5</td>
</tr>
</tbody>
</table>

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

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

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
BiPass I/O
High-Speed Solutions

Features and Advantages

Twinax cables enable routing to minimize airflow impedance
Improves thermal management and design flexibility. Delivers low insertion loss and, therefore, superior signal integrity performance

Applications

Data Center Solutions
- Data center switches
- Data center servers
- Data center routers

Telecommunications/Networking
- Top-of-the-rack switches
- Core routers

Ordering Information

<table>
<thead>
<tr>
<th>Custom Product</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Molex</td>
<td>BiPass I/O  High-Speed Solutions</td>
</tr>
</tbody>
</table>

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

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

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

Molex is a registered trademark of Molex, LLC in the United States of America and may be registered in other countries; all other trademarks listed herein belong to their respective owners.

Order No. 987651-5801 USA/04/GF/2018.05 © 2018 Molex

www.molex.com/link/bipass.html