Z-RAY® LOW PROFILE INTERPOSERS
HIGH-DENSITY, ULTRA-LOW PROFILE, HIGHLY CUSTOMIZABLE ARRAYS

As a high-speed, high-density connector, Z-Ray® provides the ultimate in design flexibility, from custom heights to full custom geometries. As an interposer, Z-Ray® is a cost-saving removable interface between the IC package and main board. Z-Ray® is ideal for the demands of military /defense, aerospace and R&D applications including radar, radio, navigation and sensors.

Board-to-Board & IC-to-Board Applications

- Dual compression contacts or single compression with solder balls
- BeCu micro-formed contacts
- 0.80 mm or 1.00 mm pitch arrays
- Performance up to 14 Gbps (ZAX Series) and 56 Gbps NRZ (ZAXH Series) with a migration path to 100 Gbps
- 0.33 mm height for shortest signal path (ZA8H Series)
- Low profile 1 mm body height (ZAX Series)
- Low 30 g normal force with .008” contact deflection
- Up to 1,000 cycles, with alternate contact design for up to 3,000 cycles also available (tested to 85˚C)
- Up to 400 I/Os standard with custom capabilities to 3,000+ I/Os
- Also Available: 1.00 mm pitch system with up to 400 I/Os, 1.27 mm and 2 mm standard heights, and up to 56 Gbps performance (GMI Series)

Cable-to-Board Applications

- Ultra-low profile Z-Ray® Cable Assembly (ZRDP Series)
  - Designed for high-speed, micro pitch applications
  - Up to 16 signal pairs on 0.80 mm pitch
  - 100 ohm differential pair signal routing
  - 34 AWG twinax ribbon cable
- Additional applications for Z-Ray® interposers include low-cost cable alternatives using flex, low profile RF capabilities

www.samtec.com/zray | zray@samtec.com
Ultimate Design Flexibility

- Configurations for any application, complete with detailed footprints
- Customer-specific stack heights, pin counts, insulator shapes and plating thicknesses
- Customizable in X-Y-Z axes
- Quick-turn customization with minimal NRE and tooling charges
- Various compression and alignment configurations

Interposer Design & Construction

- One-piece design assembled into rugged low profile FR4 substrate under high pressure and temperature
- Interposers are built standard with a 1 mm board-to-board thickness
- Contacts are designed using BeCu foils that have been formed into the "beam" structure

Performance Specifications

<table>
<thead>
<tr>
<th>Series</th>
<th>Single Compression w/ Solder Balls</th>
<th>Dual Compression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pitch</td>
<td>ZA8</td>
<td>ZA1</td>
</tr>
<tr>
<td>Max Row</td>
<td>0.80 mm</td>
<td>1.00 mm</td>
</tr>
<tr>
<td>Max Column</td>
<td>25</td>
<td>20</td>
</tr>
<tr>
<td>Thickness</td>
<td>Kapton Core</td>
<td>1.00 to 4 mm</td>
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<tr>
<td></td>
<td>FR4 Core</td>
<td>1.00 to 4 mm</td>
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<tr>
<td>Thickness Tolerance</td>
<td>Kapton Core</td>
<td>N/A</td>
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<tr>
<td></td>
<td>FR4 Core</td>
<td>±10%</td>
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<tr>
<td>Deflection / Normal Force per Pin</td>
<td>0.20 mm / 30g</td>
<td>0.20 mm / 25-50g</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-55°C to +105°C (85°C Single Cycle)</td>
<td></td>
</tr>
</tbody>
</table>
Z-RAY® COMPRESSION HARDWARE SYSTEMS

Engineered to provide precise alignment, compression and retention of dual compression (LGA) or single compression with solder balls (BGA) Z-Ray® Interposers, these hardware systems are ultra-low profile and designed to reduce risk of damage to the interposer.

**ZHSI Series for Dual Compression Interposers**
- Provides alignment and ensures proper contact retention
- Prevents over compression of contacts on interposer
- Eliminates the need for additional fasteners
- Accommodates .062” and .093” PCB thicknesses
- Press-fit design
- 4 in-oz maximum torque on the screw head

**ZSO Series for Single-Compression Solder Ball Interposers**
- Provides alignment
- Prevents over compression of solder ball joints on interposer
- Ensures proper contact retention and board spacing
- Press-fit design
- 1 mm board stack height
- For additional stack heights contact Samtec

**ZD Series for Dual Compression Interposers**
- Press-in hardware provides proper PCB to interposer alignment
- Micro 1 mm diameter
- Use industry standard hardware to secure and compress interposer
- 3.7 mm, 5.3 mm and 5.7 mm lengths available for varying mated heights