SILMAT® TEST SOCKET

Elastomeric Solutions for Digital High Speed & PoP Top Test

Uniting the unparalleled attributes of Silmat® Elastomeric Contacts with the best-in-class engineering and test development practices of Smiths Connectors
FEATURES & BENEFITS

- **Patented, low profile contact**
  - Solderless memory replacement
  - Short signal path
  - Conformal to recessed LGAs

- **High speed signal integrity**
  - Electrically transparent contact
  - High frequency bandwidth > 40 GHz
  - Low inductance

- **Durability**
  - Long cycle life > 500,000 cycles
  - No PCB or solder ball damage
  - Minimal labor and tester downtime

- **Engineering expertise**
  - Monte Carlo Analysis
  - Thermal Analysis
  - RF Simulation

The Next Generation of Test Solutions
Smiths Connectors, a leading supplier of high reliability test solutions, is introducing the Silmat® elastomeric contact to our technology portfolio. The patented, low profile contact is engineered specifically to provide electrical and mechanical advantages in the Digital High Speed and PoP Top segments of the Semiconductor Test industry.

Smiths Connectors best-in-class engineering, test development expertise and commitment to excellence allows us to continuously invest in innovative technologies and solutions for the testing requirements of next generation devices.

TECHNICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>High Performance Contacts</th>
<th>Package Types</th>
<th>Package Size</th>
<th>Recommended Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 piece system: contact set and elastomer</td>
<td>All package types and sizes, full and partial array capabilities</td>
<td>50 mm x 50 mm</td>
<td>RF / Microwave, Power, System Level Test, ATE HVM, High Compliance</td>
</tr>
<tr>
<td>2 piece system: contact set and elastomer</td>
<td>30 mm x 30 mm</td>
<td>RF / Microwave, Power, System Level Test, ATE HVM</td>
<td></td>
</tr>
<tr>
<td>1 piece system: elastomer</td>
<td>30 mm x 30 mm</td>
<td>RF / Microwave, Power, Device Characterization, Low Cycle</td>
<td></td>
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</tbody>
</table>

MECHANICAL & ENVIRONMENTAL

| Minimum Pitch | 0.5 mm | 0.4 mm | 0.3 mm |
| Compliance / Travel | 0.40 mm | 0.28 mm | 0.23 mm |
| Operating Temperature | -55°C to 155°C | -55°C to 155°C | -55°C to 200°C |
| Gold Contact Set Expected Life | > 2,000,000 | > 2,000,000 | — |
| Elastomeric Interposer Expected Life | > 500,000 | > 500,000 | > 1,000-100,000 |

ELECTRICAL

| Inductance (Self / Mutual) | 0.33 nH / 0.15 nH | < 0.15 nH / 0.05 nH | 0.10 nH / 0.02 nH |
| Capacitance (Self / Mutual) | 0.20 pF / 0.05 pF | 0.15 pF / 0.02 pF | 0.14 pF / 0.01 pF |
| Contact Resistance | < 25 mΩ | < 25 mΩ | < 25 mΩ |
| Current Capacity | 4 A @ 14°C rise | 4 A @ 14°C rise | 4 A @ 14°C rise |
| Bandwidth | Up to 40 GHz | > 40 GHz | > 40 GHz |

All data is subject to change without notice
CURRENT CARRYING CAPACITY
- Provides higher current at lower temperature rise as compared to spring probe (3 Amps) and competitive elastomeric solutions (< 2 Amps)
- Characterization data for 0.5 mm contact structure

CONTACT RESISTANCE
- 0.5 mm pitch

BANDWIDTH & FREQUENCY RESPONSE
- 0.5 mm pitch

EYE DIAGRAM
- 28 Gbps application
- EYE Pattern is similar between device tested in Silmat® Socket and soldered down environments
- Pattern: PRBS 2^29

MEASURED DATA
<table>
<thead>
<tr>
<th></th>
<th>Socketed</th>
<th>Soldered Down</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deterministic Jitter</td>
<td>3.58 ps</td>
<td>4.04 ps</td>
</tr>
<tr>
<td>Random Jitter</td>
<td>0.238 ps</td>
<td>0.234 ps</td>
</tr>
</tbody>
</table>
| Inter Symbol ...
| Rise Time (20%-80%) | 18.40 ps | 17.50 ps      |
| Fall Time (20%-80%) | 15.10 ps | 14.80 ps      |
| EYE Amperage         | 550 mV   | 571 mV        |
| Input Voltage        | 800 mVpp | 800 mVpp      |

Notes:
1) Lab measured data
All data is subject to change without notice
APPLICATIONS

DIGITAL HIGH SPEED

▸ Electrically transparent interconnect
  ▸ Enables system level and ATE testing to full speed

▸ More bandwidth available for other test hardware

▸ Minimal signal distortion
  ▸ Ensuring reliable measurement

▸ Enables clean power delivery

PACKAGE-ON-PACKAGE TOP

▸ Conformal contacts for recessed pads
  ▸ Accommodates device tolerance misalignment

▸ Provides soldered memory performance level while eliminating the memory soldering/desoldering operation

▸ Reduced cost of ownership
  ▸ Offers maximized equipment utilization
  ▸ Minimized labor requirement