DaVinci Series Test Sockets
High Speed Test

Impedance Controlled Coaxial Solution for High Speed Test
DaVinci Series Test Sockets
The Next Generation of High Speed Test Solutions

Smiths Interconnect’s DaVinci 56 Test Socket is a high performance coaxial socket developed for reliable IC testing up to 67 GHz Analog RF & 56 Gbps NRZ Digital.

Consumer demands for next generation technologies such as IoT, 5G, Artificial Intelligence (AI), Deep Learning, vehicle-to-vehicle communication and self-driving vehicles fuel a need for high speed data transfer and processing technologies. High reliability testing is essential for the higher speed, multi-function digital and analog devices driving these technologies.

DaVinci 56 is the next generation of Smiths Interconnect’s patented DaVinci technology which integrates spring probe technology and a proprietary insulated material resulting in a high speed solution that offers these benefits:

- Matched coaxial impedance.
- Spring probes with reduced test length for low power inductance, high current carrying capacity and low contact resistance.
- Reliable performance, simple in-house probe replacement and system maintenance.

Smiths Interconnect’s design team utilizes extensive system simulation models throughout product development to ensure an optimal solution for each test environment. We also perform design validation and RF measurements which exceed the industry’s stringent test requirements ensuring excellent out of the box performance and quick test system implementation.

End Product Markets
- Communication
- Computer
- Automobile
- Defense
- Industrial & Medical
- Game Consoles
- AI & Deep Learning
- Optical & Silicon Photonics
Value Proposition

DaVinci Technology

- Improved coaxial socket structure
- Proprietary insulated metal socket
- Spring probe simplicity
- Easily configurable
- Field maintainable

Superior Durability

- Entire signal path shielded
- Impervious to temperature and humidity fluctuations
- Extreme rigidity
- Very low deflection rate

Optimized Design

- Single-ended spring probe design for extended compliance
- Low contact resistance
- Reduced test height
- High current carrying capacity

Exceptional Performance

- High Speed: >67 GHz / 56 Gbps
- >3 Amp current carrying capacity
- Exceptional thermal properties with socket frame acting as a heat sink
## Technical Characteristics

<table>
<thead>
<tr>
<th></th>
<th>DaVinci 45G</th>
<th>DaVinci 56</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mechanical &amp; Environmental</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum Pitch</td>
<td>&gt;0.7mm</td>
<td>0.65mm</td>
</tr>
<tr>
<td></td>
<td>0.50mm</td>
<td>0.40mm</td>
</tr>
<tr>
<td>Compliance / Travel</td>
<td>0.50mm</td>
<td>0.40mm</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-55˚ to +120˚C</td>
<td>-55˚ to +120˚C</td>
</tr>
<tr>
<td>Life Span</td>
<td>&gt;200,000 cycles</td>
<td>200,000 cycles</td>
</tr>
<tr>
<td><strong>Electrical</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loop Inductance</td>
<td>0.2 nH</td>
<td>0.22 nH</td>
</tr>
<tr>
<td>Mutual Capacitance</td>
<td>0.15 pF</td>
<td>0.13 pF</td>
</tr>
<tr>
<td>Contact Resistance</td>
<td>80 mΩ</td>
<td>&lt;80 mΩ</td>
</tr>
<tr>
<td>Current Carrying Capacity</td>
<td>3.0 A</td>
<td>3.0 A</td>
</tr>
<tr>
<td>Bandwidth (-1dB)</td>
<td>45 GHz / 26 Gbps</td>
<td>67 GHz / 56 Gbps</td>
</tr>
</tbody>
</table>

* DaVinci 56 for 0.65 and 0.7 mm pitches under development

## IM Mechanical Performance

- Proprietary insulated IM Material exhibits least deflection as illustrated by below Max Deflection rates.

<table>
<thead>
<tr>
<th>Material Type</th>
<th>IM Material</th>
<th>Peak Ceramic</th>
<th>MDS-100</th>
</tr>
</thead>
<tbody>
<tr>
<td>DaVinci 45G 1745 pin BGA</td>
<td>0.009mm</td>
<td>0.085mm</td>
<td>0.046mm</td>
</tr>
<tr>
<td>DaVinci 56 4096 pin BGA</td>
<td>0.050mm</td>
<td>0.210mm</td>
<td>0.168mm</td>
</tr>
</tbody>
</table>
Bandwidth & Frequency Measured Data

DaVinci 45G Single Ended 0.8mm pitch probes - 8A Pattern (3x3 Array)

- Impedance 43 Ohm
- Linear Frequency 50 GHz

DaVinci 56 Single Ended 0.8mm pitch probes - 8A Pattern (3x3 Array)

- Impedance 43 Ohm
- Linear Frequency 67 GHz
Global Support

Americas
- Kansas City, KS
  +1 913 342 5544
  info.us@smithsinterconnect.com
- Milpitas, CA
  +1 408 957 9607 x-1125
  info.us@smithsinterconnect.com
- Kirkland, QC, Canada
  +1 514 842 5179
  info.us@smithsinterconnect.com
- Salisbury, MD
  +1 800 780 2169
  info.us@smithsinterconnect.com
- Tampa, FL
  +1 813 901 7200
  info.tampa@smithsinterconnectinc.com

Europe
- Deggendorf, Germany
  +49 991 250 120
  info.de@smithsinterconnect.com
- Dundee, UK
  +44 1382 427 200
  info.dundee@smithsinterconnect.com
- Genova, Italy
  +39 0 10 60361
  info.it@smithsinterconnect.com
- Rouen, France
  +33 2 3296 9176
  info.fr@smithsinterconnect.com

Asia
- Bangalore, India
  +91 080 4241 0529
  info.in@smithsinterconnect.com
- Mianyang, China
  +86 816 231 5566
  HSICSR@hf-smiths.com
- Suzhou, China
  +86 512 6273 1188
  info.asia@smithsinterconnect.com
- Shanghai, China
  +86 21 2283 8008
  info.asia@smithsinterconnect.com
- Singapore
  +65 6846 1655
  info.asia@smithsinterconnect.com

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