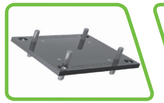
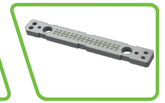
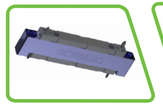
## CA™ Series | Connectors & Interposers

### Form Factors


Low-Profile Board-to-Board


Tight Pitch Compression Mount


Coaxial and Custom Patterned


Variable Height RF


Optical

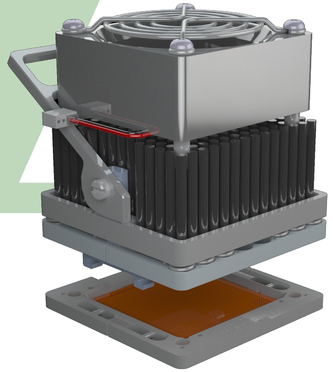
| Specifications | |
|---|---|
| Pitch | 0.4 mm and above (grid array) |
| Frequency | 56 Gbps+ |
| Insertion Loss | -1 dB at 40 GHz @ 1 mm pitch |
| Self-Inductance | .5 nH |
| Mated Height | 0.76 mmand above |

**AC characterization reports available upon request.**

## SK™ Series | High Frequency Sockets

Engineers involved in the design, test, and manufacture of high speed devices are generally focused on sockets that offer high performance at a reasonable cost. Ardent's patented solderless contact technology, which utilizes industry-leading alloys, makes for a cost-effective and electrically robust socket solution.

- Durable 40 GHz+ socket solutions offer low loss connection for high performing devices like FPGAs, ASICS, etc.
- Up to 70 x 70 mm package sizes
- Sockets can be easily mounted and de-mounted with a few screws encouraging re-use across board revisions



### Applications

SK Series Sockets are ideal for use in/with:

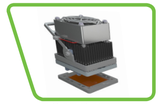
- › BGA/LGA/ASIC/FPGA
- › Optical Engines
- › "Butterfly" Gold Box Packages
- › Network Switches

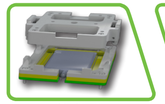


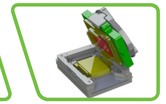


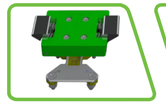
## SK™ Series | High Frequency Sockets

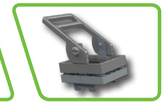
### Form Factors


BGA/LGA


Optical


Plunge to Board

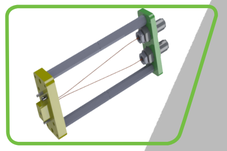

QFN/QFP/MEMS


Multiple Lid and Thermal Solutions Available

| Specifications | |
|---|---|
| Pitch | 0.4 mm and above |
| Insertion Loss | -1 dB at 40 GHz @ 1 mm pitch |
| Return Loss | -15dB at 37 GHz @ 1 mm pitch |
| Self-Inductance | 0.5 nH |

**AC characterization reports available upon request.**

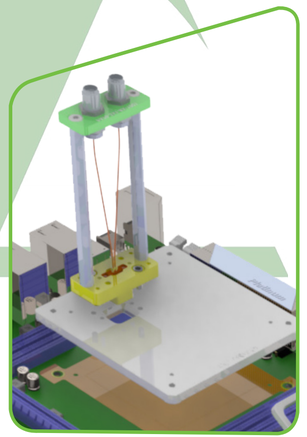
## ICFP™ Series | IC Footprint Probe



Ardent's ICFP offers 50 ohm access to IC contact pads and signal paths on an IC circuit footprint. This solution is a simple to use, cost effective and time saving alternative to expensive X-Y tables and fragile planar probes for engineers who may need to probe multiple signals at once. With ICFP, test engineers and reference design engineers can implement the shortest, fastest, compression mount connector technology on the planet to probe multiple signals simultaneously.

- 40 GHz+ IC footprint probing
- Less expensive and more robust than planar probes
- Quicker and easier probing through guided alignment
- No more breaking of fragile planar probes

| | |
|---|---|
| Pitch | 1.0mm or 0.8mm |
| Form Factor | Differential (G-S-S-G) |
| Connector Options | 2.92mm (SMK) Female (Jack) connectors |
| Calibration Options | Calibration Probe available to de-embed ICFP |
| Probe Support | PCB stiffener included |



### Applications

ICFP Series is ideal for use in/with:

- › Reference Design De-Bug
- › Reference Design Loss De-Embedding
- › Test Interface Characterization
- › Test Interface Troubleshooting
- › TDR Measurements
- › Probe Card Verification

Specifications subject to change without notice
US Patent Numbers 6,787,709, 6,909,056, 7,126,062, 7,556,503, 8,926,342.
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www.ardentconcepts.com

# ARDENT CONCEPTS

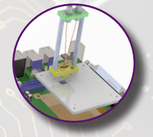
Signal Integrity is our Passion

# High Bandwidth | High Density Solderless Multicoax, Connectors, & Sockets


TR Multicoax Series™


CA Series™ - Connectors


SK Series™ - Sockets


ICFP Series™ - Probes

**For our full product portfolio, datasheets, additional resources, videos, case studies, and application notes please visit our website**

www.ardentconcepts.com

### More Information

For questions please contact us:
Phone: (603)474-1760
E-mail: info@ardentconcepts.com
Technical: support@ardentconcepts.com

Ardent Concepts Inc.
4 Merrill Industrial Drive
Hampton, NH 03842

# About Ardent Concepts

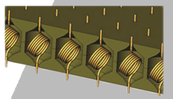
Ardent Concepts is a leading designer and manufacturer of high performance multicoax and coaxial assemblies, connectors, sockets, and probes, used in next generation semiconductor and electronics systems. Our core technology is the smallest, fastest, most electrically efficient compression mount connector technology worldwide. As data rate requirements increase and devices and systems shrink, Ardent's products deliver superior signal integrity in a dense footprint that can be reusable across programs to maximize cost savings.

# Patented Compliant Contacts

## Choose the Right Contact for Your Application

Spring Probe™

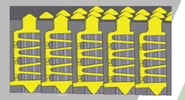
- Scalable solutions for connectors down to .4 mm Pitch
- Eliminates the barrel and the plunger from a traditional "pogo" style spring pin - Less mechanical components to fail
- Patented "wipe action" of the coils causes contact to behave like a solid element instead of behaving like an inductor. The result is exceptionally clean AC performance in an extremely short electrical path



| Specifications | |
|---|---|
| Pitch | 0.4 mm and above |
| Frequency | 70 GHz+ |
| Insertion Loss | -1 dB at 40 GHz @ 1 mm pitch |
| Self-Inductance | .5 nH |
| Mated Height | .76 mm and above |

Connect-R™

- Cost-Effective Automation Loaded Contacts
- High Performance
- Stamped Contact for Area Array Applications Down to .6mm Pitch



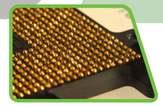
| Specifications | |
|---|---|
| Pitch | 0.8 mm and above (area), .6 mm and above (linear) |
| Frequency | 40 GHz+ (56 Gbps+) |
| Insertion Loss | -1 dB at 40 GHz @ 1 mm pitch |
| Self-Inductance | .5 nH |
| Mated Height | 1.57 mm |

## Our Products

TR Series Multicoax

- Superior signal integrity up to 70 GHz+
- Solderless system eliminates signal distortion for clean signal integrity
- 80% space savings over SMPs
- High density gets TR closer to the DUT
- Reusable across programs promotes exponential cost savings

CA Series Connectors

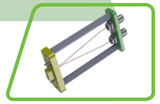


- 56 Gbps+
- Solderless compression mount system means no sunk cost solder-down components on board revisions
- Area array to 0.4mm pitch

SK Series Sockets

- Durable 40 GHz+ socket solutions offer low loss connection for high performing devices
- Up to 70 x 70 mm package sizes
- Sockets can be easily installed and removed with a few screws encouraging re-use across board revisions

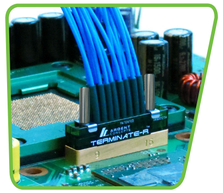
ICFP Series Probes



- 40 GHz+ IC footprint probing
- 50 Ω access to signal pads
- Area array to 0.8 mm
- Less expensive and more robust than planar probes
- Quicker and easier probing through guided alignment
- No more breaking of fragile planar probes

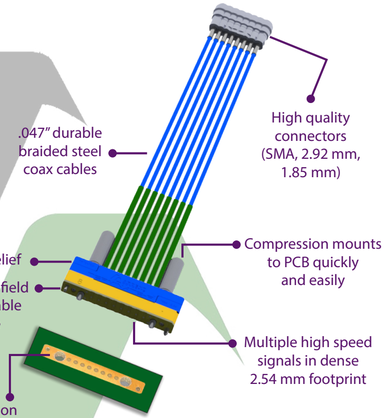
# Products


## TR™ Multicoax Series



TR Multicoax delivers superior signal integrity from multiple high speed analog or digital channels. TR is the highest density, high speed multicoax connector on the market. The interface is solderless which drives lower total cost of testing by eliminating costly solder-down components that can't be recovered, and encouraging reuse across programs.

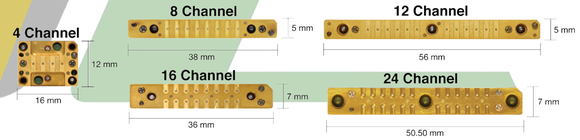
- Superior signal integrity up to 70 GHz+
- Solderless system eliminates signal distortion for clean signal integrity
- 80% space savings over surface mount connectors
- High density gets TR closer to the DUT
- Reusable across programs promotes exponential cost savings




### Applications

TR Multicoax connectors are ideal for use in:

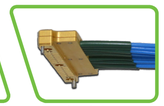
- › Semiconductor Design & Test
  - Customer Evaluation Boards
  - PCIe Gen 4 & 5
  - Pam4
  - High Speed SerDes
- › Automated Test & Measurement
- › Communications
  - Optical Device Characterization
  - Backplane Connector Characterization
- › Quantum Computing
  - Shielding Can Connector
  - Cryogenic Testing
- › Defense/Aerospace
- › Server/Data
- › Medical
- › Custom Applications




### Form Factors

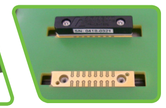
Straight Mount

Quick Latch



Right Angle

Blind Mate



Loopback (Tx/Rx)

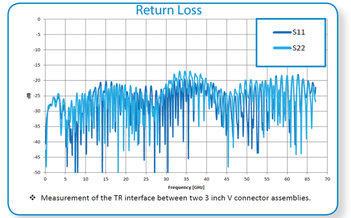
## TR™ Multicoax Series

### Specifications

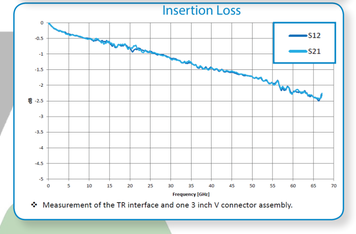
| Electrical Specifications | |
|---|---|
| Frequency Range | DC to 70 GHz+ |
| Return Loss[1] | -18 dB through 70 GHz |
| Insertion Loss[2] | -1.5 dB through 40 GHz, -3 dB through 70 GHz |
| Crosstalk | -70 dB through 70 GHz |
| Impedance[1] | 50 Ω +/- 2.5 Ω |
| Phase Matching | +/- 2 ps standard |

| Mechanical Specifications | |
|---|---|
| Pitch | 2.54 mm |
| Cables | .047" diameter cables[3] |
| Connectors | SMA, SMK (2.92 mm), or V (1.85 mm) |
| Cable Length | 6"/152 mm, 12"/304 mm, 24"/ 608 mm |
| Insertion Life | 1,000+ mating cycles |
| Field Replaceable Interface | Yes |
| Footprint | Microstrip & Stripline compatible |

Notes: [1]Largely a function of PCB design. [2]Measurement includes 3" of cable.
[3]Consult factory for additional cable options.

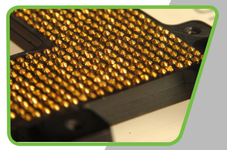



Measurement of the TR interface between two 3 inch V connector assemblies.



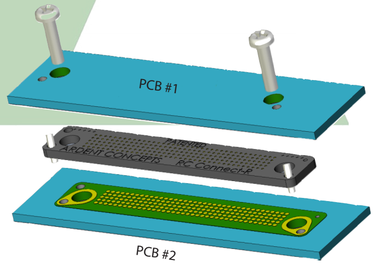

Measurement of the TR interface and one 3 inch V connector assembly.

## CA™ Series | Connectors & Interposers



Ardent's CA Series™ high performance 56 Gbps+ compression mount connectors & interposers offer exceptional signal integrity and high density for applications like high speed backplane, mezzanine, edge card, and optical at a 0.4 mm pitch in a pure vertical interface – no offset required. Reliable under extreme conditions CA Series™ connectors can stand up to the most demanding environmental factors. Custom configurations are available in a wide array of pitches, contact counts, stack heights, and orientations.

- 56 Gbps+
- Solderless compression mount system means no sunk cost solder-down components on board revisions
- Area array down to 0.4 mm pitch




### Applications

CA Series connectors are ideal for use in/with:

- › High Speed Mezzanines
- › Backplanes
- › Defense/Aerospace
- › Phased Array Radar
- › Probe Card Assemblies
- › Medical Devices



Specifications subject to change without notice
US Patent Numbers 6,787,709, 6,909,056, 7,126,062, 7,556,503, 8,926,342.
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