INTERCONNECT DEVICES, INC.

Semiconductor

smiths
bringing technology to life

High Performance Test Sockets

IDI provides a variety of high-performance test sockets and lids to meet virtually any lab, system level or ATE requirement for analog, power and logic devices.

All of our products share the same standard features such as best-in-class materials, field replaceable interconnects and unsurpassed quality in design and manufacturing. IDI test sockets and lids are custom designed and manufactured to meet your specific application.

We work closely with you to fully understand your needs. Our engineers time and time again have proven the ability to rapidly develop comprehensive solutions that far exceed your expectations and continually outperform other competitive products.

Synergetix Brand Test Sockets

Synergetix brand test sockets have utilized IDI's three piece probe design. This innovation allowed the base resistance to be dramatically reduced and more importantly, introduced a truly consistent spring probe design that is considered to be the industry standard.

IDI has continued our innovations throughout the years by introducing many new test socket designs in our Synergetix brand including the Dyno test socket for QFN devices, the Offset Kelvin Socket for 0.5mm QFN devices and Wafer Level CSP sockets.

Antares Brand Test Sockets

In 2009, IDI acquired the Antares brand test sockets. Antares has offered test socket solutions for over 25 years. Antares brand test sockets offer some of the most complex designs including PoP test sockets, impedance controlled test sockets, elastomer test sockets and thermal management solutions as well as conventional test sockets. The design process used for Antares and Synergetix brand test sockets, is automated from a computer aided design process that includes 3D electrical and mechanical modeling. Our engineers are well versed in mechanical and thermal FEA and signal integrity simulation.

IDI has Sales and Application Engineering support located throughout US, Asia and Europe, providing 24/7 service and support.

Semiconductor Table of Contents

Family Sockets

Applying standard designs to IDI sockets and lids allows for expedited design and delivery of our products. By utilizing design templates, socket and lid drawings for specific packages can be quickly completed and the components procured allowing for improved delivery cycles. Applying the IDI family standards will allow designs to have the same dimensioning features and overall look among multiple packages.

Peripheral Family Sockets

Peripheral family standard sockets include an alignment ring. Designing the socket with an alignment ring allows replacement of the alignment features without replacing the entire socket.

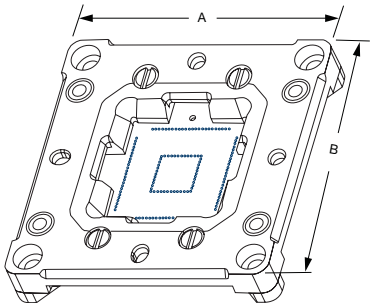
- Sockets are configurable with any portfolio spring pin, at any pitch.
- Socket frames are made from aluminium, thus eliminating or reducing the amount of bowing that occurs in high pin count socket applications.
- Sockets are designed with the maximum component clearance and are top mounted for easy removal. Bottom mount is available upon request.

Array Family Sockets

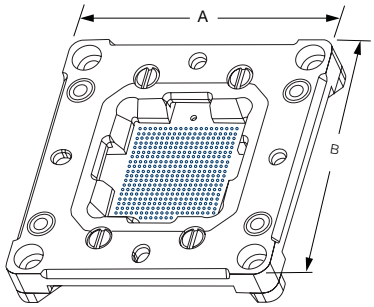
Array standard family sockets can be configured with either a floating base or non-floating base design.

- Sockets are configurable with any portfolio spring pin, at any pitch.
- Socket frames are made from aluminum, thus eliminating or reducing the amount of bowing that occurs in high pin count socket applications.
- Sockets are designed with maximum component clearance and are top mount for easy removal. Bottom mount is available upon request.

Peripheral Family Sockets



Array Family Sockets



Family Series - Device Side				
Family	Min	Max*	DIM A	DIM B
1	3mm	6mm	29.50 (1.16)	29.50 (1.16)
2	6mm	10mm	34.00 (1.34)	34.00 (1.34)
3	10mm	17mm	39.50 (1.55)	39.50 (1.55)

* not inclusive

Family Series - Device Side				
Family	Min	Max*	DIM A	DIM B
1	3mm	6mm	29.50 (1.16)	29.50 (1.16)
2	6mm	10mm	34.00 (1.34)	34.00 (1.34)
3	10mm	17mm	39.50 (1.55)	39.50 (1.55)
4	17mm	25mm	48.00 (1.89)	48.00 (1.89)
5	25mm	32mm	55.00 (2.16)	55.00 (2.16)
6	32mm	40mm	65.00 (2.56)	65.00 (2.56)
7	40mm	50mm	75.00 (2.95)	75.00 (2.95)

* not inclusive

Specifications subject to change without notice. Dimensions in millimeters (inches)

Family Lids and Footprints

IDI offers two styles of lids for our family sockets, clamping and clamshell. Each family socket has a footprint drawing available on-line for immediate download.

Family Socket Lids

- Lids are top mounted to allow more component clearance surrounding the socket.
- Top mounted lid frames include clearance holes, allowing the sockets to be installed and removed from the PCB without removing the lid.
- Standard lids are configurable, thus allowing the addition of heatsinks and fans to existing designs.
- Lids are adjustable to cover a wide range of package thicknesses.
- Lever is optional.

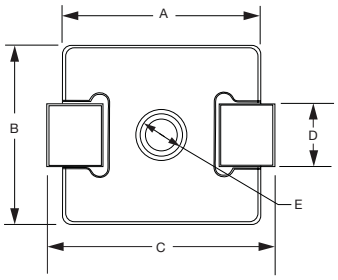
Family Socket Footprints

- Family socket footprints are available for download on our web site:

  www.idinet.com/arrayfp.aspx

  www.idinet.com/peripheralfp.aspx

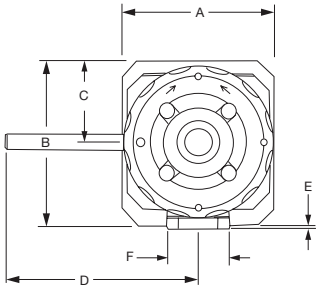
Clamping Family Lids



Clamping Family Lids				
Family	Min	Max*	DIM A	DIM B
1	3mm	6mm	33.00 (1.29)	29.50 (1.16)
2	6mm	10mm	37.50 (1.47)	34.00 (1.34)
3	10mm	17mm	43.00 (1.55)	39.50 (1.55)

* not inclusive

Clamshell Family Lids



Clamshell Family Lids				
Family	Min	Max*	DIM A	DIM B
1	3mm	6mm	29.50 (1.16)	32.80 (1.29)
2	6mm	10mm	34.00 (1.34)	37.30 (1.49)
3	10mm	17mm	39.50 (1.55)	42.80 (1.68)
4	17mm	25mm	48.00 (1.89)	51.85 (2.041)
5	25mm	32mm	55.00 (2.16)	59.35 (2.33)
6	32mm	40mm	65.00 (2.56)	69.00 (2.71)
7	40mm	50mm	75.00 (2.95)	79.00 (3.11)

* not inclusive

Specifications subject to change without notice. Dimensions in millimeters (inches)

Standard Sockets

IDI is the leading manufacturer of High Performance Test Sockets used for virtually any package and for wafer level CSP test. Socket designs utilize our IDI's proprietary spring probe and/or the patent pending Dyno™ contact technology. IDI test sockets are ideal for lead free device test and provides high cycle life, consistent contact resistance, and bandwidths greater than 10 GHz.

For over three decades, IDI has led the industry in innovation. This assures you that when you purchase an IDI test socket, you are using the most advanced interconnect available for semiconductor test. Our design approach is application specific to optimize the performance, reliability and cost effectiveness.

CSP, BGA and LGA Test Sockets

IDI's high performance CSP, BGA and LGA test sockets offer high bandwidths, consistently low resistance and low inductance for your high performance testing requirements. We employ spring probes and other alternate contact technologies in a fixed or a floating nest test socket design that best meets the requirements of your specific test application.

Package on Package Test Socket

Our PoP test sockets for years have been providing reliable solutions for both manual and automated testing of package-on-package (PoP) devices. The unique ability of our PoP test sockets to accurately and simultaneously align both the upper and lower device leads increases the versatility and lowers the cost of test.

Impedance Controlled Test Sockets

IDI brings new innovative solutions to IC testing using spring probes. Our high performance and impedance controlled test sockets have a true controlled impedance which achieves a high bandwidth performance (27GHz @ -1dB) that high speed applications and RF require.

Wafer Level CSP Test Interposers

IDI is changing the face of wafer level chip scale testing as more companies move towards bare die testing. Our interposers are being used in vertical probe test applications at a much lower cost, with a faster delivery cycle than the typical probe card solutions. IDI's interposers utilizes spring probe technology allowing for high cycle life, stable performance, reduced testing downtime and the ease of maintenance.

QFN Test Sockets

Dyno™

IDI's innovative new leadless device test solution is the patented Dyno Test Socket. The Dyno utilizes a monolithic contact that boasts of a mechanical life in excess of 500,000 cycles and requires minimal cleaning. The typical resistance is less than 20 mΩ against both matte tin and NiPdAu. There is minimal board scrubbing, yet a slight wiping action on the device side for penetration of any contaminants and oxides on the device. The Dyno footprint is compatible with most all competitive offset designs.

Multi-Site Test Sockets

Our Multi-Site test sockets include strip test sockets, wafer level test sockets and multiple position, singulated device test sockets. Our multi-site test sockets are available with interchangeable inserts and a large socket frame for the ultimate in adaptability.

QFN Kelvin Test Sockets

IDI's has developed an innovative and robust contact technology for making Kelvin contact to 0.5mm pitch QFNs. The contact uses a tip that is angled to one side and flat. Two such contacts placed in opposition will touch the pad within 0.125mm. The tip is offset making the probe diameter a robust 0.39mm which allows the load board pad pitch to remain at 0.5mm.

Standard Lids

For handler setup or hand test, a manual lid is often required as part of the test hardware set. We have refined our own standard offerings so that with each socket you can receive a lid that is designed for your specific application from one of five standard lid form factors.

The most basic function of a test socket lid is to provide mechanical stability that helps form a strong mechanical and electrical connection between the leads of the device under test and the test socket contacts.

Our design approach for lids is the same as our approach to sockets; application specific to optimize the performance, the reliability and the cost effectiveness.

In order to guarantee that the lid design meets your application requirements we offer a variety of options for our lids including:

- Multiple plunger configurations
- Spring loaded latches
- Thermal stream access holes
- Liquid heatsinks
- Passive heatsinks
- Heat dissipating fans

Clamshell Lid

Clamshell Lids are used primarily in manual test applications. These lids provide an easy-to-use solution for repetitive cycling. Our innovative controlled travel design permits virtually effortless actuation and adjusts to accommodate a wide range of device thicknesses.

The Clip-On Lid design has been given a new body to provide a user friendly solution while offering the same quick turn around, which is often a key requirement in handler setup hardware.

VCC Lid

The Vertical Compression Clamshell Lid (VCC), is a clamshell lid without secondary actuation. Numerous customers prefer the convenience of pushing the device into the pocket with a single actuation. The VCC's unique design offers natural linear compression of the device.

Failure Analysis One-Piece-Bolt-On Lid

One-Piece Bolt-On Lids are one of the most straightforward style of manual lid. When test times are long and the price is the primary driver, this can be the optimal solution.

Integral Lid

Integral Lid solutions are permanently attached to the socket and offer a more simplistic approach to low end test.

Clip-On Lid or Clamping Lid

The Clip-On Lid design has been given a new body to provide a user friendly solution while offering the same quick turn around, which is often a key requirement in handler setup hardware.

Dyno™ Test Sockets for QFN Devices

IDI's patented Dyno™ Test Sockets for QFN testing, has significant advantages over any competitive technology.

- Self-cleaning contact design
- The Dyno footprint is compatible with most all competitive offset designs.
- Unmatched reliability
- Fast delivery time

The Dyno™ Test Socket employs an innovative contact design that slightly wipes across the surface of the device lead during compression. This ensures low and consistent contact resistance and high first pass yields in even the harshest and most demanding applications.

Designed for Efficiency

The Dyno™ contact is a monolithic element which derives compliance to the load board from a simple elastomeric rod and device compliance from a painstakingly crafted contact bending effect. The Dyno boasts of a mechanical life in excess of 500,000 cycles and requires minimal cleaning with little fatigue.

Because the contact tip scrubs across the device lead with each compression, contaminants and tin oxides are wiped from both the lead and the contact surface, ensuring a low and consistent resistance and high yields throughout the contact's life. Minimal cleaning is required, and the user can expect the contact to deliver cycle after cycle with little attention.

The Endura Advantage

The Dyno contact is a beryllium copper shaped metal, contact featuring IDI's Endura plating. This proprietary plating provides a contact surface that is more resistant to debris build up in lead free device testing.

Dyno Contacts and Probes in a Single Socket

The Dyno contact is designed to be compatible with the Synergetix flagship, the 3-piece probe. The peripheral leads on the QFN can be tested with the Dyno contact and the ground pad in the center of the device can utilize our 101267 probe. Depending on package and ground pad site, Dyno contacts can be used on center ground pads as well.

A Long-Lasting Test Socket

The Dyno Test Socket requires a minimal amount of cleaning and has mechanical life of over 500,000 cycles. Its unique design provides a slight wiping action on the device to penetrate contaminants and oxides on the hard, lead-free surfaces. Because compliance to the load board is derived from the elastomer and isolated from the movement of the contact tip, board scrub is minimized and board pad life should be relatively infinite.

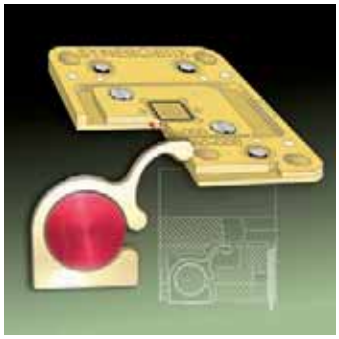
Easy Contact Replacement

With a cycle life well in excess of 500,000 insertions, the Dyno contact and silicone elastomer do not require frequent refurbishment. However, should the need arise both items are field replaceable with relative ease. The Dyno contacts can be individually replaced.

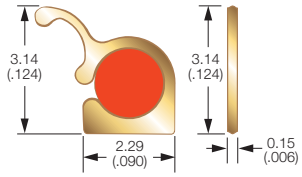
The Dyno Difference

Only IDI has the Dyno contact – a revolutionary breakthrough in High-Performance QFN testing.

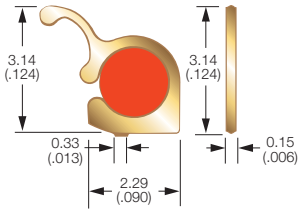
- Patented design
- Resistance < 20 mΩ against a matte-tin device
- Bandwidths > 10GHz @ -1dB on 0.50mm pitch
- Mechanical life >500,000 cycles
- Endura plating resists solder build-up
- Wiping action ensures good device contact with minimal board side scrub
- Requires minimal cleaning



0.4mm Dyno Contact



RP Dyno Contact



Specifications

Minimum Device Pitch: 0.40mm (.016)
Test Height: 2.92mm (.115)
Force per Contact:
42g (1.5 oz.) @ 0.38mm (.015) travel for RP
51g (1.8 oz.) @ 0.38mm (.015) travel
Device Compliance: 0.23mm (.009)
DUT Board Compliance: 0.15mm (.006)
Operating Temperature: -55˚C to 150˚C
Insertions: > 500,000

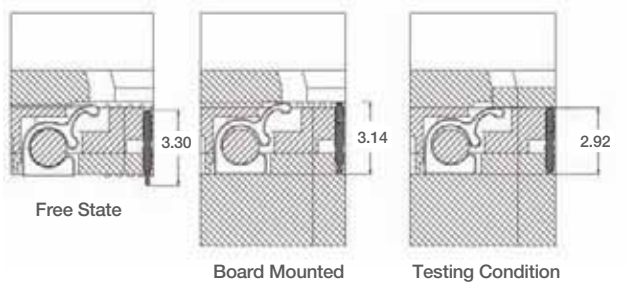
Materials

Contact: Full-hard beryllium copper, Endura plated
Insulator: Silicone

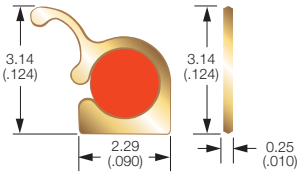
Electrical Specifications

Typical Resistance: < 20 mΩ
Current Carrying Capacity: 5 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R at 0.4mm pitch
Characteristic Impedance: 34 Ω
Time Delay: 37 pSec
Loop Inductance: 1.51 nH
Signal Pin to Return Capacitance: 0.90 pF
-1dB Insertion Loss Bandwidth: >10 GHz

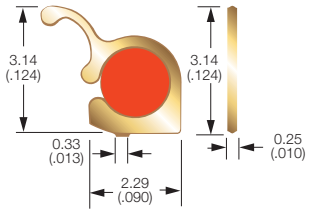
Testing Condition



0.5mm Dyno Contact



RP Dyno Contact



Specifications

Minimum Device Pitch: 0.50mm (.020)
Test Height: 2.92mm (.115)
Force per Contact:
52g (1.8 oz.) @ 0.38mm (.015) travel for RP
85g (3.0 oz.) @ 0.38mm (.015) travel
Device Compliance: 0.23mm (.009)
DUT Board Compliance: 0.15mm (.006)
Operating Temperature: -55˚C to 150˚C
Insertions: >500,000

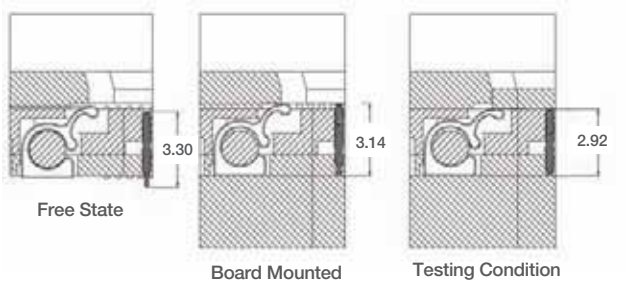
Materials

Contact: Full-hard beryllium copper, Endura plated
Insulator: Silicone

Electrical Specifications

Typical Resistance: < 20 mΩ
Current Carrying Capacity: 5 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R at 0.5mm pitch
Characteristic Impedance: 34 Ω
Time Delay: 48 pSec
Loop Inductance: 1.74 nH
Signal Pin to Return Capacitance: 1.34 pF
-1dB Insertion Loss Bandwidth: >10 GHz

Testing Condition



Specifications subject to change without notice. Dimensions in millimeters (inches)

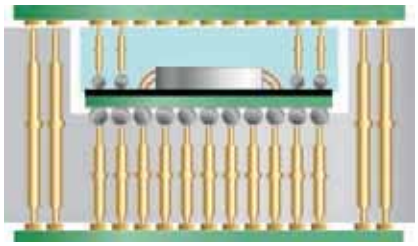
PoP Sockets

IDI's Antares brand PoP test sockets for years have been providing reliable solutions for both the manual and automated testing of package-on-package devices. Our PoP test sockets accurately and simultaneously align both the upper and lower device pads and leads which increases versatility and lowers the cost of test.

IDI Offers three distinct types of PoP sockets designs to meet your specific requirements.

Memory-Less

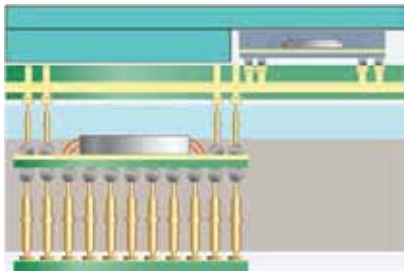
Memory-Less (ML) PoP Socket – top and bottom access to leads on devices with memory information supplied from the tester thru the socket assembly.



Memory-Less

Memory-Bearing

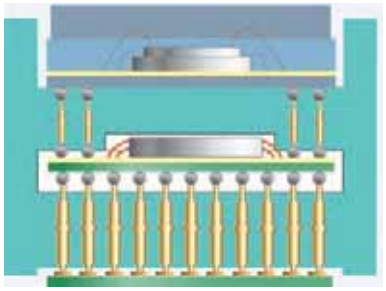
Memory-Bearing (MB) PoP Socket – top and bottom access to leads on devices with a known good memory device that is contained within the socket assembly providing a temporary connection to the PoP device test.



Memory-Bearing

Manual Test

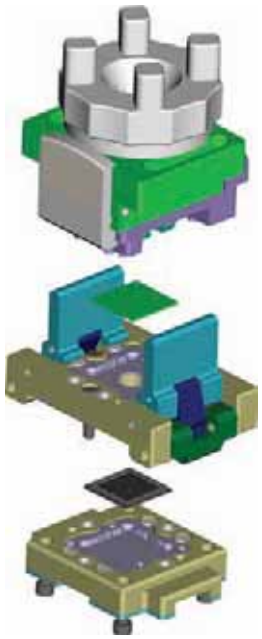
Manual Test (MT) PoP Socket – top and bottom access to leads on devices with a known good memory device contained within the lid assembly providing a temporary connection to the PoP device test.



Manual Test

PoP Test Sockets

- Proven design – over two years in the field
- Reliable alignment to the top and bottom leads
- Superior Signal Integrity to both packages
- Interface bandwidths to 10 GHz
- 0.40mm pitch & above – production ready solutions
- 0.25mm pitch – is in development



WLCSP Test Sockets

IDI's interposers are revolutionizing the testing of wafer-level chip scale packages (WLCSP) in vertical probing applications. Test engineers are realizing tremendous savings in cost of ownership as IDI delivers a highly reliable, easily maintained, and eminently capable solution for this rapidly emerging form of test.

Where engineers were previously required to use expensive and difficult to maintain vertical probing solutions, IDI interposers can:

- Be implemented at a fraction of the initial cost and lead time as compared to most traditional technologies.
- Produce a radical improvement in maintenance downtime and contact life.

Remarkably Low Cost of Ownership

IDI sockets for production test of packaged devices are well known for their extreme durability and ease of maintenance. Now, IDI brings this same degree of ease to the wafer probing level.

An IDI WLCSP interposer solution is typically less than 20% of the cost of a comparably effective vertical probing card.

IDI's WLSCP interposers have a low cost of ownership that begins with their initial cost. The interposer is a simple plastic assembly that contains IDI's proven semiconductor probe technology. This is combined with an easy-to-design and fabricated load board.

The savings continue as the WLSCP interposer is put into action. IDI's spring probe technology provides more than 300 microns travel, therefore allowing for easy probe set-up and forgiving performance cycle after cycle.

Fast Delivery Time

Delivery times are greatly reduced on the WLCSP interposers as well. IDI designs its interposers within a week and ships within three weeks – a fraction of the lead time that is associated with vertical probe card technologies.

A Long Lasting Interposer Solution

IDI WLCSP interposers run long and hard, with minimal attention required. They are easily maintained by the test technician with little tooling or training. Their resulting minimal downtime combined with their fractional initial investment equals a far lower cost of ownership than any other vertical probing solution available.

Effortless Cleaning & Maintenance

Recommended off-line cleaning techniques take only minutes, and in many cases the interposer may be left attached to the load board. Online cleaning can be done depending on the medium used. When contact replacement is required, it may be done at the test technician level with tools no more complex than tweezers and a screwdriver.

Modeling and Analysis

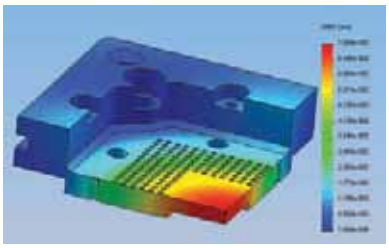
In more complex socket designs, it is often necessary to model the socket's performance to guarantee that the socket design is mechanically robust while delivering virtually transparent signal paths.

Structural Finite Element Analysis

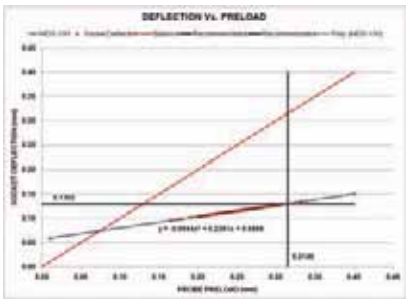
Determines the yield failure due to pin array and lid force, as well as socket deflection at the pin array.

Thermal FEA

Determines power dissipation from the package. Steady State Analysis is performed.



Spring Probe Travel Analysis



Preload – Level 1 - The Monte Carlo analysis verifies the spring probe is always in contact with the load board when mounted. This analysis assumes a constant socket deflection.

Preload – Level 2 - Analysis is typically required for higher pin count sockets. It uses variable socket deflection based on additional structural FEA.

Preload – Level 3 - This level adds a lid travel analysis.

Compression - Monte Carlo analysis optimizes spring life, contact life, CRES and force.

Post Preload Compression - Monte Carlo analysis checks for continuity and pin bottoming in socket.

Contactor Alignment Analysis

Alignment to Load Board - Analysis checks the dowel pin's size and position.

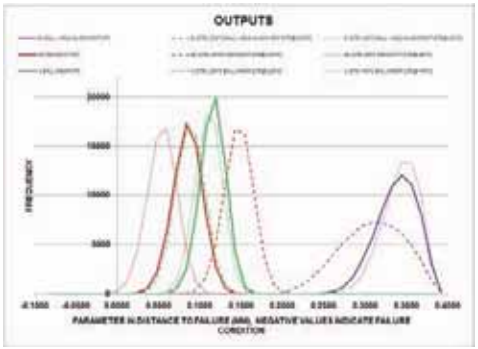
Spring Probe to Load Board - Monte Carlo analysis checks the probe contact to load board pad alignment.

DUT Into IC Pocket Fit - Analysis checks that the min/max package body against the IC pocket.

Spring Probe to DUT - Monte Carlo analysis method checks the DUT to top contact alignment.

Package Damage due to Misalignment - Monte Carlo analysis checks for ball or pin shear.

Alignment with CTE Considerations - Monte Carlo analysis checks the CTE of each material in the specific test temperature environment.



Lid Alignment - Platen to IC Pocket - Prevent damage to IC pocket walls. Heatsink to Die - Prevent die cracking

DUT/LID/Heatsink Travel - Analysis for DUT force balance. Force balancing for PoP systems - substrate and die. Prevents damage to package or die.

Handler Alignment - Handler placement and positional accuracy into IC pocket. Package theta rotational accuracy.

Spring Probe Pointing Accuracy - Prevents damage to spring probe tip and to the load board pads.

Socket Cleaning

IDI recommends cleaning sockets on either as needed or per cycle basis for regular maintenance.

Generally, the most effective cycle for cleaning of sockets can be determined by tracking test yields, and establishing a maintenance schedule based on when they begin to fall measurably below the acceptable performance level.

Acetone Cleaning Socket Mounted on Board

1. Visually inspect socket and probes for contamination, particles, scratches, etc.
2. Blow filtered air or inert gas on the surfaces to remove all loose particles of contaminations.
3. If contaminants still exist, apply the acetone to a soft bristle brush or soft pad to clean the surfaces. Blow filtered air or inert gas on socket and probe to remove solvent and any contaminants.
4. If contaminants are still present, the socket should be removed from the board to perform offline cleaning.

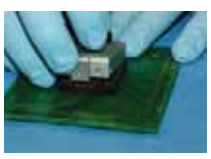
Acetone Cleaning - Socket Removed From Board

1. Dismantle the socket; remove the bottom retainer plate and all the probes from the socket.
2. Place socket parts in one glass beaker and probes in a separate glass beaker containing the acetone, IPA or methanol. All parts should be submersed in the liquid.
3. Place the glass beakers in the ultrasonic cleaner cleaning the parts for a minimum of 30 minutes.
4. Remove all the parts individually from the ultrasonic bath and place on a white absorbent paper.
5. Use a nylon hog hair or horse tail brush to remove any left over contaminants on the socket parts.
6. Place the socket and/or probes in a beaker or other oven suitable container; place in a pre-heated oven at 60°C for 30 minutes to dry all parts. (This process must be performed for IPA or methanol cleaned parts. Acetone cleaned parts must be dried with clean compressed air only (30psi); no oven drying).

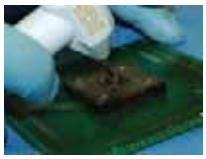
7. Reassemble socket.

IDI Cleaning Kits - Socket Removed From The Board

1. Remove socket and load board from the tester and place both on a clean work surface (do not remove socket from load board if possible).
2. If a floating nest is included in your socket's design, remove the nest and set it aside. Be sure to retain the springs which drive the floating nest.
3. If the socket is removed from the load board, you must compress the board-side tips of the probes. Use a flat instrument. This will cause the probe tips to project from the top surface of the socket, allowing for easier and more effective cleaning.
4. Trim the pre-saturated cleaning cloth with scissors to the size of the pocket and place in pocket; if the device is larger than the cloth, multiple cloths may be overlaid.
5. Place the sacrificial device in the pocket over the cloth and attach the lid to the socket.
6. Turn the socket lid handle to the test position and allow to soak. Longer soak times have proven to be the most effective; soak for a minimum of one minute. Longer soak times will not hurt the socket performance; the cleaning agent continues to remove solder and oxides as long as the cloth is in place.



7. If a socket lid is not available, cycle the device 10 times over the cloth. Allow the cloth to remain in place over the device for the recommended soak time, then cycle the device 10 more times.
8. After completion, remove the device and the cleaning cloth from the socket pocket. Discard cleaning cloth after each use.
9. Remove rotary tool from the kit and insert the nylon brush tip into the tool.
10. Approach the probe tips at a 30° angle with the rotary tool brush, and apply light pressure.
11. Actuate the rotary tool and work slowly across the probe tips in a sweeping manner working left to right (work in one direction only).



12. Rotate socket 90° and repeat.
13. Visually inspect probe tips to ensure tin removal. Repeat as necessary to loosen stubborn deposits.
14. The nylon hand brush tool may be used to remove any loose particles remaining on the socket.
15. Do not rinse the socket; the chemical left on the socket by the cloth is safe for the device and will help to limit any further contamination.

- Use safety goggles and latex gloves during the cleaning
- Preserve cleaning kit; rinse nylon brushes with isopropyl alcohol (IPA) after each cleaning. Allow IPA to evaporate from the brush bristles before using.
- Keep the saturated cleaning cloth in a closed package when not in use for maximum life.

Homogeneous Probes

IDI's spring test probe designs combine conductivity and rigidity to form a reliable electrical path with excellent force distribution and compliance. Mechanical probe tip designs can be varied at each end of the contact to provide the absolute best socket-to-package and socket-to-PCB interconnection.

Tips styles can also be designed for specific applications to optimize contact surface area while minimizing contact wear factors, as well as lead and solder ball deformation. Elements can be scaled and materials chosen to produce a contact that optimizes performance for high-speed signals, or for high or low power requirements. Scaling also allows the design and production of spring probes to meet high pin-count and tight pitch requirements.

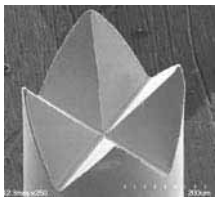
The homogeneous probe series features device contact tips made from custom developed solid precious metal alloy, usable without an additional plating process. This method of construction offers a more robust structure that is capable of withstanding the extreme cleaning techniques associated with the testing of SAC-105 BGA and NiPdAu QFN packages. Measured against typical contact materials, this alloy offers less wear than beryllium copper, increased hardness and superior electrical conductivity compared to carbon steel.

Homogeneous Probe Advantages

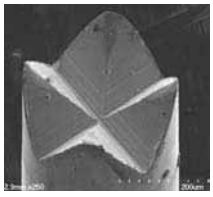
- In-Situ Cycle Life in excess of 800K
- Improved test yields - up to 80% increase in FPY vs. standard product
- Increased "uptime"
- Low and stable contact resistance
- Drop-in replacement for standard IDI – Antares & Synergetix probes
- Available for all pitches 0.4mm and higher

Characteristics

Material	Conductivity % IACS	Hardness HV
Beryllium Copper	25%	HV360
Carbon Steel	-9%	HV620
Homogeneous	15%	HV450



New Tip



Clean and Sharp
After 400K Cycles

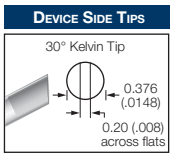
Semiconductor Probe Table of Contents

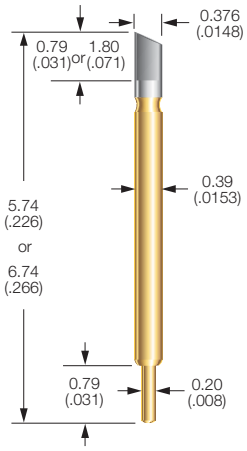
Specifications subject to change without notice. Dimensions in millimeters (inches)

Offset Kelvin Test Probes

101500 Kelvin Test Probe

Device Side Tips





Probe Specifications

Minimum Device Pitch: 0.50mm (.020)
Signal Path Length:
5.26mm (.207) for 101500-000
6.26mm (.247) for 101500-001
Spring Force per Contact: 35g (1.25 oz.)
@ 0.48mm (.019) travel
Device Compliance: 0.33mm (.013)
DUT Board Compliance: 0.15mm (.006)
Operating Temperature: -55˚C to 150˚C
Insertions: > 500,000

Materials

Barrel: Phosphorus Bronze, gold plated
Spring: Stainless steel, gold plated
Device Side Contact: Stainless steel, palladium cobalt plated
Board Side Plunger: Full-hard beryllium copper, gold plated

Electrical Specifications

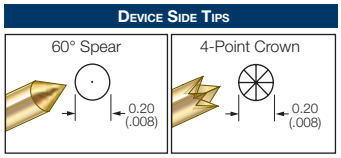
Typical Resistance: < 100 mΩ
Current Carrying Capacity: 3 amps continuous
(Current DC carry capability @ 80° C steady state)

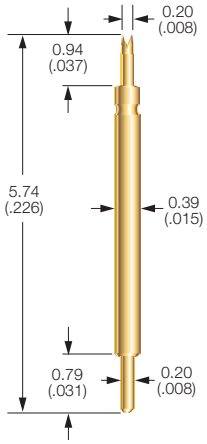
How to Order

Part No.	Overall Length
101500-000	5.74mm (.226)
101500-001	6.74mm (.266)

101245 Ground Probe

Device Side Tips





Probe Specifications

Minimum Device Pitch: 0.50mm (.020)
Signal Path Length: 5.26mm (.207)
Force per Contact: 35g (1.25 oz.)
@ 0.48mm (.019) travel
Device Compliance: 0.33mm (.013)
DUT Board Compliance: 0.15mm (.006)
Operating Temperature: -55°C to 150°C
Insertions: > 500,000

Materials

Barrel: Phosphorous bronze, gold plating
Spring: Stainless steel, gold plated
Device Side Contact: Full-hard beryllium copper, gold plated
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

Typical Resistance: < 50 mΩ
Current Carrying Capacity: 3 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 0.5mm pitch
Characteristic Impedance: 41 Ω
Time Delay: 28 pSec
Loop Inductance: 1.16 nH
Signal Pin to Return Capacitance: 0.68 pF
-1 dB Insertion Loss Bandwidth: > 14.6 GHz

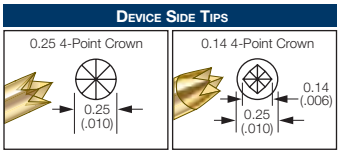
How to Order

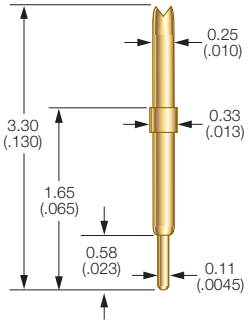
Part No.	Device Side Tip	PCB Side Tip
101245-000	0.20 4-pt. Crown	Radius
101245-001	Spear Tip	Radius

Specifications subject to change without notice. Dimensions in millimeters (inches)

Semiconductor Probes 0.40mm Pitch

101303 Probe





Probe Specifications

Minimum Device Pitch: 0.40mm (.016)
Signal Path Length: 2.92mm (.115)
Spring Force per Contact:
202 & 210 - 21.2g (0.75 oz.) @ 0.38mm (.015) travel
207 & 211 - 16.7g (0.59 oz.) @ 0.38mm (.015) travel
Device Compliance: 0.25mm (.010)
DUT Board Compliance: 0.15mm (.006)
Operating Temperature:
-55˚C to 150˚C for stainless steel spring
-55˚C to 120˚C for music wire spring
Insertions: > 500,000

Materials

Barrel: Beryllium copper, Endura plating
Spring: Stainless steel, gold plated - 17g spring;
Music wire, gold plated - 21g spring
Device Side Contact: Full-hard beryllium copper, gold plated
Board Side Contact: Full-hard beryllium copper, gold plated

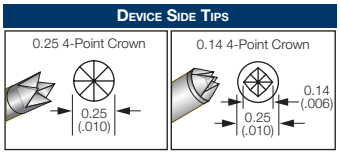
Electrical Specifications

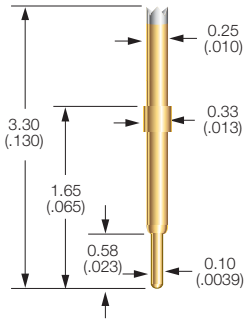
Typical Resistance: < 40 mΩ
Current Carrying Capacity: 3 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 0.4mm pitch
Characteristic Impedance: 54 Ω
Time Delay: 19 pSec
Loop Inductance: 1.02 nH
Signal Pin to Return Capacitance: 0.35 pF
-1 dB Insertion Loss Bandwidth: > 20 GHz

How to Order

Part No.	Device Side Tip	PCB Side Tip	Spring Force
101303-202	0.25 4-pt. Crown	Radius	21.2g
101303-207	0.25 4-pt. Crown	Radius	16.7g
101303-210	0.14 4-pt. Crown	Radius	21.2g
101303-211	0.14 4-pt. Crown	Radius	16.7g

101795 Probe





Probe Specifications

Minimum Device Pitch: 0.40mm (.016)
Signal Path Length: 2.92mm (.115)
Force per Contact: 21g (0.74 oz.) @ 0.38mm (.015) travel
Device Compliance: 0.25mm (.010)
DUT Board Compliance: 0.15mm (.006)
Operating Temperature: -55°C to 120°C
Insertions: > 500,000

Materials

Barrel: Brass, gold plating
Spring: Music wire, gold plated
Device Side Contact: Homogeneous alloy
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

Typical Resistance: < 50 mΩ
Current Carrying Capacity: 3 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 0.4mm pitch
Characteristic Impedance: 54 Ω
Time Delay: 19 pSec
Loop Inductance: 1.02 nH
Signal Pin to Return Capacitance: 0.35 pF
-1 dB Insertion Loss Bandwidth: > 20 GHz

How to Order

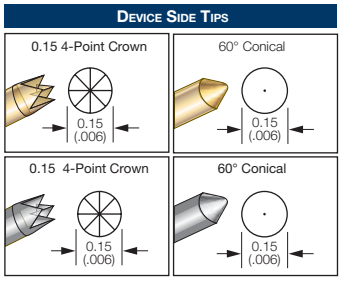
Part No.	Device Side Tip	PCB Side Tip	Spring Force
101795-H2	0.25 4-pt. Crown	Radius	21g
101795-H10	0.14 4-pt. Crown	Radius	21g

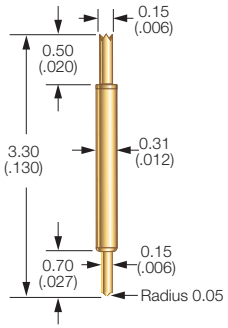
Prolonged exposure of greater than one hour reduces the maximum operating temperature of music wire springs to 85°C.

Specifications subject to change without notice. Dimensions in millimeters (inches)

0.40mm Pitch Semiconductor Probes

623-0286 Probe





Probe Specifications

Minimum Device Pitch: 0.40mm (.016)
Signal Path Length: 2.80mm (.110)
Force per Contact: 19.2g (0.68 oz.) @ 0.50mm (.020) travel
Device Compliance: 0.30mm (.012)
DUT Board Compliance: 0.20mm (.008)
Operating Temperature: -55°C to 120°C
Insertions: > 500,000

Materials

Barrel: Phosphorous bronze, gold plating
Spring: Music wire, gold plated
Device Side Contact: Carbon steel, gold plated or Homogeneous alloy
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

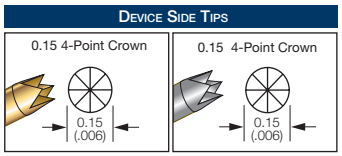
Typical Resistance: < 60 mΩ
Current Carrying Capacity: 2.5 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 0.4mm pitch
Characteristic Impedance: 49 Ω
Time Delay: 20 pSec
Loop Inductance: 0.98 nH
Signal Pin to Return Capacitance: 0.41 pF
-1 dB Insertion Loss Bandwidth: > 17.5 GHz

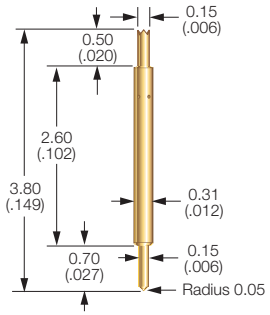
How to Order

Part No.	Device Side Tip	PCB Side Tip	Spring Force
623-0286-02	0.15 4-pt. Crown	Conical	19.2g
623-0286-03	Conical	Conical	19.2g
623-0286-H2	0.15 4-pt. Crown	Conical	19.2g
623-0286-H3	Conical	Conical	19.2g

H2 & H3 have the homogeneous alloy on the device side of the contact.

623-0334 Probe





Probe Specifications

Minimum Device Pitch: 0.40mm (.016)
Signal Path Length: 3.30mm (.130)
Force per Contact: 25g (.88 oz.) @ 0.50mm (.020) travel
Device Compliance: 0.30mm (.012)
DUT Board Compliance: 0.20mm (.008)
Operating Temperature: -55°C to 120°C
Insertions: > 500,000

Materials

Barrel: Phosphorous bronze, gold plating
Spring: Music wire, gold plated
Device Side Contact: Carbon steel, gold plated or Homogeneous alloy
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

Typical Resistance: < 60 mΩ
Current Carrying Capacity: 3 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 0.4mm pitch
Characteristic Impedance: 47 Ω
Time Delay: 22 pSec
Loop Inductance: 1.01 nH
Signal Pin to Return Capacitance: 0.46 pF
-1 dB Insertion Loss Bandwidth: > 15.4 GHz

How to Order

Part No.	Device Side Tip	PCB Side Tip	Spring Force
623-0334-01	0.15 4-pt. Crown	Conical	25g
623-0334-H1	0.15 4-pt. Crown	Conical	25g

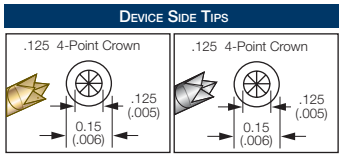
H1 has the homogeneous alloy on the device side of the contact.

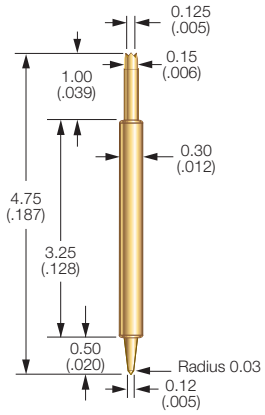
Prolonged exposure of greater than one hour reduces the maximum operating temperature of music wire springs to 85°C.

Specifications subject to change without notice. Dimensions in millimeters (inches)

Semiconductor Probes 0.40mm Pitch

200-000940 Probe





Probe Specifications

Minimum Device Pitch: 0.40mm (.016)
Signal Path Length: 4.05mm (.160)
Force per Contact: 26g (0.92 oz.) @ 0.70mm (.027) travel
Device Compliance: 0.50mm (.020)
DUT Board Compliance: 0.20mm (.008)
Operating Temperature: -55°C to 120°C
Insertions: > 500,000

Materials

Barrel: Phosphorous bronze, gold plating
Spring: Music wire, gold plated
Device Side Contact: Full-hard beryllium copper, gold plated or Homogeneous alloy
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

Typical Resistance: < 80 mΩ
Current Carrying Capacity: 1.5 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 0.4mm pitch
Characteristic Impedance: 44 Ω
Time Delay: 21 pSec
Loop Inductance: 0.95 nH
Signal Pin to Return Capacitance: 0.48 pF
-1 dB Insertion Loss Bandwidth: > 20 GHz

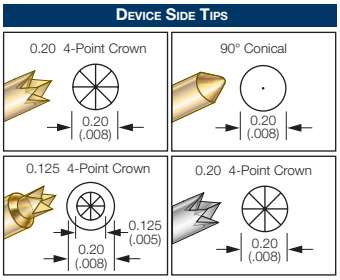
How to Order

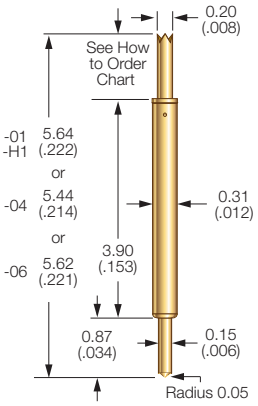
Part No.	Device Side Tip	PCB Side Tip	Spring Force
200-000940-001	0.125 4-pt. Crown	Conical	26g
200-000940-H1	0.125 4-pt. Crown	Conical	26g

H1 has the homogeneous alloy on the device side of the contact.

Prolonged exposure of greater than one hour reduces the maximum operating temperature of music wire springs to 85°C.

623-0248 Probe





Probe Specifications

Minimum Device Pitch: 0.40mm (.016)
Signal Path Length:
01 & H1- 5.04mm (.198)
04 - 4.84mm (.190)
06 - 5.02mm (.198)
Force per Contact: 25g (.88 oz.) @ 0.60mm (.024) travel
Device Compliance: 0.40mm (.016)
DUT Board Compliance: 0.20mm (.008)
Operating Temperature: -55°C to 120°C
(Higher operating temperature probes available, consult factory)
Insertions: > 500,000

Materials

Barrel: Brass, gold plated
Spring: Music wire, gold plated
Device Side Contact:
01 & 06 Full-hard beryllium copper, gold plated
04 Carbon steel, gold plated
H1 Homogeneous alloy
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

Typical Resistance:
01 & H1 < 60 mΩ
04 & 06 < 50 mΩ
Current Carrying Capacity: 3 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 0.4mm pitch
Characteristic Impedance: 46 Ω
Time Delay: 30 pSec
Loop Inductance: 1.38 nH
Signal Pin to Return Capacitance: 0.67 pF
-1 dB Insertion Loss Bandwidth: > 13.2 GHz

How to Order

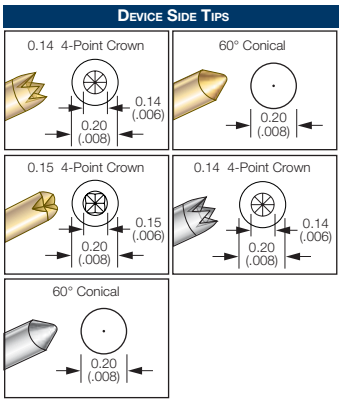
Part No.	Device Side Tip	Plunger Length	PCB Side Tip
623-0248-01	0.20 4-pt. Crown	0.87mm (.034)	Conical
623-0248-04	Conical	0.67mm (.026)	Conical
623-0248-06	0.125 4-pt. Crown	0.85mm (.033)	Conical
623-0248-H1	0.20 4-pt. Crown	0.87 mm(.034)	Conical

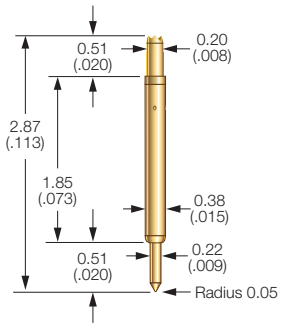
H1 has the homogeneous alloy on the device side of the contact.

Specifications subject to change without notice. Dimensions in millimeters (inches)

0.50mm Pitch Semiconductor Probes

623-0249 Probe





Probe Specifications

Minimum Device Pitch: 0.50mm (.020)
Signal Path Length: 2.49mm (.098)
Force per Contact: 25g (.88 oz.) @ 0.38mm (.015) travel
Device Compliance: 0.23mm (.009)
DUT Board Compliance: 0.15mm (.006)
Operating Temperature: -55°C to 120°C
Insertions: > 500,000

Materials

Barrel: Phosphorous bronze, gold plating
Spring: Music wire, gold plated
Device Side Contact:
01 & 03 Full-hard beryllium copper, gold plated
02 Carbon steel, gold plated
H1 & H2 Homogeneous alloy
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

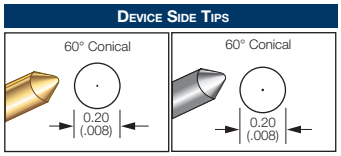
Typical Resistance: < 50 mΩ
Current Carrying Capacity: 3.5 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 0.5mm pitch
Characteristic Impedance: 50 Ω
Time Delay: 18 pSec
Loop Inductance: 0.89 nH
Signal Pin to Return Capacitance: 0.36 pF
-1 dB Insertion Loss Bandwidth: > 20 GHz

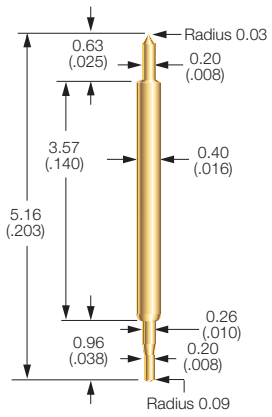
How to Order

Part No.	Device Side Tip	PCB Side Tip	Spring Force
623-0249-01	0.14 4-pt Crown	Conical	25g
623-0249-02	Conical	Conical	25g
623-0249-03	0.15 4-pt Crown	Conical	25g
623-0249-H1	0.14 4-pt Crown	Conical	25g
623-0249-H2	Conical	Conical	25g

H1 & H2 have the homogeneous alloy on the device side of the contact.

623-0290 Probe





Probe Specifications

Minimum Device Pitch: 0.50mm (.020)
Signal Path Length: 4.56mm (.180)
Force per Contact: 40g (1.4oz.) @ 0.60mm (.024) travel
Device Compliance: 0.45mm (.018)
DUT Board Compliance: 0.15mm (.006)
Operating Temperature: -55°C to 120°C
(Higher operating temperature probes available, consult factory)
Insertions: > 500,000

Materials

Barrel: Phosphorous bronze, gold plated
Spring: Music wire, gold plated
Device Side Contact: Carbon steel, gold plated or Homogeneous alloy
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

Typical Resistance: 01: < 50 mΩ & H1: < 40 mΩ
Current Carrying Capacity: 3.5 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 0.5mm pitch
Characteristic Impedance: 38 Ω
Time Delay: 32 pSec
Loop Inductance: 1.19 nH
Signal Pin to Return Capacitance: 0.82 pF
-1 dB Insertion Loss Bandwidth: > 9.6 GHz

How to Order

Part No.	Device Side Tip	PCB Side Tip	Spring Force
623-0290-01	Conical	Radius	40g
623-0290-H1	Conical	Radius	40g

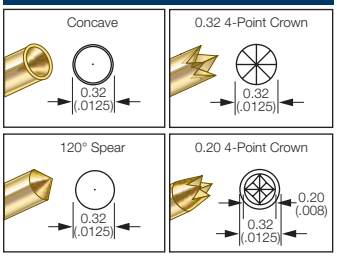
H1 has the homogeneous alloy on the device side of the contact.
Prolonged exposure of greater than one hour reduces the maximum operating temperature of music wire springs to 85°C.

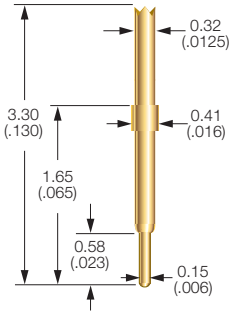
Specifications subject to change without notice. Dimensions in millimeters (inches)

Semiconductor Probes 0.50mm Pitch

101267 Probe

Device Side Tips





Probe Specifications

Minimum Device Pitch: 0.50mm (.020)
Signal Path Length: 2.92mm (.115)
Force per Contact: 24g (0.86 oz.), 27g (.94 oz.), 31.1g (1.10 oz.) or 37g (1.30 oz.) @ 0.38mm (.015) travel
Device Compliance: 0.23mm (.009)
DUT Board Compliance: 0.15mm (.006)
Operating Temperature:
-55°C to 150°C for stainless steel spring
-55°C to 120°C for music wire spring
Insertions: > 500,000

Materials

Barrel: Full-hard beryllium copper, Endura plating
Spring:
Stainless steel, gold plated – 24g & 27g spring
Music wire, gold plated – 32g & 37g spring
Device Side Contact: Full-hard beryllium copper, gold plated
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

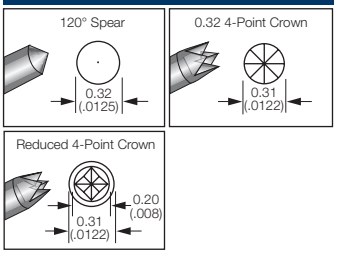
Typical Resistance: < 40 mΩ
Current Carrying Capacity: 3.5 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 0.5mm pitch
Characteristic Impedance: 61 Ω
Time Delay: 18 pSec
Loop Inductance: 1.12 nH
Signal Pin to Return Capacitance: 0.30 pF
-1 dB Insertion Loss Bandwidth: > 20 GHz

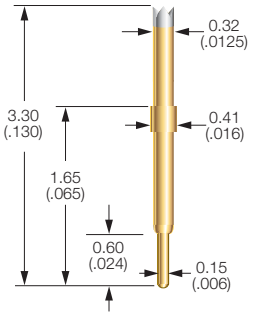
How to Order

Part No.	Device Side Tip	PCB Side Tip	Spring Force
101267-200	Concave	Radius	24g
101267-202	0.32 4-pt. Crown	Radius	24g
101267-203	120° Spear	Radius	24g
101267-206	0.32 4-pt. Crown	Radius	31.1g
101267-208	0.20 4-pt. Crown	Radius	37g
101267-209	0.20 4-pt. Crown	Radius	27g

623-0326 Probe

Device Side Tips





Probe Specifications

Minimum Device Pitch: 0.50mm (.020)
Signal Path Length: 2.9mm (.114)
Force per Contact: 25.3g (0.89 oz.) or 30g (1.06 oz.) @ 0.38mm (.015) travel
Device Compliance: 0.23mm (.009)
DUT Board Compliance: 0.15mm (.006)
Operating Temperature:
-55°C to 150°C for stainless steel spring
-55°C to 120°C for music wire spring
Insertions: > 500,000

Materials

Barrel: Phosphorous bronze, gold plating
Spring:
Stainless steel, gold plated – 25.3g spring
Music wire, gold plated – 30g spring
Device Side Contact: Homogeneous alloy
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

Typical Resistance: < 55 mΩ
Current Carrying Capacity: 3.5 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 0.5mm pitch
Characteristic Impedance: 61 Ω
Time Delay: 18 pSec
Loop Inductance: 1.12 nH
Signal Pin to Return Capacitance: 0.30 pF
-1 dB Insertion Loss Bandwidth: > 20 GHz

How to Order

Part No.	Device Side Tip	PCB Side Tip	Spring Force
623-0326-H3	120° Spear	Radius	25.3g
623-0326-H6	0.32 4-pt. Crown	Radius	25.3g
623-0326-H9	0.20 4-pt. Crown	Radius	30g

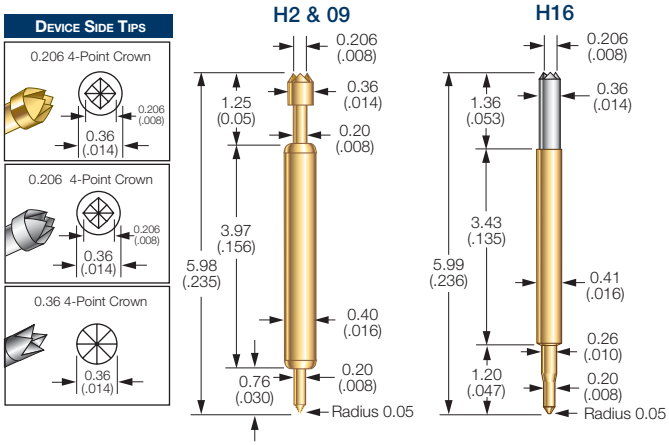
H3, H6 & H9 has the homogeneous alloy on the device side of the contact.

Prolonged exposure of greater than one hour reduces the maximum operating temperature of music wire springs to 85°C.

Specifications subject to change without notice. Dimensions in millimeters (inches)

0.50mm & 0.65mm Pitch Semiconductor Probes

623-0047 Probe



Probe Specifications

Minimum Device Pitch: 0.50mm (.020)
Signal Path Length: 5.28mm (.208)
Force per Contact:
09 - 32g (1.1 oz.) @ 0.70mm (.028) travel
H2 - 22g (0.78 oz.), @ 0.70mm (.028) travel
H16 - 35g (1.24 oz.) @ 0.70mm (.028) travel
Device Compliance: 0.40mm (.016)
DUT Board Compliance: 0.30mm (.012)
Operating Temperature:
-55°C to 150°C for stainless steel spring
-55°C to 120°C for music wire spring
(Higher operating temperature probes available, consult factory)
Insertions: > 500,000

Materials

Barrel: Phosphorous bronze, gold plating
Spring:
09 & H2 - Stainless steel, gold plated
H16 - Music wire, gold plated
Device Side Contact: Full-hard beryllium copper, gold plated or Homogeneous alloy
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

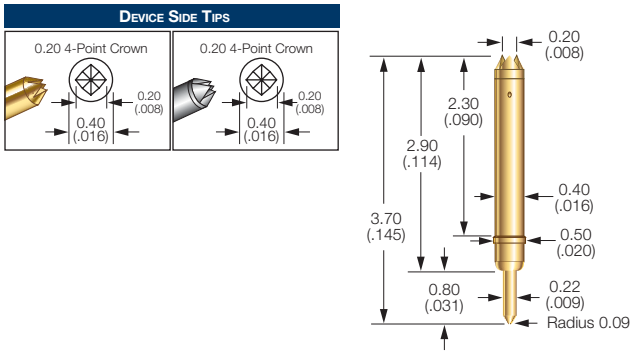
Typical Resistance: H2 & H9 < 45 mΩ; H16 < 50 mΩ
Current Carrying Capacity: 2.2 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 0.65mm pitch
Characteristic Impedance: 50 Ω
Time Delay: 31 pSec
Loop Inductance: 1.56 nH
Signal Pin to Return Capacitance: 0.62 pF
-1 dB Insertion Loss Bandwidth: > 20 GHz

How to Order

Part No.	Device Side Tip	PCB Side Tip
623-0047-09	0.206 4-pt Crown	Conical
623-0047-H2	0.36 4-pt Crown	Conical
623-0047-H16	0.206 4-pt Crown	Conical

H2 & H16 has the homogeneous alloy on the device side of the contact.

623-0303 Probe



Probe Specifications

Minimum Device Pitch: 0.65mm (.026)
Signal Path Length: 3.10mm (.122)
Force per Contact: 30g (1.06 oz.) @ 0.60mm (.024) travel
Device Compliance: 0.40mm (.016)
DUT Board Compliance: 0.20mm (.008)
Operating Temperature: -55°C to 120°C
(Higher operating temperature probes available, consult factory)
Insertions: > 500,000

Materials

Barrel: Phosphorous bronze, gold plating
Spring: Music wire, gold plated
Device Side Contact: Carbon steel, gold plated or Homogeneous alloy
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

Typical Resistance: < 40 mΩ
Current Carrying Capacity: 3 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 0.65mm pitch
Characteristic Impedance: 49 Ω
Time Delay: 17 pSec
Loop Inductance: 0.85 nH
Signal Pin to Return Capacitance: 0.35 pF
-1 dB Insertion Loss Bandwidth: > 20 GHz

How to Order

Part No.	Device Side Tip	PCB Side Tip
623-0303-01	0.20 4-pt. Crown	Conical
623-0303-H1	0.20 4-pt. Crown	Conical

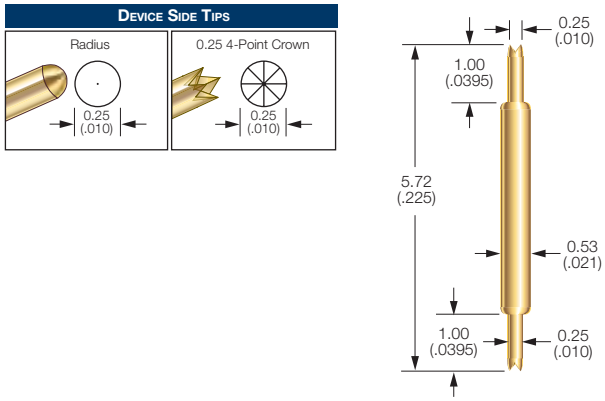
H1 has the homogeneous alloy on the device side of the contact.

Prolonged exposure of greater than one hour reduces the maximum operating temperature of music wire springs to 85°C.

Specifications subject to change without notice. Dimensions in millimeters (inches)

Semiconductor Probes 0.65mm & 0.80mm Pitch

100938 Probe



Probe Specifications

Minimum Device Pitch: 0.65mm (.026)
Signal Path Length: 4.75mm (.187)
Force per Contact: 31g (1.1oz.) @ 0.97mm (.038) travel
Device Compliance: 0.48mm (.019)
DUT Board Compliance: 0.48mm (.019)
Operating Temperature: -55°C to 150°C
Insertions: > 500,000

Materials

Barrel: Nickel/silver, gold plated
Spring: Stainless steel, gold plated
Device Side Contact: Full-hard beryllium copper, gold plated
Board Side Contact: Full-hard beryllium copper, gold plated

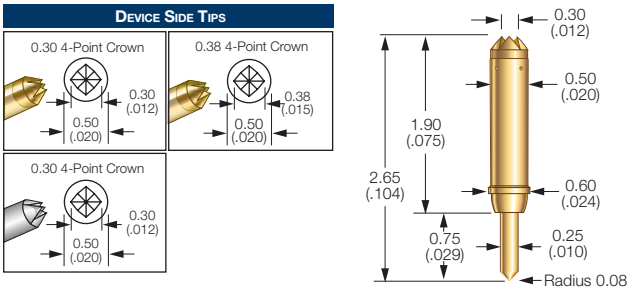
Electrical Specifications

Typical Resistance: < 70 mΩ
Current Carrying Capacity: 3 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 0.65mm pitch
Characteristic Impedance: 50 Ω
Time Delay: 31 pSec
Loop Inductance: 1.46 nH @ 0.75mm pitch
Signal Pin to Return Capacitance: 0.10 pF
-1 dB Insertion Loss Bandwidth: > 2.4 GHz

How to Order

Part No.	Device Side Tip	PCB Side Tip
100938-001	0.25 4-pt Crown	0.25 4-pt Crown
100938-014	0.25 4-pt Crown	Radius
100938-016	Radius	Radius

623-0270 Probe



Probe Specifications

Minimum Device Pitch: 0.80mm (.031)
Signal Path Length: 2.15mm (0.085)
Force per Contact: 27.5g (0.97 oz.) @ 0.50mm (.020) travel
Device Compliance: 0.30mm (.012)
DUT Board Compliance: 0.20mm (.008)
Operating Temperature: -55°C to 120°C
(Higher operating temperature probes available, consult factory)
Insertions: > 500,000

Materials

Barrel: Phosphorous bronze, gold plating
Spring: Music Wire, gold plated
Device Side Contact:
01 & 03 Carbon steel, gold plated
H1 Homogeneous alloy
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

Typical Resistance: < 40 mΩ
Current Carrying Capacity: 3 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 0.8mm pitch
Characteristic Impedance: 44 Ω
Time Delay: 14 pSec
Loop Inductance: 0.59 nH
Signal Pin to Return Capacitance: 0.31 pF
-1 dB Insertion Loss Bandwidth: > 20 GHz

How to Order

Part No.	Device Side Tip	PCB Side Tip
623-0270-01	0.30 4-pt. Crown	Conical
623-0270-03	0.38 4-pt. Crown	Conical
623-0270-H1	0.30 4-pt. Crown	Conical

H1 has the homogeneous alloy on the device side of the contact.

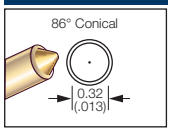
Prolonged exposure of greater than one hour reduces the maximum operating temperature of music wire springs to 85°C.

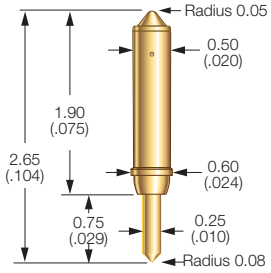
Specifications subject to change without notice. Dimensions in millimeters (inches)

0.80mm Pitch Semiconductor Probes

623-0271 Probe

Device Side Tips





Probe Specifications

Minimum Device Pitch: 0.80mm (.031)
Signal Path Length: 2.15mm (0.085)
Force per Contact: 27.5g (0.97 oz.) @ 0.50mm (.020) travel
Device Compliance: 0.30mm (.012)
DUT Board Compliance: 0.20mm (.008)
Operating Temperature: -55°C to 120°C
Insertions: > 500,000

Materials

Barrel: Phosphorous bronze, gold plating
Spring: Music wire, gold plated
Device Side Contact: Carbon steel, gold plated
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

Typical Resistance: < 40 mΩ
Current Carrying Capacity: 3 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 1.0 mm pitch
Characteristic Impedance: 54 Ω
Time Delay: 13 pSec
Loop Inductance: 0.72 nH
Signal Pin to Return Capacitance: 0.25 pF
-1 dB Insertion Loss Bandwidth: > 20 GHz

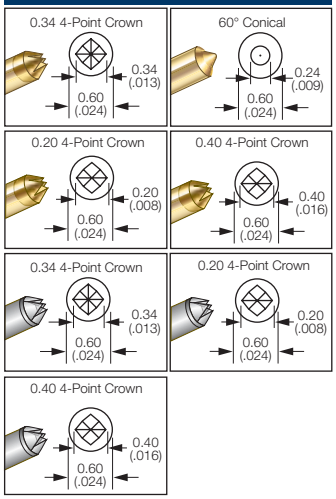
How to Order

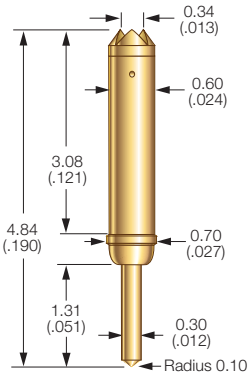
Part No.	Device Side Tip	PCB Side Tip
623-0271-01	Conical	Conical

Prolonged exposure of greater than one hour reduces the maximum operating temperature of music wire springs to 85°C.

623-0195 Probe

Device Side Tips





Probe Specifications

Minimum Device Pitch: 0.80mm (.031)
Signal Path Length: 4.04mm (.159)
Force per Contact: 33.4g (1.18 oz.) @ 0.80mm (.031) travel
Device Compliance: 0.50mm (.020)
DUT Board Compliance: 0.30mm (.012)
Operating Temperature: -55°C to 120°C
(Higher operating temperature probes available, consult factory)
Insertions: > 500,000

Materials

Barrel: Phosphorous bronze, gold plating
Spring: Music wire, gold plated
Device Side Contact:
02 & 03 Carbon steel, gold plated
08 & 09 Full-hard beryllium copper, gold plated
H2, H8, & H9 Homogeneous alloy
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

Typical Resistance: 03 < 35 mΩ;
02, 08, 09, H2, H8, & H9 < 50 mΩ
Carrying Capacity: 3 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 0.8mm pitch
Characteristic Impedance: 37 Ω
Time Delay: 23 pSec
Loop Inductance: 0.86 nH
Signal Pin to Return Capacitance: 0.62 pF
-1 dB Insertion Loss Bandwidth: > 20 GHz

How to Order

Part No.	Device Side Tip	PCB Side Tip
623-0195-02	0.34 4-pt. Crown	Conical
623-0195-03	Conical	Conical
623-0195-08	0.20 4-pt. Crown	Conical
623-0195-09	0.40 4-pt. Crown	Conical
623-0195-H2	0.34 4-pt. Crown	Conical
623-0195-H8	0.20 4-pt. Crown	Conical
623-0195-H9	0.40 4-pt. Crown	Conical

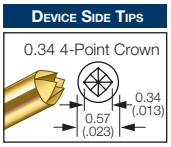
H2, H8 & H9 has the homogeneous alloy on the device side of the contact.

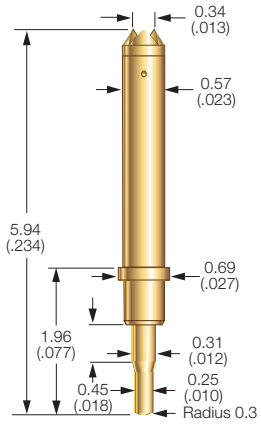
Specifications subject to change without notice. Dimensions in millimeters (inches)

Semiconductor Probes 0.80mm & 1.00mm Pitch

101785 Probe

Device Side Tips





Probe Specifications

Minimum Device Pitch: 0.80mm (.031)
Signal Path Length: 5.21mm (.205)
Force per Contact: 35.4g (1.25 oz..) @ 0.74mm (.029) travel
Device Compliance: 0.33mm (.013)
DUT Board Compliance: 0.41mm (.016)
Operating Temperature: -55°C to 150°C
Insertions: > 500,000

Materials

Barrel: Full-hard beryllium copper, Endura plating
Spring: Stainless steel, gold plated
Device Side Contact: Full-hard beryllium copper, gold plated
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

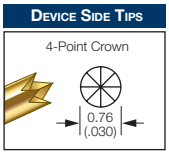
Typical Resistance: < 40 mΩ
Current Carrying Capacity: 5 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R at 0.8mm pitch
Characteristic Impedance: 38 Ω
Time Delay: 27 pSec
Loop Inductance: 1.03 nH
Signal Pin to Return Capacitance: 0.71 pF
-1 dB Insertion Loss Bandwidth: > 10 GHz

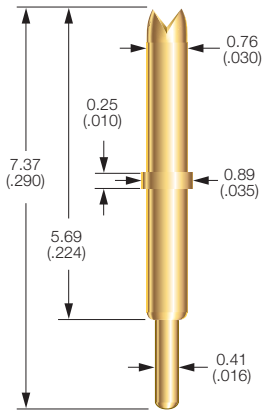
How to Order

Part No.	Device Side Tip	PCB Side Tip
101785-001	0.34 4-pt. Crown	Radius

101312 Probe

Device Side Tips





Probe Specifications

Minimum Device Pitch: 1.00mm (.039)
Signal Path Length: 6.97mm (.274)
Force per Contact: 31g (1.1 oz.) @ 1.02mm (.040) travel
Device Compliance: 0.25mm (.010)
DUT Board Compliance: 0.76mm (.030)
Operating Temperature: -55°C to 150°C
Insertions: > 500,000

Materials

Barrel: Full-hard beryllium copper, Endura plating
Spring: Stainless steel, gold plated
Device Side Contact: Full-hard beryllium copper, gold plated
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

Typical Resistance: < 40 mΩ
Current Carrying Capacity: 5 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R at 1.00mm pitch
Characteristic Impedance: 36 Ω
Time Delay: 33 pSec
Loop Inductance: 1.19 nH
Signal Pin to Return Capacitance: 0.92 pF
-1 dB Insertion Loss Bandwidth: > 10 GHz

How to Order

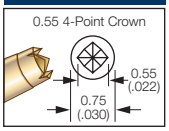
Part No.	Device Side Tip	PCB Side Tip
101312-001	0.76 4-pt. Crown	Radius

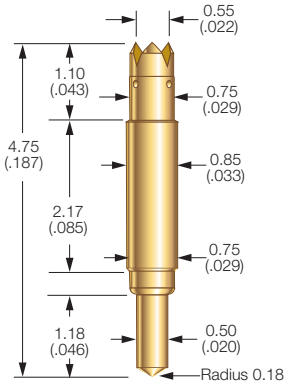
Specifications subject to change without notice. Dimensions in millimeters (inches)

1.00mm & 1.27mm Pitch Semiconductor Probes

623-0117 Probe

Device Side Tips





Probe Specifications

Minimum Device Pitch: 1.00mm (.039)
Signal Path Length: 3.90mm (.154)
Force per Contact: 35.5g (1.25 oz.) @ 0.85mm (.033) travel
Device Compliance: 0.45mm (.018)
DUT Board Compliance: 0.40mm (.016)
Operating Temperature: -55°C to 120°C
Insertions: > 500,000

Materials

Barrel: Phosphorous bronze, gold plating
Spring: Music wire, gold plated
Device Side Contact: Full-hard beryllium copper, gold plated
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

Typical Resistance: < 60 mΩ
Current Carrying Capacity: 3 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 1.27mm pitch
Characteristic Impedance: 43 Ω
Time Delay: 24 pSec
Loop Inductance: 1.02 nH
Signal Pin to Return Capacitance: 0.56 pF
-1 dB Insertion Loss Bandwidth: > 20 GHz

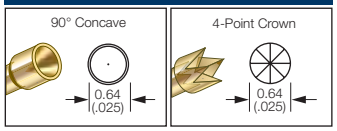
How to Order

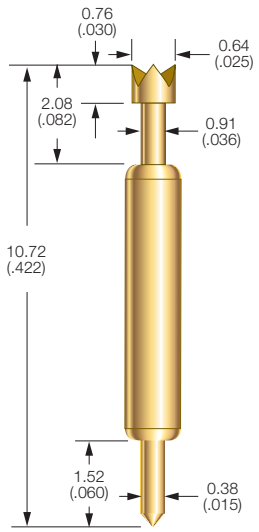
Part No.	Device Side Tip	PCB Side Tip
623-0117-02	0.55 4-pt Crown	Conical

Prolonged exposure of greater than one hour reduces the maximum operating temperature of music wire springs to 85°C.

100785 Probe

Device Side Tips





Probe Specifications

Minimum Device Pitch: 1.27mm (.050)
Signal Path Length: 9.2mm (.362)
Force per Contact: 42.5g (1.5 oz.) @ 1.52mm (.060) travel
Device Compliance: 0.76mm (.030)
DUT Board Compliance: 0.76mm (.030)
Operating Temperature: -55°C to 150°C
Insertions: > 250,000

Materials

Barrel: Full-hard beryllium copper, gold plated
Spring: Stainless steel, gold plated
Device Side Contact: Full-hard beryllium copper, gold plated
Board Side Contact: Full-hard beryllium copper, gold plated

Electrical Specifications

Typical Resistance: < 50 mΩ
Carrying Capacity: 3 amps continuous
(Current DC carry capability @ 80° C steady state)
Pattern 2a: R S R @ 1.27mm pitch
Characteristic Impedance: 41 Ω
Time Delay: 47 pSec
Loop Inductance: 1.93 nH
Signal Pin to Return Capacitance: 1.15 pF
-1 dB Insertion Loss Bandwidth: > 16.2 GHz

How to Order

Part No.	Device Side Tip	PCB Side Tip
100785-002	.064 4-pt. Crown	Conical
100785-003	90° Concave	Conical

Specifications subject to change without notice. Dimensions in millimeters (inches)

INTERCONNECT DEVICES, INC.

GLOBAL SALES OFFICES

Customer Service

Kansas City, KS	913.342.5544	China	86.512.6273.1170
Sunnyvale, CA	408.834.1436	Singapore	65.6846.1655

Sales and Applications Engineering

Kansas City, KS	913.342.5544	France	33.617.93.1564
Sunnyvale, CA	408.834.1419	Germany	49.173.669.8335
Dallas, TX	972.899.2860	Italy	39.347.222.3420
Gilbert, AZ	480.682.6200	Israel	39.347.222.3420
Boston, MA	508.222.1132	United Kingdom	44.1869.245630
Southern CA	951.837.5385		
Malaysia	65.6846.1655	Philippines	63.92855.26843
Singapore	65.6846.1655	Korea	82.10.4939.3269
Taiwan	886.936.857.752	China	86.512.6273.1069

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