smiths interconnect
a molex company

Semiconductor

Test Connectivity Solutions

CUTTING-EDGE
CONNECTIVITY

About Smiths Interconnect

We Offer

Smiths Interconnect, a Molex company, is a leading provider of high reliability connectivity products and solutions serving segments of aerospace and defence, medical, semiconductor test and industrial markets. It designs and manufactures technically differentiated electronic components, as well as microwave, optical and radio frequency products and sub-systems that connect, protect and control critical applications.

Smiths Interconnect is a leading provider of innovative solutions for critical semiconductor test applications. Smiths Interconnect's test sockets and probe card solutions offer superior quality and reliability, providing customers with a competitive advantage.

Our best-in-class engineering and technical expertise ensure the development of cutting-edge test platforms for area array, peripheral, wafer level packaging and Package on Package (PoP) devices.

Our extensive product portfolio accommodates both devices with finest micro pitches and those with very high bandwidth requirements. Off-the-shelf and custom products are proven to deliver the best solution for the customer's specific needs.

Defence & Aerospace

Communications

Industrial

Your partner of choice for cutting-edge connectivity solutions

80+

Years Experience

Technology

Broad Range of Advanced Interconnect Technologies

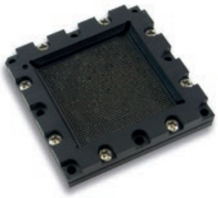
Flexibility

High Volume Product Platforms & Complete Tailored Solutions

Service

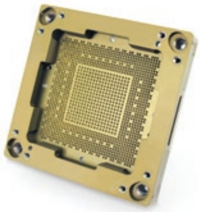
Global Reach with Local Support

Technology Brands



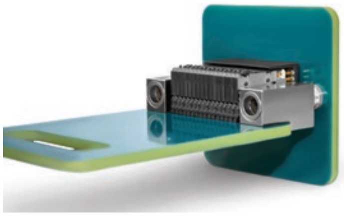
PLASTRONICS

A leading supplier of burn-in test socket solutions for all the latest packaged devices. With the most comprehensive QFN catalog in the world, in addition to a large portfolio of sockets for burn-in, HAST, failure analysis and other test requirements for Leaded, LGA and BGA devices.



IDI

World's most comprehensive offering of spring probe based solutions, including: contacts, connectors, interposers, semiconductor test sockets, and ATE interfaces. Proven off-the-shelf and custom products deliver the best solution for the customer's specific application.



HYPERTAC

Premium interconnect solutions for electrical and electronic applications requiring optimised quality, performance, and reliability. Hypertac connectors utilise the original high performance hyperboloid contact technology; ideal for harsh environments and safety critical applications.

HSI

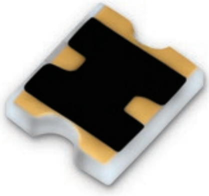
Joint venture with Sichuan Huafeng Enterprise Group Co. Ltd, one of the major manufacturers of electronic components in China. Industry-leading connectivity solutions for commercial aerospace and railway markets in mainland China.

SABRITEC

High speed quadrax, twinax, fibre optic, filter, coax and triax connectors, contacts and cable assemblies. Custom multi-pin circular, D-Sub rack and panel connectors and MIL-Spec interface type products.

▌Connectors ▌Fibre Optics & RF Components ▌Semiconductor Test

Connectors Fibre Optics & RF Components Semiconductor Test



EMC

Board-level components incorporating advanced resistive and signal distribution technologies for a broad range of frequency spectrum applications. Extensive portfolio of RF devices used to attenuate, level, or terminate signals available in a variety of packages and footprints.

LORCH

Innovative solutions for the electronics and communications industries. Ranging from high performance wireless and RF products to micro-miniature, cavity, discrete, waveguide, tunable, ceramic, and printed filters and integrated assemblies.

REFLEX PHOTONICS

Embedded transceivers and transmit/receive modules for advanced interconnect-based solutions. Targeting high data rate interconnects where ruggedness and radiation resistance are required for defence, space, commercial aerospace and industrial applications.

RF LABS

High performance microwave cable assemblies and coaxial components supporting high performance operations, application-specific premium interconnects for high durability and harsh environments.

Synonymous with High Performance, Reliability and Safety.

Our Markets

Aerospace & Defence

Commercial Aerospace

Our relentless pursuit of innovative high performance connectivity solutions enables us to provide high density, high power handling, EMI/EMP protection, RF and high speed capabilities focused on the next generation of airframe applications.

- Avionics Equipment
- Engine Systems
- Power Distribution

Communications

Wireless Infrastructure

Our solutions help evolution to 5G, while maximising the use of existing infrastructure. Our components and optical transceivers help ensure reliability in mission critical wireless communications.

- 4/5G Networks
- Remote Radio
- Installations
- Distributed Antenna Systems
- Data Centres

Semiconductor Test

We develop sockets and probe card products that ensure superior quality and reliability in testing applications. Our solutions support the finest micron pitches while meeting requirements for higher bandwidths.

- Area Array Test
- Package-on-Package Test
- Wafer Level Packaging Test
- Peripheral Package Test

Industrial

Transportation

We offer multiple interconnect technologies able to withstand harsh environments of extreme temperatures, pressure, shock and vibration, ensuring system quality and reliability.

- Rolling Stock
- Signalling
- Infrastructures
- Vehicles
- Automotive
- Unmanned Vehicles

Defence

We partner with our customers to design and manufacture products and solutions including connectors, cable assemblies, multi-function RF systems, SATCOM terminals and datalinks to achieve optimal system performance in the most demanding end-user environments.

- Radar
- Electronic Warfare
- Integrated Vehicle Systems
- Intelligence, Surveillance, Reconnaissance (ISR)

Space

We engineer superior NASA and ESA-certified solutions to ensure continuous connectivity within environments where shock and vibration, corrosive atmosphere, and thermal deviations are prevalent.

- GEO/MEO Satellites
- LEO Satellites
- Launchers
- Ground Support Equipment

Test & Measurement

We create high quality connector and cable assemblies that deliver increased phase stability, decreased insertion loss, and design flexibility for long lasting performance in lab and production test environments.

- Electronics Testing
- Automotive Testing
- Telecommunications
- RF and Microwave Testing

Medical

We provide solutions that protect, connect, and control critical medical devices which meet requirements for invasive procedures, disposable components, embedded electronics, high cycle life, and sterilisation.

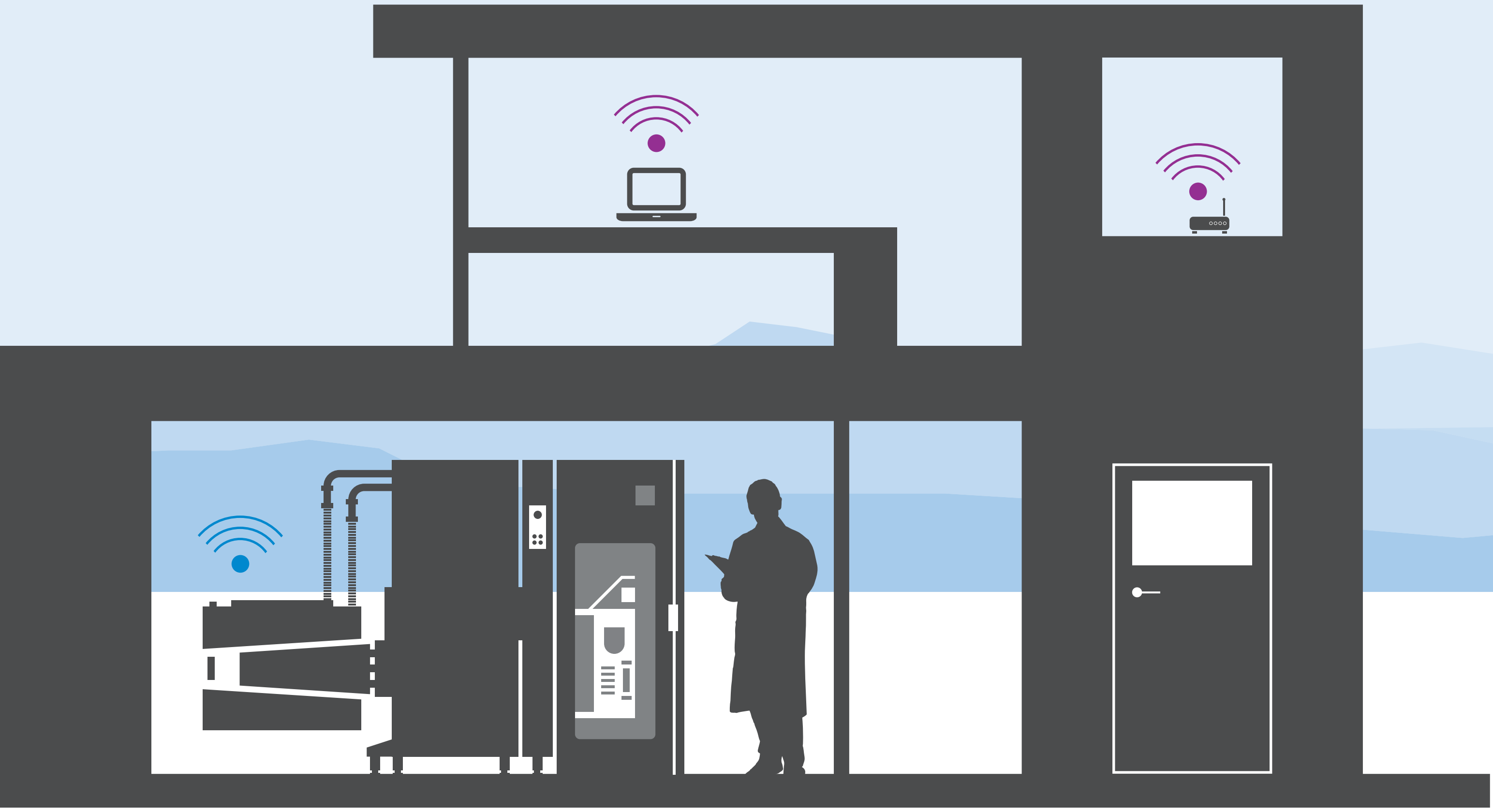
- Surgical Systems
- Patient Monitoring
- Imaging Systems
- Disposables

Industrial

We design durable and robust platform products and customized solutions combining rugged backshells with high reliability contact technologies for easy assembly.

- Heavy Equipment/Machinery
- Industrial Automation
- Utilities

Applications



Area Array Test

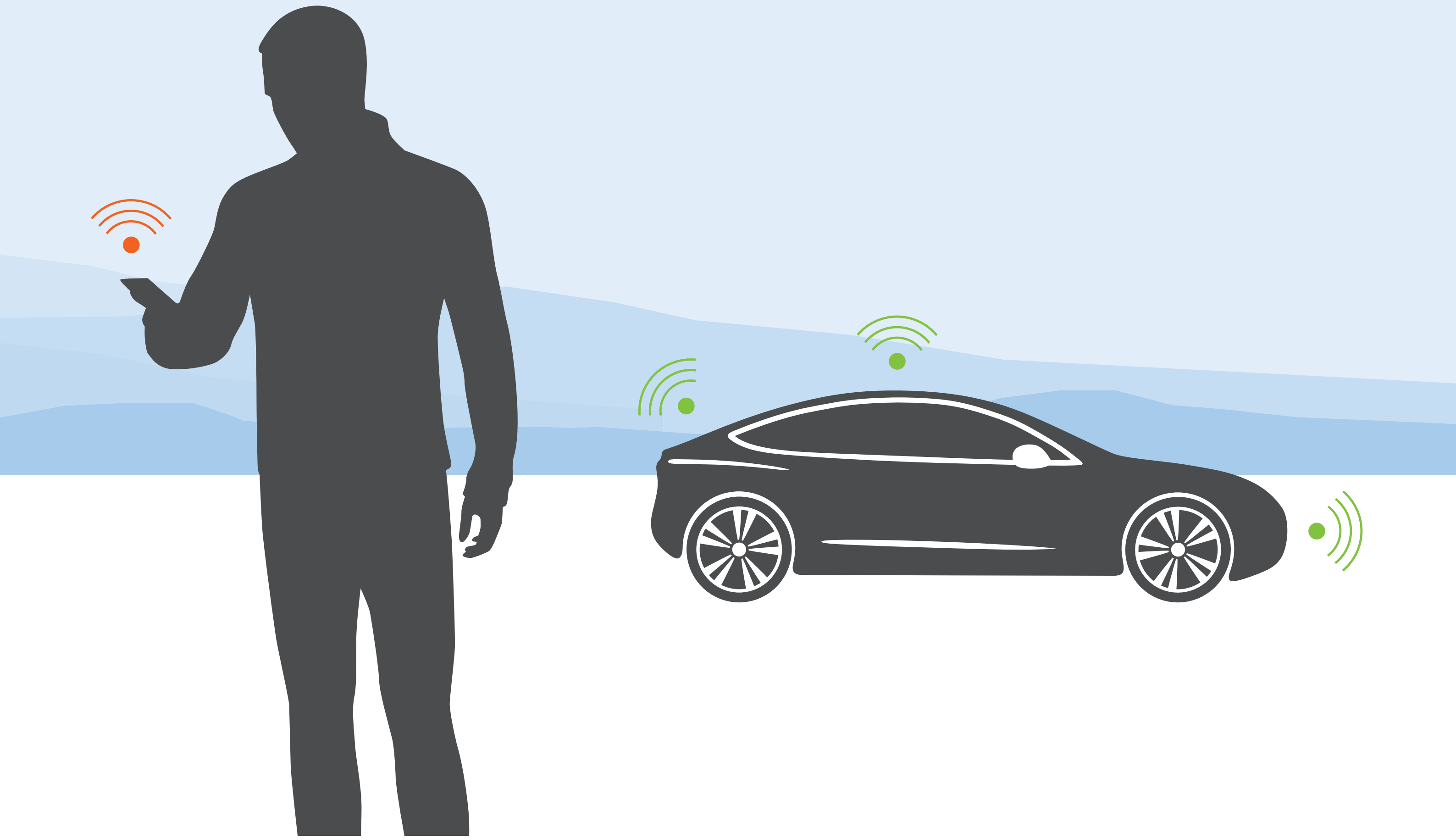
- GPU
- CPU
- Artificial Intelligence
- Deep Learning
- High-speed Memory
- Analog RF

Package on Package Test

- Smart Phone CPU
- Wearable Technology
- NFC - Near Field Communications

Providing A Competitive Advantage

Proliferation of data devices and the growth of cloud computing, artificial intelligence and big data is resulting in complex systems and new materials that require rigorous, efficient validation. Smiths Interconnect’s test sockets and probe card solutions ensure superior quality and reliability in the semiconductor test applications. Our best-in-class engineering, development and technical expertise ensure support of automated, system level and development test platforms for area array, peripheral, wafer level and Package on Package (PoP) devices as well as high performance spring probe technology and cable assemblies.



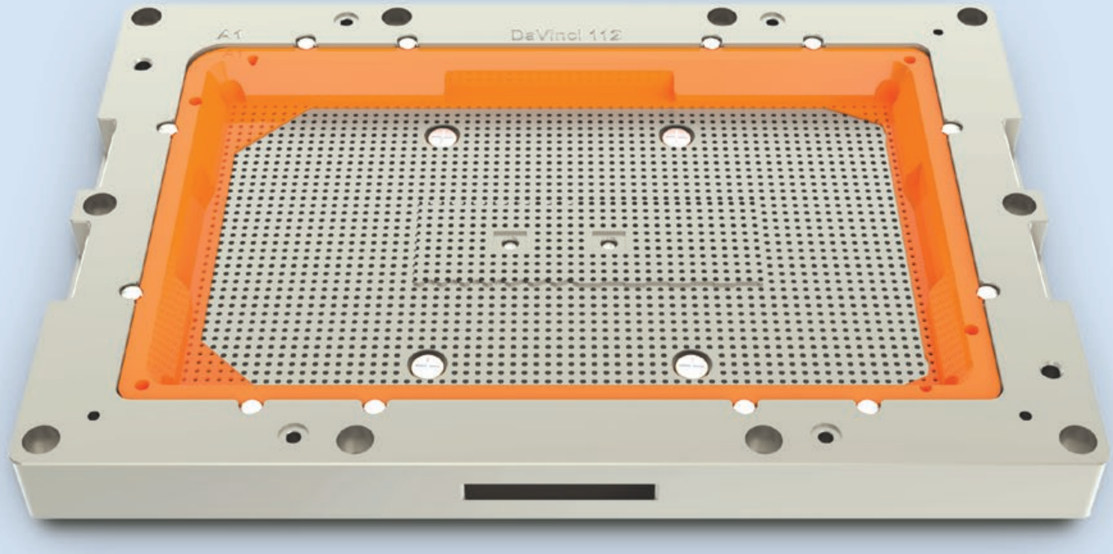
Peripheral Package Test

- Wireless Communications
- Infotainment
- Automotive
- Industrial

Wafer Level Packaging Test

- Bluetooth
- Wi-Fi
- Power Management

Area Array Test



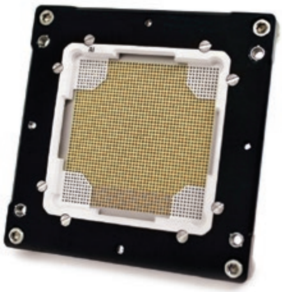
High Speed Performance

Supporting high pin count and high-speed signal applications. Engineered to meet stringent single ended signal performance (GDDRX). High current carrying capacity and active crosstalk isolation for testing of GPUs, CPUs and other high speed digital applications.

High current carrying capacity and active crosstalk isolation

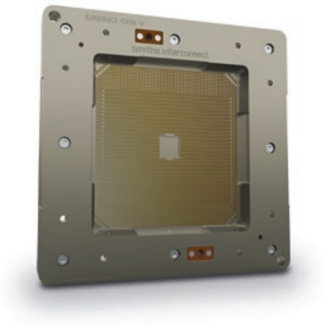
Standard Array Test Socket

- Innovative design with a wide range of material options
- Proprietary engineered plastic body for larger size BGA / LGA test
- Precision alignment calculation
- Replaceable floating or fixed device alignment guide feature
- Z-axis tolerance stacking analysis
- FEA analysis
- Customisation and design flexibility



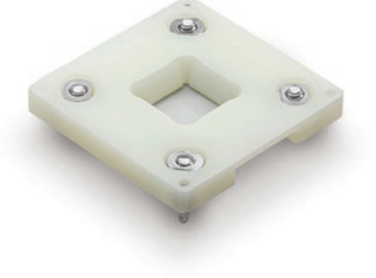
DaVinci Gen V High Speed Test Socket

- High performance impedance-controlled socket
- Proprietary insulated metal socket
- Spring probe technology
- Entire signal path shielded
- Insensitive to temperature changes and humidity
- Extreme rigidity (very low deflection rate)
- Mixed impedance in same Array
- Low contact resistance
- High current carrying capacity
- High-speed performance up to 224 Gbps, with other available options including the DaVinci 45G, DaVinci 56, and DaVinci 112



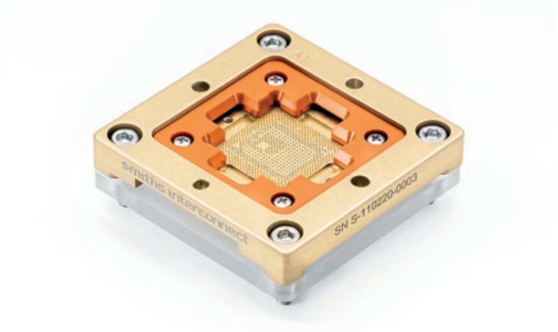
Galileo Test Socket

- Uncompressed (free) height of 0.40 mm
- Compliant range up to 35% of overall thickness
- For use with all popular package types: BGA, LGA, QFN
- No contact alignment or registration holes required in PCB
- Board-to-Board, Board-to-Flex PCB, DUT-to-Flex PCB application uses
- Due to high thermal conductivity, can be used as a compliant Thermal Interface Material
- 1.25 A CCC per lead for 0.50 mm pitch devices
- Up to 2.50 A per lead for 0.80 mm pitch applications
- 16.6 A /mm^2 steady state @10°C heat rise
- <25 mΩ contact resistance
- Up to 5,000 insertions

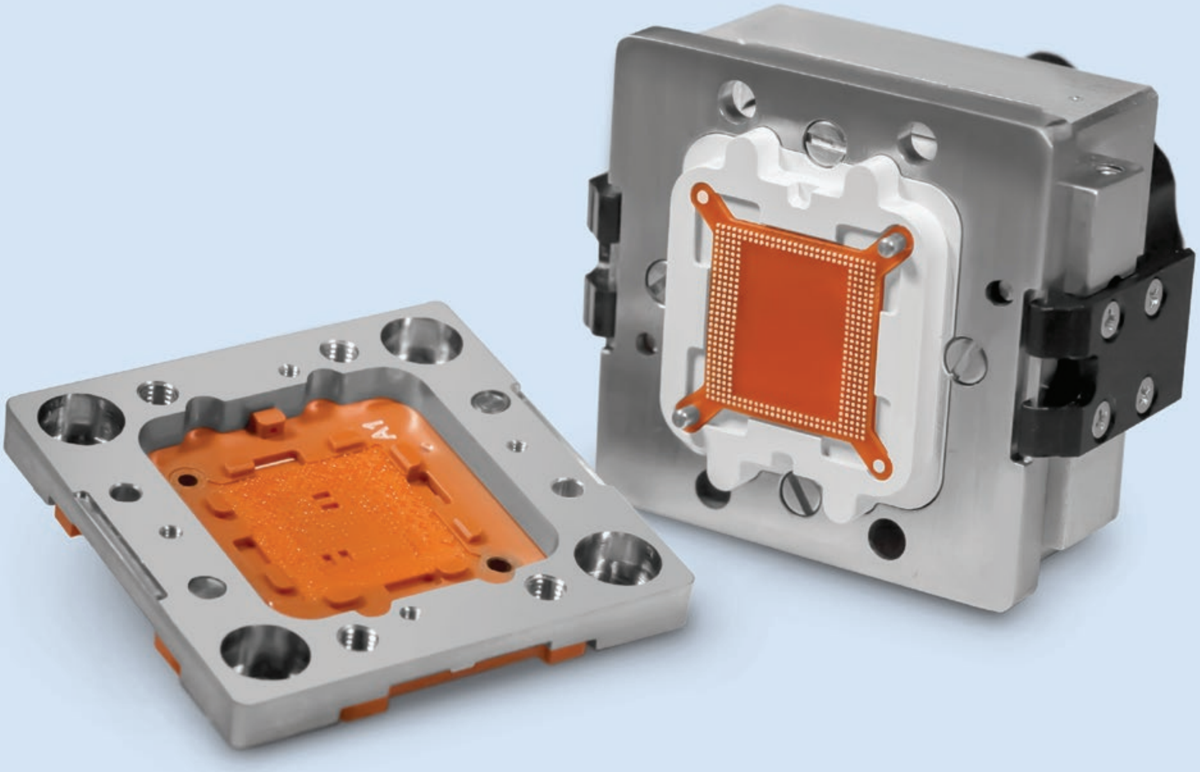


DaVinci Micro Test Socket

- Inherits the DaVinci coaxial technology for IC applications to 350µm pitch
- Tested to 500,000 insertions
- Short contact path for excellent DC performance
- RF bandwidth up to 30 GHz @ -1 dB IL
- Reduction in pin-to-pin noise (cross-talk)
- Precision-machined socket housing ensures robust mechanical performance
- Field repairable, replace a single probe or full array without the need for additional training



Package on Package Test



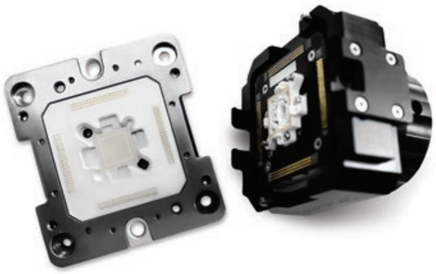
Cutting-Edge Technology

High-speed, low profile contact technology delivering enhanced performance and competitive edge in testing Package on Package (PoP) devices used in smart phone CPUs and wearable technology. Unique ability to accurately and simultaneously align both the upper and lower device pads increasing fault coverage and reducing cost of test.

Increased fault coverage and reduced cost of test

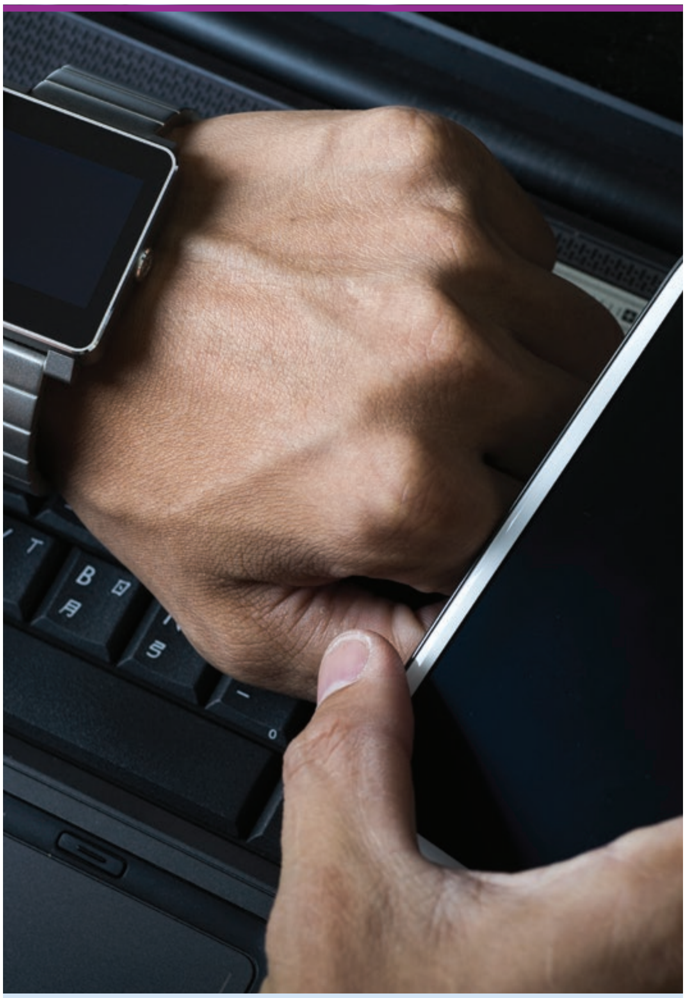
Euclid PoP Test Socket

- Memory-bearing, memory-less and manual sockets
- Advanced alignment features for both top and bottom devices
- Refined analysis tools ensure production-ready solutions
- Controlled impedance available
- Features optional coaxial interposer for memory-less test
- RF simulation used to validate signal integrity of interface
- 6 Gbps options available
- Tester or socket supplies memory function during test through topside attach features
- Solutions are valid in both manual and automated test environments



Elastomeric Contact PoP Test Socket

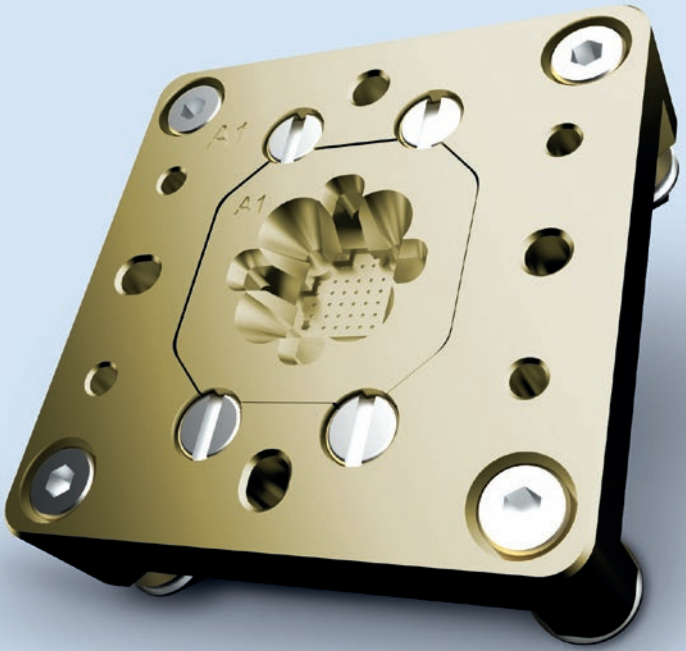
- Electrically transparent contact
- Solderless memory replacement
- Short signal path < 1 mm
- Conformal to recessed LGAs
- High frequency bandwidth > 40 GHz
- Low inductance
- Long cycle life > 500,000 cycles (application dependent)
- No PCB or solder ball damage
- Minimal labour and tester downtime



Did you know?

The design of Euclid lid can accommodate multiple PoP applications using the same socket base, reducing hardware cost.

Peripheral Package Test



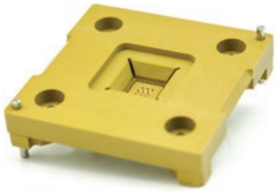
Out of the Box Performance

Engineered solutions using vertical spring probe technology, which seamlessly align complex device requirements to deliver out of the box performance, with minimal cleaning and extended mechanical life.

High production throughput and reduced down time

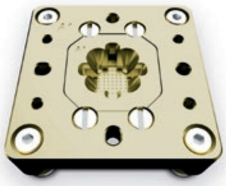
Celsius Peripheral IC Package Test Socket

- Wiping action ensures good device contact with minimal board side scrub
- Requires minimal cleaning
- Patented technology
- Suited for tri-temp peripheral testing
- Resistance < 20 m
- Bandwidth > 10 GHz @ -1 dB
- Temperature rated: -50°C to 175°C



Kepler Test Socket

- For testing LGA, QFN, QFP and other variants
- Scrub action breaks through surface oxides on device pad
- Short signal path
- Long contact life, low wear, tested to over 500,000 insertions
- Tri-Temp socket design to support -55°C to +150°C
- Configurable design flexibility for integrating into existing hardware setups
- Designed for manual test, bench test, and HVM production test
- Insulator housing made from high performance polyimide
- Small socket footprint

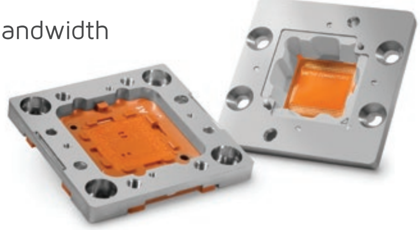


Peripheral Lead Frame Test Socket

- Excellent co-planarity
- High suitability to auto cleaning
- Up to 32 Sites
- HG contact technology available
- Reduced required overdrive
- Analysis of thermal, alignment and pin travel
- Capable of high parallelism

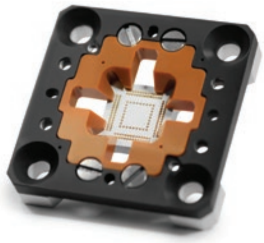
Elastomeric Contact Peripheral IC Package Test Socket

- Electrically transparent contact
- Low, stable contact resistance
- High frequency bandwidth > 80 GHz
- Signal path length < 1 mm



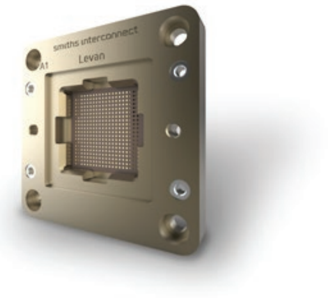
Standard Array Peripheral IC Package Test Socket

- Innovative design with a wide range of material selection
- Precision alignment analysis
- Replaceable device alignment guide feature
- Customisation and design flexibility
- HG spring probes

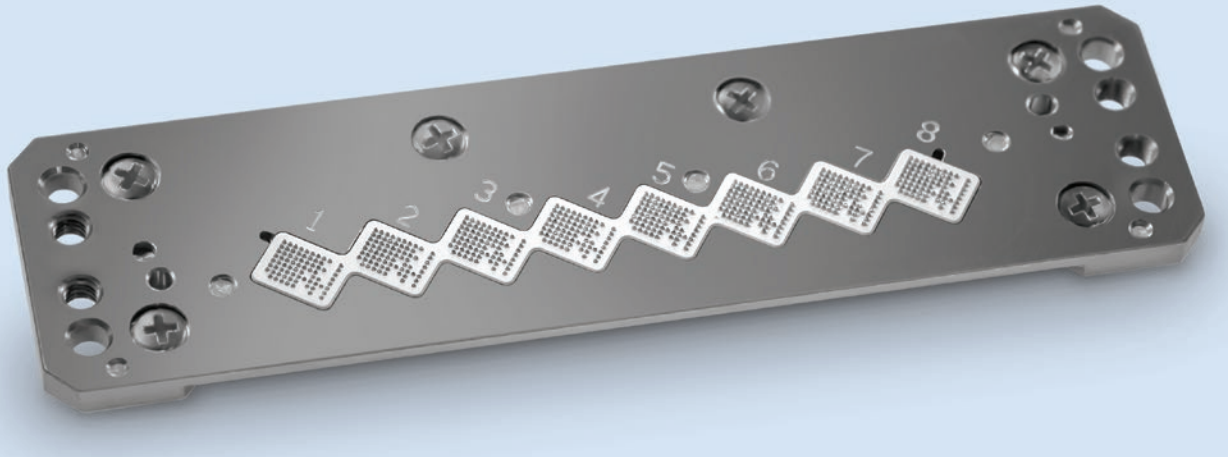


Levan Elastomeric Contact Test Socket

- Solution for BGA, LGA, QFN and other variants
- RF Bandwidth > 40 GHz @ -1dB IL
- Short signal path ≤ 0.9 mm
- Ability to do impedance match signals
- Consistent stable contact resistance 100 mΩ (Avg.)
- Low inductance
- Optimised design based on test application
- Tri-temp socket design to support -55 °C to +160 °C
- Designed for manual test, bench test, and HVM production test using the same socket



Wafer Level Packaging Test



Excellent Yield

Innovative wafer level package test solutions that help customers deliver higher quality products by ensuring every touchdown is contributing to the highest possible yield. Volta products are plug and play, providing the electrical accuracy and robust mechanical stability needed to reduce the total cost of ownership.

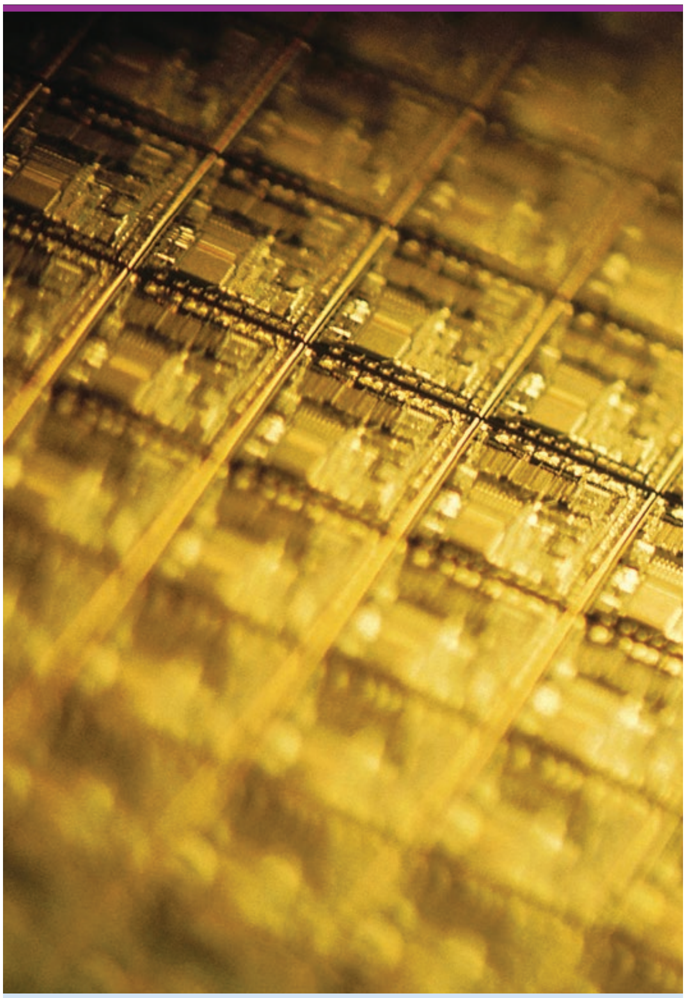
Exceptional mating cycles, unrivaled signal reliability

Volta Probe Head

- Minimal compression force
- Exceptional mating cycles
- Unrivaled signal reliability
- Optimised travel at 500, 400, 350, 300, 250, 200, 180, 130 µm pitch
- Exceptional DC and RF performance
- Floating spring probe designs allow for seamless deployment in test WLCSP
- Replacement for cantilever and traditional vertical probe card technologies
- Easy maintenance
- High performance engineered plastic and ceramic material
- Consistent tip co-planarity

Kelvin Probes

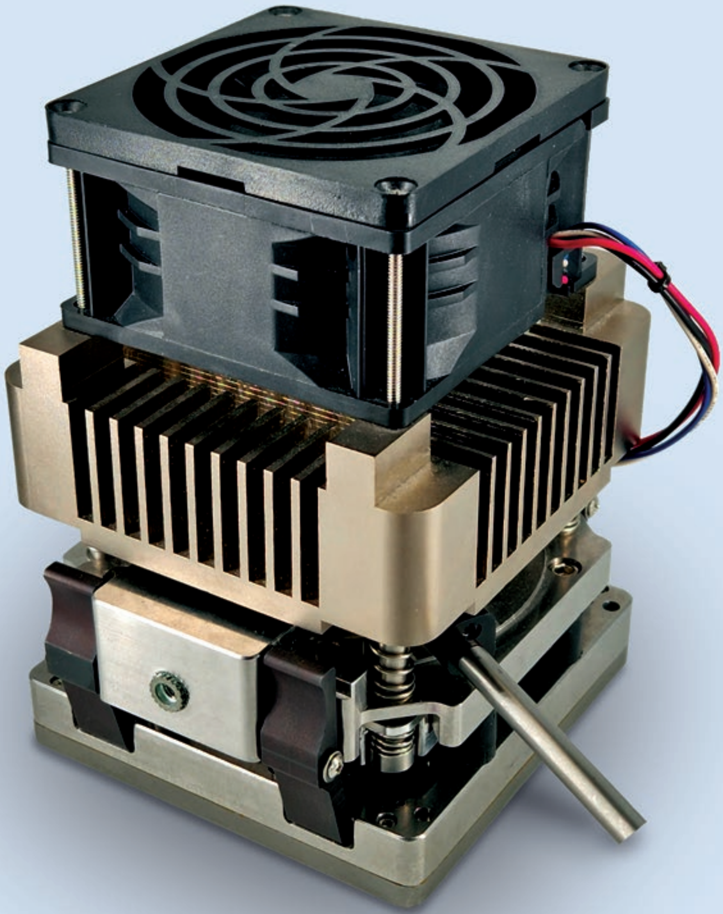
- Device contact pitch: 0.35 mm pitch and above
- Operating temperature range: -55°C to 120°C
- Device packages: BGA, WLCSP, QFN
- Pin-to-pin tip distance is 0.07 mm - 0.14 mm, depending on the pin used
- Insertions: >500,000
- Innovative beveled offset tip allows for tighter centres, down to 0.25 mm on the device pad



Did you know?

Volta spring probes can achieve 30 µm tip-to-tip co-planarity in the probe head, providing stable contact to the wafer.

Burn-in Test



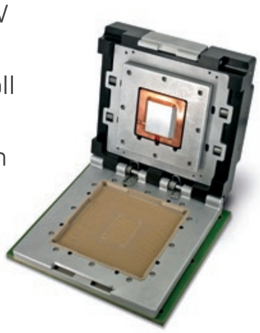
Reliability Ready Sockets

Our newly acquired brand Plastronics offers an extensive catalog of Reliability sockets that are ready to fulfill burn-in, humidity environmental, failure analysis, and test requirements for the latest packaged devices, including QFN, LGA, BGA and μBGA.

An extensive catalog for the latest packaged devices

Hi-Power Burn-in Test Socket

- Supports next-generation devices (>12,000 contacts, 150 x 150 mm)
- Manages power up to 2500W with integrated water cooling
- Universal compatibility with all advanced burn-in chambers
- High 450 Kg force application with low-effort lever (<15 lbs)
- Flexible thermal options: passive heatsink or heatpipe

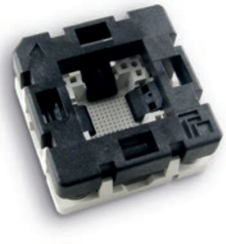


QFN Sockets

- Modular design in a small outline meets major application requirements
- Open Top QFN socket available allowing for convenient package loading and unloading with options for many of the same pin count designs as their clamshell counterparts
- The H-Pin® QFN sockets provide maximum performance with the most cost-effective, high-performance pin on the market

LGA Sockets

- H-Pin® provides a high-performance test socket that reduces the cost of test for all burn-in operations
- LGA platform serves package sizes from 2.0 mm x 2.0 mm to the largest packages being produced today
- Open Top LGA socket available allowing for convenient package loading and unloading with options for many of the same pin count designs as their clamshell counterparts (open top shown in image)



BGA Sockets

- Featuring H-Pin®, a high-performance stamped spring probe pin, to provide a pure vertical contact system
- High-performance socket that is affordable for all burn-in operations
- Serves package sizes from as small as 6.0 mm x 6.0 mm to the industry's largest standard socket for 60.0 mm x 60.0 mm packages

Interposers

- Featuring H-Pin® technology
- Excellent mechanical and electrical performance
- High volume stamping and quality control
- Stocked inventory and better lead time
- Limitless applications
- High performance at a low cost

Custom Sockets

- Mixed pitch
- Power integrity
- Large package sizes
- High temperature
- Fully configurable for any application

Global Capabilities

Reliable Solutions

In-house capabilities encompassing design, development, manufacturing and testing to anticipate market needs, respond quickly and accurately to customers, and provide the most reliable connectivity solutions.

Market-leading Engineering and Technology Solutions

80+

Years Experience

Certifications, Standards & Compliance

- AS9100D
- ISO 9001
- ISO 14001
- ISO 45001
- NF F 61-030
- NF F 61-032
- NF F 16-101
- NF F 16-102
- NF-C 93421
- DIN 41612
- DIN 43652
- EN 50124
- EN 45545-2
- IEEE-1101.2-'92
- IEC 1076-4 101
- IEC 61373
- IEC 61984
- HE 501
- HE 704
- UTE C93-425
- UL94 VO
- RoHS compliance
- IRIS

Engineering

- 3D EM Modelling
- Advanced RF & System Modelling
- CAD/CAM & Solid Modelling
- Finite Element Analysis
  - Thermal Analysis
  - Shock & Vibration Analysis
- Reliability Analysis

Prototyping

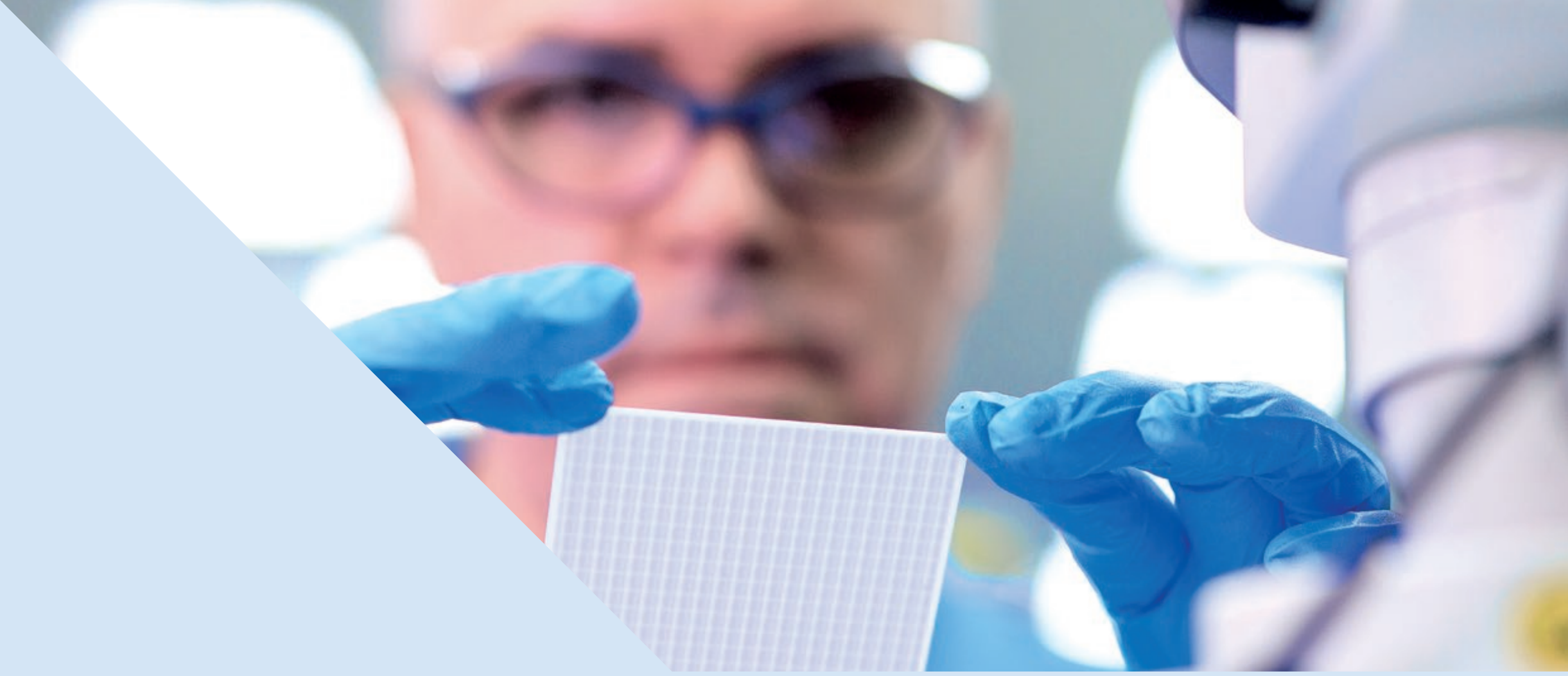
- CNC Turning & Milling Centres
- Cabling / Prototype Assembly
- 3D Printing
- Ceramic Grinding
- EDM
- Circuit Board Routing

Manufacturing

- Precision Machine Shops
- Connector, Contact & Cable Assembly
- Automated PCB Assembly & Inspection
- Automated Hybrid Assembly
  - Die Placement
  - Wedge & Wire Bonding
  - Gap Welding
- NASA Certified Soldering
- Automated Test & Tune
- Optical Alignment
- System Integration
- Validation Testing

Testing/Qualification

- Electrical Acceptance & LOT Test
- RF Test Capability, up to 325 GHz
- High Speed Digital
- Anechoic Chamber Testing
- ESS Environmental Qualification
- ESS Temperature, Shock & Vibration
- Metallurgical
- Real Time X-Ray
- Thermal Vacuum
- High Power RF Testing
- Optics Lab
- Multi paction, SRS mechanical shock



Connecting Global Markets

Smiths Interconnect's strong focus on serving international markets and customers is supported by our sales and technical teams across the Americas, Europe and Asia.

smithsinterconnect.com

Business Unit

Connectors

Fibre Optics & RF Components

Semiconductor Test

Worldwide Support

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Pioneers of Progress

Advancing the world through cutting-edge connectivity

We aim to be the partner of choice for innovative connectivity solutions where reliability, high quality, technical expertise, application knowledge, and a reputation for excellence is vital.

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