

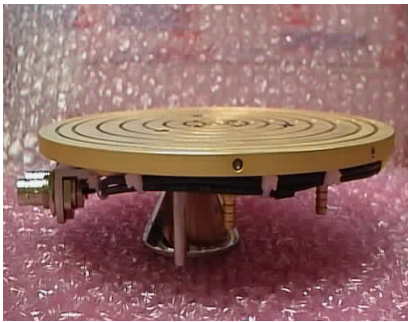


# AMERICAN PROBE & TECHNOLOGIES, INC.

## ISO-CHUCK

### High Performance Chuck for your needs

In the probing industry, the demand for improved test performance is critical. The ISO-CHUCK solution can upgrade your existing probe system with an advanced design with lower capacitance, low current leakage, and provide an excellent solution for high voltage test environments. The power of the ISO-CHUCK design is in its nonconductive, lightweight material. The applied metallization to this fixture in specific areas supplies surface connection and isolated shielding components resulting in advanced performance for the probing industry.



#### ISO-CHUCK for Electroglas 2001 with dual BNC connectors

With the versatility of a multilayered PC board, and the support of a metal wafer chuck, the ISO-CHUCK offers an excellent opportunity to improve the test environment with today's demanding performance requirements.

ISO-CHUCK is trade name and is a patented design protected by US patent # 6,236,221,B1



Shown with Kelvin design for Electroglas 2001 with wafer transport and lift pin configuration

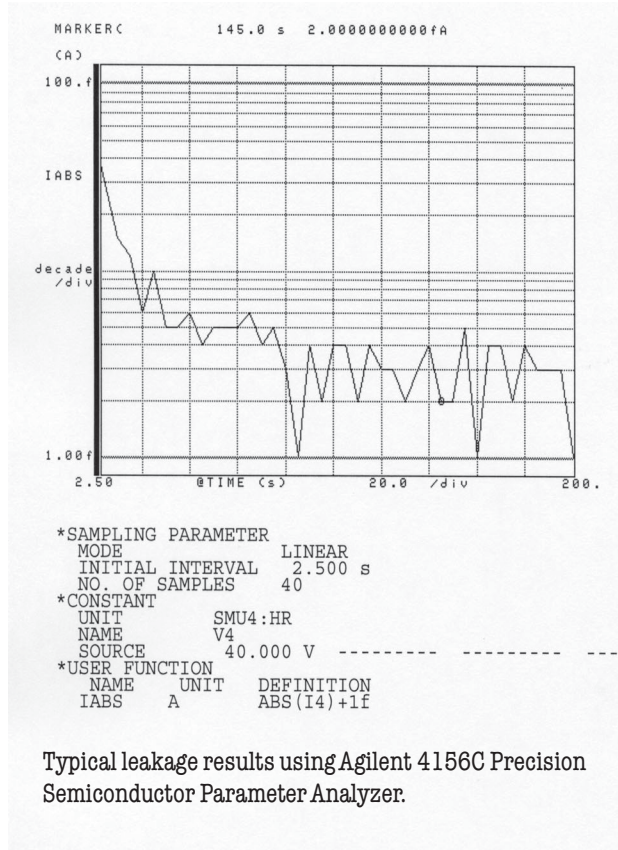
One of the many materials that APT has chosen for the ISO-CHUCK design is Ultem. This material has solid mechanical & light weight properties, with excellent electrical properties, and a dielectric constant of 3.15 with a volume resistivity of  $1.0 \times 10^{17}$ .

### Designs for complex OEM replacements Electroglas, KLA, TEL & all analytical probers

The wafer chuck capacitance in the 4", 6" and 8" test environments was a controllable factor. With the current advancements in the 300mm wafers, this is no longer a minor factor to overcome. The low density material of the ISO-CHUCK design, compared to its 300mm metal counterparts, provides advantages in mechanical repeatability due to the lower mass. The low dielectric constant provides very low chuck capacitance in the triaxial versions of less than 200pF, and less than 10pF with a driven guard!

- **Low inertia for high speed testing**
- **Low leakage between conductors for low current testing**
- **Low capacitance triax designs**
- **Low contact resistance conductors, with choice of plating materials**
- **Coaxial, triaxial, Kelvin, & high voltage models available**
- **Models for 4", 6", 8" and now 300mm (12")**

# ISO-CHUCK SPECIFICATIONS



Typical leakage results using Agilent 4156C Precision Semiconductor Parameter Analyzer.

## CONFIGURATIONS & MATERIALS

- Ultem 1000 is one of several materials available for the ISO-CHUCK series of wafer chucks. Contact American Probe & Technologies for details on the material and configuration which will result in superior electrical or mechanical properties for your custom application.
- American Probe & Technologies has built its success on products that are high quality, and tested at our facility to meet or exceed the specifications requested. APT has a complete test and measurement laboratory and can provide a certificate of compliance.
- APT offers a complete line of low current probes and test accessories to provide a turnkey system solution for your analytical test requirements.
- For a listing of other superior products offered by American Probe & Technologies', please refer to our web site at [www.americanprobe.com](http://www.americanprobe.com)

## ISO-CHUCK INFORMATION USING ULTEM

### Mechanical Properties:

Materials:  
 Base: Ultem 1000  
 Base Plating: Copper (0.003"-0.005")  
 Finish Plating: Gold (type II) (0.0015")  
 with nickel base coat (0.002")

Specifications of Ultem:  
 Specific Gravity: 1.27  
 Tensile Strength: 15,200 psi @73°C  
 Tensile Modulus: 430,000 psi  
 Flexural Strength: 21,000 psi  
 Hardness, Rockwell: M105 @73°C  
 Water absorption, Immersion (24 hours): 0.25%  
 Deflection Temperature: 264 psi@392°F  
 Excellent chemical resistance to acid/base

Wafer Chuck Flatness: within 0.0008"  
 Wafer Chuck Parallelism: within 0.001"  
 Deflection: TBD

### Electrical Properties:

Dielectric Strength: 831 volt/mil  
 Volume Resistivity:  $1.0 \times 10^{17}$  ohm/cm  
 Dielectric Constant: 3.15@1kHz:  
 Dissipation Factor: 0.0013@1kHz:

Current Leakage < 50fA @ 100 VDC  
 Settle Time < 15 seconds (typical)  
 Contact Resistance < 1 milli-ohm (typical)

Capacitance @ 30 VDC (top to guard/ground):

Typical configurations:  
 6" with 0.5" thickness: < 50pF  
 6" with 0.75" thickness: < 35pF

8" with 0.5" thickness: < 85pF  
 8" with 0.75" thickness: < 60pF

12" with 0.75" thickness: < 120pF  
 12" with 1.0" thickness: < 95pF

Contact:  
 Kenneth Chabrava  
 ph:(408)263-3366 fax:(408)263-3797  
 471 Montague Expressway, Milpitas, CA 95035  
 Email: [kchabrava@americanprobe.com](mailto:kchabrava@americanprobe.com)

The information contained in this document is preliminary and may change without notice.