

Cascade

# Dual IZI Probe

## High-Frequency Wafer Probe

### Overview

For wafer-level testing of RF and microwave devices, there is no better solution than the Cascade IZI Probe. The patented technology used in the IZI Probe assures high-accuracy measurements with low contact resistance and superior impedance control. The RF / microwave signal makes only one transition to the coplanar contact structure within the shielded, air-isolated probe body. This maintains the signal integrity with stable performance over a wide temperature from 10 K to 300°C.

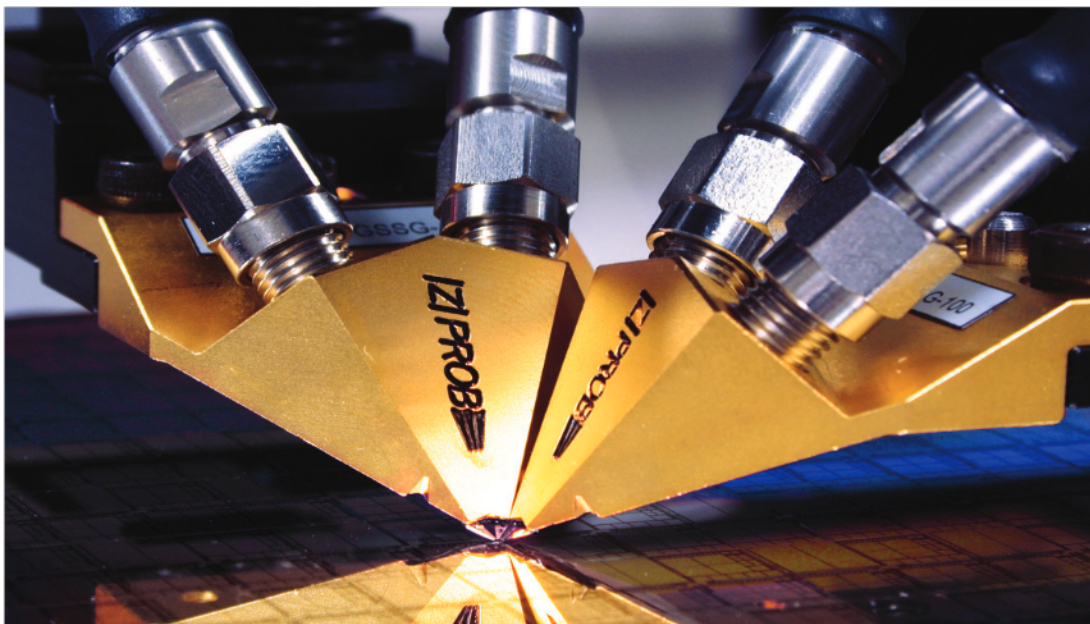
The Dual IZI Probe has been enhanced with the cutting-edge 1MX™ technology. Electrical performance, especially insertion and return loss, has been advanced to levels superior to older technologies like thin-film and micro-coax probes. In addition, isolation (crosstalk) has been significantly improved resulting in a probe that delivers the highest accuracy for your wafer-level RF and microwave measurements.

Contacting the device under test (DUT) with the Dual IZI Probe is simple, highly repeatable and requires significantly less overtravel than conventional RF wafer probes.

This is due to the robust design of the coplanar contact structure and the elimination of the micro-coax cable. As the contacts can move independently of each other, an excellent contact quality is guaranteed regardless of the number of contacts. Additionally, this allows you to probe on three-dimensional structures and on wafers with pad-height deviation of up to 50 µm.

The complete FormFactor HF probe system includes the highly-accurate CSR family of calibration substrates for each pitch, which significantly reduces parasitic effects of calibration standards and drastically increases calibration accuracy. When used together with ProbeHeads™ and the powerful SussCal® Calibration Software, the Dual IZI Probe becomes the ultimate tool for all your HF wafer-level probing needs.

Thanks to the proven IZI Probe technology, the probe also has an extremely long lifetime. FormFactor guarantees that the probe has a useful life of at least 1,000,000 contact cycles under standard use and overtravel.



## ➤ Features and Benefits

### Durability

- Incredibly long lifetime
- Unparalleled repeatable and reliable contact quality

### Flexibility

- Suitable for automated testing
- Probe on most pad material with minimal damage
- Independent, long contact springs easily overcome pad height differences up to 50 µm
- Small structures such as 40 µm x 40 µm pads can be tested
- Excellent performance in vacuum environments and temperatures from 10 K to 300°C
- Available in GSGSG (up to 50 GHz), GSSG and SGS (both up to 18 GHz)

### RF performance

- Lowest insertion loss
- Lowest crosstalk
- Lowest contact resistance
- High power capability

## ➤ Mechanical Specifications

### Electrical Characteristics (50 GHz GSGSG)

• Characteristic impedance	50 Ω
• Return loss	≥17 dB DC to 50 GHz (50 µm to 250 µm) ≥15 dB DC to 50 GHz (500 µm)
• Insertion loss	<0.8 dB DC to 50 GHz (50 µm to 250 µm)
• Crosstalk	≤ -43 dB DC to 50 GHz at 150 µm distance on ceramic
• Maximum RF power	2 x 5 W (50 GHz) 2x9 W (20 GHz) 2x16 W (5 GHz)
• DC current	2 x maximum 1.5 A
• Internal crosstalk	< -30 dB DC to 50 GHz (air / SOL standards)
• Contact resistance on Au	<6mΩ
• Contact resistance on Al	<30mΩ

### Mechanical characteristics

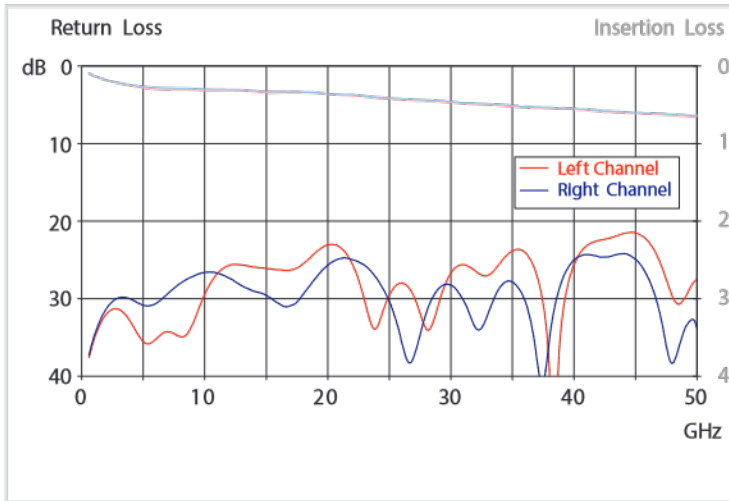
• Contact Material	Nickel
• Insulator	RF dielectric
• Contact cycles on Al	> 1,000,000
• Contact spring pressure	10 N/mm
• Available standard pitches	100, 125, 150, 175, 200, 250, 500 µm

### RF connector

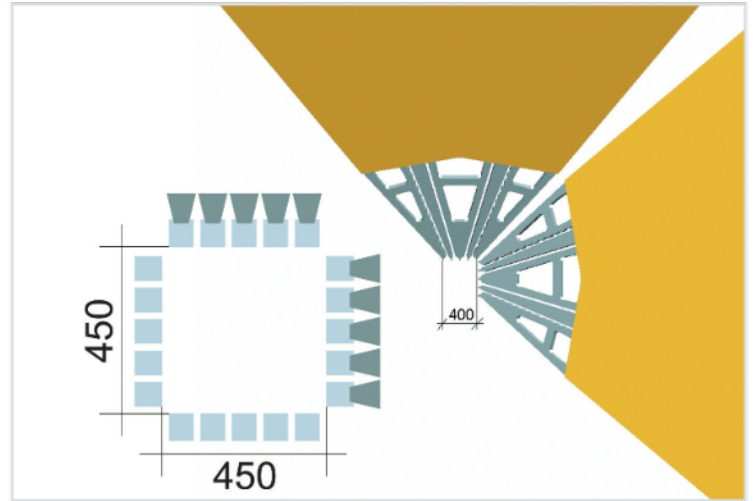
• Type	PC 2.4 mm (50 GHz) PC 2.92 mm (other)
• Coupling torque	0.8 to 1.1 Nm (recommended)

\* Data, design and specification depend on individual process conditions and can vary according to equipment configurations. Not all specifications may be valid simultaneously.

## Applications

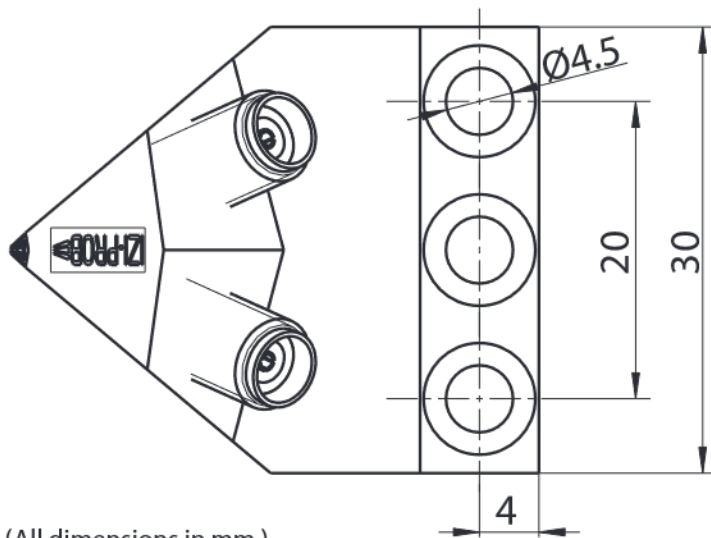


Uncalibrated performance of a Dual IZI Probe (50 GHz, GSGSG, pitch: 100  $\mu\text{m}$ ).

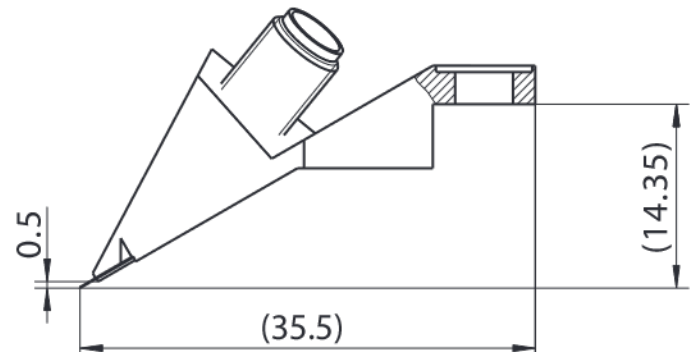


NSEW configuration down to a minimum chip size of 450  $\mu\text{m}$  x 450  $\mu\text{m}$  (all dimensions in  $\mu\text{m}$ ).

## Physical Dimensions (measurements in mm)



(All dimensions in mm.)



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