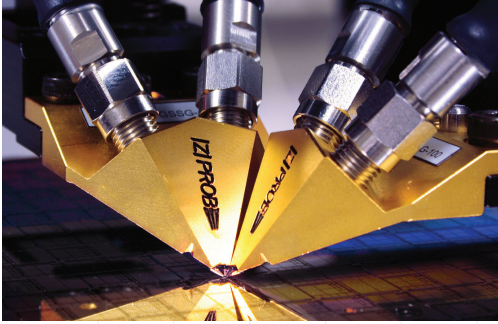


Cascade Microtech, Inc.

SPECIFICATION SHEET



Most accurate wafer-level
multiport measurements

Dual |Z| Probe®

High-Frequency Wafer Probe

For wafer-level testing of RF and microwave devices, there is no better solution than the |Z| Probe. The patented technology used in the |Z| 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 |Z| 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 |Z| 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 Cascade Microtech 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 |Z| Probe becomes the ultimate tool for all your HF wafer-level probing needs.

Thanks to the proven |Z| Probe technology, the probe also has an extremely long lifetime. Cascade Microtech 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 |
| RF performance | Available in GSGSG (up to 50 GHz), GSSG and SGS (both up to 18 GHz) |
| | Lowest insertion loss |
| | Lowest crosstalk |
| | Lowest contact resistance |
| | High power capability |

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 |
| RF maximum power | 2 x 5 W (50 GHz) 2 x 9 W (20 GHz) 2 x 16 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 | < 6 m Ω |
| Contact resistance on Al | < 30 m Ω |

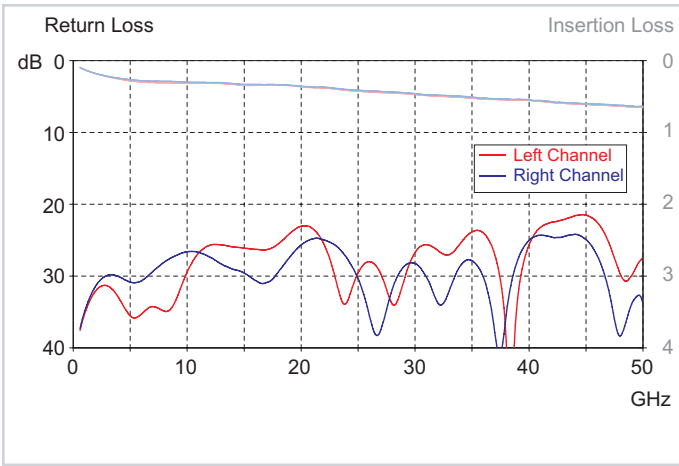
Mechanical Characteristics

| | |
|--|---|
| Contact material | Nickel |
| Insulator | RF dielectric |
| Contact cycles on Al | $> 1,000,000$ |
| Contact spring pressure | 10 N / mm |
| Available standard pitches (μm) | 100, 125, 150, 175, 200, 250, 500 μm |

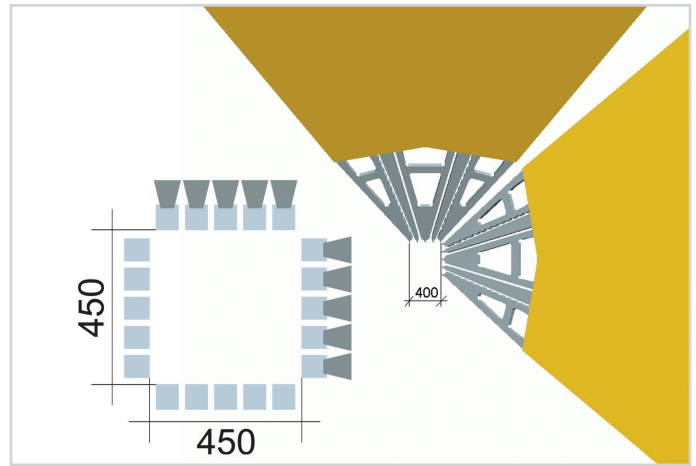
Connector

| | |
|-----------------|--|
| 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.

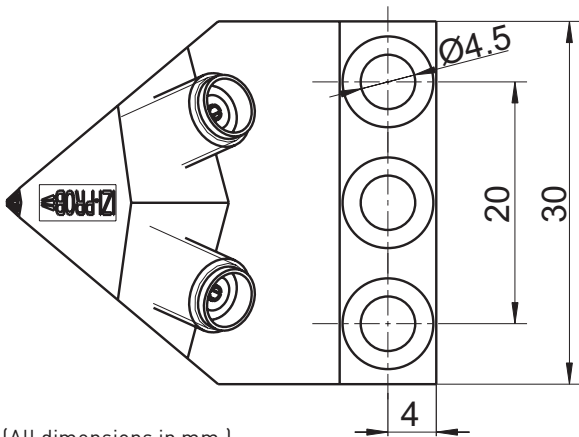


Uncalibrated performance of a Dual |Z| Probe
(50 GHz, GSGSG, pitch: 100 μm).

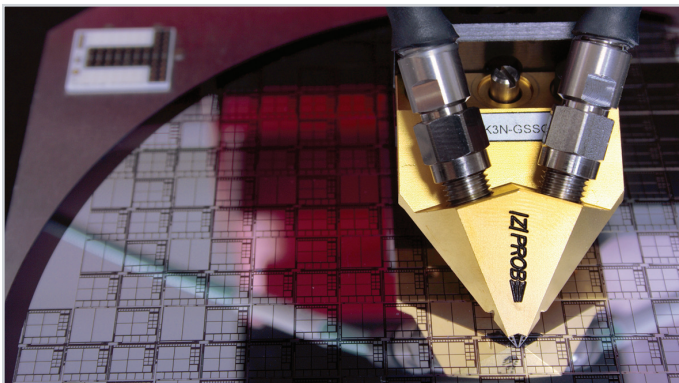
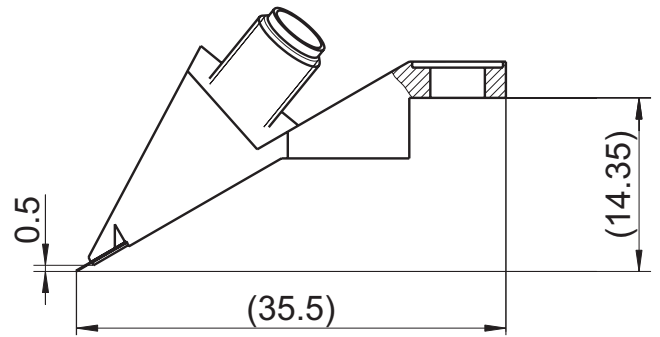


NSEW configuration down to a minimum chip size of 450 μm x 450 μm
(all dimensions in μm).

PHYSICAL DIMENSIONS



(All dimensions in mm.)



Dual |Z| Probe with 1MX technology.

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Data subject to change without notice

DualZProbe-SS-0310

Cascade Microtech, Inc.
toll free: +1-800-550-3279
phone: +1-503-601-1000
email: cmi_sales@cmicro.com

Cascade Microtech GmbH
phone: +49-811-60005-0
email: cmg_sales@cmicro.com

Cascade Microtech Japan
phone: +81-3-5615-5150
email: cmj_sales@cmicro.com

Cascade Microtech Shanghai
phone: +86-21-3330-3188
email: cmc_sales@cmicro.com

Cascade Microtech Singapore
phone: +65-6873-7482
email: cms_sales@cmicro.com

Cascade Microtech Taiwan
phone: +886-3-5722810
email: cmt_sales@cmicro.com

www.cascademicrotech.com

