Cascade

Multi |Z| Probe

High-Frequency Wafer Probe

Overview

With FormFactor's Cascade Multi |Z| Probe, you are no longer limited to just two RF channels with one wafer probe. The Multi |Z| Probe is the only RF probe that can be configured with up to 16 RF channels (35 contacts), providing you with unparalleled multiport RF measurement capabilities up to 15 GHz and superior broadband digital measurements up to 25 GHz.

As the most flexible multiport on-wafer probe, the Multi |Z| Probe gives you the option of placing DC lines on unused RF contacts. This means you can measure DC and RF signals on one very accurate probe, eliminating the need for costly probe cards in many applications. Additionally, elements such as shunts, baluns, DC-blocks or even circuits can be placed directly on the probe. Pitches from 100 µm to 500 µm are standard, but Cascade Microtech is always ready to provide other pitches and individual configurations on request.

The technology used in the Multi |Z| Probe is similar to that of all |Z| Probes. Contact resistance on gold and aluminum is extremely low, and the Multi |Z| Probe's independent, long contact springs can overcome pad height differences of up to 50 µm while providing stable contact and an extremely long lifetime. The RF signal is transmitted from the connector to the air-coplanar waveguide (CPW) lines across an RF-PCB board. Furthermore, the MEMS-machined, symmetrical structures of the Multi |Z| Probe keep coupling and crosstalk at a low level.

The Multi |Z| Probe is part of a complete solution for multiport RF wafer level testing along with FormFactor's Cascade probe systems, which offer the highest positioning accuracy in X, Y, and Z - a vital feature for HF probing; SussCal® Professional Calibration Software, the first and only fully automated multiport calibration software; and multiport CSR calibration substrates, which are the industry standard in accuracy. This comprehensive solution provides the highest possible accuracy and flexibility in on-wafer HF testing for production and development.

Features and Benefits

Accurate multiport measurements	• Only probe with up to 16 RF lines • Transmission from coaxial connector to exactly matched air-CPW across RF-PCB • Extremely low contact resistance
Cost effectiveness	• Eliminates need for expensive probe cards in many applications
Flexibility	• Mixed signal RF / DC testing possible on one probe • Custom elements can be placed directly on the probe • Independent, long contact springs easily overcome pad height differences up to 50 µm
Durability	• Incredibly long lifetime (> 1,000,000 touchdowns) • Safe and repeatable contact with minimal overtravel

Mechanical Specifications*

Electrical Characteristics

• Characteristic impedance Maximum frequency	50 Ω
• Maximum frequency	Calibration range: 15 GHz (GSG), 6 GHz (GS, SS) Digital applications up to 25 GHz (GSG), 7.5 GHz (GS) ≤ 0.04 Ω
• Contact resistance on Au	< 30 mΩ
• Contact resistance on Al	< 0.8 dB DC to 50 GHz**

Mechanical characteristics

• Contact springs	Nickel
• Contact cycles on Al	> 1,000,000
• Contact spring pressure	About 1 N/mm per contact
• Contact span	Maximum 4 mm overall width (7 pin standard board) Maximum 6 mm overall width (15 pin standard board)
• Available standard pitches	100, 125, 150, 200, 250, 500 µm

Connector

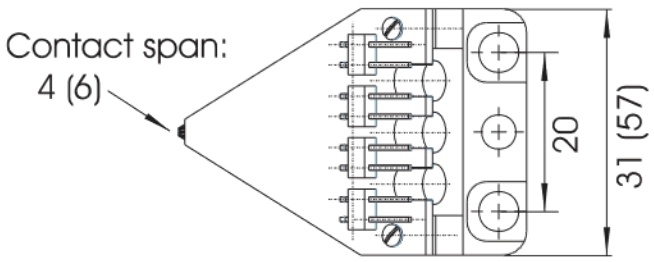
• Type	Up to 16 x Mini-Coax Up to 8 x SMP Up to 4 x SMA

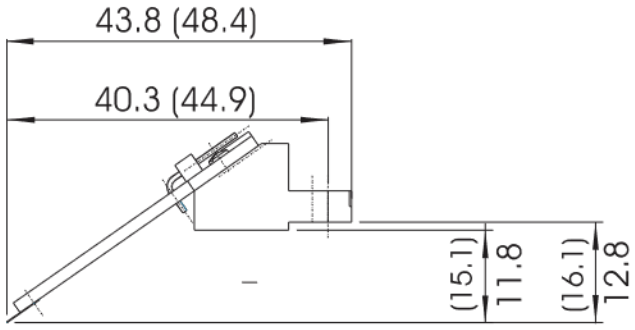
Cables

• Adapter cable	8 cm SMP male to SMA female 8 cm SMP male to 3.5 m SMA female
• Cable	1.2 m SMP male to SMA female 1.2 m SMP male to 3.5 m SMA female

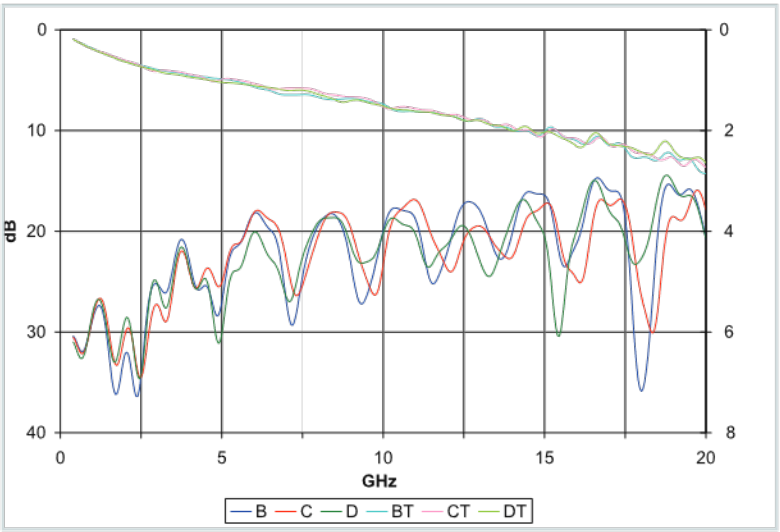
* Data, design and specification depend on individual process conditions and can vary according to equipment configurations.
Not all specifications may be valid simultaneously.

Physical Dimensions (measurements in mm)

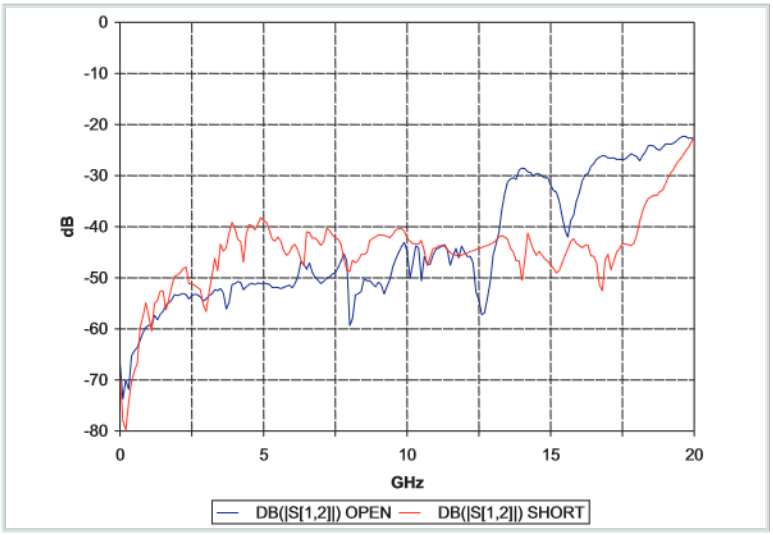




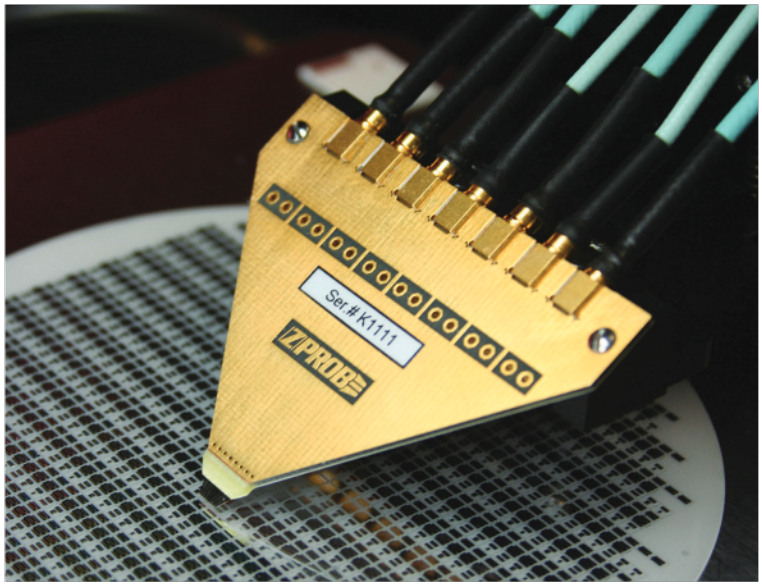
Multi IZI Probe 3 to 7 pin with medium board size. Variational figures for Multi IZI Probe 7 to 25 pin with large board size in brackets. All dimensions in mm.



GSGSGSG 150 insertion and return loss.



2 x Multi IZI Probe GSG 150 crosstalk on CSR-8



Multi IZI Probe.

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