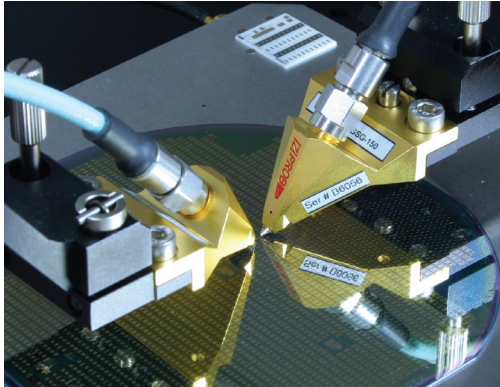


Cascade Microtech, Inc.

SPECIFICATION SHEET



High-power,
high-performance RF probe

|Z| Probe[®] Power

High-Frequency Wafer Probe

The demand for access to rich content anywhere in the world is driving the growth of wireless transmission of information. This increases the need for RF power devices in wireless systems and new technologies such as GaN and SiC. This in turn necessitates the characterization of these new technologies at wafer-level, which significantly reduces the time needed to develop new models. These models are used in new device designs, which are then further implemented in wireless transmission systems (base stations, satellites, etc.) to meet the demands of the content-hungry consumer.

To provide highly accurate characterization of RF power devices at wafer level, Cascade Microtech has developed |Z| Probe Power, based off proven |Z| Probe technology, which can handle up to 66 W at 2.4 GHz and 43 W at 5 GHz. The |Z| Probe Power provides excellent contact repeatability and extremely low contact resistance to deliver the most accurate results up to 40 GHz in load-pull measurement setups, which are typical for characterizing RF power devices.

The |Z| Probe Power is optimized even further for load-pull and noise-parameter measurements. Insertion loss, a critical value in these measurements, must be kept low in order to keep the reflection coefficient (Γ) high. The |Z| Probe Power has a typical insertion loss of 0.4 dB up to 40 GHz – a more than 70% improvement over standard |Z| Probe. This means you get more accurate measurements especially at non-50 Ω impedances.

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. No other RF probe provides such outstanding electrical performance and long lifetime, both characteristics that are a result of Cascade Microtech's pioneering work in developing nickel contact tips. As a result, the |Z| Probe Power is perfect for probing on aluminum and gold pads, and the ideal choice for your on-wafer RF power device characterization needs.

FEATURES AND BENEFITS

High-power RF measurement	Lowest DC resistance enables high power throughput
	Lowest insertion loss and highest possible return loss
	Unparalleled repeatable and reliable contact quality
Pulsed signal measurement	More than twice the specified power rating (depending on pulse characteristics)
Small pads, structures and uneven surfaces	40 μm x 40 μm pads can be tested Pad height differences of up to 50 μm can easily be handled
Accurate load-pull measurements	Very-low insertion loss makes the probes ideal for on-wafer load-pull measurements Nickel spring contacts enable safe and stable contact even on aluminum pads and under small vibrations

SPECIFICATIONS*

Electrical Characteristics

Characteristic impedance	50 Ω
Frequency range	DC to 40 GHz
Insertion loss	< 0.5 dB DC to 40 GHz (0.4 dB typical)
Average maximum RF power	9 W (40 GHz), 25 W (10 GHz), 60 W (2 GHz) (CW**)
DC current	Maximum 2 A
Contact resistance on Au	< 0.04 Ω

Mechanical Characteristics

Contact springs	Nickel
Insulator	RF dielectric
Lifetime	> 1,000,000 contact cycles
Maximum contact pressure	6 N/mm
Available pitches (μm)	100, 125, 150, 200, 250, 300, 350, 400, 450, 500 μm

Connector

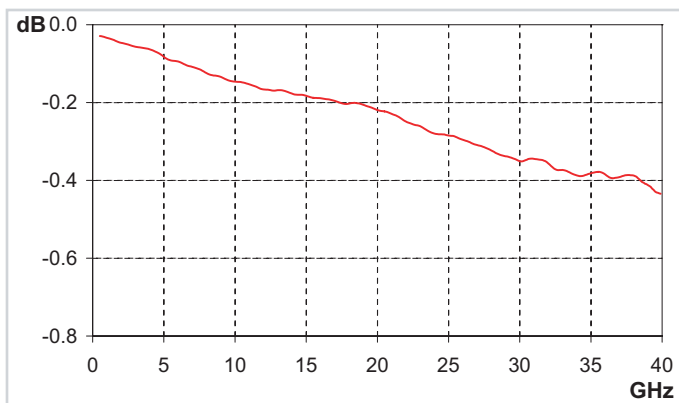
Type	PC 2.92 mm, female
Coupling torque	0.8 to 1.1 Nm (recommended)
Outer contact	Stainless steel
Center contact	CuBe with Au plating
Insulator	PEEK

Environmental Data

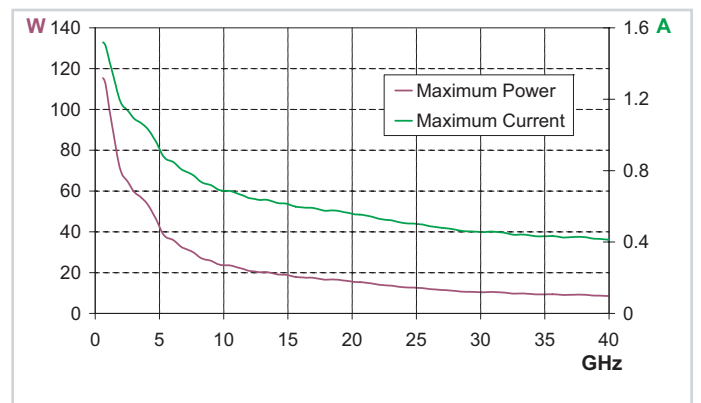
Temperature range	- 100° C to 200° C
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* Data, design and specification depend on individual process conditions and can vary according to equipment configurations.
Not all specifications may be valid simultaneously.

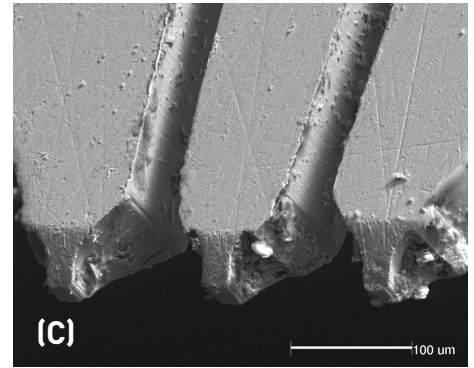
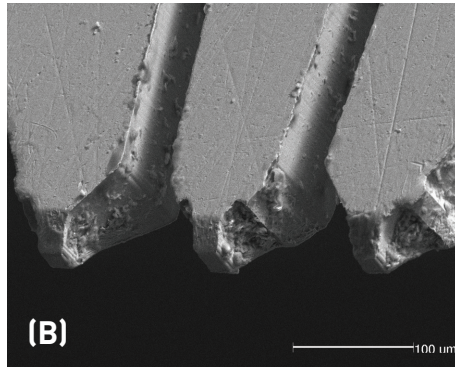
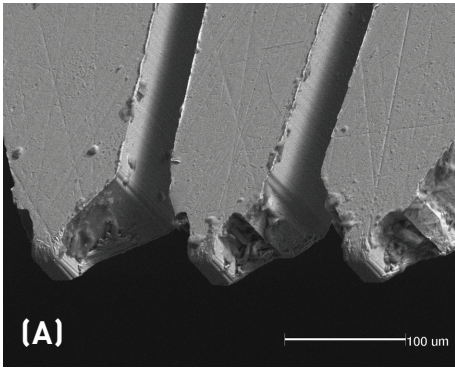
** Continuous Wave - An electromagnetic wave generated as an unbroken train of constant frequency and amplitude, rather than in pulses.



Low insertion loss of the |Z| Probe Power.

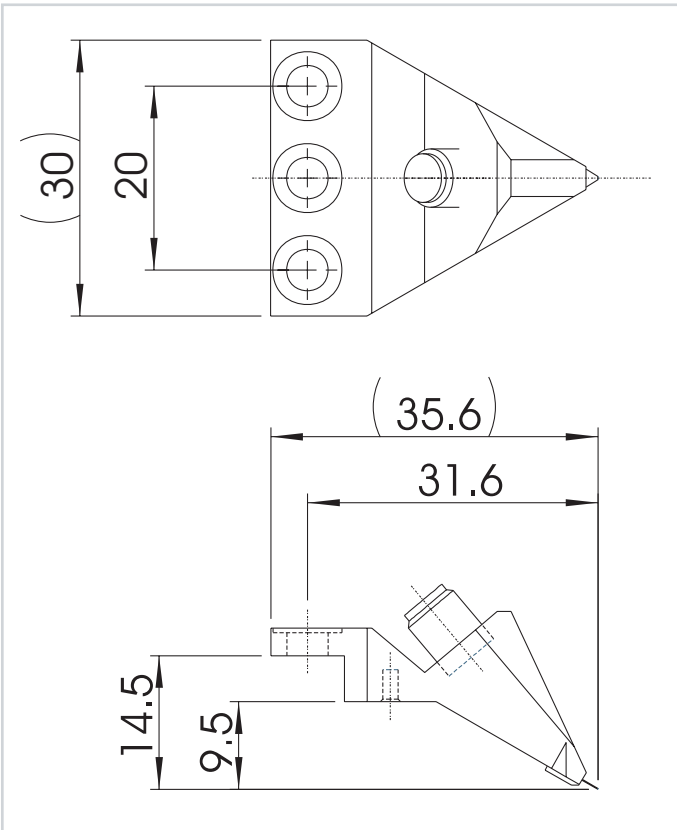


Average rating of maximum power and maximum current (CW) of the |Z| Probe Power GSG.

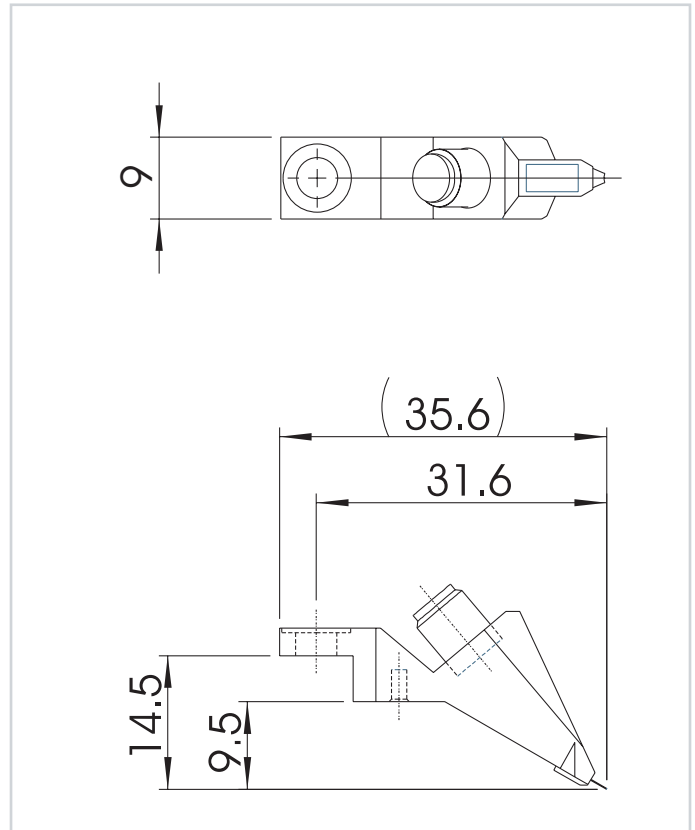


The |Z| Probe has the longest lifetime of any RF probe. (A) is a new |Z| Probe (upside-down). (B) shows the same probe after 1.5 million touchdowns. (C) after three million touchdowns. (Contact material: Al, Overtravel: 75 μm)

PHYSICAL DIMENSIONS



|Z| Probe Power standard case. (All dimensions in mm.)



|Z| Probe Power slim case. (All dimensions in mm.)

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Data subject to change without notice

ZProbePower-SS-0310

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