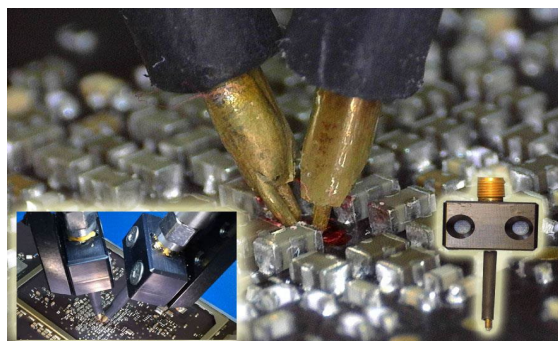


# S-Probe Single-Ended 20 GHz Probe

Rugged, RF and Power Integrity system capable of probing on uneven solder bumps



## Features

- **High Bandwidth:** DC to 20 GHz
- **Low Insertion Loss:** < 3 dB bandwidth
- **Ruggedness:** Strong enough for direct probing on hard-to-reach test pads
- **Probe-tip Calibration:** Accurate measurements without the need of soldering semi-rigid RF cables
- **High Repeatability:** No moving parts

The S-Probe series of single-ended probes tests RF, power integrity, and signal integrity up to 20 GHz. The long, strong beryllium copper (BeCu) probe tips provide direct access to uneven surfaces and hard-to-reach test pads. Note that microprobes are generally not recommended for this type of measurement because of their fragility.

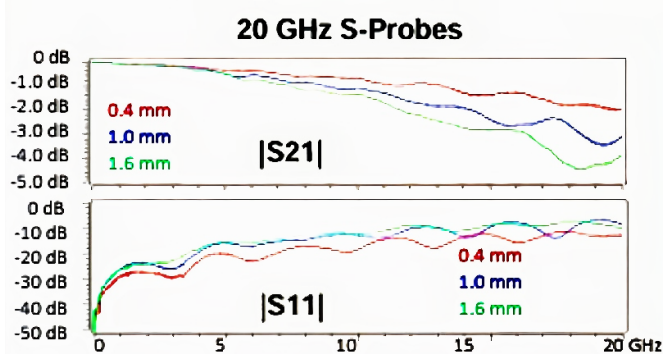
As circuit components shrink, semi-rigid RF cables cannot be used for testing gigahertz circuits. Engineers and Microprobe users alike will find the rugged S-Probe familiar. It has a calibration substrate (TCS70) and is capable of performing probe tip calibration. With the Precision Positioner DVT-FP250, engineers can switch between a 20 GHz Single-Ended S-Probe, microprobes, and high bandwidth true differential probes from DVT Solutions to measure time and frequency from 40 GHz to 110 GHz on full-size PCB prototypes.

## Specifications

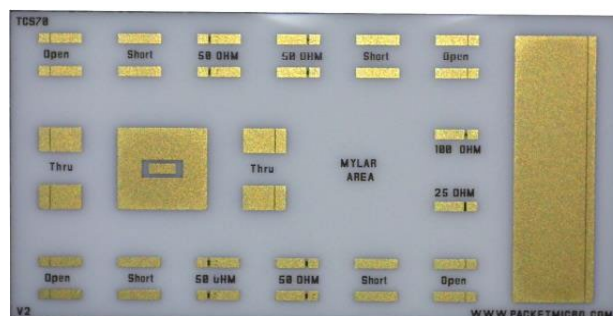
- **Bandwidth:** 18 GHz -20 GHz
- **Insertion Loss:** less than 3 dB
- **Impedance:** 50±2 Ohm
- **Connector Type:** SMA Female  
Size: 38 x 20 x 12 mm (1.5 x 0.8 x 0.5 in)
- **Probe Force:** 50 gm (typical)  
250 gm (maximum without damage)

## S-Probe Part Numbers

- SP-GR-2015025 –20 GHz, 0.25 mm pitch
- SP-GR-201504 – 20 GHz, 0.4 mm pitch
- SP-GR-201505 – 20 GHz, 0.5 mm pitch
- SP-GR-181508 – 18 GHz, 0.8 mm pitch
- SP-GR-181510 – 18 GHz, 1.0 mm pitch
- SP-GR-161512 – 16 GHz, 1.2 mm pitch
- SP-GR-161514 – 16 GHz, 1.4 mm pitch
- SP-GR-161516 – 16 GHz, 1.6 mm pitch



Uncalibrated S21/S11 of 0.41/1.6 mm pitch



## Calibration Substrate

The R-Probe product family includes a TCS70 calibration substrate with short, open, load, and thru (SOLT) standards for S-parameter calibrations. This substrate enables a user to move the measurement reference point directly to the probe tips for accurate, repetitive testing.

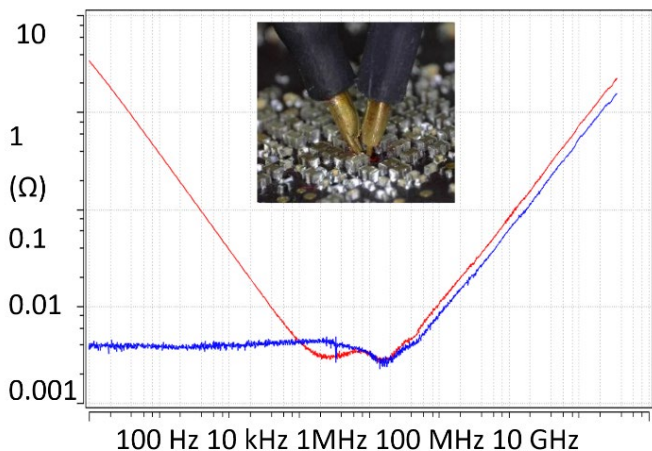
## Substrate Specifications

- Substrate:** Polished aluminum
- SOLT Standards:** Open, short, thru, and 50 Ω
- Contact Material:** Gold
- Accuracy:** < 0.5% (25 Ω, 50 Ω)
- Size:** 17.3 x 9.4 x 0.6 mm (0.68 x 0.37 x 0.025 in)

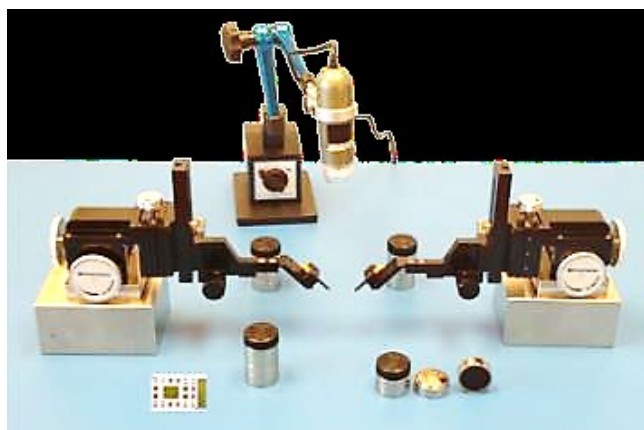
### Power Integrity Measurement

High-speed electronics are increasingly more sensitive to the quality of their power distribution networks (PDN) because many of them draw tens of amps at 0.9 volts. Typically, the 2-port shunt-thru technique is used to measure the PDN impedance in the milliohm range. In many cases, the test pads are surrounded by components, and this makes the measurements difficult.

Two 0.5 mm pitch S-Probes, a Rohde & Schwarz ZNL VNA, and an Omicron Bode 100 VNA are used to make the impedance measurements from 100 Hz to 3 GHz. It has been demonstrated that R-Probe can make accurate PDN measurements down to 3 milliohms.



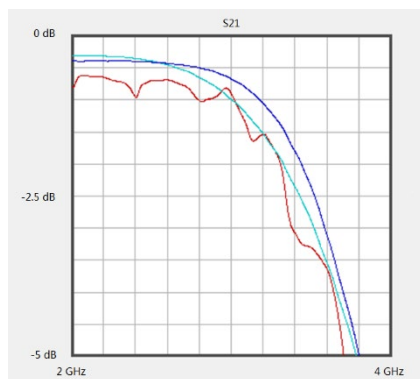
### Recommended Accessories



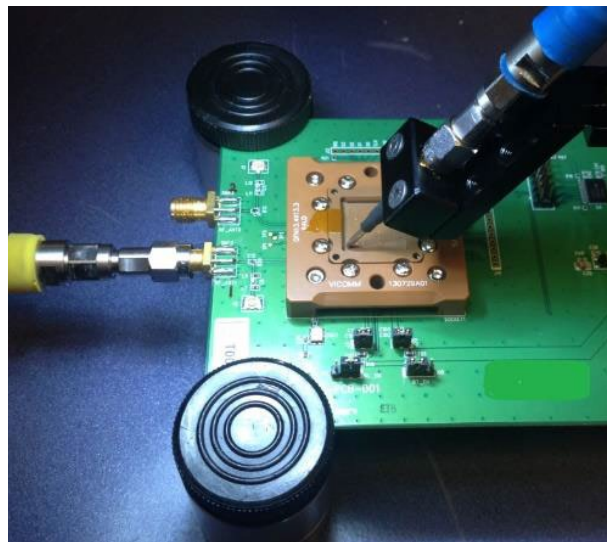
- DVT-FP250, (XYZ.Theta) Precision Positioner
- DVT-SM Holders, PCB Holder
- DVT-CS-3, Camera Positioner System

### RF Measurement

The S-Probe is also ideal for making RF measurements. The following S21 measurement of a TDK 2.45 GHz low pass filter (P/N: DEA102500LT-6307A1, Size 0402) shows that S-Probe accuracy is better than that of soldering a coaxial cable.



The S-Probes are also frequently used to test Wi-Fi, Bluetooth, other RF modules, and their test fixtures.



RF Module Test Fixture Measurement