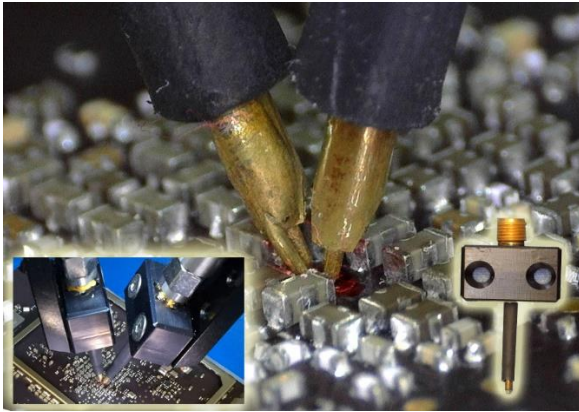


# R-PROBE RP-GR SERIES

**RUGGED, SINGLE-ENDED 18-GHZ PROBE FOR MEASURING POPULATED PCB BOARDS**



R-Probe series is designed for RF and power integrity testing. Its long, strong beryllium copper (BeCu) tips are perfect for direct probing of hard-to-reach test pads surrounded by components. Microprobes are not suitable for this type of measurements due to their fragility.

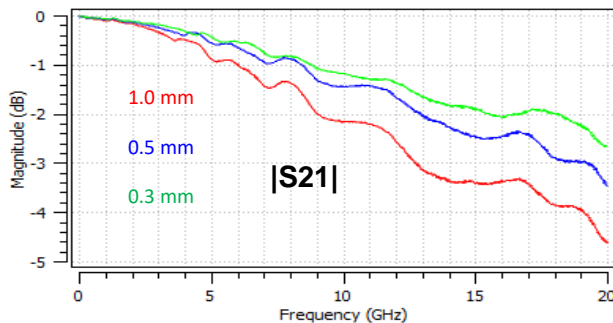
Constant shrinking size of circuit components makes soldering semi-rigid RF cables to test gigahertz circuits impractical. The user experience of R-Probe is similar to that of the microprobe. Precision Positioner TP250 allows an engineer to switch between a R-Probe and microprobe easily.

## FEATURES:

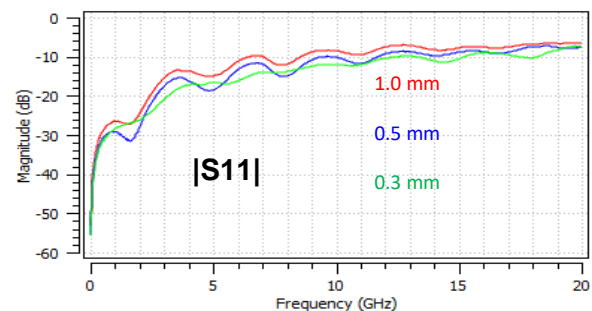
- **High Bandwidth:** DC to 18 GHz
- **Low Insertion Loss:** < 3 dB @ Bandwidth
- **Ruggedness:** Strong, narrow BeCu tips for direct probing on hard-to-reach test pads surrounded by components
- **High Repeatability:** No moving parts
- **Probe-tip Calibration:** accurate measurements without the need of soldering semi-rigid RF cables

## SPECIFICATIONS

<b>Bandwidth</b>	18 GHz (0.2/0.3 mm pitch) 15 GHz (0.4/0.5 mm pitch) 12 GHz (0.8/1.0 mm pitch)
<b>Insertion Loss</b>	Less than 3 dB @ Bandwidth
<b>Impedance</b>	50±2 Ohm
<b>Connector Type</b>	SMA Female
<b>Size/ Weight</b>	38x20x12 mm (1.5x0.8x0.5") / 8 gm
<b>Probe Force</b>	50 gm (typical) 200 gm (max w/o damage)



**Un-calibrated S21 for 0.5/0.8/1.0 mm pitch**



**Un-calibrated S11 for 0.5/0.8/1.0 mm pitch**

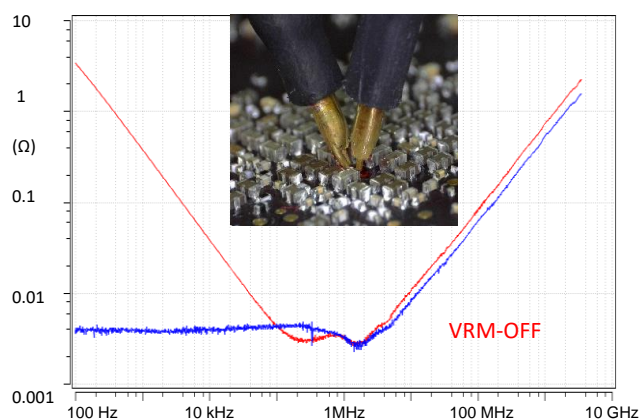
PROBE PITCH VS. COMPONENT SIZE	
PROBE PART NUMBER	SIZE
<b>RP-GR-181503</b>	01005
<b>RP-GR-151505</b>	0201
<b>RP-GR-121510</b>	0402

PART NUMBERS	BW (GHz)	PROBE PITCH
<b>RP-GR-181502</b>	18 GHz	0.2 mm / 8 mil
<b>RP-GR-181503</b>	18 GHz	0.3 mm / 12 mil
<b>RP-GR-151504</b>	15 GHz	0.4 mm / 16 mil
<b>RP-GR-151505</b>	15 GHz	0.5 mm / 20 mil
<b>RP-GR-121508</b>	12 GHz	0.8 mm / 32 mil
<b>RP-GR-121510</b>	12 GHz	1.0 mm / 40 mil

## MEASUREMENTS

### Power Integrity Measurement

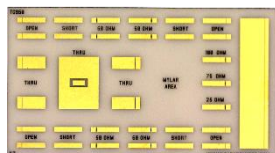
High-speed electronics are increasingly more sensitive to the quality of their power distribution networks (PDN) because many of them draw hundreds of amps at 0.9 volts. Typically, the 2-port shunt-thru technique is used to measure the PDN impedance in the milliohm range. In many cases, the test pads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



Two 0.5 mm pitch R-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.

### TCS50 CALIBRATION SUBSTRATE

R-Probe product family includes a TCS50 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.



### SPECIFICATIONS

**SOLT Standards:** Open, short, thru, and 50  $\Omega$

**Frequency:** 20 GHz

**Probe Pitch:** 0.2 mm – 1.6 mm

**Substrate:** Polished Alumina

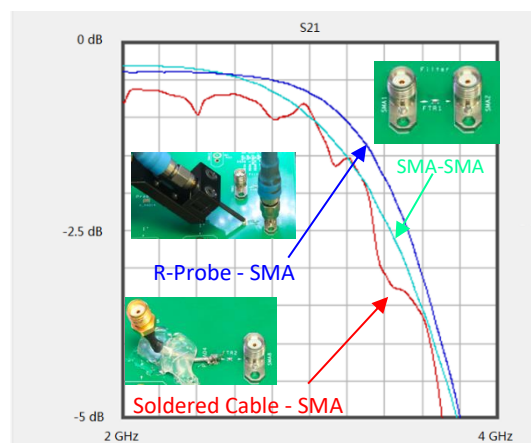
**Contact Material:** Gold

**Accuracy:** < 0.5% (25  $\Omega$ , 50  $\Omega$ )

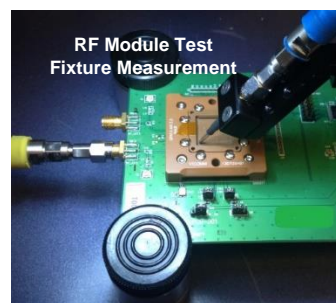
**Size/Weight:** 17.3 x 9.4 x 0.6 mm (0.68 x 0.37 x 0.025 in) / 1 gm

### RF Measurement

R-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 R-Probe accuracy is better than that of soldering a coaxial cable.



In addition, R-Probes have been used to test Wi-Fi, Bluetooth, other RF modules, and their test fixtures.

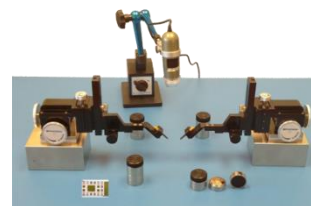


### ACCESSORIES

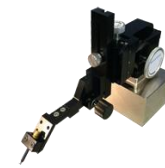
- TP250 4D (xyz $\theta$ ) Precision Positioner
- TP150 4D (xyz $\theta$ ) Precision Positioner
- PH100 PCB Holder
- FP40-HDM1 Flex Positioner
- Dino-Lite Digital Microscope



Dino-Lite Microscope



Typical Probing Setup



R-Probe on TP250