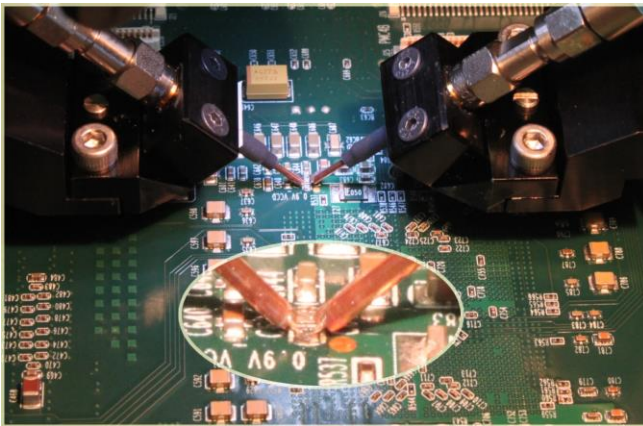


# S-Probe

Rugged, single-ended 30/20 GHz probe capable of probing on uneven solder bumps



Direct probing on solder pads

## Overview

S-Probe series is designed for RF, power integrity, and signal integrity testing. Its strong beryllium copper (BeCu) tips are perfect for direct probing of uneven surfaces, such as solder pads and 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 rugged S-Probe and its calibration substrate (TCS70) allow engineers to perform probe-tip calibration for accurate, repetitive measurements.

The user experience of S-Probe is similar to that of the microprobe. Precision Positioner TP250 allows an engineer to switch between a S-Probe and microprobe easily.

## Specifications

- **Bandwidth:** 30/20 GHz (0.25/0.4/0.5 mm)  
18 GHz (0.8/1.0 mm)  
16 GHz (1.2/1.4/1.6 mm)
- **Insertion Loss:** less than 3 dB
- **Impedance:** 50±2 Ohm
- **Connector Type:** 2.92mm/SMA Female
- **Size:** 38 x 20 x 12 mm (1.5 x 0.8 x 0.5 in)
- **Weight:** 10 gm
- **Probe force:** 50 gm (typical)  
250 gm (max w/o damage)

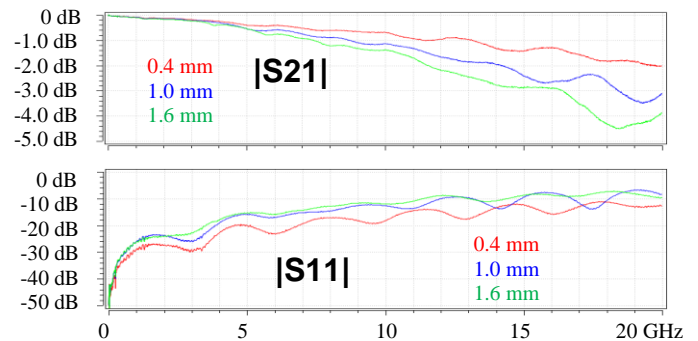
## 20 GHz S-Probe Part No.

- **SP-GR-2015025** – 20 GHz, 0.25 mm/10 mil pitch
- **SP-GR-201504** – 20 GHz, 0.4 mm/16 mil pitch
- **SP-GR-201505** – 20 GHz, 0.5 mm/20 mil pitch
- **SP-GR-181508** – 18 GHz, 0.8 mm/32 mil pitch
- **SP-GR-181510** – 18 GHz, 1.0 mm/40 mil pitch
- **SP-GR-161512** – 16 GHz, 1.2 mm/48 mil pitch
- **SP-GR-161514** – 16 GHz, 1.4 mm/56 mil pitch
- **SP-GR-161516** – 16 GHz, 1.6 mm/64 mil pitch

## Features:

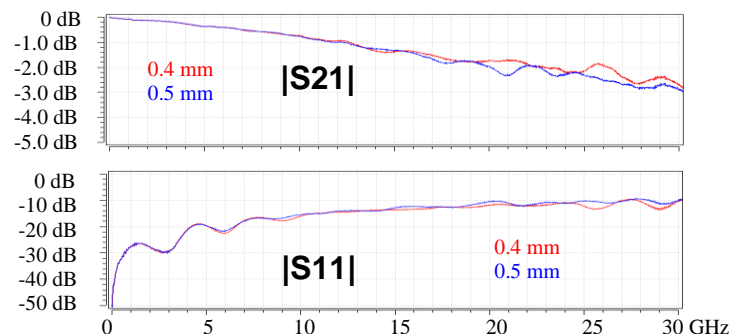
- **High Bandwidth:** DC to 30/20 GHz
- **Low Insertion Loss:** < 3 dB @ 30 GHz for probe pitch ≤ 0.5 mm
- **Ruggedness:** Strong enough for direct probing on uneven solder bumps
- **Probe-tip Calibration:** accurate measurements without the need of soldering semi-rigid RF cables
- **High Repeatability:** No moving parts

### 20 GHz S-Probes



un-calibrated S21/S11 of 0.4/1.0/1.6 mm pitch

### 30 GHz S-Probe



un-calibrated S21/S11 of 0.4/0.5 mm pitch

## 30 GHz S-Probe Part No.

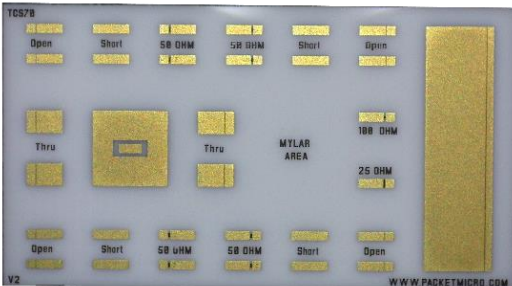
- **SP-GR-3015025** – 30 GHz, 0.25 mm/10 mil pitch
- **SP-GR-301504** – 30 GHz, 0.4 mm/16 mil pitch
- **SP-GR-301505** – 30 GHz, 0.5 mm/20 mil pitch

Size	Probe Part number	Size	Probe Part number
01005	SP-GR-201504	0402	SP-GR-181510
0201	SP-GR-201505	0603	SP-GR-161514

### Probe Pitch vs. Component Size

## Calibration Substrate

S-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.



## Specifications

**Substrate:** Polished alumina

**Structure:** Open, short, thru, 25  $\Omega$ , 50  $\Omega$ , 100  $\Omega$

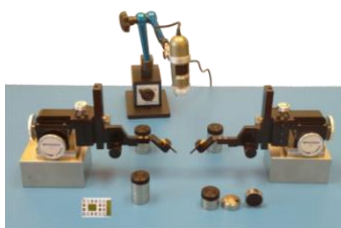
**Contact Material:** Gold

**Accuracy:** 25  $\Omega$ , 50  $\Omega$  < 0.5%, 100  $\Omega$  < 1%

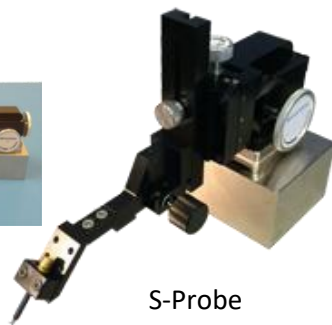
**Size:** 17.3 x 9.4 x 0.6 mm (0.68 x 0.37 x 0.025 in)

## Accessories

- PS600 RF Probe Station
- TP250 4D (xyz $\theta$ ) Precision Positioner
- TP150 4D (xyz $\theta$ ) Precision Positioner
- PH100 PCB Holder
- Dino-Lite Digital Microscope



PS600 RF  
Probe Station



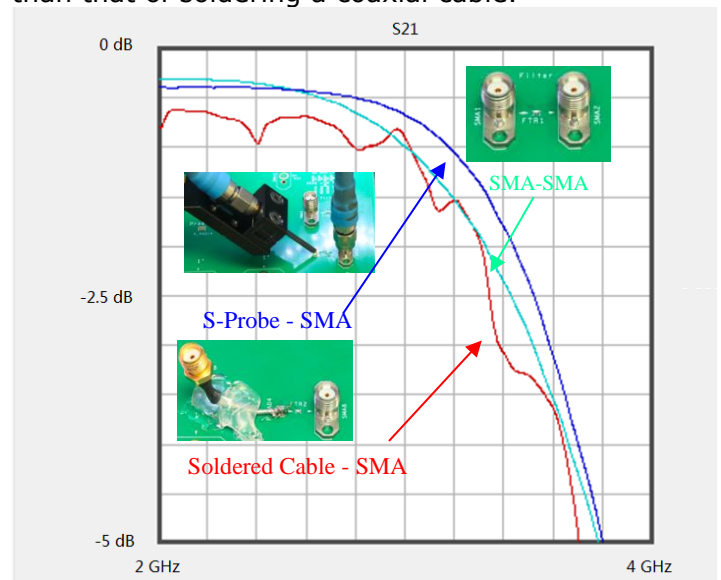
S-Probe  
on TP250

## About PacketMicro

PacketMicro, headquartered in Silicon Valley, provides one-stop shopping for your needs in PCB probing and signal-integrity analysis. Its product offering includes a wide range of rugged RF probes up to 40 GHz, patented probe positioners, DIY bench-top probe stations, flexible phase-stable RF cables, digital microscopes, and AITT signal-integrity analysis tools for de-embedding and PCB material extraction. PacketMicro customers include many Fortune 100 companies. For more information, please visit [www.packetmicro.com](http://www.packetmicro.com).

## RF Measurement

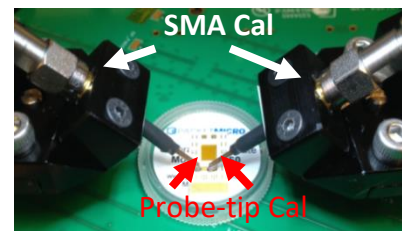
The following S21 measurement of a TDK 2.45 GHz low pass filter (P/N: DEA102500LT-6307A1, Size 0402) shows that S-Probe performance is better than that of soldering a coaxial cable.



RF Measurement Comparison

## 2-Port Probe-Tip Calibration

Probe-tip calibration allows accurate, repetitive S-Parameter measurements.



2-probe measurement of TCS70 Thru

