GPR GS/SG Series RF Probes 26/40/50/67 GHz

At a Glance

Our RF wafer probes are built with advanced 3D MEMS technology and precision micromachining for stable, repeatable probing. The proprietary tip design enables accurate contact on small passivation openings while minimizing probe skating.

This new-generation design uses high-performance alloy materials and an optimized profile to improve stability and consistency versus traditional products. A protruding tip and refined geometry reduce signal loss and parasitic parameters, while improving probing positioning under a microscope.

The probes maintain stable RF parameter measurements from −60°C to +125°C and have been validated through aging tests exceeding 2,000,000 cycles, ensuring consistent long-term contact performance.

GPR GS/SG RF Probe Parameters & Dimensions

Performance Repeatability

Measured under controlled temperature and humidity using the same instrument setup and the same calibration dataset.

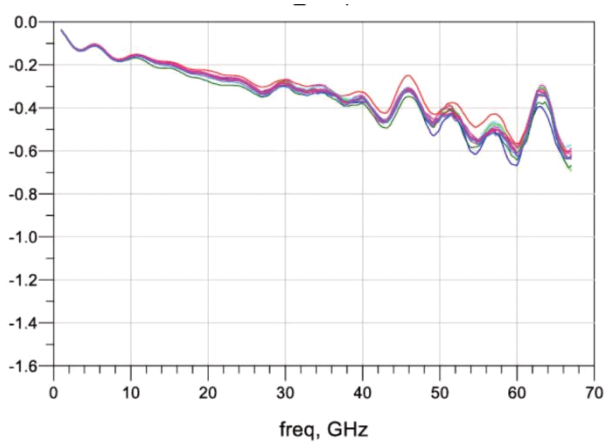

Figure 2-1: Performance Repeatability

Probe Outline Dimensions (mm)

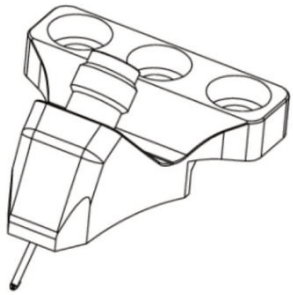

Figure 2-2. Isometric View of the Probe Housing (for reference)

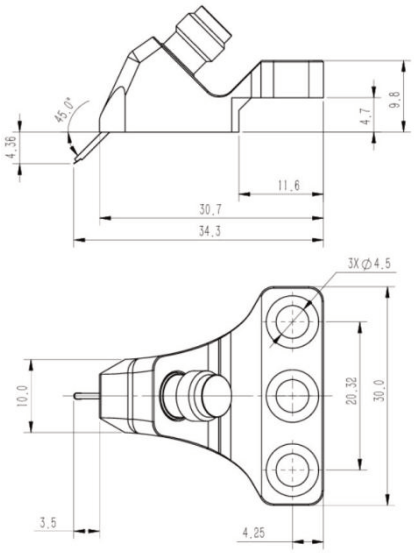

Figure 2-3. Probe Outline Dimensions (2D)

GS Tip Configuration (mm)

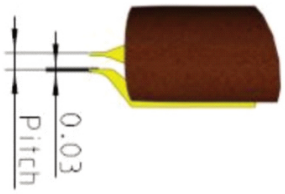

Figure 2-4(a). GS Tip Geometry (Schematic)

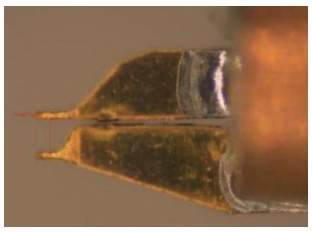

Figure 2-4(b). Microscope Image of GS Tip

SG Tip Configuration (mm)

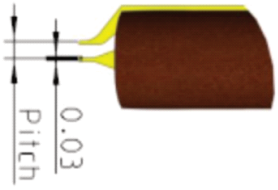

Figure 2-5(a). SG Tip Geometry (Schematic)

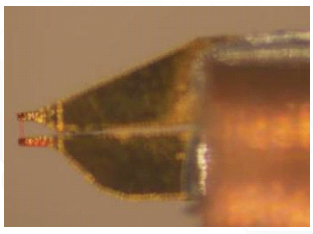

Figure 2-5(b). Microscope Image of SG Tip

GPR 26 GHz GS/SG RF Probe

Mechanical Specifications	
Connector Interface	SMA (Female)
Tip Configuration	GS, GS
Tip Pitch	50 - 300 µm
Tip Material	Nickel Alloy
Tip Width	30 µm
Scrub Length	10 - 30 µm
Electrical Specifications	
Impedance	50 Ω
Operating Frequency	DC to 26 GHz
Return Loss	> 14 dB @ DC to 26 GHz
Insertion Loss	< 0.9 dB @ DC to 26 GHz

Figure 3-1. GPR 26 GHz RF Probe

Measured Probe Data

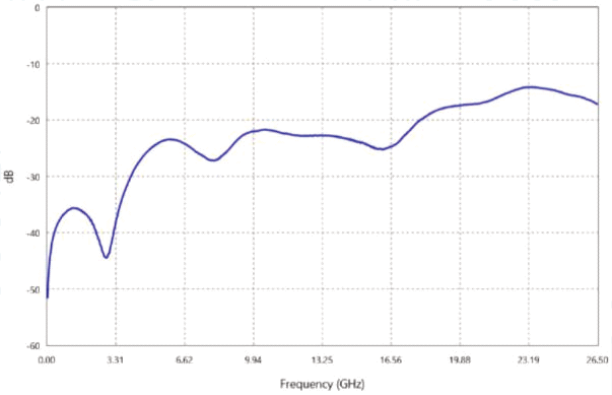

Figure 3-2(a). S11 FORWARD REFLECTION

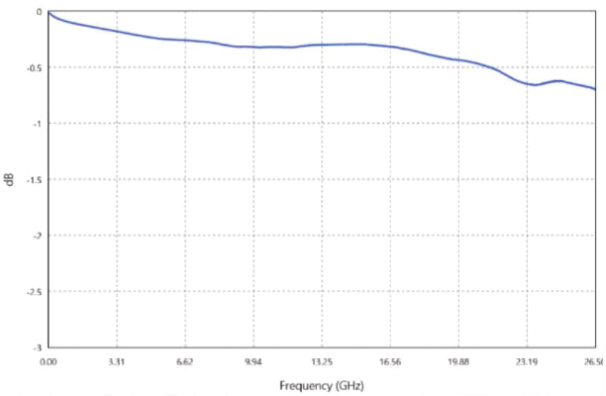

Figure 3-2(b). S21 FORWARD TRANSMISSION

· Return Loss into a 50 ohm load
· Minimum return loss: -14.1dB

· Insertion Loss
· Maximum insertion loss: -0.69dB

(Data source: measured results of the GPR26-GS-150 probe.)

GPR 40 GHz GS/SG RF Probe

Mechanical Specifications	
Connector Interface	2.92 mm (Female)
Tip Configuration	GS, GS
Tip Pitch	50 - 300 µm
Tip Material	Nickel Alloy
Tip Width	30 µm
Scrub Length	10 - 30 µm
Electrical Specifications	
Impedance	50 Ω
Operating Frequency	DC to 40 GHz
Return Loss	> 14 dB @ DC to 40 GHz
Insertion Loss	< 1.1 dB @ DC to 40 GHz

Figure 4-1. GPR 40 GHz RF Probe

Measured Probe Data

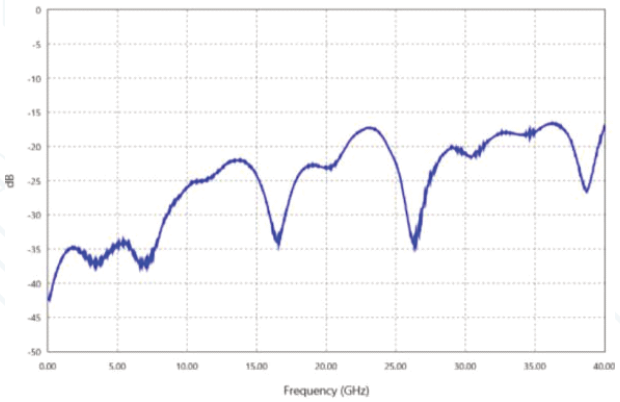

Figure 4-2(a). S11 FORWARD REFLECTION

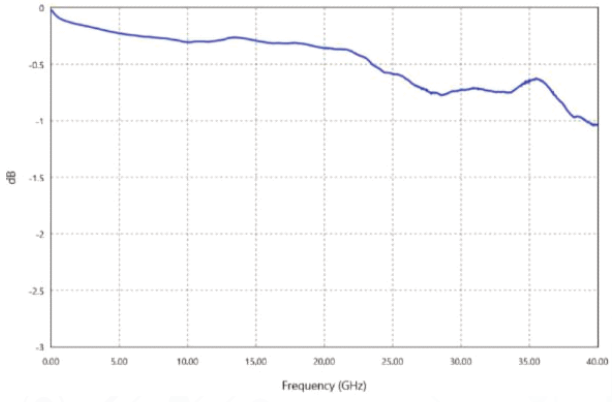

Figure 4-2(b). S21 FORWARD TRANSMISSION

- Return Loss into a 50 ohm load
- Minimum return loss: -16.2dB

- Insertion Loss
- Maximum insertion loss: -1.03dB

(Data source: measured results of the GPR40-GS-100 probe.)

GPR 50 GHz GS/SG RF Probe

Mechanical Specifications	
Connector Interface	2.4 mm (Female)
Tip Configuration	GS, GS
Tip Pitch	50 - 300 µm
Tip Material	Nickel Alloy
Tip Width	30 µm
Scrub Length	10 - 30 µm
Electrical Specifications	
Impedance	50 Ω
Operating Frequency	DC to 50 GHz
Return Loss	> 14 dB @ DC to 50 GHz
Insertion Loss	< 1.2 dB @ DC to 50 GHz

Figure 5-1. GPR 50 GHz RF Probe

Measured Probe Data

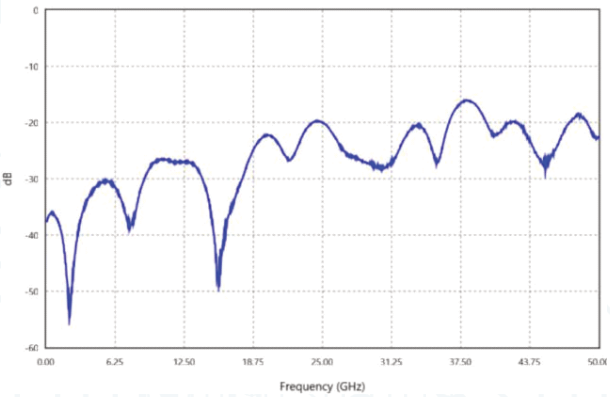

Figure 5-2(a). S11 FORWARD REFLECTION

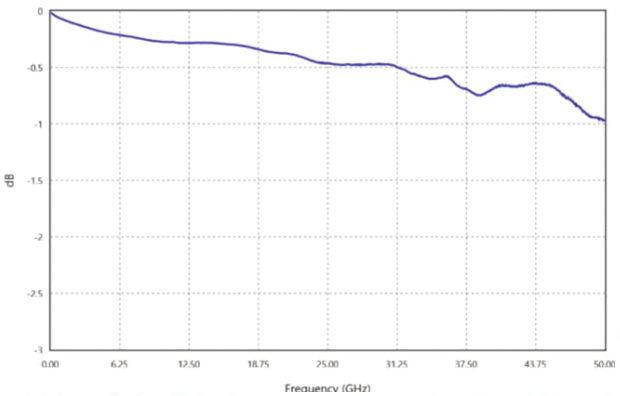

Figure 5-2(b). S21 FORWARD TRANSMISSION

- Return Loss into a 50 ohm load
- Minimum return loss: -15.3dB

- Insertion Loss
- Maximum insertion loss: -1.03dB

(Data source: measured results of the GPR50-GS-150 probe.)

GPR 67 GHz GS/SG RF Probe

Mechanical Specifications	
Connector Interface	1.85 mm (Female)
Tip Configuration	GS, GS
Tip Pitch	50 - 300 µm
Tip Material	Nickel Alloy
Tip Width	30 µm
Scrub Length	10 - 30 µm
Electrical Specifications	
Impedance	50 Ω
Operating Frequency	DC to 67 GHz
Return Loss	> 14 dB @ DC to 67 GHz
Insertion Loss	< 1.3 dB @ DC to 67 GHz

Figure 6-1. GPR 67 GHz RF Probe

Measured Probe Data

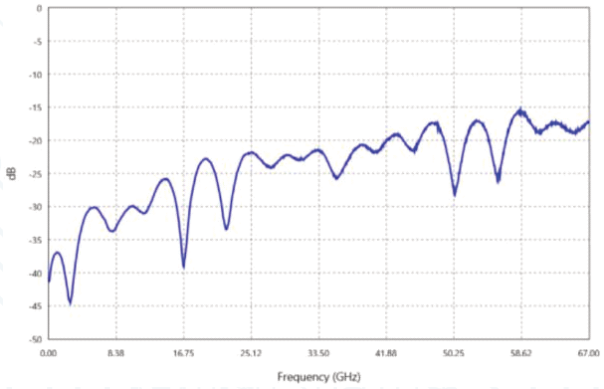

Figure 6-2(a). S11 FORWARD REFLECTION

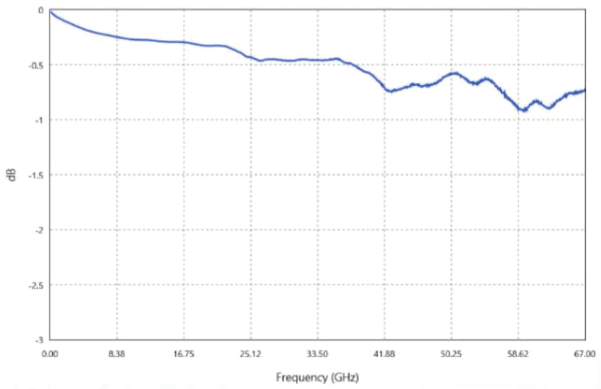

Figure 6-2(b). S21 FORWARD TRANSMISSION

- Return Loss into a 50 ohm load
- Minimum return loss: -15.7dB

- Insertion Loss
- Maximum insertion loss: -0.98dB

(Data source: measured results of the GPR67-GS-150 probe.)

GPR GS Series Ordering Information

GPR 26 GHz GS Series

GS Probe Part No.	Frequency	Configuration	Pitch
GPR26-GS-50	26 GHz	GS	50 µm
GPR26-GS-75	26 GHz	GS	75 µm
GPR26-GS-100	26 GHz	GS	100 µm
GPR26-GS-125	26 GHz	GS	125 µm
GPR26-GS-150	26 GHz	GS	150 µm
GPR26-GS-175	26 GHz	GS	175 µm
GPR26-GS-200	26 GHz	GS	200 µm
GPR26-GS-XXX	26 GHz	GS	XXX µm

GPR 40 GHz GS Series

GS Probe Part No.	Frequency	Configuration	Pitch
GPR40-GS-50	40 GHz	GS	50 µm
GPR40-GS-75	40 GHz	GS	75 µm
GPR40-GS-100	40 GHz	GS	100 µm
GPR40-GS-125	40 GHz	GS	125 µm
GPR40-GS-150	40 GHz	GS	150 µm
GPR40-GS-175	40 GHz	GS	175 µm
GPR40-GS-200	40 GHz	GS	200 µm
GPR40-GS-XXX	40 GHz	GS	XXX µm

GPR 50 GHz GS Series

GS Probe Part No.	Frequency	Configuration	Pitch
GPR50-GS-50	50 GHz	GS	50 µm
GPR50-GS-75	50 GHz	GS	75 µm
GPR50-GS-100	50 GHz	GS	100 µm
GPR50-GS-125	50 GHz	GS	125 µm
GPR50-GS-150	50 GHz	GS	150 µm
GPR50-GS-175	50 GHz	GS	175 µm
GPR50-GS-200	50 GHz	GS	200 µm
GPR50-GS-XXX	50 GHz	GS	XXX µm

GPR 67 GHz GS Series

GS Probe Part No.	Frequency	Configuration	Pitch
GPR67-GS-50	67 GHz	GS	50 µm
GPR67-GS-75	67 GHz	GS	75 µm
GPR67-GS-100	67 GHz	GS	100 µm
GPR67-GS-125	67 GHz	GS	125 µm
GPR67-GS-150	67 GHz	GS	150 µm
GPR67-GS-175	67 GHz	GS	175 µm
GPR67-GS-200	67 GHz	GS	200 µm
GPR67-GS-XXX	67 GHz	GS	XXX µm

GPR SG Series Ordering Information

GPR 26 GHz SG Series

SG Probe Part No.	Frequency	Configuration	Pitch
GPR26-SG-50	26 GHz	SG	50 µm
GPR26-SG-75	26 GHz	SG	75 µm
GPR26-SG-100	26 GHz	SG	100 µm
GPR26-SG-125	26 GHz	SG	125 µm
GPR26-SG-150	26 GHz	SG	150 µm
GPR26-SG-175	26 GHz	SG	175 µm
GPR26-SG-200	26 GHz	SG	200 µm
GPR26-SG-XXX	26 GHz	SG	XXX µm

GPR 40 GHz SG Series

SG Probe Part No.	Frequency	Configuration	Pitch
GPR40-SG-50	40 GHz	SG	50 µm
GPR40-SG-75	40 GHz	SG	75 µm
GPR40-SG-100	40 GHz	SG	100 µm
GPR40-SG-125	40 GHz	SG	125 µm
GPR40-SG-150	40 GHz	SG	150 µm
GPR40-SG-175	40 GHz	SG	175 µm
GPR40-SG-200	40 GHz	SG	200 µm
GPR40-SG-XXX	40 GHz	SG	XXX µm

GPR 50 GHz SG Series

SG Probe Part No.	Frequency	Configuration	Pitch
GPR50-SG-50	50 GHz	SG	50 µm
GPR50-SG-75	50 GHz	SG	75 µm
GPR50-SG-100	50 GHz	SG	100 µm
GPR50-SG-125	50 GHz	SG	125 µm
GPR50-SG-150	50 GHz	SG	150 µm
GPR50-SG-175	50 GHz	SG	175 µm
GPR50-SG-200	50 GHz	SG	200 µm
GPR50-SG-XXX	50 GHz	SG	XXX µm

GPR 67 GHz SG Series

SG Probe Part No.	Frequency	Configuration	Pitch
GPR67-SG-50	67 GHz	SG	50 µm
GPR67-SG-75	67 GHz	SG	75 µm
GPR67-SG-100	67 GHz	SG	100 µm
GPR67-SG-125	67 GHz	SG	125 µm
GPR67-SG-150	67 GHz	SG	150 µm
GPR67-SG-175	67 GHz	SG	175 µm
GPR67-SG-200	67 GHz	SG	200 µm
GPR67-SG-XXX	67 GHz	SG	XXX µm

Universal RF Calibration Substrate (GS/SG)

Specifications	
Frequency Range	DC to 110 GHz
Pitch (center-to-center)	50 - 1000 µm
Substrate Size	15 mm × 20 mm
Thickness	635 µm
Probe Tip Contact Width	30 µm
Probe Pad / Contact Pad Size	50 µm x 50 µm
Supported Calibration Methods	SOLT, TRL, SOLR

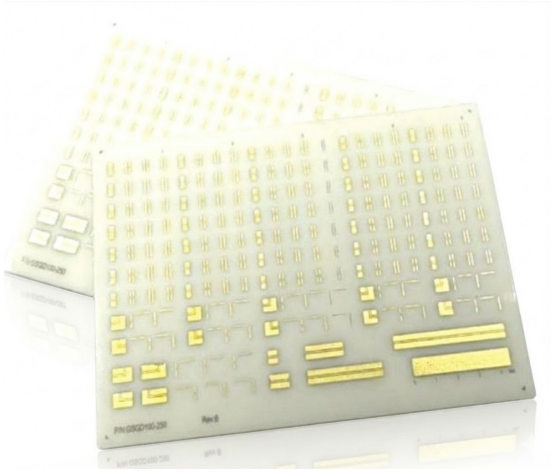

Figure 9-1. Universal RF Calibration Substrate

A single calibration substrate integrates multiple calibration structures (e.g., in-line/straight and bent/folded layouts) and supports multi-port measurements.

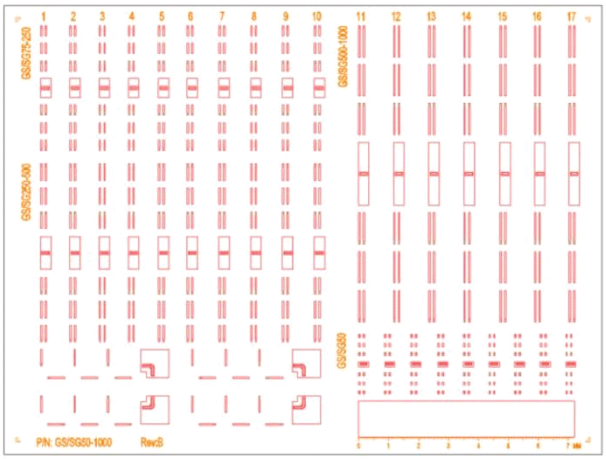

Figure 9-2. Layout of the GS/SG calibration substrate

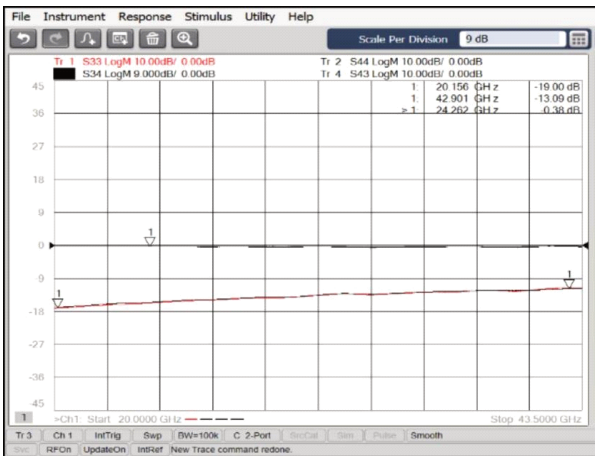

Figure 9-3. Post-calibration transmission-line measurement (VNA)

Ordering Information

Universal RF Calibration Substrate (GS/SG)	Configuration	Pitch
GS/SG50-1000	GS/SG	50 - 1000 µm

Table 9-1. Universal RF Calibration Substrate (GS/SG) Selection Table

(Notes: This universal calibration substrate is intended for GS/SG (2-point) applications (GS and SG orientations supported). For GSG or differential 4-point configs (e.g., SGSG/GSSG), please provide the chip pad/layout drawing for proper selection or use the corresponding calibration substrate. For mmWave/waveguide setups, please also confirm probe-station module compatibility and mechanical outline constraints.)

Straight RF Cable for GPR GS/SG Series

Specifications	40 GHz Cable	50 GHz Cable	67 GHz Cable
Frequency range	DC - 40 GHz	DC - 50 GHz	DC - 67 GHz
Application	Probe-to-VNA	Probe-to-VNA	Probe-to-VNA
Compatible probe type	45° connector probe	45° connector probe	45° connector probe
Probe - end connector	2.92 mm male	2.4 mm male	1.85 mm male
VNA - end connector	2.92 mm female	2.4 mm female	1.85 mm female
Cable length	1.2 m	1.2 m	1.2 m
Typical insertion loss (IL)	3.50 dB @ DC - 40 GHz	4.49 dB @ DC - 50 GHz	6.48 dB @ DC - 67 GHz
Typical VSWR	1.25 @ DC - 40 GHz	1.30 @ DC - 50 GHz	1.35 @ DC - 67 GHz

Figure 10-1. Straight RF cable assembly

Probe Planarization Substrate

Specifications	
Overall dimensions (L × W)	20 mm × 15 mm
Thickness	635 µm

Figure 10-2. Probe Planarization Substrate