

Data Sheet

D-COAX, Inc.



Differential/Single-ended High Frequency Probe

DP1.4 Differential Probe

1.4 mm Pitch High Frequency Differential, Coaxial PCB Probe (40 GHz)

The DP1.4 Differential probe by D-COAX is used for high frequency PCB differential impedance characterization or high-speed differential or single-ended electrical signal analysis and is an excellent and affordable solution. The probe is mounted on the compact rigid holding fixture that can be configured in two positions: horizontal position for Testing and for nulling out probe-to-probe and the vertical position for testing. This compact configuration is designed for [PCB boards](#) or [direct probing of Twinax or Coaxial cable](#). Because the probe uses un-coupled 50 ohm semi-rigid for each channel, [differential or single-ended measurements are possible](#). High accuracy measurement are obtained by having low contact resistance and impedance control of the probe throughout all transitions.

Features and Benefits

Durability	Long Life Time
	Anti-crash feature
	Reliable contact quality
Flexibility	Probe rough surfaces
	Probe Twinax or Coaxial cable directly

DP1.4 Differential Probe
www.d-coax.com



	Custom ground contact positions
RF performance	Low insertion loss
	Low contact resistance
	High Bandwidth

Specification

Electrical

Type	Passive, differential, or single-ended
Bandwidth	40GHz
Impedance	100 Ohm differential, 50 Ohm single-ended (Un-coupled)
Insertion loss GSSG	< 0.55 dB at 40GHz (Typical) < 0.65 dB at 40GHz (Guaranteed)
Return loss GSSG	> 15dB at 40GHz (Typical) > 12dB at 40GHz (Guaranteed)
Tip contact resistance	< 40 milli-ohms for signal tip, < 40 milli-ohms for each ground tip
Current capacity	2 Amps

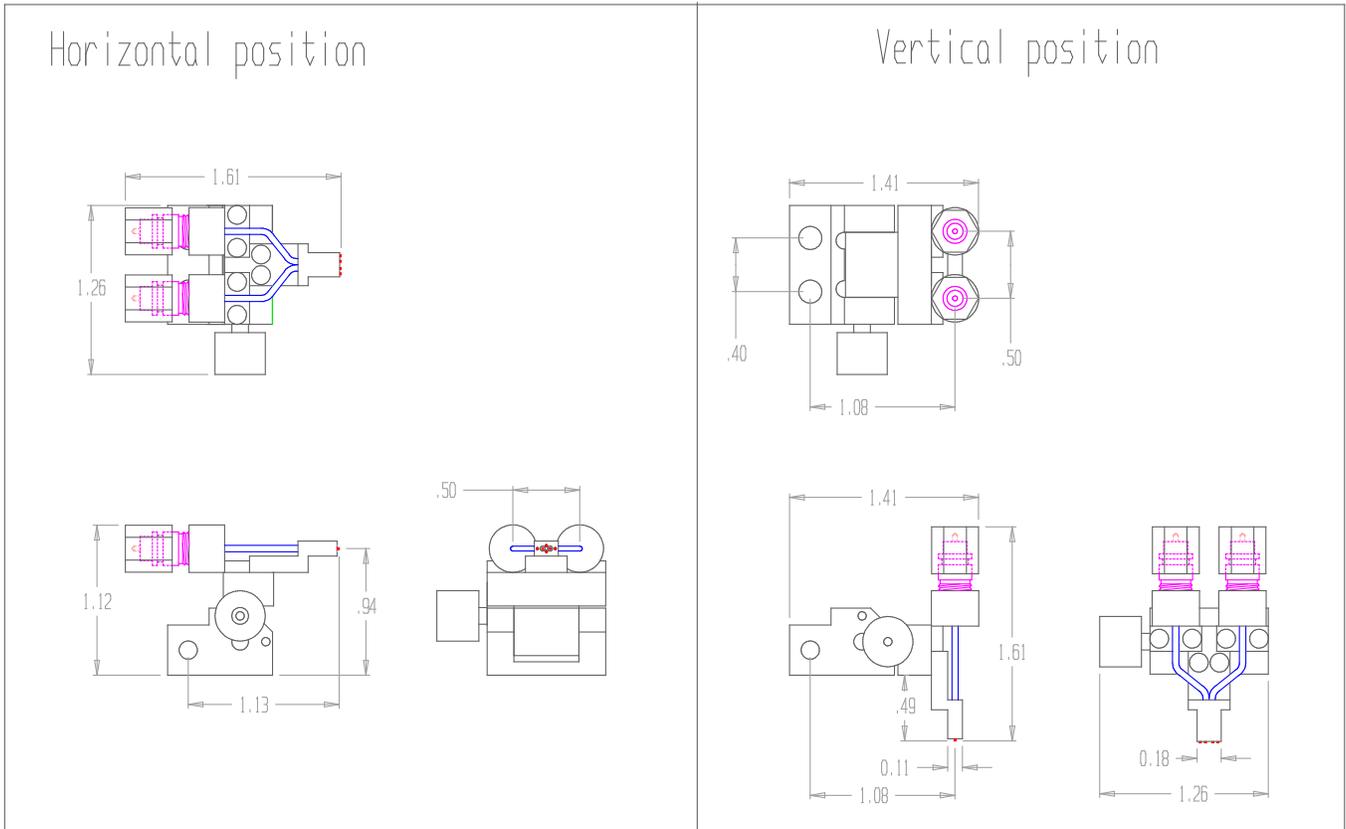
Specification

Mechanical

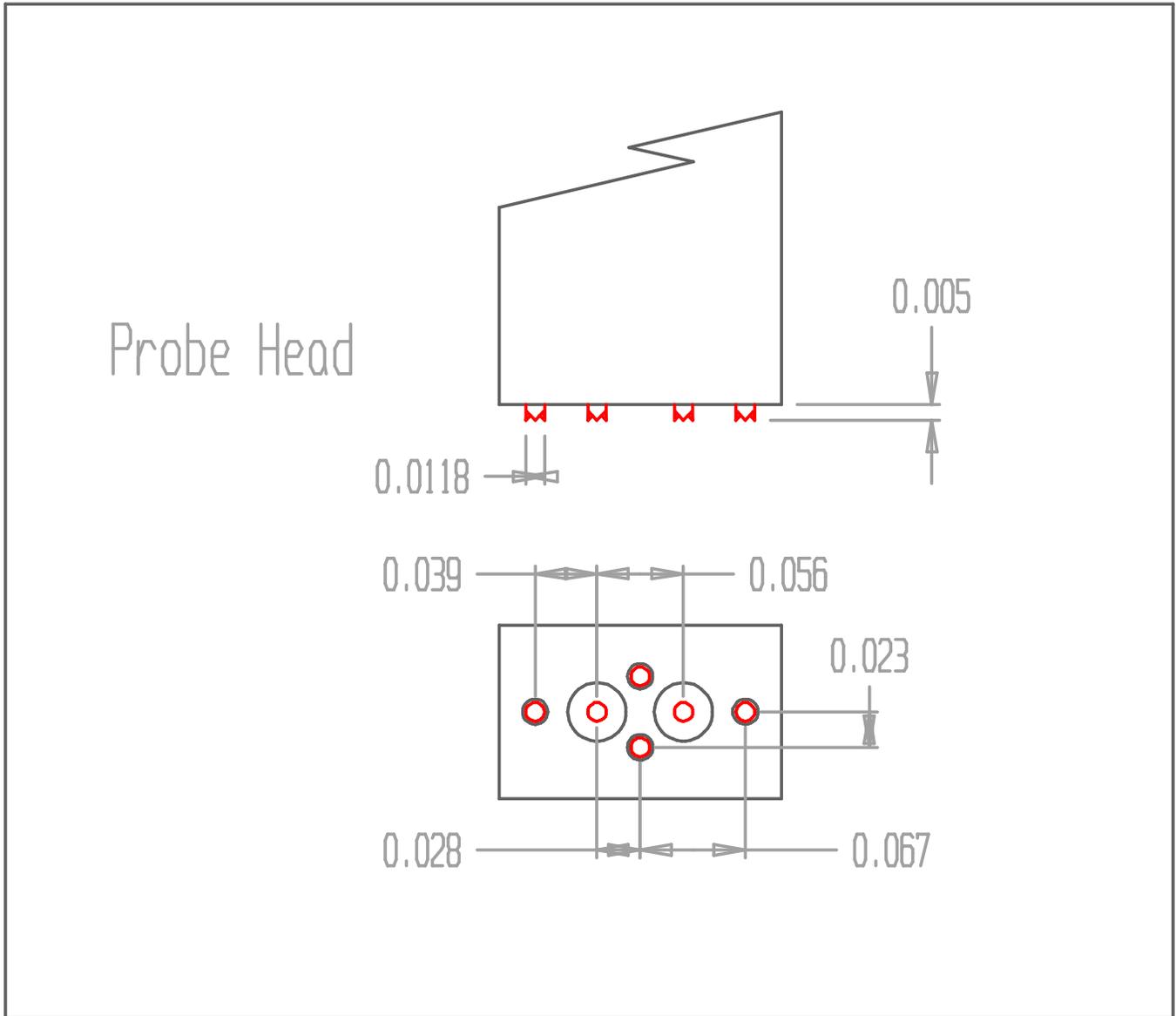
Overall Length	See physical dimensions (configuration: vertical/horizontal)
Probe head shape	Rectangular, 0.111" x 0.180"
Signal tip quantity	2
Ground tip quantity	1, 2, 4
Signal tip travel	0.010 inches (Typical) 0.005 inches (Guaranteed)
Ground tip travel	0.010 inches (Typical) 0.005 inches (Guaranteed)
Probe tip diameter	0.0118 inches
Probe tip plating	Gold
Single tip spring force	0.88 oz.
Pitch	1.4 mm (signal pins)
Number of touch downs	> 50,000
Tip Configurations	GSSG, GSGSG
Semi-rigid type	0.047 inch diameter
Connector type	2.92 mm compatible connector
Connector position	Parallel at 0.5 inch pitch

Physical Dimensions

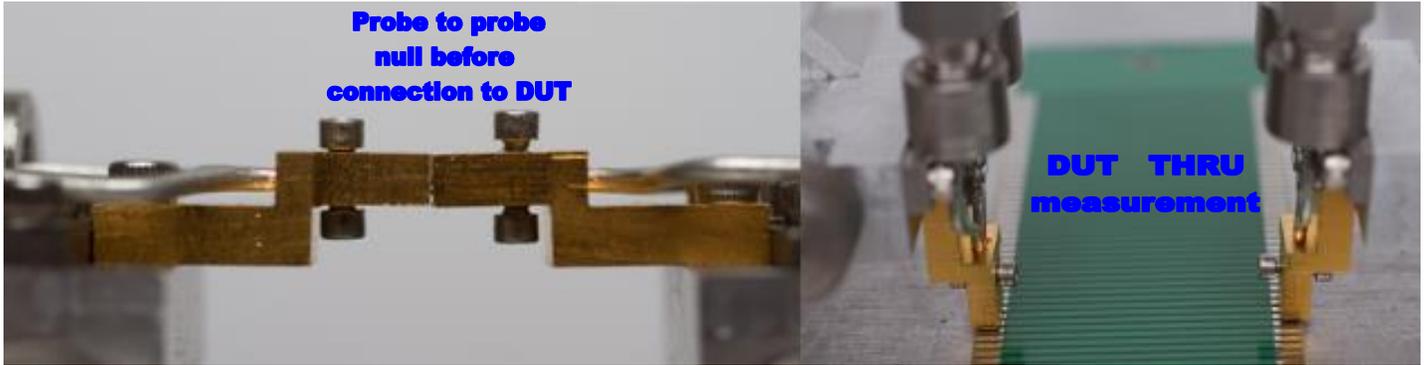
DP1.4 Differential probe dimensions (all dimensions in inches)



Physical Dimensions (continued)



Probe Configurations



Typical Twinax Configuration



Typical Performance

Typical Differential probe S-Parameters data. Single ended data through 40GHz.

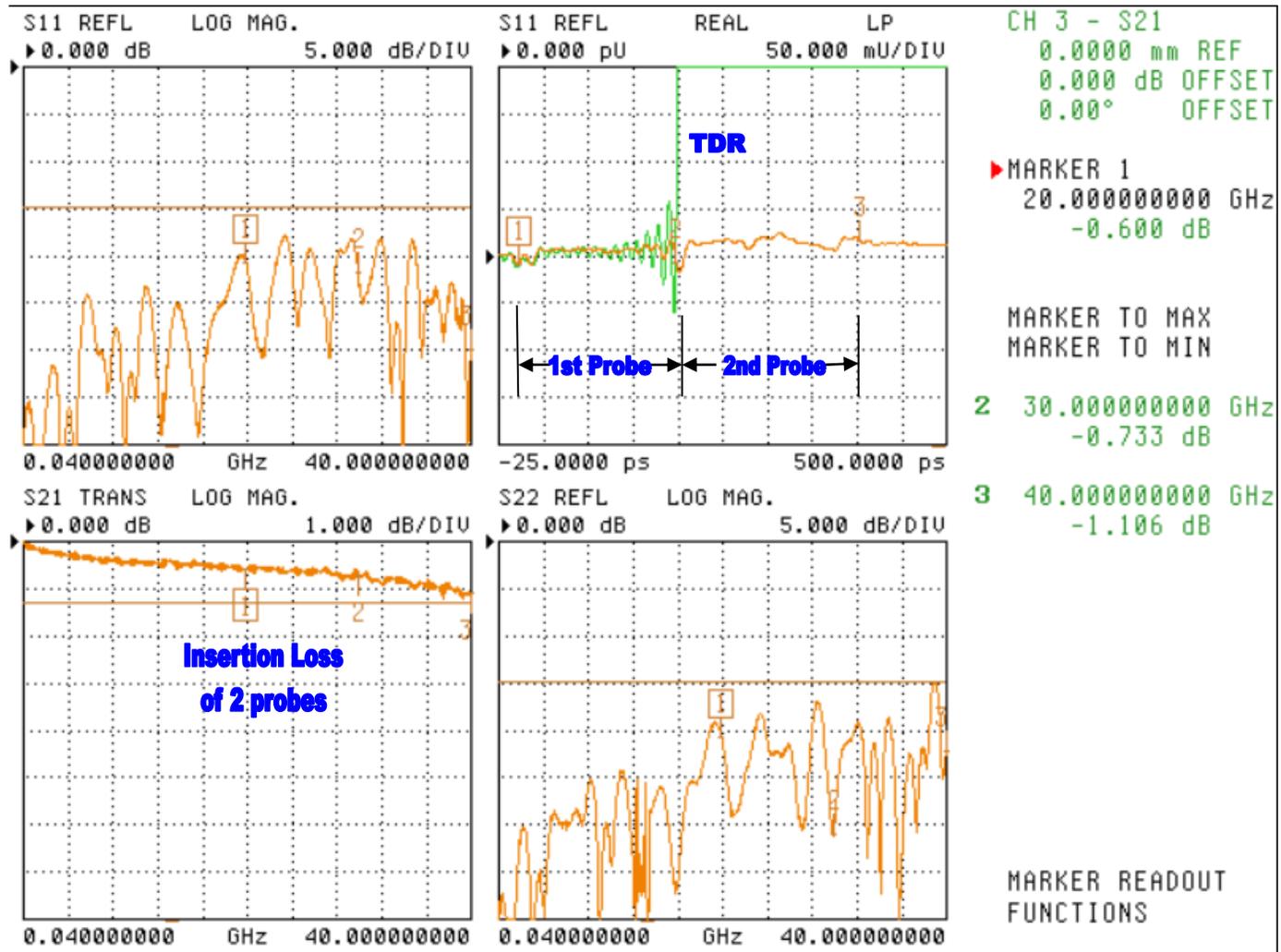
Probes tip to tip after a full 2-path, 2-port calibration on the cables up to the probes:

Uncorrected probe data

S21/2 probes = 0.553 insertion loss per probe

S11 = 18dB

S22 = 15dB



Tips for using DP1.4 Differential Probe with a manual probe station on printed circuit boards:

- Set microscope at about 45 degree angle to the DUT plane as a visual aid to land the probe on the test pads
- Probe the first DUT and optimize the electrical response by roaming by increments until the best possible results are obtained. Note the position of this DUT pad with the probe to calculate the travel needed for the next DUT pad
- Raise the probe back 0.002 inches for the best repeatable results on PCBs

Tips for using DP1.4 Differential Probe with a semi-automatic probe station on printed circuit boards:

- Set microscope at about 45 degree angle to the DUT plane as a visual aid to land the probe on the test pads
- Use a fiducial pattern to align the probe by raster scan to the DUT. If an electrical test coupon is available then position the probe for the optimizing of the electrical response. Use this position as a reference for testing; the distance from the contact location on the test coupon to the DUT pads
- Raise the probe back 0.002 inches for the best repeatable results on PCBs

Tips for using DP1.4 Differential Probe on Twinax or Coaxial cables:

- It is recommended to use a holding fixture for the twinax or coaxial cable for alignment and repeatability
- Set microscope at about 45 degree angle to the DUT plane as a visual aid to land the probe on the conductors
- Bring the probe close to the cable conductors without touching them as to allow final alignment before touch-down
- Use a flush probe contact for Twinax and Coaxial cables

The use of spring-loaded probe tips allow the probe last longer than conventional probes without losing performance or accuracy because the tips will recess into the probe body during an over-travel event. The probe head has gold plated, rugged, crown tips that can be used for smooth or rough surfaces.

DP1.4 Differential Probe part number: 600-00179-00

Available Accessories

40 GHz flexible cable	D-COAX, P/N 600-00169-00, 12 inch long, phase stable 16' per IEC 60966-1
40 GHz flexible cable	D-COAX, P/N 600-00170-00, 24 inch long, phase stable 16' per IEC 60966-1
40 GHz flexible cable	D-COAX, P/N 600-00171-00, 48 inch long, phase stable 16' per IEC 60966-1

Matched cable pairs will have Serial number-01 and Serial number -02

40 GHz flexible cable	D-COAX, P/N 600-00169-00, 12 inch long, \leq 1ps skew matched, phase stable 16' per IEC 60966-1
40 GHz flexible cable	D-COAX, P/N 600-00170-00, 24 inch long, \leq 1ps skew matched, phase stable 16' per IEC 60966-1
40 GHz flexible cable	D-COAX, P/N 600-00171-00, 48 inch long, \leq 1ps skew matched, phase stable 16' per IEC 60966-1
65 GHz flexible cable	D-COAX, P/N 600-00172-00, 12 inch long, \leq 1ps skew matched, phase stable 29' per IEC 60966-1
65 GHz flexible cable	D-COAX, P/N 600-00173-00, 24 inch long, \leq 1ps skew matched, phase stable 29' per IEC 60966-1
65 GHz flexible cable	D-COAX, P/N 600-00174-00, 48 inch long, \leq 1ps skew matched, phase stable 29' per IEC 60966-1
65 GHz flexible cable	D-COAX, P/N 600-00175-00, 12 inch long, \leq 1ps skew matched, phase stable 20' per IEC 60966-1
65 GHz flexible cable	D-COAX, P/N 600-00176-00, 24 inch long, \leq 1ps skew matched, phase stable 20' per IEC 60966-1
65 GHz flexible cable	D-COAX, P/N 600-00177-00, 48 inch long, \leq 1ps skew matched, phase stable 20' per IEC 60966-1
65 GHz flexible cable	D-COAX, P/N 600-00030-00, 12 inch long or custom length
40 GHz flexible cable	D-COAX, P/N 600-00029-00, 12 inch long or custom length
65 GHz semi-rigid cable	D-COAX, P/N 600-00028-00, 12 inch long or custom length
40 GHz semi-rigid cable	D-COAX, P/N 600-00027-00, 12 inch long or custom length

W2.5 x L6.5 mini probe station D-COAX, P/N 600-00130-00, manual portable mini probe station

W4.0 x L6.5 mini probe station D-COAX, P/N 600-00180-00, manual portable mini probe station

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