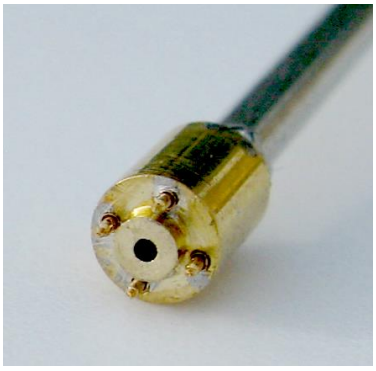
D-COAX, Inc.

Data Sheet



Making in-process testing of glassed-pin packages possible before assembling connectors

HyPac Probe

High Frequency Coaxial Packaging Probe (40 GHz)

D-COAX's HyPac probe is a great solution for in-process testing of hybrid packages with glassed pin feed-thru(s). By probing the package feed-thru pins with fast rise time TDR or high frequency VNA via HyPac probe, manufacturers of the hybrid packaging can pretest package performance and interconnections before assembling actual connectors and therefore saving money by not assembling defective packages.

The HyPac probe is a high frequency probe with low contact resistance and bandwidth of 40GHz. The probe has an impedance controlled airline that was designed to follow the contours of the spring pin shape inside the probe and the signal pin under test and thereby maintain the best possible performance. The use of spring-loaded probe tips makes the probe durable. The probe head has gold plated and rugged crown tips that make contact with the rounded pin of the glass bead.

The HyPac probe shape was designed to be a conjugate to the DUT for mechanical compatibility and high frequency performance. The probe airline serves a double purpose: it controls the impedance for the glass-pin/probe-signal-pin transition and it also acts like a stop for the probe travel, preventing it to crash against DUT.

Features and Benefits

Durability	Long Life Time
	Anti-crash feature
	Reliable contact quality
RF performance	Low insertion loss
	Low contact resistance
	High Bandwidth

Specification*

Electrical

Type	Passive, single-ended
Frequency Range	40MHz to 40GHz
Characteristic Impedance	50 Ohm
Insertion loss	< 1.0 dB at 40GHz (Typical), < 1.2 dB at 40GHz (Guaranteed)
Return loss	> 17dB at 40 MHz to 20GHz, > 13dB at20 GHz to 30GHz, > 12dB at 30GHz to 40GHz (Typical), > 15dB at 40 MHz to 20GHz, > 11dB at20 GHz to 30GHz, > 10dB at 30GHz to 40GHz (Guaranteed)
Tip contact resistance	< 50 milli-ohms for signal tip, < 50 milli-ohms for each ground tips, 4 ground tips in parallel, (Typical)
Current capacity	2 amps

Mechanical

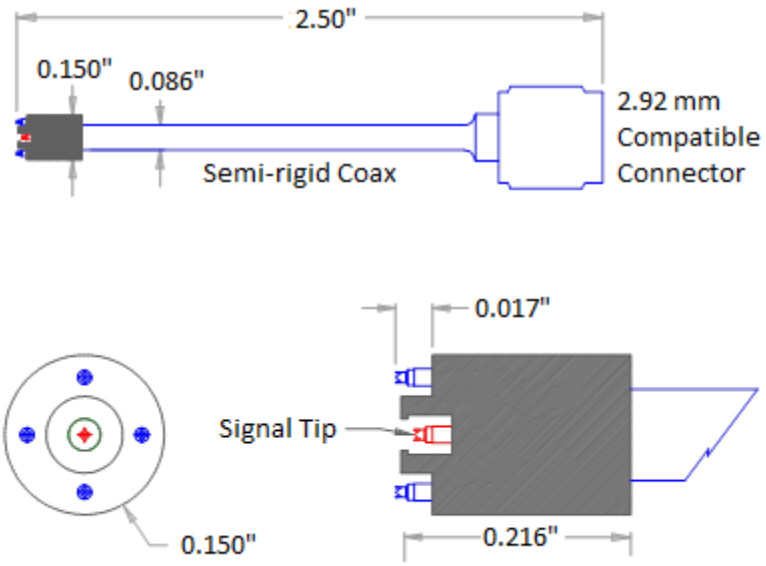
Overall Length	2.50 inches
Probe head diameter	0.150 inches
Signal tip quantity	1
Ground tip quantity	4
Signal tip travel	0.018 inches (Typical), 0.010 inches (Guaranteed)
Ground tip travel	0.018 inches (Typical), 0.010 inches (Guaranteed)
Probe tip diameter	0.0098 inches
Probe tip plating	Gold
Single tip spring force	1.5 oz
Pitch	Standard model 1.37mm for a 2.92 mm glass bead pin**
Number of touch downs	> 50,000
Configuration	Ground-Signal-Ground
Semi-rigid type	Low loss 0.086 inch diameter
Connector type	Male 2.92 mm compatible connector

* Data, design and specifications depend on individual process conditions and can vary according to equipment configurations. Not all specifications maybe valid simultaneously.

** Other pitch sizes available as a custom assemblies, consult factory.

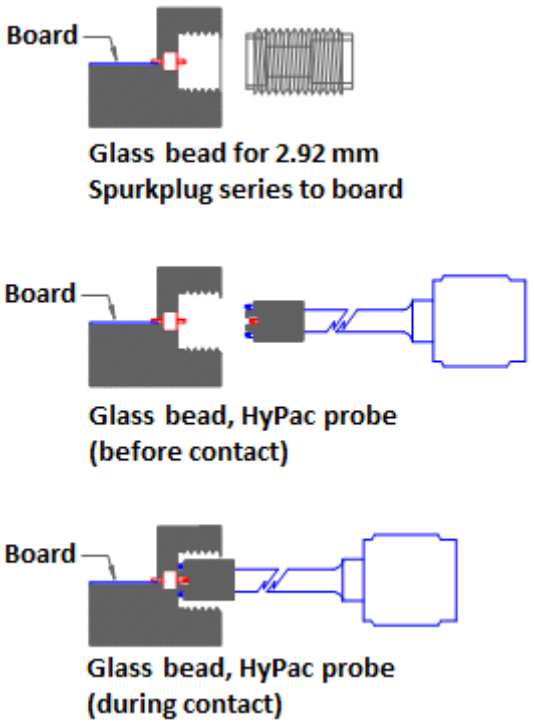
Physical Dimensions

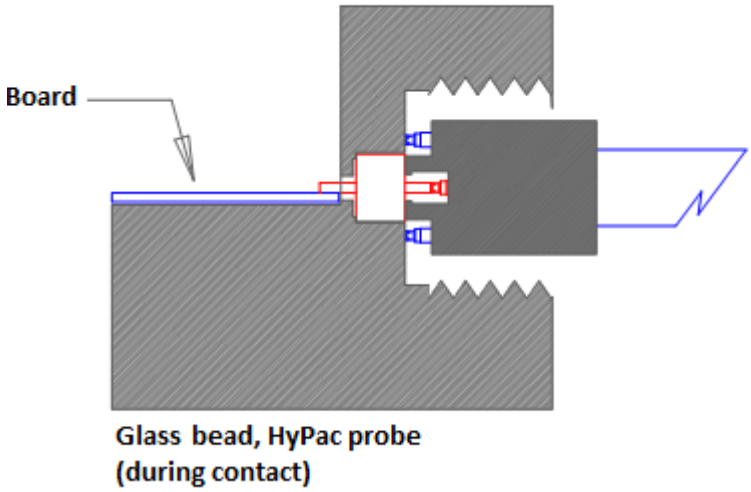
HyPac probe dimensions (all dimensions in inches)



Applications

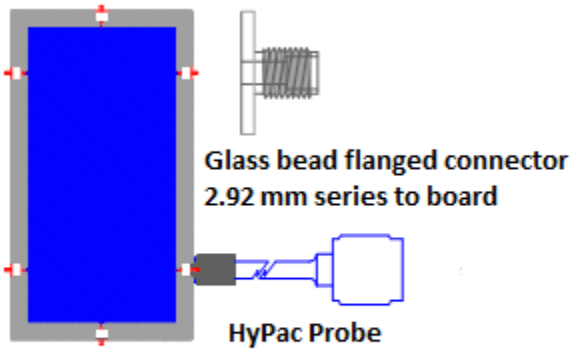
The glass bead installation in a metal block for a board to a 2.92mm sparkplug connector application may use the HyPac probe to pre-test the glass bead and the connection to the board.

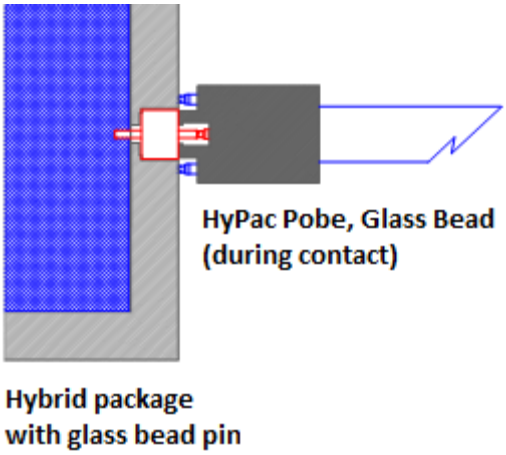




Applications (continued)

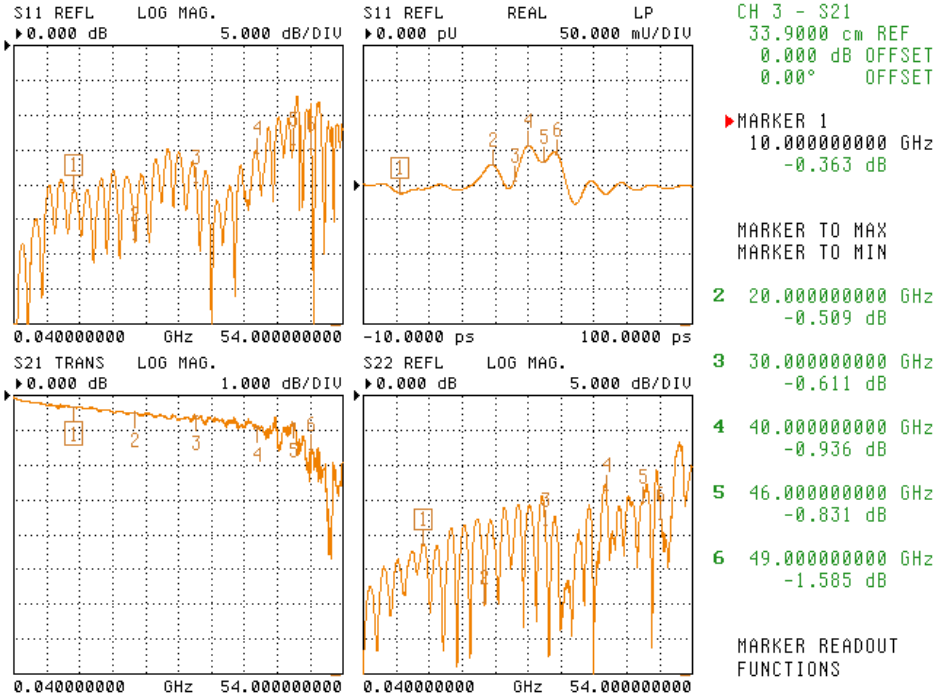
The glass bead installation in a hybrid package for a board to a flange 2.92mm connector application may use the HyPac probe to pre-test the glass bead installation and the connection to the board.





Typical Performance

Uncorrected S-Parameters and TDR data of HyPac probe tested up to 54 GHz. In this data the DUT is a glass bead installation of a 2.92mm sparkplug connector. Using a higher test frequency than the 40GHz probe bandwidth allows the VNA to calculate a rise time at 54 GHz for the FFT transformation to a TDR response of 6.48ps.



Available Accessories

For precise alignments between the probe and the pin on the package custom fixture is recommended. D-COAX can provide the assistance of design and build of the custom fixture.

65 GHz flexible cable	D-COAX, P/N 600-00030-00, 12 inch, or custom length
65 GHz phase stable flexible cable pair	D-COAX, P/N 600-00173-00, 24 inch pair assembly, skew matched at ≤ 1ps
40 GHz flexible cable	D-COAX, P/N 600-00029-00, 12 inch, or custom length
40 GHz phase stable flexible cable pair	D-COAX, P/N 600-00169-00, 12 inch pair assembly, skew matched at ≤ 1ps
40 GHz phase stable flexible cable pair	D-COAX, P/N 600-00170-00, 24 inch pair assembly, skew matched at ≤ 1ps
40 GHz phase stable flexible cable pair	D-COAX, P/N 600-00171-00, 48 inch pair assembly, skew matched at ≤ 1ps
Probe holder	D-COAX, P/N 600-00045-00, adjustable probe holder
W2.5 x L6.5 mini probe station	D-COAX, P/N 600-00130-00, manual portable mini probe station, or custom

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