

# DVT30-1MM Dual Multi-mode 20GHz VNA, 27ps TDR Probe Kit



## Applications

**(TDR) Measurements:** Single-Ended or Differential Impedance Testing of IC Package, Cable, PCB or Backplanes

**Failure Analysis:** Locate opens and shorts in Printed Circuit Boards(PCBs)

**(VNA) Measurements:** Differential SDD21/SDD11 S-parameters up to 20GHz bandwidth on cables or differential PCB traces

## Characteristics

- Attenuation: 1X
- Probe Rise Time: 27ps
- Bandwidth: 20 GHz
- Variable Probe Pitch: .35mm – 1.8mm (signal tip to signal tip)
- Connector Type: SMA
- TDR Launch Discontinuity: <20mv
- Impedance: 100  $\Omega$  +/-6% differential, 50  $\Omega$  +/- 3% common mode

*Note: Numeric values shown are nominal*

**DVT30-1MM GigaProbes®** (Pat. Pend.) use a multi-mode balanced differential cable that is a true odd mode Differential which can be converted to a Single Ended probe to capture ODD/EVEN impedance profiles and S-parameters. With a typical differential launch discontinuity of <20 mv and a fall-time of 27ps, the probe masks only ~ 0.5 mm of the device under test.

The DVT30 probe has Ultem grips for comfortable hand probing and is easily attached to most probe station micro-manipulators with the provided GPMMA Probe Adapters.

The Signal-to-Signal pitch can be set to a fixed 0.8 mm, 1.0 mm or 1.27 mm using the Pitch Calibration tool and other tools included in the kit.

Conductive Diamond plating technology places 100s of sharp conductive diamonds in a nickel/gold matrix onto the probe tips. The diamonds do not corrode and allow the user to break through any surface oxide when probing at any angle with a probing force of <10 grams, creating a temporary connection that is comparable to that of lead solder.

The DVT30-1MM dual probe kit with 4 cables and many adapters is like having 4 probes in one kit and is compatible with most 20 GHz – 30 GHz TDR systems such as the LeCroy, Tektronix, and Keysight/Agilent, R&S and Multi-lane TDR instruments.

## Key Features

- True Odd Multi-Mode TDR/VNA Probe
- Each probe measures both Single-Ended and Differential Impedances.
- Fully Balanced Differential Signals w/out Ground Contact
- Probe can be converted to a single-ended input impedance.
- Adjustable Probe Pitch from 0.35 mm to 1.8 mm
- Probe Tip diameter: 0.254 mm
- Gold-plated Conductive Diamond non-oxidizing probe tips, improve repeatably reliable measurements with a probe force <10 grams at any angle.

## Probe Kit Contents

Attractive and durable box for storing probes, tools and accessories

2 – DVT30-1 probes convertible to Single-Ended or Differential Impedances

1 – GPMMA for attaching the probe to a standard micro-positioner

1 – Stainless Steel 110mm tweezer for fine pitch probe adjustments

1 – Desktop 5X Macro-Lens Inspection Station

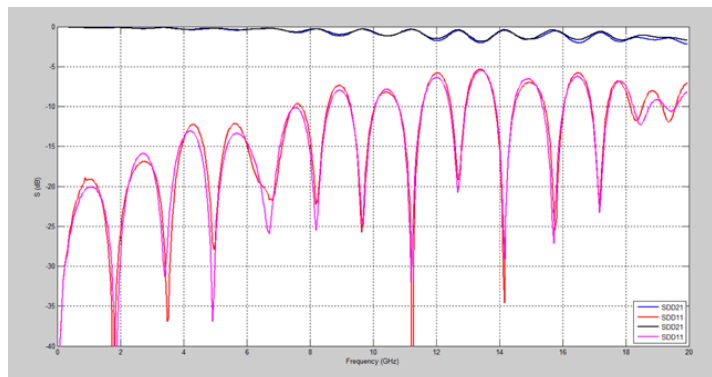
1 – Model 10 SMA wrench (Pat. Pend.) with Quick Calibrator Holes

2 – Handheld Probe Ultem Sleeve Adapters for preventing probe damage

4 – Right Angle SMA Elbows for easy routing of cables

1 – 50  $\Omega$  Probe Conversion kit

## Differential SDD21/SDD11 S-Parameter Measurements



The DVT30 probe can measure up to a 20 GHz differential bandwidth. This measurement contains only the SDD21/11 S-parameters and is used to make useful measurements on differential traces. The probe de-embedding S4p probe model is created using the Ataitec ISD software option ISB40-002. This ISD S4p 20GHz probe model is used by the VNA to de-embed the probe loss from the differential trace measurement. Contact us for additional information on this option.

## Building a Differential/Single-Ended Impedance Probe Measurement System

Most TDR probing projects require measuring both true Differential and Single-Ended impedances to probe a variety of test pads pitches.

The DVT30-1MM Probe kit contains two DVT30 multi-mode variable pitch probes to probe test pads pitches from .35mm to 1.85mm. Each probe can measure Single-Ended or true differential impedances.

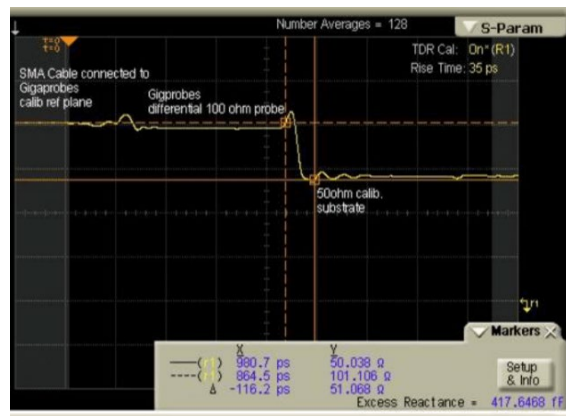
Attach a probe to the DVT-FP60 probe positioner arm and cable the probe to your TDR. Use the DVT-FP60 XYZ controls aided by the DVT-CS-3 USB camera system to view the placement of the probe tips onto the test pads.

Also recommended are the DVT-SM-Holders used to secure the DUT from moving when probing.

Please let us know if you have any questions or need pricing. Technical support is provided for free.

(On right) Desktop TDR Probing system included the DVT30 multi-mode probes, DV-FP60 probe positioner and DVT-CS-3 Camera system.

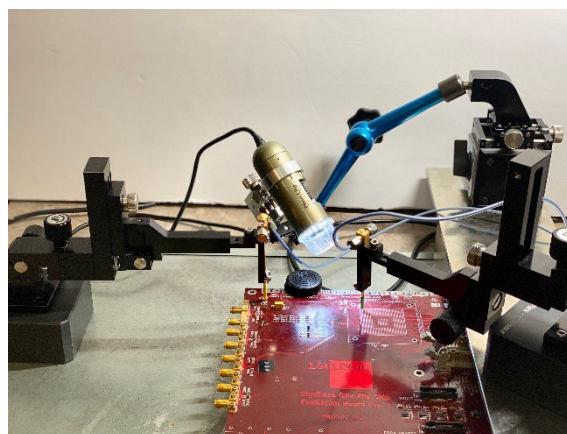
## Differential/Single-Ended Impedance Measurements



The DVT30 can make both true differential and single-ended impedance measurements with the same probe.



Fig 4. Gold Plated Conductive Diamond Probe Tips (Pat. Pend.): Closeup of the hundreds of sharp, non-oxidizing, conductive diamonds on the probe tips, which break through surface oxide when probing to create a connection equal to that of lead solder.



## Probe System Components

### DVT30-1MM Dual Multi-Mode Probe Kit



20GHz/27ps Dual Probe Differential Multi-Mode TDR and S-Parameters Probe kit. Contains two variable pitch conductive diamond plated DVT30 differential probes convertible to 50 ohms. Includes pitch setting tools and four 17-inch 25 GHz cables.

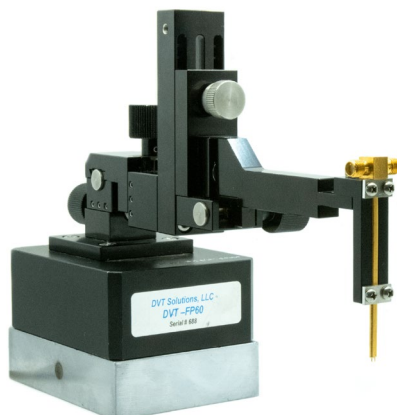
### DVT-SM Holders



Stackable Magnetic PCB Holders to hold corners of a PCB to hold it fast while probing. You can also place two holders under the PCB near where it will be probed to keep the board from bowing (At least 6 holders recommended).

## Datasheets

### DVT-FP60 Probe Positioner



Rigid arm probe manipulator with XYZ pitch 40TPI controls & magnetic base. Recommended for probing with DVT30 GigaProbes.

### DVT-FP100 Magnetic Bases



DVT-FP100-1IN, DVT-FP100-1.5IN and DVT-FP100-2IN Stackable 1", 1.5" and 2" magnetic blocks used to raise the probe and camera positioners to clear the test board.

### DVT-CS-3 Camera System



The Camera System is used for accurate placement of probe tips on the test pads, probe tip planarization and calibration.

### DVT-FP60 Probe Positioner



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## Online Application Demos

Converting DVT30 to Single Ended  
<https://youtu.be/obHCLaX7ViE>

DVT30-1MM probe kit demo  
<https://youtu.be/zlwIsRVTBZQ>