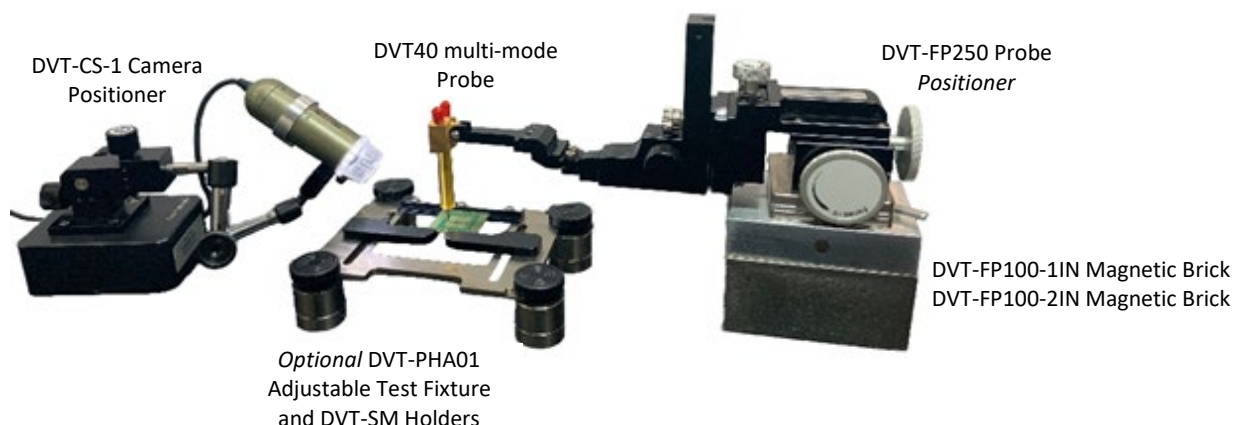


DVT40-1MM Advanced Failure and Impedance Analysis True Differential and Single-Ended TDR Probe System



This datasheet offers an overview of the recommended components for creating an affordable and scalable Time Domain Reflectometry (TDR) Failure and Impedance Analysis PCB Probing system.

The system is designed to conveniently fit most lab desks and has been successfully employed by engineers in both large and small Failure Analysis (FA) labs since 2011, utilizing TDR/VNA instruments from leading brands such as Keysight, Tektronix, LeCroy, and Multi-Lane.

At the heart of this TDR Failure Analysis probe solution is the DVT40-1MM, a two multi-mode probe kit featuring two DVT40 multimode probes with 4.5 ps/40 GHz bandwidth.

These high bandwidth probes maintain much of the TDR instrument's risetime edge, enabling the resolution to locate open failures in FLEX or interlayer failures in device packages, even locating open trace failures as small as 20 μm utilizing high-performance TDR instruments.

The DVT40 probe is unique, serving as the world's only true differential convertible to a single-ended impedance probe, providing the capability to locate failures in PCBs trace layouts whose boards contain 90% mostly differential traces.

To assemble a comprehensive TDR system, essential components include the DVT-FP250 Probe Positioner and the DVT-CS-1 Flexible Camera Positioner. These components are equipped with 50 TPI XYZ, Theta probe controls, and an integrated high-resolution USB camera for enhanced visibility during the probing process.

Additionally, PCB fixturing components such as DVT-SM Holders, designed to prevent test board movement during probing, are recommended for various board sizes, with four to six holders suggested to secure the board adequately.

The optional DVT-PHA01 Adjustable Test Fixture is employed specifically for holding small device packages or small PCBs (5 mm to 50 mm), while DVT-SM Holders secure the fixture in place during probing operations.

Applications

The DVT40 multi-impedance mode probe system can be used for locating open/short failures and characterizing impedance on differential and with single-ended traces in FLEX Circuits, Semiconductor Packages, PCBs, Cables, Backplanes, and Daughter Cards.

Fault Localization Capability:

- With its multi-mode impedance design and the low internal rise time of ~ 4.5 ps/40 GHz, this probe can support high-resolution TDR (Time Domain Reflectometry) Failure Analysis, offering 20 μm Fault Isolation on both single-ended and differential traces without a ground reference.
- DVT40's .35 μm -1.8 mm variable pitch probe tips enable efficient single-probe usage across several board designs with multiple pitch traces on the same board.
- The DVT40 is a unique true differential probe, crucial for pinpointing open/short failures on differential traces that populate over 90% of modern PCB traces, even without a ground probe reference.

Impedance Measurements:

The DVT40 probe system supports both Differential and Single-Ended high resolution impedance measurements.

Probe System Components with full datasheet web links

DVT40-1MM 40 GHz Multi-Mode Two Probe Kit



Functionality: 40 GHz/~4.5 ps Dual Probe Multi-Mode TDR & S-Parameters Probe kit.

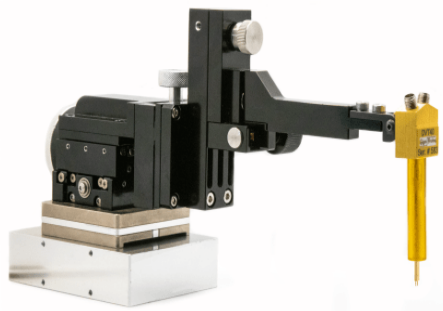
Components: Two DVT40 probes with both differential and Single-Ended input impedance, 2.92 mm connectors.

Probe Tips: .35 mm - 1.8 mm variable pitch, 4/6um conductive diamond-plated probe tips for high-frequency repeatable measurements.

Adapters: Kit comes with adapters to connect to probe positioners for vertical and horizontal probing applications.

Additional Tools: Includes probe pitch setting tools. [Datasheet link](#)

DVT-FP250 Probe Positioner



Arm Type: Sturdy and adaptable for horizontal and vertical probing.

Manipulator Features: XYZ pitch controls at 50 TPI for precision placement of probes.

Base: Breakaway magnetic base for flexible positioning. [Datasheet link](#)

DVT-CS-1 Camera

Camera Features: XYZ 50 TPI controls for precise camera (1.3MP) image placement.

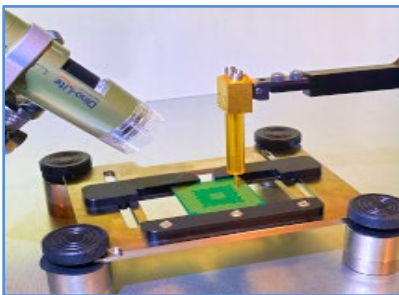
Flexible Arm: 4-axis arm for versatile positioning.

Application: Used to verify probe placement on test pads and to planarize the probe tips for simultaneous contact with the test pads.

[Datasheet link](#)



DVT-PHA01 Adjustable Test Fixture



Purpose: Used for holding semiconductor device packages or small PCBs during probing.

Size Range: Accommodates PCBs with 5 mm to 50 mm dimensions.

Operation: Place the PCB within the adjustable fixture.

Stability: Attach four DVT-SM Holders to the corners of the fixture.

[Datasheet link](#)

DVT-SM Holder Test Fixtures



Flexible: Any-sized test board horizontal fixturing.

Height: Two in/5 cm

Segments: Three (1 removable) segments plus a magnetic base.

[Datasheet link](#)