P2103A

Data Sheet

Differential TDR Probe

PCB Trace and Coupon

Impedance measurement and characterization

PCB resonances

TDR Capacitor and Inductor measurement

PICOTEST

Differential TDR Probe

The Picotest P2103A probe is a 100 ohm input impedance differential transmission line 'browser' probe for TDR/TDT applications. This precision probe supports a variety of measurements.

The P2103A TDR probe shown with the Picotest J2154A PerfectPulse® Differential TDR makes a powerful and low-cost PCB testing tool. When combined with your oscilloscope, you can probe all types of PCB structures and measure their impedance accurately.

To characterize a differential pair, the TDR must drive a differential signal and measure the response as the reflected differential signal. This requires two channels to be connected to the same end of the differential pair, and have the equivalent of two, simultaneous stimulus - either launching a differential signal or launching a common signal into the device under test (DUT). This is done with a differential TDR.

The P2103A is referred to as a 'browser' probe for its ability to easily and quickly be moved from point-to-point/rail-to-rail simply by re-seating the probe points. The probe achieves a very low inductance at the tip to mitigate space constraints on a dense PCB, while eliminating the need to add additional SMA connections or other test points necessary for impedance measurements. It is especially useful when there are multiple trace pairs to assess and there is no time for PCB iterations to provide test point implementations for each. Repeated measurements are simplified because connection is by simply touching the tips to existing traces. The fixed spacing between signal pins provides for highly reliable and repeatable data measurements.

FEATURES:

- 6GHz Bandwidth (uncorrected)
- Works for all Time Domain Reflectometry (TDR/TDT) applications
- Compatible with the Picotest J2154A PerfectPulse® Differential TDR (Differential mode only)
- Compatible with all 50 ohm Instruments; 100 Ohm nominal differential impedance
- Fixed pitches available: 50 and 100 mils
- Spring pins for easy landing
- Short pins and integrated PDN Cable® for low coupling and optimum shielding
- Handheld browser style for repeatable and easy probing; Handle design fits most probe holders
- Slim low-profile housing for comfort and visibility

APPLICATIONS:

- Differential transmission lines measurement
- PCB coupon tester including characteristic impedance
- Calculation of cable and PCB trace length, dielectric constant, and loss tangent
- Locate and detect impedance mismatches
- Failure analysis of PCB with or without components mounted
- Package impedance testing

* When coupled with the J2154A TDR, only differential mode applications are supported.

PICOTEST
The test and measurement experts.

The rugged, ergonomic design allows easy TDR measurements by hand. The slim body with the extended tips provides good visibility of the target.

The P2103A is available in two fixed pin pitches (50 and 100 mil spacing with 1X attenuation), though customized pitches are available.

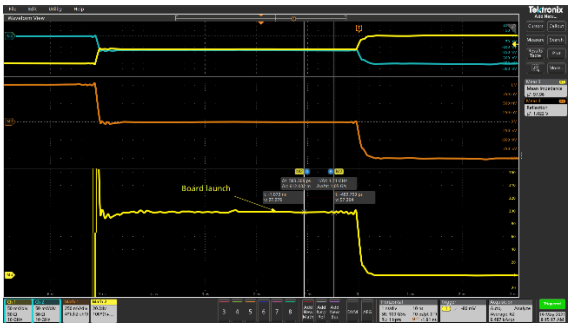
NOTE: The probe is compatible with all TDR/TDT applications and measurements; however, only differential mode measurements are supported when using the J2154A TDR.

Engineers working on high-speed differential electrical channels can analyze where the DUT causes reflections that unfavorably affect the signal integrity (SI) of their designs. Multiple P2103A probes can be used with 4, 6, and 8 port TDR test setups.

SPECIFICATIONS

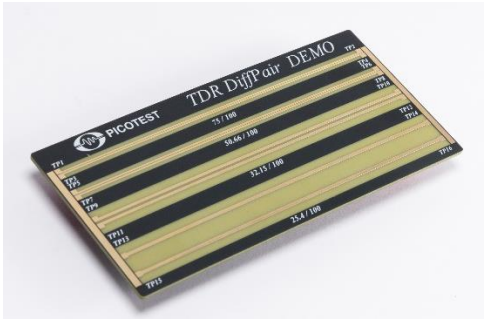
Characteristic	Rating
Bandwidth	DC-6GHz (uncorrected)
Probe Pin Pitch/Spacing	Comes with one each of the following: 50mil - 1.27mm 100mil – 2.54mm Custom pitches available
Impedance Range	Typical 1-port impedance reflection floor -ceiling limits (~100mohms – ~100k ohms). Not probe dependent. See your instrument's manual
Input C:	<1pF
Attenuation	1X, NOT user changeable
Probe Connectors	SMA
Probe Loading Input	50 ohms
Operating Temperature	0 to 45° C (32° F to 104° F) at 80% Relative Humidity
Nominal Length with Cable	0.5 meter
Maximum Relative Humidity	80% at 31° C max
Usage	Indoor
Altitude	3000 m (9850 feet)
Absolute Maximum Voltage	< 50VAC and 75VDC

Caution: To avoid equipment damage and/or severe injuries death or death do not use this probe close to voltages higher than 50 VAC or 75 VDC.



P2103A recorded differential signal, gamma function and 100 Ohm measurement

P2103A probe heads



The Picotest P2103A demo board

For more information on Picotest products, applications, or services, please contact Picotest at info@picotest.com.

This information is subject to change without notice.
www.picotest.com

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