P2105A – The Versatile Multi-Function Browser Probe

Ripple, Impedance, TDR, EMI, Transient Load Step

5-in-1, 50 Ohm Probe

With Interchangeable Heads Tackles

TDR: PCB Trace and Coupon

Power Rail Ripple

Impedance

Transient Load Step Current

Near-Fields

Clock Jitter

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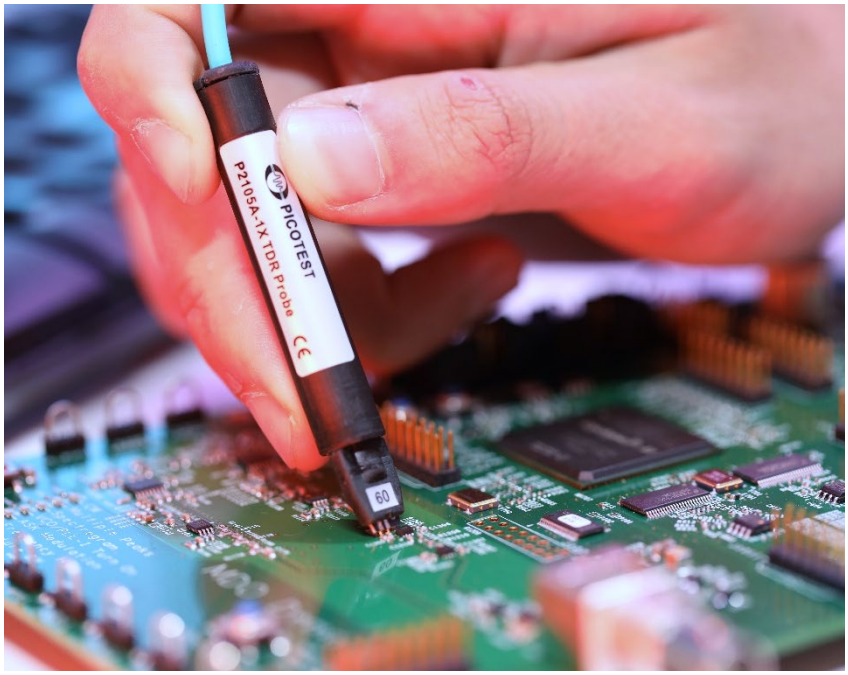
Multi-Function Probe

The Picotest P2105A probe is a versatile 50 ohm 1-port transmission line 'Browser' probe. The interchangeable heads enable this high performance low noise precision probe to support a variety of measurements including TDR (coupon and PCB trace impedance), power rail ripple, impedance, near-fields, and load current stepping. It has significant advantages in comparison to active probes and other types of passive probes.



The P2105A is referred to as a 'browser' probe for its ability to easily and quickly be moved from point-to-point simply by reseating 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 measurements. It is especially useful when testing multiple controlled impedance traces, test coupons, or other PCB structures.

The P2105A TDR/impedance/ripple probe heads are available in a variety of fixed pin pitches (31, 40, 50, 60, 70, 80, 100 and 150 mil, GSG SMA with 1X attenuation). Custom pitches are available.

The probe is compatible with all 50 ohm instruments, including the J2154A PerfectPulse® Differential TDR. The probe is designed to work with the traditional single-ended TDR setup. The P2103A probe is available for differential measurements.

FEATURES:

- 15GHz Single-Ended Precise High Bandwidth Probe for all Time Domain Reflectometry (TDR) Applications *
- TDR, Ripple and Impedance Probe Head
- Load Stepper Probe Head
- Near-Field Probe Head
- Fixed pitches available for TDR, Impedance, and Ripple: 20, 31, 40, 50, 60, 70, 80, 100 and 150 mils and GSG SMA. Custom pitch spacings available
- Compatible with all 50 ohm instruments
- Spring pins for easy landing
- Short pins and integrated, but removable, 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

* Pitch and calibration dependent. Compatible with the Picotest J2154A PerfectPulse® TDR.

APPLICATIONS:

- Low-cost PCB coupon tester - Characteristic Impedance PCB traces
- Measure PCB trace length, characteristic impedance, and dielectric constant
- Locate and detect impedance mismatches
- Measure parasitic values of inductance and capacitance such as bond wires, vias, and ESL
- Measure PCB trace path rise/fall time and overshoot/undershoot
- Supports cable and trace loss modeling
- Measure impedance above 100mohm
- Transient power rail load step testing, 0-10A (S10 option) ~3ns R/F time
- Near field measurement of magnetic and switching currents
- Bandpass filter option for ripple signal filtering

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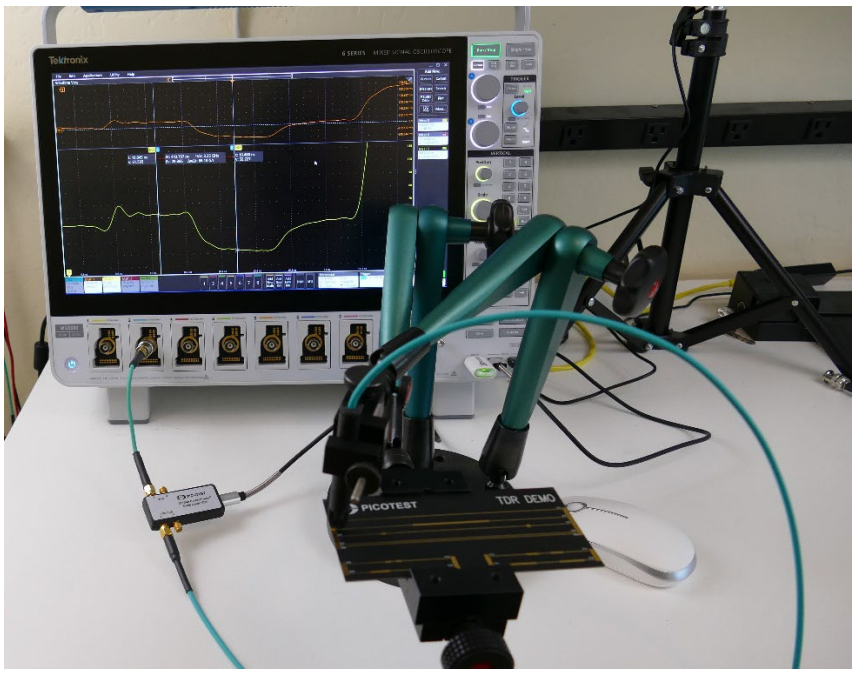
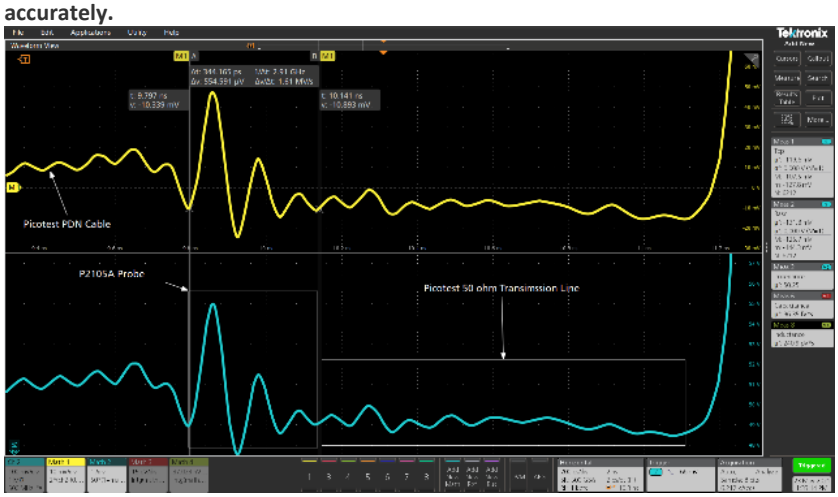
TDR Measurement Demands New Probe Capabilities

The probe's characteristic impedance is 50Ω. Poor connections between the probe cable and the probe connector or a mismatch between the probe cable and the probe head can result in small parasitic capacitance at the probe tip. This leads to poor frequency response and can add considerable (and erroneous) ringing to the measurement. Since the probe pins are inductive, it is important that the probe not be capacitive to assure that while the measurement is bandwidth limited due to the tip inductance, it will not ring.

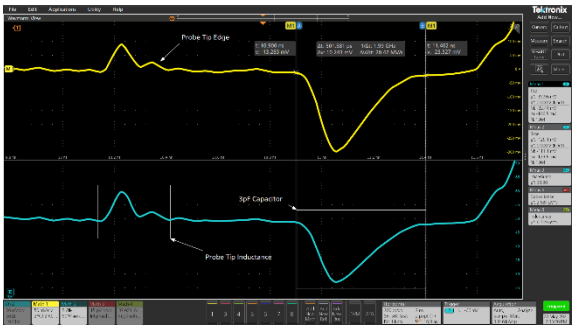
The comfortable and easy to grip probe head is both small and slim so that it fits in confined spots and can be held for long periods of time. Of course, the probe can be used with most probe stand or probe stations when hands-free operation is needed.



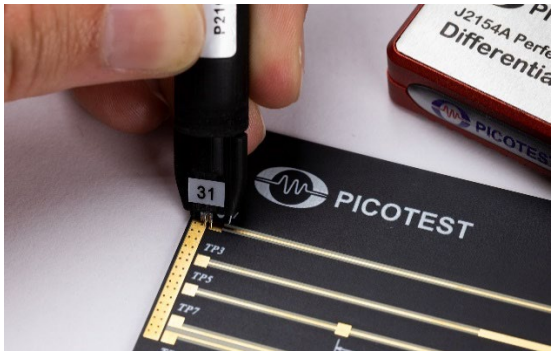
The P2105A TDR probe shown with the Picotest J2154A PerfectPulse Differential TDR makes a powerful and low-cost PCB testing tool. When combined with your oscilloscope, you can probe all types of PCB structures and measure their impedance accurately.



Testing a 50 ohm transmission line.



The J2154A/P2105A TDR can measure very small capacitors and inductors.



The Picotest P2105A browser probes have a usable bandwidth greater than 15GHz.

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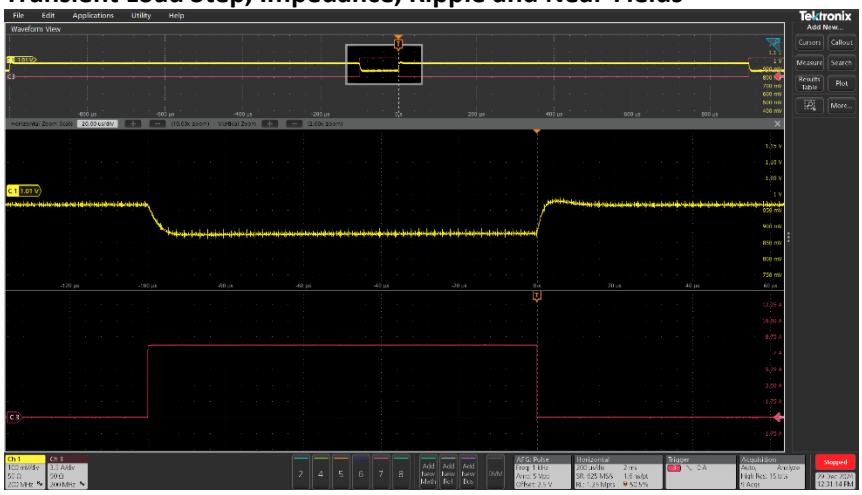
Transient Load Step, Impedance, Ripple and Near-Fields



P2105A (S10 option) fast load stepper head gives you a high speed 0-10A pulse for load transient testing.

SPECIFICATIONS

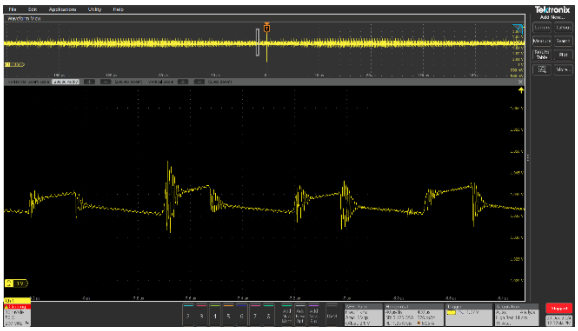
P2105A 1-Port Multi-Function Probe	
Characteristic	**Rating**
Bandwidth	DC-15GHz *
TDR/Ripple/Impedance Head Probe Pin Pitch/Spacings	Comes in one of the following: 20mil - 0.508mm 31mil - 0.79mm 40mil - 1.02mm 50mil - 1.27mm 60 mil - 1.52mm 70 mil – 1.78mm 80 mil – 2.03mm 100mil – 2.54mm 150mil – 3.81mm GSG SMA Custom pitches available
Impedance Range	Typical 1-port impedance reflection floor -ceiling limits (~100mohms – ~100k ohms). Not probe dependent. See your instrument's manual
Load Step Head	70 mils
S10 Load Transient R/F Time	~3ns 0 – 10A *, 100us pulse, <1W avg., 0.6V – 72V
S10 Head	SMPM, spring tip, Loading 120pF @0V
Near-Field Head	31mil and 100mil (H-Field Loop), BW 1GHz
Input C:	<1pF
Attenuation	1X, NOT user changeable
Probe Connectors	SMA or BNC
Probe Loading Input	50 ohms
Operating Temperature	0 to 45° C (32° F to 104° F) at 80% Relative Humidity
Nominal Length with Cable	1 meter
Absolute Maximum Voltage	< 50VAC and 75VDC

* Customized at time of purchase

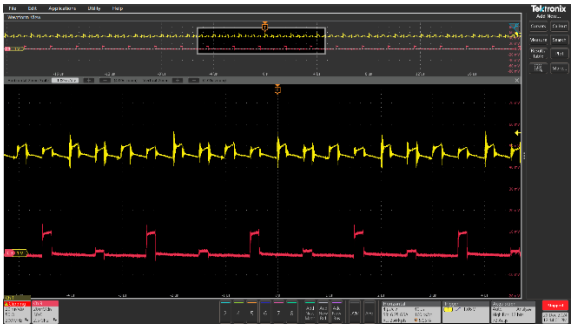
Please see website for other S10 Transient Load Step, Embedded Bandpass, and near-field options and specification.

* 15GHz is dependent on the pitch and calibration. Note: The maximum Port Voltage shown is based on the specified maximum tip voltage. Consult your VNA's manual to verify the VNA port voltage is below the ratings of your instrument. Bandwidth calibration dependent.

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.



The P2105A is one of the lowest noise power rail probes ideal for ripple testing.



Optional near field probe head measures switching currents.

Build your own set of capabilities with the wide array of snap-on probe heads

This information is subject to change without notice.

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