Tektronix®

Passive High Voltage Probes

P5100A-TPP0850-P5122-P5150-P6015A Datasheet



Safe high voltage probe solutions for ground-referenced voltage testing. It is critical to safely and accurately capture real-time signal information from "elevated" or "floating" voltage systems. Our portfolio of high voltage probes provides the safety you need for single-ended, differential or isolated measurements.

Key performance specifications

- P5100A
  - DC to 500 MHz
  - 2500 V_{Peak}, 1000 V_{RMS} CAT II
  - 100X with readout coding
- TPP0850
  - DC to 800 MHz
  - 2500 V_{Peak}, 1000 V_{RMS} CAT II
  - 50X with readout coding
  - Designed for use with the MSO/DPO5000 and MSO/DPO4000B Series Oscilloscopes
- P5122
  - DC to 200 MHz
  - 1000 V_{RMS} CAT II when DC-coupled*[1]
  - 100 X
  - Floatable up to 600 V_{RMS} CAT II
  - For TPS2000 and THS3000 Series Oscilloscopes
- P5150
  - DC to 500 MHz
  - 2500 V_{Peak}, 1000 V_{RMS} CAT II
  - 50 X
  - Floatable up to 600 V_{RMS} CAT II or 300 V_{RMS} CAT III
  - For TPS2000 and THS3000 Series Oscilloscopes
- P6015A
  - DC to 75 MHz
  - High Voltage - 20 kV DC / 40 kV Peak (100 ms Pulse Width)
  - Optional 1000X readout coding

Applications

- Power supply design
- Design motor drive
- Electronic ballast
- Power semiconductors
- Switch mode control
- UPS systems
- Power converters

P5100A High-Voltage Probe

The P5100A is a low input capacitance, high-voltage probe (2.5 kV) designed for higher-frequency applications. The probe can be compensated to match plug-ins and oscilloscopes with nominal input capacitances of 7-30 pF. A variety of screw-on accessories provide easy connection to the device-under-test.

TPP0850 High-Voltage Probe

The TPP0850 offers the industry's highest bandwidth probe (800 MHz) for high-voltage signals (up to 2500 V_{p-p}). This is ideal for testing power semiconductors and switch-mode power supplies, which continue to increase in switching speed to minimize power loss, creating a need for faster rise time, higher bandwidth, and higher voltage probes. The TPP0850 meets this need and can be used with switching transistor circuits operating at 1200 V_{RMS}, above the voltage operating range of standard general-purpose probes. It will also be able to accommodate emerging power applications that will require even faster rise time capabilities.

P5150 and P5122 IsolatedChannel™ Applications

In many applications, it is important to be able to isolate the measurement from earth ground and also to isolate the common voltage between channels. The P5150 or P5122, coupled with the TPS2000 and THS3000 Series digital storage oscilloscopes, deliver both the isolation for the measurement from earth ground and full isolation between the channels. The P5150 is the recommended probe for measuring ripple on high-voltage DC supplies. The P5122 probe should not be used on the TPS2000 Series oscilloscopes for AC-coupled measurements on signals with greater than 300 V DC offset.

P6015A High-Voltage Probe

For heavy-duty high-performance measurements of voltages over 2.5 kV, the P6015A is the industry standard. You can measure DC voltages up to 20 $kV_{RMS}$and pulses up to 40 kV (peak, 100 ms duration). The 75 MHz bandwidth enables you to capture fast, high-voltage signals.

The P6015A uses an environmentally safe silicone compound for a dielectric and never needs refilling. Other features include: A 7-49 pF compensation range, small compensation box that fits on adjacent amplifier inputs, and a readout option for use with most Tektronix digital scopes. With the readout option, displayed voltage amplitude values will be the actual signal value rather than understated by a factor of 1,000.

Note: Using the readout version with other than Tektronix digital oscilloscopes may result in an erroneous readout display.

Specifications

All specifications are guaranteed unless noted otherwise. All specifications apply to all models unless noted otherwise.

Model overview

	P5100A	TPP0850	P5122	P5150	P6015A	P6015A Opt. 1R
Nominal length	2 m	1.3 m	1.2 m	2 m	3 m	3 m
Attenuation	100X	50X	100X	50X	1000X	1000X
Bandwidth	500 MHz	800 MHz	200 MHz	500 MHz	75 MHz	75 MHz
Rise time (typ)	<700 ps	<525 ps	2.2 ns	<700 ps	4.0 ns	4.0 ns
Loading	40 MΩ/ 2.5 pF	40 MΩ/ 1.8 pF	100 MΩ/ 4.0 pF	40 MΩ/ 3.8 pF	100 MΩ/ 3.0 pF	100 MΩ/ 3.0 pF
Maximum input voltage, DC or RMS	2.5 kV_{Peak} 1000 V_{RMS} CAT II	2.5 kV_{Peak} 1000 V_{RMS} CAT II	1000 V_{RMS} CAT II	2.5 kV_{Peak} 1000 V_{RMS} CAT II	20 kV	20 kV
Maximum float voltage	N/A	N/A	600 V_{RMS} CAT II	600 V_{RMS} CAT II 300 V_{RMS} CAT III	N/A	N/A
Compensation range (pf)	7 to 30	N/A	10 to 22	10 to 25	7 to 49	7 to 49
Readout	Yes	Yes	No	No	No	Yes

EMC environment and safety

P5100A	UL61010-031, EN61010-031, IEC61010-031, CSA61010-031
TPP0850	UL61010-031, EN61010-031, IEC61010-031, CSA61010-031
P5122	UL61010-1, UL61010B-2-031, CSA61010-1
P5150	UL61010-031, EN61010-031, IEC61010-031, CSA61010-031
P6015A	UL3111-1, EN61010-1, IEC61010-2-031, CSA1010.1, CSA1010.2.031

Ordering information

Models

P5100A/TPP0850	100X, High Voltage Probes Includes: Large hook tip (013-0389-xx), small hook tip (013-0388-xx), 6 in. ground lead (196-3526-xx), 18 in. ground lead (196-3527-xx), ground spring (214-5299-xx), crocodile clip (344-0461-xx), adjustment tool (003-1433-xx), color bands (016-1886-xx), instruction manual.
P5122	100X, High-voltage Probe for TPS2000/B and THS3000 Series Oscilloscopes. Includes accessory kit (020-3046-xx) Contents: large retractable hook tip, lead with hook tip, lead with crocodile clip, adjustment tool, instruction manual, ground spring.
P5150	50X, High-voltage Probe for TPS2000/B and THS3000 Series Oscilloscopes. Includes: Large hook tip (013-0389-xx), small hook tip (013-0388-xx), 6 in. ground lead (196-3526-xx), 18 in. ground lead (196-3527-xx), common spring (214-5299-xx), crocodile clip (344-0461-xx), color bands (016-1886-xx), adjustment tool (003-1433-xx), instruction manual.
P6015A	1000X, 3-meter High-voltage Probe. Includes: Hook probe tip (206-0463-xx), banana plug tip (134-0016-xx), crocodile clip - plugs onto ground lead (344-0461-xx), ground lead (196-3363-xx), carrying case (016-1147-xx), instruction manual (070-8223-xx), probe tip (206-0116-xx).

Recommended accessories (for P5100A, TPP0850, P5150)

Probe Tip to BNC Adapter	013-0291-xx
0.080 in. diameter Spring Tip	206-0060-xx

Warranty

One year parts and labor.

Options

Options (P6015A only)

Option 1R	3-meter length with readout

Service options (P6015A)

Opt. C3	Calibration Service 3 Years
Opt. C5	Calibration Service 5 Years
Opt. D1	Calibration Data Report
Opt. D3	Calibration Data Report 3 Years (with Opt. C3)
Opt. D5	Calibration Data Report 5 Years (with Opt. C5)
Opt. R3	Repair Service 3 Years (including warranty)
Opt. R5	Repair Service 5 Years (including warranty)

Service options (TPP0850)

Opt. C3	Calibration Service 3 Years
Opt. C5	Calibration Service 5 Years
Opt. D1	Calibration Data Report
Opt. D3	Calibration Data Report 3 Years (with Opt. C3)
Opt. D5	Calibration Data Report 5 Years (with Opt. C5)
Opt. R3	Repair Service 3 Years (including warranty)
Opt. R5	Repair Service 5 Years (including warranty)

CE

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