Tektronix®

1 GHz and 500 MHz High Voltage Differential Probes
TDP1000, TDP0500, P6251 Datasheet

Key performance specifications

- 1 GHz and 500 MHz probe bandwidth
- <1 pF differential input capacitance
- 1 MΩ differential input resistance
- ±42 v (DC + pk AC) differential input voltage
- >18 dB CMRR (at 250 MHz 50X attenuation)

Key features

- Outstanding electrical performance
    - Selectable bandwidth-limiting filters
    - DC reject
- Versatile DUT connectivity
    - Small compact probe head for probing small geometry circuit elements
    - Straight pin, square pin, solder down, variable pitch standard accessories
    - Robust design for reliability
- Easy to use
    - Provides automatic units scaling and readout on the oscilloscope display
    - TDP1000, TDP0500
        - Connect directly to oscilloscopes with the TekVPI™ probe interface
        - Easy access to scope-displayed probe menu for probe setup control and operating status information
        - Remote GPIB/USB probe control through the oscilloscope

- AutoZero – zeros out output offset
- P6251
    - Connect directly to the TekProbe™ interface oscilloscopes, or to TekConnect® oscilloscopes using TCA-BNC adapter

Applications

- High-speed switch mode power supply design
- CAN/LIN bus design
- Digital design and characterization
- Manufacturing engineering test
- Research and development

High-voltage differential probes

The TDP1000, TDP0500, and P6251 High-voltage Differential Probes are specifically designed for use with and direct connection to Tektronix oscilloscopes with either the TekVPI™ probe interface, or TekProbe BNC Interface. These probes achieve high-speed signal acquisition and measurement fidelity by solving three traditional measurement challenges:

- Outstanding Electrical Performance
- Versatile Device-Under-Test Connectivity
- Ease of Use

Specifications

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

Warranted characteristics

Bandwidth (probe only)

TDP1000, P6251	1 GHz
TDP0500	500 MHz

Attenuation — 5X, 50X

Differential mode input voltage — ±42 v (DC + pk AC); 30 V_{rms}

Rise time (probe only)

TDP1000, P6251	≤350 ps
TDP0500	<700 ps

CMRR
>55 dB at 30 kHz
>50 dB at 1 MHz
>18 dB at 250 MHz (warranted at 50X attenuation)

Maximum input voltage (nondestruct) — ±100 V (DC + pk AC)

Gain accuracy at DC — ±5%

Typical characteristics

Differential input capacitance — ≤1 pF

Differential input resistance — 1 MΩ

Sensitivity/noise level

5X attenuation	2 mV_{rms}
	10 mV_{rms} (referred to the probe output)
50X attenuation	1 mV_{rms}
	50 mV_{rms} (referred to the probe output)

Propogation delay — 6.5 ns

Common mode input voltage — ±35 v (DC + pk AC); 25 V_{rms}

Differential input offset range

TDP1000, TDP0500	±42 V (5X or 50X attenuation)
P6251	±4.25 V (5X attenuation) ±42 V (50X attenuation)

DC reject

5X attenuation	0.4 Hz
50X attenuation	4 Hz

Nominal characteristics

Selectable bandwidth filter limits

TDP1000, TDP0500	100 Hz, 10 kHz, 1 MHz, Full
P6251	5 MHz, Full

Oscilloscope interface recommendations

TDP1000, TDP0500	TekVPI™ Probe When using MSO/DPO2000/B series, the TekVPI Power supply (Tektronix part number, 119-7465-xx) and power cable is needed.
P6251	TekProbe BNC Level II TekConnect® (TCA-BNC required)

Power requirements

TDP1000, TDP0500	Powered directly by oscilloscopes with the TekVPI interface

P6251	Powered directly by the TekProbe-BNC interface, eliminating the need for additional power supplies and cables when used with TekProbe-BNC oscilloscopes. May also be powered through the 1103 TEKPROBE power supply for use with non-TekProbe interface instrumentation.

Physical characteristics

Compensation box dimensions

Dimension	TDP1000, TDP0500		P6251	
	in	cm	in	cm
Height	1.6	4.1	1.0	2.6
Width	1.2	3.05	1.6	4.1
Length	4.2	10.7	3.2	8.13
Cable length	47.2 (inches), 1.2 (meters)			

Weight

TDP1000, TDP0500		P6251	
lb	kg	lb	kg
0.320	0.146	0.360	0.163

Ordering information

Models

TDP1000	1 GHz high-voltage differential probe with TekVPI interface.
TDP0500	500 MHz high-voltage differential probe with TekVPI interface.
P6251	1 GHz High-voltage Differential Probe with TekProbe-BNC Level II Interface.

Options

Language options

Opt. L5	Japanese manual
Opt. L7	Simplified Chinese manual

Service options

Opt. C3	Calibration Service 3 Years
Opt. C5	Calibration Service 5 Years
Opt. R3	Repair Service 3 Years (including warranty)
Opt. R5	Repair Service 5 Years (including warranty)
Opt. SILV600	Standard warranty extended to 5 years
Opt. SILV900	Standard warranty extended to 5 years

Additional service products for the TDP0500 or TDP1000

TDP0500-R3DW / TDP1000-R3DW	Repair service coverage 3 years (includes product warranty period) 3-year period starts at time of customer instrument purchase
TDP0500-R5DW / TDP1000-R5DW	Repair service coverage 5 years (includes product warranty period) 5-year period starts at time of customer instrument purchase

Accessories

Standard accessories

Description	Quantity included with product	Reorder part number (qty in reorder)
Y-lead set	2 each	196-3434-xx (1)
Solder-down lead set, 1 inch	1 each	196-3504-xx (1)
Solder-down lead set, 3 inch	1 each	196-3505-xx (1)
Micro CKT test tip	3 each	206-0569-xx (1)
Tip savers	2 each	016-1781-xx (2)
Longhorn adapters	2 each	016-1780-xx (5)
Straight-pin probe tips	8 each	016-1891-xx (8)
3-inch ground leads	2 each	196-3437-10 (2)
Color-coding bands	2 each of 5 colors	016-1315-xx (2 each of 5 colors)

Table continued…

Description	Quantity included with product	Reorder part number (qty in reorder)
Nylon carrying case	1 each	016-1952-xx (1)

Standard warranty

1 year parts and labor.

Recommended accessories

Description	Part number	Quantity
BNC to probe tip adapter	067-1734-xx	1 each
Spring loaded grounds	016-1782-xx	1 package of 6
Twin foot adapter	016-1785-xx	1 package of 4
Twin tip adapter	016-1786-xx	1 package of 4
IC micro grabber	SMK4	1 package of 4
TEKPROBE probe power supply	1103	1 each

Tektronix is ISO 14001:2015 and ISO 9001:2015 certified by DEKRA.

GPIB
IEEE-488

Product(s) complies with IEEE Standard 488.1-1987, RS-232-C, and with Tektronix Standard Codes and Formats.

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Mess- und Prüftechnik. Die Experten.

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For Further Information. Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology. Please visit *www.tek.com*.

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