1 GHz and 500 MHz High Voltage Differential Probes

TDP1000 • TDP0500 • P6251 • P6250 Data Sheet

Easy to Use

- Provides Automatic Units Scaling and Readout on the Oscilloscope Display
- TDP1000, TDP0500
  - Connect Directly to the DPO7000, DPO4000, and MSO4000 Series Oscilloscopes Using TekVPI™ Probe Interface (No additional power adapters required)
  - Easy Access to Scope-displayed Probe Menu for Probe Setup Control and Operating Status Information
  - AutoZero – Zeros Out Output Offset
- P6251, P6250
  - Connect Directly to TDS5000 and other TekProbe™ Interface Oscilloscopes, or to TekConnect® Oscilloscopes Using TCA-BNC Adapter

Features & Benefits

Outstanding Electrical Performance

- 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)
- 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

Applications

- High-speed Switch Mode Power Supply Design
- CAN/LIN Bus Design
- High-speed Digital Design
- Digital Design and Characterization
- Manufacturing Engineering Test
- Research and Development

The TDP1000, TDP0500, P6251, and P6250 High-voltage Differential Probes provide excellent high-speed electrical and mechanical performance required for today's Switch Mode Power Supply (SMPS), CAN/LIN Bus, and high-speed digital system designs.

Specifically designed for use with and direct connection to Tektronix oscilloscopes with either the TekVPI™ probe interface, or TekProbe BNC Interface. The TDP1000, TDP0500, P6251, and P6250 High-voltage Differential 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

Tektronix®

Characteristics

Characteristic	Description
Bandwidth (Probe only)	1 GHz (TDP1000, P6251) 500 MHz (TDP0500, P6250)
Attenuation	5x, 50x
Rise Time (Probe only)	≤350 ps (TDP1000, P6251) <700 ps (TDP0500, P6250)
Differential Input Capacitance	<1 pF
Differential Input Resistance	1 MΩ
CMRR	>55 dB at 30 kHz >50 dB at 1 MHz >18 dB at 250 MHz (warranted at 50x attenuation)
Sensitivity/Noise Level	2 mV_{RMS} (5x attenuation) 1 mV_{RMS} (50x attenuation) referred to the probe output 10 mV_{RMS} (5x attenuation) 50 mV_{RMS} (50x attenuation) referred to the probe input
Differential Mode Input Voltage	±42 V (DC + pk AC); 30 V_{RMS}
Common Mode Input Voltage	±35 V (DC + pk AC); 25 V_{RMS}
Input Offset Range	
TDP1000, TDP0500	±42 V (5x or 50x attenuation)
P6251, P6250	±4.25 V (5x attenuation) ±42 V (50x attenuation)
Max Input Voltage (Nondestruct)	±100 V (DC + pk AC)
Selectable Bandwidth Filter Limits	
TDP1000, TDP0500	100 Hz, 10 kHz, 1 MHz, Full
P6251, P6250	5 MHz, Full
DC Reject	0.4 Hz (5x) 4 Hz (50x)
Gain Accuracy at DC	±2%
Propagation Delay	6.5 ns
Scope Interface	
TDP1000, TDP0500	TekVPI™ Probe Interface
P6251, P6250	TekProbe BNC Level II Interface

Physical Characteristics

Dimensions	TDP1000, TDP0500		P6251, P6250	
	lb./in.	kg/cm	lb./in.	kg/cm
Weight	0.320 lb.	0.146 kg	0.360 lb.	0.163 kg
Compensation Box Dimensions				
Height	1.6 inches	4.1 cm	1.0 inches	2.6 cm
Width	1.2 inches	3.05 cm	1.6 inches	4.1 cm
Length	4.2 inches	10.7 cm	3.2 inches	8.13 cm
Cable Length	47.2 inches, 1.2 meters			

Power Requirements

Device	Description
TDP1000, TDP0500	Are powered directly by the DPO7000, DPO4000, and MSO4000 Series oscilloscopes using the TekVPI interface.
P6251, P6250	Are 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.

Standard Warranty – 1-year parts and labor.

Recommended Oscilloscopes

Probes	Oscilloscopes	Interface	Adapter Required
TDP1000, TDP0500	DPO7000, DPO4000, and MSO4000 Series	TekVPI probe	—
P6251, P6250	TDS5000 Series, TDS500, TDS600, and TDS700 Series, and other Tektronix oscilloscopes with TekProbe BNC-Level2 interface	TekProbe BNC-Level2	—
	DPO70000, DSA70000, TDS6000, and TDS7000 oscilloscopes	TekConnect®	TCA-BNC

Required Oscilloscope Firmware

Probe	Oscilloscopes	Firmware
TDP1000, TDP0500	DPO7000 Series	Version 3.0.2 or later
	DPO/MSO4000 Series	Version 2.06 or later
P6251, P6250	TekProbe-BNC Level II Oscilloscopes and adapter (TCA-BNC)	TekProbe-BNC interface is firmware-independent

Ordering Information

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.

P6250
500 MHz High-voltage Differential Probe with TekProbe-BNC Level II Interface.

Standard Accessories

Certificate of Traceable Calibration included standard on all models.

Description	Qty 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-xx (2)
Color-coding Bands	2 each of 5 colors	016-1315-xx (2 each of 5 colors)
Nylon Carrying Case	1 each	016-1952-xx (1)
CD with Technical Reference Manual and Quick Start Users Guides	1 each	063-4110-xx (1)
TDP0500 and TDP1000 only		
Quick Start Users Guide	1 each	
English		071-1974-xx (1)
Japanese (with Opt. L5)		071-1975-xx (1)
Simplified Chinese (with Opt. L7)		071-1976-xx (1)
Documentation Kit CD, Includes: Quick Start Users Guide (English, Japanese, and Simplified Chinese versions); Technical Reference Manual	1 each	063-3941-xx (1)
P6250 and P6251 only		
Documentation Kit CD, Includes: Quick Start Users Guide (English, Japanese, and Simplified Chinese versions); Technical Reference Manual	1 each	063-4110-xx (1)

Manual Options (TDP1000, TDP0500 only)

Option	Description
Opt. L5	Japanese
Opt. L7	Simplified Chinese

Recommended Accessories

Description	Part Number	Quantity
BNC to Probe Tip Adapter	067-1734-xx	1 each
Spring Loaded Grounds	016-1782-xx	1 pkg of 6
Twin Foot Adapter	016-1785-xx	1 pkg of 4
Twin Tip Adapter	016-1786-xx	1 pkg of 4
IC Micro Grabber	SMK4	1 pkg of 4
TEKPROBE Probe Power Supply	1103	1 each

Service Options

Option	Description
Opt. CA1	A single calibration event or coverage for the designated calibration interval, whichever comes first
Opt. C3	Calibration Service 3 Years
Opt. C5	Calibration Service 5 Years
Opt. R3	Repair Service 3 Years
Opt. R5	Repair Service 5 Years
Additional Service Products Available During Warranty (DW) or Post Warranty (PW)	
TDP0500 and TDP1000	
TDP0500-CA1/ TDP1000-CA1	A single calibration event or coverage for the designated calibration interval, whichever comes first
TDP0500-R1PW/ TDP1000-R1PW	Repair service coverage, 1-year post warranty
TDP0500-R2PW/ TDP1000-R2PW	Repair service coverage, 2-year post warranty
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
P6250 and P6251	
P6250-CA1/ P6251-CA1	A single calibration event or coverage for the designated calibration interval, whichever comes first
P6250-R1PW/ P6251-R1PW	Repair service coverage, 1-year post warranty
P6250-R2PW/ R6251-R2PW	Repair service coverage, 2-year post warranty
P6250-R3DW/ P6251-R3DW	Repair service coverage 3 years (includes product warranty period) 3-year period starts at time of customer instrument purchase
P6250-R5DW/ P6251-R5DW	Repair service coverage 5 years (includes product warranty period) 5-year period starts at time of customer instrument purchase

CE

ISO 9001 Product(s) are manufactured in ISO registered facilities.

GPIB IEEE-488 Product(s) complies with IEEE Standard 488.1-1987, RS-232-C, and with Tektronix Standard Codes and Formats.