High Voltage Differential Probe

THDP0400 Model Datasheet



Key applications

- Floating differential measurements
- Power Semi Si, SiC, GaN Validation and Characterization
- Switching power supply design
- Industrial and automotive motor drive designs
- Power converter design and service

The Tektronix THDP0400 high voltage differential probe enables safe measurement of floating differential voltages up to ±2000 V. It is well suited for testing IGBT, SiC, and GaN power devices, as well as applications such as motor drives and power converters.

The probe provides up to 400 MHz bandwidth with selectable attenuation settings, enabling accurate measurement of fast-switching signals in medium- to high-voltage differential applications.

The THDP0400 model includes a range of standard accessories to simplify connection to the device under test (DUT). Like all probes in the THDP series, it features the TekVPI® interface, allowing seamless connection to 4, 5, and 6 Series B MSO oscilloscopes for both manual and automated measurements.

Key features

- 400 MHz bandwidth for high-speed signal measurements
- Differential voltage range up to ±2 kV
- Common-mode voltage up to ±2 kV
- Selectable attenuation: 50X, 100X, 250X, 500X
- DC gain accuracy: ±1%
- Switchable attenuation settings for measurement flexibility
- Safety certified as per UL 61010-031 and IEC 61010-031 standards
- CAT Rating: 1000 V CAT III

Specifications

All specifications are typical and apply to all models unless noted otherwise.

Probe overview

Characteristic	Description			
Bandwidth	400 MHz			
Probe range and attenuation	2 kV: 500X	1 kV: 250X	400 V: 100X	200 V: 50X
Rise time	0.9 ns	0.9 ns	1 ns	1 ns
Noise (AC RMS)	265 mV	265 mV	225 mV	225 mV
Noise (AC RMS at 20 MHz)	55 mV	55 mV	45 mV	45 mV
DC balance (input referred)	±2 V	±1 V	±1 V	±500 mV
Maximum measurable differential Voltage (DC + peak AC)	±2000 V	±1000 V	±400 V	±200 V
Maximum Common mode Voltage to Earth	±2000 Vpk; 1400 V RMS			
Max Non-Destruct differential input Voltage to Earth	6000 Vpk (as defined in IEC 61010-031); 2000 V RMS			
	Derates with frequency. Refer to Input Voltage derating curve.			
DC gain accuracy	±1%			
Common mode voltage	±2000 Vpk			
CMRR	DC: 80 dB			
	100 kHz: 70 dB			
	1 MHz: 70 dB			
	10 MHz: 50 dB			
	50 MHz: 45 dB			
	100 MHz: 35 dB			
	400 MHz: 28 dB			
Input impedance	Each input to ground: 5 MΩ || 5 pF			
	Differential input impedance: 10 MΩ || 2.5 pF			
CAT rating	1000V CAT III			
Propagation delay	13 ns ±0.5 ns			
Probe cable length	2 meters			
Supported oscilloscopes	4 Series B, 5 Series B, and 6 Series B MSO instruments			

Environmental requirements

Characteristic	Operating	Non-operating
Temperature	0° C TO +50° C	-40°C TO +71°C
Humidity	80% relative humidity (% RH) at up to +31°C, decreasing linearly to 40% at +50°C. Units to be powered up at least 30 minutes prior to testing.	5% to 95% RH (Relative Humidity) at up to +40°C, noncondensing.
Altitude	Up to 3,000 meters	Up to 15,240 meters

Ordering information

Select the appropriate instrument and options for your measurement needs.

Model overview

Model	Description
THDP0400	400 MHz high voltage differential probe
THDP0400KIT	Standard accessory kit (includes items in standard accessory list)

Standard accessories

The following table lists the accessories that are shipped with the probe.

Accessory	Description	Part number
	Probe tip adapters; 4mm to 0.8mm, black (qty. 2)	013-0436-XX
	Spring tips; fine (qty. 4)	214-5586-XX
	Hook clamps; red and black (qty. 2)	344-0703-XX
	Rotating grip jaw clamps (qty. 2)	344-0704-XX

Accessory	Description	Part number
	2-footed holder; black (qty. 2)	352-1192-XX
	Safety alligator clips; small (qty. 2)	344-0705-XX

Recommended accessories

The following table lists optional accessories.

Accessory	Description	Part number
	Transit hard case	016-2177-XX
	EMI noise suppression kit	276-0914-XX
	3D positioner with steel base, 200 mm span width and universal probe holder	352-1193-XX
	4 mm Coupler f-f (red), 30V AC / 60V DC	133-0698-XX
	BNC-male to dual 4 mm sockets, fully insulated	133-0699-XX

Certifications

Tektronix is registered to ISO 9001:2015 and ISO 14001:2015.

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