TPP0051
50 MHz 10X Passive Probe

Instructions

Tektronix

071-3248-00

Operating Information

The TPP0051 10X Passive Probe is a high impedance, passive probe with 10X attenuation that is designed for use with the following Tektronix oscilloscopes:

- TBS1000B and TBS1000B-EDU oscilloscopes, which have 20 pF of input capacitance

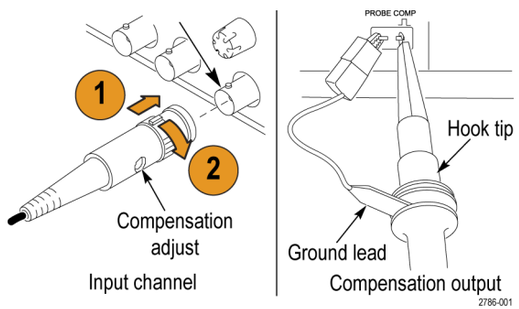
The probe has no user- or Tektronix-serviceable parts.

⚠ ***WARNING.*** *Do not float this probe on any oscilloscope except TPS2000 Series Oscilloscopes.*

Do not float the reference lead of this probe to >30 V_{RMS} when used with a TPS2000 Series Oscilloscope. Use either the P5120 or P5150 probes (floatable to 600 V_{RMS} CAT II), a similarly-rated passive high voltage probe, or an appropriately-rated high voltage differential probe when floating the reference lead above 30 V_{RMS}, subject to the ratings of the high voltage probe used.

Connecting the Probe to the Oscilloscope

Connect the probe as shown in the illustrations below.



Compensating the Probe

Due to variations in oscilloscope input characteristics, the low-frequency compensation of the probe may need adjustment after moving the probe from one oscilloscope channel to another.

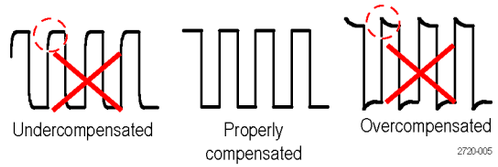
If a 1 kHz calibrated square wave displayed at 1 ms/division shows significant differences between the leading and trailing edges, perform the following steps to optimize low-frequency compensation:

1. Connect the probe to the oscilloscope channel that you plan to use for your measurements.
2. Connect the probe to the probe compensation output terminals on the oscilloscope front panel.

⚠ ***WARNING.*** *To avoid electric shock, only connect to the Probe Comp signal on the oscilloscope when making this adjustment.*

3. Push AUTOSET or otherwise adjust your oscilloscope to display a stable waveform.
4. Adjust the trimmer in the probe until you see a perfectly flat-top square wave on the display. (See illustration.)

⚠ ***WARNING.*** *To avoid electric shock, only use the insulated adjustment tool when making compensation adjustments.*



Connecting the Probe to the Circuit

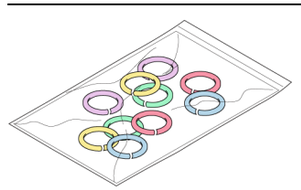
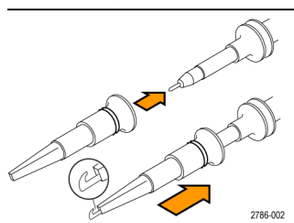
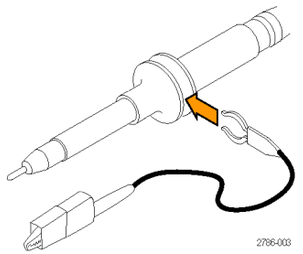
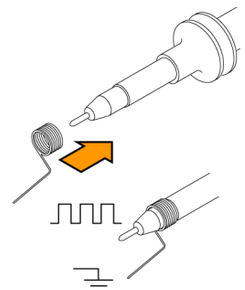
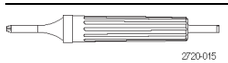
Use the standard accessories included with the probe to connect to your circuit.

⚠ ***WARNING.*** *To avoid electric shock when using the probe or accessories, keep fingers behind the finger guard of the probe body and accessories.*

To reduce risk of shock, ensure the ground lead and ground spring are fully mated before connecting the probe to the circuit under test.

Standard Accessories

The accessories included with the probe are shown below.

Item	Description
	**Color bands** Use these bands to identify the oscilloscope channel at the probe head. Reorder Tektronix part number 016-0633-xx (5 pairs)
	**Hook tip** Press the hook tip onto probe tip and then clamp the hook onto the circuit. Reorder Tektronix part number 013-0362-xx
	**Ground lead, 6-inch** Secure the lead to the probe head ground and then to your circuit ground. Reorder Tektronix part number 196-3521-xx
	**Ground spring** The ground spring minimizes aberrations on high-frequency signals caused by the inductance of the ground path, giving you measurements with good signal fidelity. Attach the spring to the ground band on the probe tip. You can bend the spring out to ~0.75 in. away from the signal test point. Reorder Tektronix part number 016-2028-xx (2 ea.)
	**Adjustment tool** Reorder Tektronix part number 003-1433-xx

Optional Accessories

You can order the following accessories for your probe.

Accessory	Part number
Alligator Ground Lead, 12 in	196-3512-xx
6” Clip-on Ground Lead	196-3198-xx
Ground Spring, Short, 2 ea.	016-2034-xx
MicroCKT Test Tip	206-0569-xx
Micro Hook Tip	013-0363-xx
Universal IC Cap	013-0366-xx
Circuit Board Test Point/PCB Adapter	016-2016-xx
Wire, spool, 32 AWG	020-3045-xx

Specifications

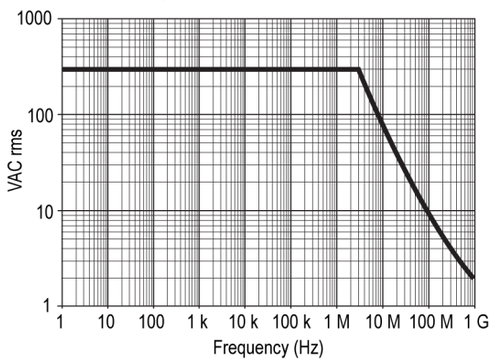
Table 1: Electrical and mechanical specifications

Characteristic	
Bandwidth (–3 dB)	DC to 50 MHz
System atten–uation accuracy	10:1 ±3.2%
Compensation range	15 pF – 25 pF
System input resistance @ DC	10 MΩ ±1.5%
System input capacitance	<12 pF
System rise time (typical)	<3.5 ns
Propagation delay	~6.1 ns
Maximum input voltage	300 V_{RMS} CAT II
Cable length	1.3 m

Table 2: Environmental specifications

Characteristics	Description
Temperature	
Operating	–10 °C to +55 °C (14 °F to +131 °F)
Nonoperating	–51 °C to +71 °C (–60 °F to +160 °F)
Humidity Operating and Non-Operating	5% to 95% relative humidity (%RH) up to +30 °C (86 °F), 5% to 65% RH above +30° C up to +55 °C (131 °F)
Altitude	
Operating	3.0 km (10,000 ft) maximum
Nonoperating	12.2 km (40,000 ft) maximum

Performance Graphs



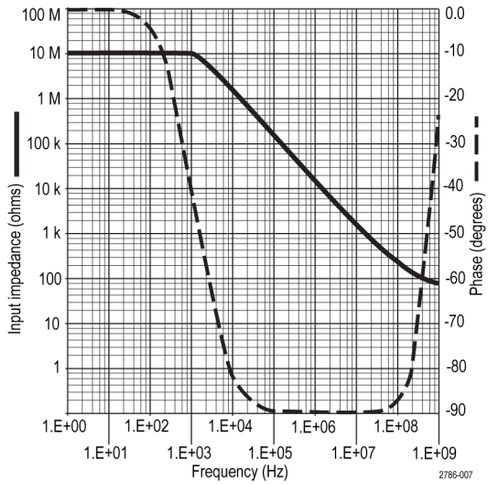


Table 3: Certifications and compliances

Characteristics	Description	
EC Declaration of Conformity	Compliance was demonstrated to the following specification as listed in the Official Journal of the European Communities: Low Voltage Directive 2006/95/EC: EN61010-031: 2002	
Safety Standards	UL61010-031;2007 (AM1) CAN/CSA C22.2 No. 61010-031-07 (AM1) IEC61010-031; IEC 61010-031/A1:2008	
Measurement Category Descriptions	*Category*	*Examples of Products in this Category*
	CAT III	Distribution-level mains, fixed installation
	CAT II	Local-level mains, appliances, portable equipment
	CAT I	Circuits not directly connected to mains.
Pollution Degree 2	Do not operate in environments where cond–uctive pollutants may be present (as defined in IEC 61010-1). Rated for indoor use only.	

Equipment Recycling. This product complies with the European Union's requirements according to Directive 2002/96/EC on waste electrical and electronic equipment (WEEE). For more information about recycling options, check the Support/Service section of the Tektronix Web site (www.tektronix.com).

Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. To avoid potential hazards, use this product only as specified. Using the probe or accessories in a manner not specified could result in a shock or fire hazard.

To Avoid Fire or Personal Injury

Ground-Referenced Oscilloscope Use. Do not float the reference lead of this probe when using with ground referenced oscilloscopes (for example, TBS, DPO, MSO, and TDS series oscilloscopes). The reference lead must be connected to earth potential (0 V).

TPS2000 Series Oscilloscope Use. Do not float the reference lead of this probe above the rated float voltage (30 V_{RMS}).

Connect and Disconnect Properly. Connect the probe output to the measurement instrument before connecting the probe to the circuit under test. Disconnect the probe input and the probe reference lead from the circuit under test before disconnecting the probe from the measurement instrument.

Avoid Electric Shock. Do not connect or disconnect probes or test leads while they are connected to a voltage source.

Observe All Terminal Ratings. To avoid fire or shock hazard, observe all ratings and markings on the product. Consult the product manual for further ratings information before making connections to the product.

Avoid Electric Shock. When using probe accessories, never exceed the lowest rating of the probe or its accessory, whichever is less, including the measurement category and voltage rating.

Inspect the Probe and Accessories. Before each use, inspect the probe and accessories for damage (cuts, tears, defects in the probe body, accessories, cable jacket, etc.). Do not use if damaged.

Do Not Operate in Wet/Damp Conditions.

Do Not Operate in an Explosive Atmosphere.

Keep Product Surfaces Clean and Dry.

Safety Terms and Symbols Terms in This Manual.

These terms may appear in this manual:

⚠ ***WARNING.*** *Warning statements identify conditions or practices that could result in injury or loss of life.*

⚠ ***CAUTION.*** *Caution statements identify conditions or practices that could result in damage to this product or other property.*

Symbols on the Product. These symbols may appear on the product:

Caution Refer to Manual

Earth Terminal

Contacting Tektronix

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Email:	techsupport@tektronix.com

Warranty Information

For warranty information, go to www.tektronix.com/warranty