

# Differential Probes

## P6046



### Features

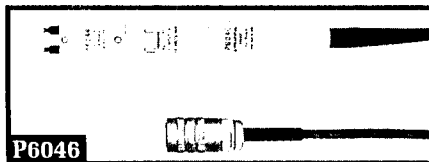
#### P6046

- Active Differential System
- DC to 100 MHz
- 1X/10X Differential
- Typically 10,000:1 CMRR Derating to 1,000:1 at 50 MHz
- $\pm 250$  V Maximum Voltage with 10X Attenuator



### Applications

- Power Supplies
- Disk Drives
- Digital Design
- Telecommunications



P6046 with 10X Attenuator.

### Differential Measurements

Differential measurement systems enable you to simultaneously measure two voltage points in a circuit and provide as an output the difference between the two voltages.

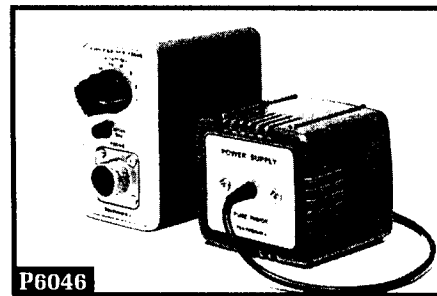
Tektronix offers two types of differential measurement probes: the active differential probe system and the passive matched pair of probes. The P6046 and P5200 are active differential amplifiers in probe form which connect to one channel of a standard scope amplifier. The P6135A is a passive probe pair designed to enhance the performance of a differential amplifier.

#### P6046 ACTIVE DIFFERENTIAL PROBE SYSTEM

The P6046 is a self-contained active differential system consisting of a Differential Probe, Amplifier and Power Supply. Active FET amplifiers at the dual-inputs reduce circuit loading. Combined with the differential processing occurring in the probe head, the P6046 provides superior common mode rejection ratios (CMRR) at high frequencies typically 10,000:1 out to 50 kHz, derating to 5,000:1 at 1 MHz.

Since the P6046 is self-contained, it provides a differential output into a single channel of any oscilloscope. System controls enable you to select AC or DC coupling, adjust the DC balance and select mV/div from 1 to 200 mV (10 mV to 2 V with attenuator head) in standard 1, 2, 5 steps.

A slip-on 10X attenuator is also included which increases the maximum input voltage from  $\pm 25$  V to  $\pm 250$  V and the common mode dynamic range from  $\pm 5$  V to  $\pm 50$  V.



P6046 Amplifier with Power Supply.

### Characteristics

**CMRR** – With deflection factors of 1 to 20 mV/div: at least 10,000:1 at 50 kHz, 5,000:1 at 1 MHz, and 1,000:1 at 50 MHz (DC coupled).

**Common Mode Linear Dynamic Range** –  $\pm 5$  V,  $\pm 50$  V with 10X attenuator.

**Bandwidth** – DC to 100 MHz ( $-3$  dB).

**Rise Time** – 3.5 ns or less.

**Deflection Factor Range** – 1 to 200 mV/div in eight calibrated steps, 1-2-5 sequence, accurate within 3% (with an oscilloscope deflection factor of 10 mV/div). Input RC 1 M $\Omega$  paralleled by 10 pF or less.

**Input Coupling** – AC or DC, selected by a switch on the probe. Low frequency response AC-coupled is  $-3$  dB at 20 Hz, 2 Hz with 10X attenuator.

**Displayed Noise** – Typically 450 mV or less (tangentially measured).

**Maximum Non-Destructive Input Voltage** –  $\pm 25$  V (DC + peak AC),  $\pm 250$  V with 10X attenuation, derated with frequency. The P6046 circuitry can be damaged by electrostatic discharge. Please refer to the manual for use.

**Output Impedance** – 50  $\Omega$  through a BNC-connector. 50  $\Omega$  termination supplied with amplifier for use with 1 M $\Omega$  systems.

**Probe Cable** – 6 ft. long, terminated with special nine-pin connector.

For your local Tektronix representative see the list in the back of this catalog or outside the U.S. call: 1-503-627-1933, inside the U.S. call: 1-800-426-2200.



See Tektronix on the World Wide Web:  
<http://www.tek.com>



**ISO 9001** Tektronix Measurement products are manufactured in ISO registered facilities.

### ORDERING INFORMATION

For price information: Outside the U.S. contact your local Tektronix representative, inside the U.S. see the price list in the back of this catalog.

#### P6046

1X, 6 ft. FET Differential Probe with Amplifier and Power Supply.

**Includes:** 50  $\Omega$  Termination (011-0049-01); Amp and Power Supply (015-0106-00); 50  $\Omega$  Coaxial Cable (012-0076-00); Hanger Assembly (014-0029-00); Carrying Case (016-0111-01); Dual Attenuator Head (010-0419-01); Swivel Probe Tip; Spring Ground Contact; Connector Test Point Jack; Instruction Manual (070-7129-02).

**Opt. A6** – Japan, 100 V, 50 Hz.  
**Power Supply with Amplifier** – Order 015-0106-00.

#### SERVICE ASSURANCE OPTIONS

**Opt. R2** – Adds two years of post-warranty Repair Protection.

**Opt. C5** – Adds five years of Calibration Services.