



## SPECIFICATION

### DESCRIPTION

The TEKTRONIX P6204 is a high-impedance, miniature, 10X active (FET) probe with *identify* function. The probe is designed to provide maximum performance with the 11000 Series oscilloscopes and is equipped with the TEKPROBE™ interface which provides data communication between the probe and oscilloscopes and conveys power from the host instrument. Data contained within the probe informs the instrument of the probe's attenuation, model number, and serial number, and causes the input to automatically terminate with 50 Ω. The ID button on the probe head activates the *identify* function in the instrument. The ID signal can also set an SRQ (Service Request) flag on an IEEE-488 bus if the instrument is programmed to do so.

The P6204 offers a variable dc offset voltage, which is controlled through the TEKPROBE™ interface by the host instrument.

The P6204 has a 1.5-meter signal cable. No power cable is necessary, as power is drawn from the host-instrument plug-in through the TEKPROBE™ interface or through a Tektronix 1103 TEKPROBE power supply.

The miniature probe head of the P6204 is fully compatible with the Tektronix family of miniature probe accessories.

### ACCESSORIES

The P6204 is shipped with the following standard accessories:

- 1 Instruction Manual
- 1 Hook Tip
- 1 Ground Lead with Alligator
- 1 Ground Lead with Receptacle
- 1 Klipchip™ Adapter
- 1 Ground Contact
- 1 Ground Sleeve Cover
- 1 Probe Tip, IC Test

Use of these accessories is described in the "Operating Instructions" section of this manual. Part numbers and optional accessories are listed in the "Replaceable Parts List" (Section 8).

### PERFORMANCE CONDITIONS

The electrical characteristics listed in Table 1-1 apply when a calibrated probe is used with a calibrated oscilloscope system operating within the environmental conditions stated in Table 1-2.

Items listed in the "Performance Requirement" column are verifiable qualitative or quantitative limits. Items listed in the "Supplemental Information" column are not verified in the "Performance Check Procedure" (Section 3); they are either explanatory notes, calibration setup descriptions, perfor-

mance characteristics for which no absolute limits are specified, or characteristics that are impractical to check.

The probe's physical characteristics are listed in Table 1-3.

**Table 1-1**  
**Electrical Characteristics**

Characteristic	Performance Requirement	Supplemental Information
Attenuation (system)	10X ± 1.5% at dc.	Into a 50 Ω ± 0.5% load. <sup>b</sup>
Input Resistance (system)	≥10 M Ω at dc. <sup>a</sup>	
Input Capacitance	≤ 1.9 pF (1 kHz to 1.0 GHz). <sup>a</sup>	Typically 1.7 pF. <sup>c</sup> See Figure 1-1 for a graph of input impedance versus frequency.

<sup>a</sup> Performance Requirement not checked in manual.

<sup>b</sup> Additional gain accuracy may be obtained by utilizing the probe calibrate function of the 11000 Series mainframe.

<sup>c</sup> At room temperature.

Table 1-1 (cont)

Characteristic	Performance Requirement	Supplemental Information
Bandwidth (Probe only)	DC to 1.0 GHz.	Typically 1.1 GHz. <sup>b</sup> Small signal bandwidth (See Figure 2-2).
Rise Time (Probe Only)	< 350 ps.	Small signal rise time (See Figure 2-1).
Rise Time (System)	< 490 ps. <sup>a</sup>	When used in a system w/rise time of 350 ps such as the 11A71 and 11402 (Small signal rise time. See Figure 2-1).
Aberrations (Probe Only)	± 6%, 10% p-p total for first 6 ns, ref point at 6 ns. ± 4%, 6 ns to 30 ns, ref point at 30 ns. ± 3%, 30 ns to 20 μs, ref point at 20 μs. ± 1.5%, 20 μs to dc.	When used in a system w/rise time of 350 ps such as the 11A71 and 11402.
Signal Delay	8.4 ns ± 200 ps. <sup>a</sup>	Probe tip to output connector, measured at 50% points.
Output Offset (Probe Only)	< 10 mV.	Tested at 25° C (77°F).
(following 11000 Series probe calibration)	< 2 mV	Tested at 25° C (77°F).
Linearity Error	< 2 % at dc.	(Relative to output full scale with ±10V range on input.) See <i>Input Linear Dynamic Range</i> , Section 2.

<sup>a</sup> Performance Requirement not checked in manual.

<sup>b</sup> At room temperature.

Table 1-1 (cont)

Characteristic	Performance Requirement	Supplemental Information										
DC Thermal Drift	$< 150 \mu\text{V}/^\circ\text{C}^{\text{a}}$	Equivalent output voltage.										
Output Load Requirement	$50 \Omega \pm 0.5\%^{\text{a}}$											
Maximum Nondestructive Input Voltage	40 Vdc continuous. <sup>a</sup>	See Figure 1-2.										
Electrostatic Immunity	Will withstand discharge through 1 k $\Omega$ resistance to a 500 pF capacitor charged to 10kV.	Discharge to the probe tip and the TEKPROBE™ connector pins.										
Power Supply Requirements	<table border="0"> <thead> <tr> <th>Voltage Level</th> <th>Maximum Current</th> </tr> </thead> <tbody> <tr> <td>+15 V <math>\pm</math> 2%</td> <td>29 mA</td> </tr> <tr> <td>-15 V <math>\pm</math> 2%</td> <td>33 mA</td> </tr> <tr> <td>+ 5 V <math>\pm</math> 2%</td> <td>40 mA</td> </tr> <tr> <td>- 5 V <math>\pm</math> 2%</td> <td>25 mA</td> </tr> </tbody> </table>	Voltage Level	Maximum Current	+15 V $\pm$ 2%	29 mA	-15 V $\pm$ 2%	33 mA	+ 5 V $\pm$ 2%	40 mA	- 5 V $\pm$ 2%	25 mA	<p>Power drawn from host instrument: Max. 1.25 Watts.</p> <p>Less accurate supply levels incur output offset error.</p>
Voltage Level	Maximum Current											
+15 V $\pm$ 2%	29 mA											
-15 V $\pm$ 2%	33 mA											
+ 5 V $\pm$ 2%	40 mA											
- 5 V $\pm$ 2%	25 mA											
Probe Coding	Meets TEKPROBE™ standard, Level 2.											
DC Offset Range	$\pm 15 \text{ V}$ accurate to $\pm 2\%$ ( $\pm 30 \text{ mV}$ measured at probe output).	Referenced to the probe tip.										

<sup>a</sup> Performance Requirement not checked in manual.

**Table 1-2  
Environmental Characteristics**

<b>Characteristic</b>	<b>Information</b>
Temperature Range (Operating)	0° C to + 50° C (+32° F to 122° F).
Temperature Range (Nonoperating)	- 55° C to + 75° C (- 67° F to + 167° F).
Humidity	Five cycles (120 hr.) at 90% to 95% relative humidity.
Altitude (Operating)	To 4,600 m (15,000 ft).
Transportation	Qualifies under National Safe Transit Association's Pre-shipment Test Procedures; 1A-B-1.

**Table 1-3  
Physical Characteristics**

<b>Characteristic</b>	<b>Information</b>
Net Weight (includes accessories)	680 g (1.3 lbs).
Signal Cable Length	1.5 m (60 in).

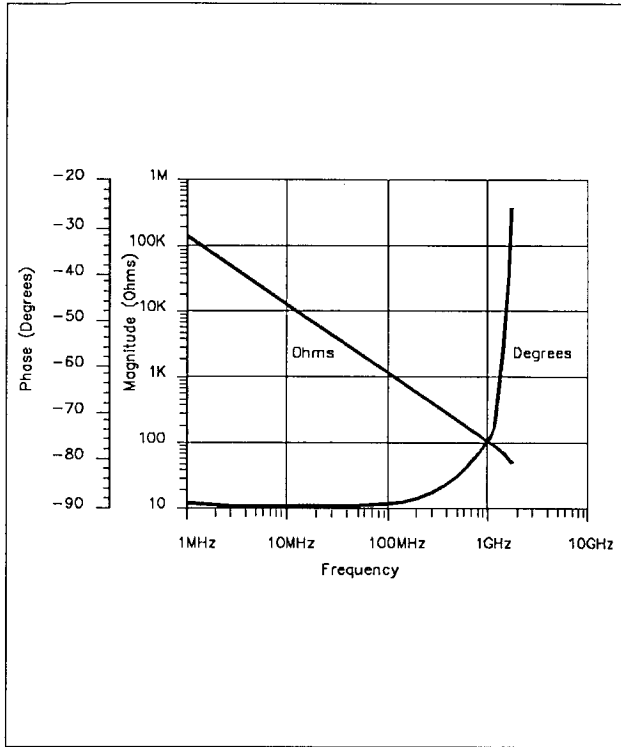


Figure 1-1. Typical Input Impedance vs frequency.

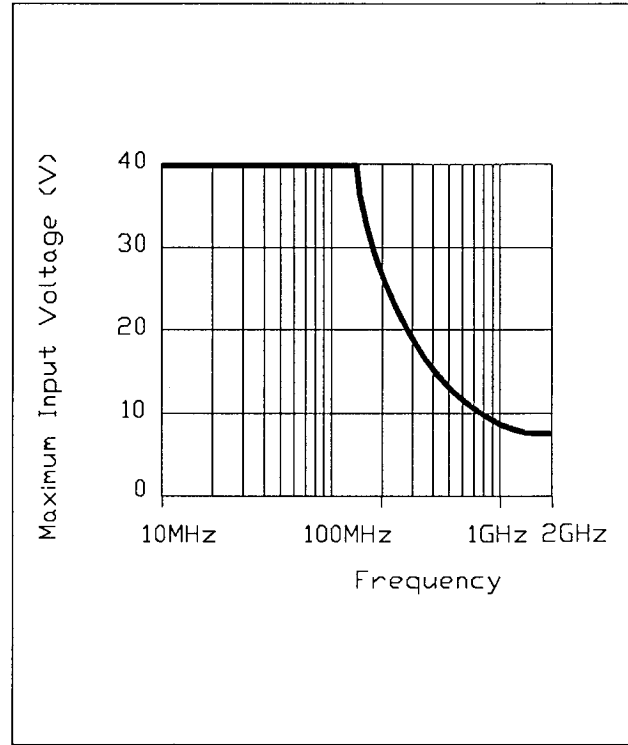


Figure 1-2. Operating voltage derating.

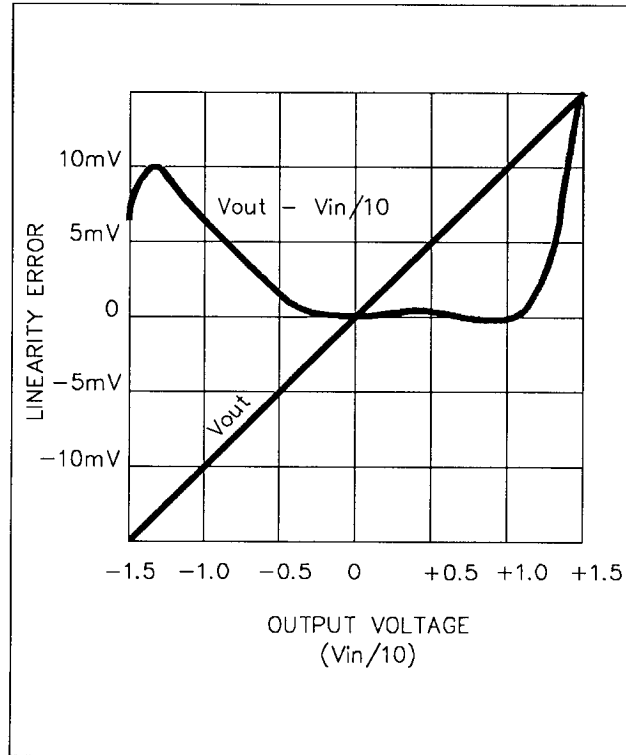


Figure 1-3. Typical Linearity Curve.