

Differential Probes

P6248 • P6247 • P6246

Features and Benefits

P6248

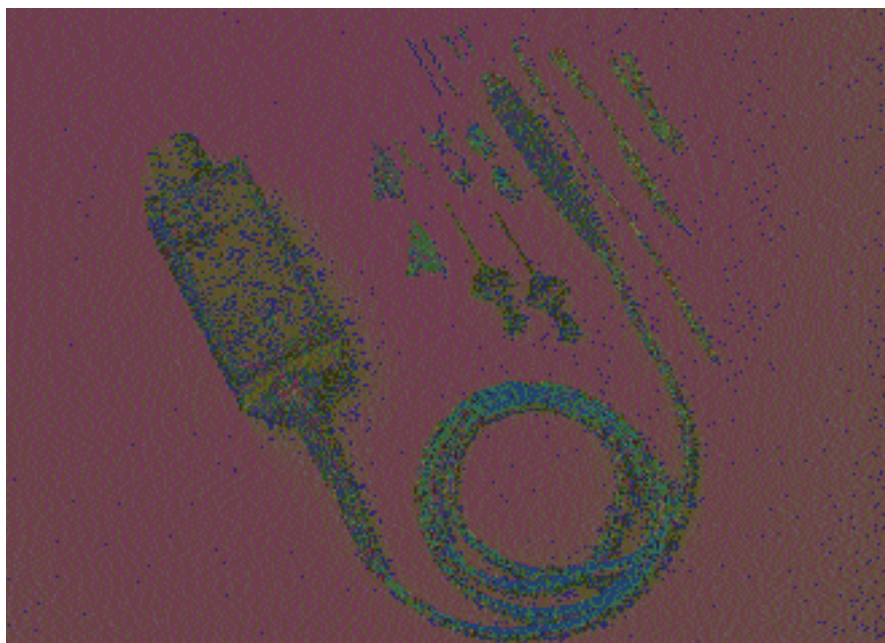
- 1.7 GHz (Typical Probe Only $\leq 27^{\circ}\text{C}$)
1x Mode
- 1.85 GHz (Typical Probe Only $\leq 27^{\circ}\text{C}$)
10x Mode

FAMILY FEATURES & BENEFITS

- Low Input Capacitance: <1 pF Differential
- Probe Input Connector: Two Standard 0.025 in./0.63 mm (0.1 in. center) Square Pin Receptacle (Female)
- Electrostatic Discharge Tolerant (IEC 801-2)
- Connects to TEKPROBE[®] Interface on TDS Series Scope, or Other Instruments Using 1103 TEKPROBE Power Supply
- For Use with Oscilloscopes, Spectrum or Network Analyzers
- >60 dB (1000:1) Common Mode Rejection Ratio (CMRR)
- Small Probe Head Allows Easy Probing of SMDs

Applications

- Communications (Gigabit Ethernet, IEEE 1394, Fibre Channel)
- Semiconductor Characterization (RAMBUS)
- Disk Drive Read Channel Design
- Communication Pulse Shape Compliance
- Jitter, Cross-Talk, BERT Measurements
- Location of Ground Bounce



The P6246, P6247 and P6248 Differential Probes

The P6248, P6247 and P6246 enable users to make time domain or frequency domain measurements on high bandwidth signals commonly found in disk drive, digital IC design (RAMBUS), and communication applications (Gigabit Ethernet, IEEE 1394 Firewire and Fibre Channel). The P6248 includes accessories that allow RAMBUS via probing and IEEE 1394 interconnect access. The small probe head geometry and assorted probe tip accessories allow these probes to easily accommodate manual probing of surface mount devices while maintaining high CMRR.

The P6246, P6247 and P6248 are ideal for design verification of disk drive read channel electronics and timing analysis for troubleshooting ground bounce problems associated with high speed logic. They can also be used for pulse shape or cross talk compliance testing of high speed communication signals.

Characteristics

Bandwidth (Guaranteed) –

P6248: DC to 1.5 GHz.
P6247: DC to 1.0 GHz
P6246: DC to 400 MHz.

Rise Time (specified) –

<265 ps (P6248), <350 ps (P6247),
 <875 ps (P6246).

Common Mode Rejection Ratio (CMRR) –

<45 dB at ≤ 1 MHz.
 <25 dB at ≤ 100 MHz.
 <20 dB at ≤ 500 MHz.
 <18 dB at ≤ 1 GHz.
 <60 dB at ≤ 1 MHz.
 <38 dB at ≤ 100 MHz.
 <35 dB at ≤ 500 MHz.
 <30 dB at ≤ 1 GHz.
 <25 dB at ≤ 1.5 GHz typical. (P6248)

DC Attenuation Accuracy – $\pm 2\%$.

Common Input Voltage Range –

± 7.0 V, 1x; ± 7.0 V, 10x.

Differential Input Voltage Range –

± 850 mV, 1x; ± 8.5 V, 10x.

Max. Non-Destruct Input Voltage –

± 25 V (DC + peak AC).

Electrostatic Immunity – >15 kV.

TEKPROBE Interface – Probe power, auto-scaling, auto-termination with TDS scopes.

Bandwidth Limit – Switchable, 200 MHz

(P6246 & P6247).

DC Reject – 0.4 Hz, 1x; 4.0 Hz, 10x

(P6246 & P6247).

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



ISO 9001 Tektronix measurement products
are manufactured in ISO
registered facilities.

Differential Probes

P6248 • P6247 • P6246

CHARACTERISTICS CONTINUED

TYPICAL SPECIFICATIONS

Input C –

<1 pF (differential mode),
<2 pF (common mode).

Input R –

200 k Ω (differential mode),
100 k Ω (common mode).

Linearity – $\pm 2\%$.

Noise – $<50 \text{ nV}/\sqrt{\text{Hz}}$

Harmonic Distortion – $\leq 1.5\%$ @ 100 MHz.

Passband Ripple – $<\pm 0.25 \text{ dB}$.

P6248: DC to 1.5 GHz.

P6247: DC to 850 MHz.

P6246: DC to 400 MHz.

Output Termination –

Terminate into 50 Ω .

PHYSICAL CHARACTERISTICS

Weight (probe only) – 160 g (0.36 lb.).

Probe Head Volume – 6 cm³ (0.3 in.³).

Probe Head Input Connection – 0.63 mm (0.025 in.) square pins on 2.54 mm (0.1 in.) centers.

Output Cable Length – 1.2 m (4.0 ft.).

ENVIRONMENTAL CHARACTERISTICS

Temperature –

Operating 0 to 50°C.

Non-operating –55 to +75°C.

Humidity (0 to 90% RH) –

Operating 30 to 50°C.

Non-operating 30 to 60°C.

ORDERING INFORMATION

P6248

1.5 GHz Differential Probe. (Guaranteed)

P6247

1.0 GHz Differential Probe. (Guaranteed)

P6246

400 MHz Differential Probe. (Guaranteed)

Hard Case –

P6248, P6247 Order 006-7340-00.

P6246 Order 016-0156-03.

Certificate of Traceable Calibration

P6246 and P6247 User Manual Set –

English, German, French, and Japanese: Order 070-9898-02.

Service: 071-9899-01.

P6248 Instruction Manual – English: Order

071-0566-00.

Service Manual – English: Order 071-0573-00.

MEASUREMENT SERVICE OPTIONS

Opt. D1 – Calibration Data.

Opt. R3 – 3 Years Extended Warranty.

Opt. C3 – 3 Years Calibration Services.

RECOMMENDED/REPLACEMENT ACCESSORIES

50 Ω , BNC (M) to BNC (M) Coaxial Cable – 18 in.

Order 012-0076-00.

50 Ω , BNC Coaxial Terminator – Order 011-0049-01.

50 Ω , SMA (F) to BNC (M) Adapter – 015-0572-00.

INCLUDED ACCESSORIES

Product Name/Description	P6246 & P6247 Quantity	P6248 Quantity	Order
Y Lead Adapter	2 Each	2 Each	196-3462-00
3" Ground Lead	2 Each	4 Each	196-3462-00
6" Ground Lead	2 Each	2 Each	196-3462-00
SMK4	2 Each	4 Each	SMK4 (1 package of 4)
SMT KlipChip	3 Each	4 Each	206-0364-00 (1 per package)
BNC to Probe Tip Adapter	1 Each	1 Each	013-0304-00
Twin Foot- Package 4 each	2 Each	4 Each	016-1785-00 (1 package of 4)
Twin Tip Adapter- Package 4 each	2 Each	4 Each	016-1786-00 (1 package of 4)
Short Ground Contact	2 Each	10 Each	016-1783-00
Spring Loaded Grounds	2 Each	6 Each	016-1782-00
New Products			
Probe Tip Connector Saver	2 Each	2 Each	016-1781-00 (2 per package)
IEEE 1394 Breakout Connector	None	order separately	679-5027-00
RAMBUS "Longhorn" Via Probe	None	5 Each	016-1780-00 (5 per package)

INTERNATIONAL POWER PLUG OPTIONS

Opt. A1 – Europe Power Cord.

Opt. A2 – UK Power Cord.

Opt. A3 – Australia Power Cord.

Opt. A4 – Switzerland Power Cord.

Opt. A6 – Japanese Power Cord.

For further information, contact Tektronix:

Worldwide Web: for the most up-to-date product information visit our web site at: www.tektronix.com

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