

# Z-Active™ Differential Probe Family

► P7313 • P7380



## Z-Active™ probing architecture leads the way for high speed probing applications

Tektronix has created a revolutionary Z-Active probe architecture that sets the industry benchmark for signal fidelity. Tektronix active probe architecture preserves high bandwidth while providing improved connectivity with low loading. The Z-Active architecture is a hybrid approach composed of a distributed attenuator topology feeding an active probe amplifier.

The Z-Active probes use a tiny passive probe tip element that is separate from

the amplifier, extending the usable reach of the probe. In traditional active probes, adding this much length can introduce signal fidelity problems. However this architecture maintains high DC input resistance and presents a higher AC impedance than previous probe architectures. It accomplishes this while providing significant length between the probe body and the probe attachment point to the DUT. This architecture provides the best of both worlds: high DC impedance like existing active probes and the stable high-frequency loading of  $Z_0$  probes.

## ► Features & Benefits

### Signal Fidelity

- >12.5 GHz Bandwidth (P7313 Only, Typical)
- <40 ps Rise Time 10% to 90% (P7313 Only, Guaranteed)
- <25 ps Rise Time 20% to 80% (P7313 Only, Typical)

### Low Probe Loading

- DC Input Resistance
  - 100 K $\Omega$  Differential
  - 50 K $\Omega$  Single-ended
- AC Loading
  - $Z_{min}$  >250  $\Omega$  Differentially Out to 12.5 GHz

### Versatility

- Solder Down Capability
- Handheld Probing with Variable Spacing and Compliance (> 8 GHz)
- Fixtured Probing

### Interchangeable Tip-Clip™ Assemblies

- Connect to a Variety of Devices
- Economical

### TekConnect® Interface

## ► Applications

Examples include, but are not limited to:

- PCI-Express I and II, Serial ATA II, USB 2.0, DDRII, Rambus, XAUI

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## Signal Fidelity

You can be confident in the signal fidelity of your measurements because the Z-Active™ architecture provides:

- High bandwidth
- Excellent step response
- Low loading
- High CMRR

## Connectivity

This family of probes uses Tip-Clip™ assemblies, an interchangeable probe tip system that enables customers to configure their probe with the optimal tip for their application. These detachable assemblies make it possible to replace a tip for a fraction of the cost formerly associated with such hardware changes. The several lengths and variable spacing of the assemblies provide flexibility for adapting to vias and other test points of differing sizes. With Tektronix Tip-Clip assemblies, Monday's solder-in probe can become Tuesday's handheld tool, simply by switching tips. The Z-Active probe design allows the probe to easily switch between solder, handheld or fixtured applications.

## Value

The combination of the Z-Active architecture and the Tip-Clip assemblies provides superior signal fidelity at a cost-effective price. The inexpensive Tip-Clip assemblies enable full performance solder connections at a very low price per connection. Over the life of a probe this can add up to significant savings in the cost of operation.

## ► Characteristics

	P7380	P7313
Bandwidth (typical)	>8 GHz	>12.5 GHz
Rise Time (10% to 90%) (guaranteed)	<55 ps	<40 ps
Rise Time (20% to 80%) (typical)	<35 ps	<25 ps
Attenuation	5X or 25X, user selectable	
Differential Input Range	±0.625 V (5X) ±2.0 V (25X)	
Common Mode Input Range	+4.0 V to -3.0 V	
Offset Voltage Range	+4.0 V to -3.0 V	
DC Input Resistance	100 KΩ	
AC Loading (Differential $Z_{in}$ )	>290 Ω	>250 Ω
Noise	<30 nV/√Hz (5X) <75 nV/√Hz (25X)	
CMRR	>50 dB to 1 MHz >35 dB to 1 GHz >20 dB to 8 GHz	>50 dB to 1 MHz >35 dB to 1 GHz >20 dB to 6 GHz >15 dB to 12.5 GHz
Non-destructive Input Range	±15 V	
Interface	TekConnect®	
Cable Length	1.2 m	

## ▶ Ordering Information

### P7313

>12.5 GHz Differential Probe for TekConnect® Interface.

**Includes:** See Standard Accessories table.

### P7380

>8.0 GHz Differential Probe for TekConnect Interface.

**Includes:** See Standard Accessories table.

## ▶ Standard Accessories

Description	P7380	P7313	Reorder Part Number
Pouch, Nylon Carrying Case with Inserts	1 each	1 each	016-1952-xx Qty 1
Accessory Performance Summary and Reorder Sheet	1 each	1 each	001-1381-xx Qty 1
Product Identification Label for Carrying Case	1 each	1 each	P7380: 335-1227-xx Qty 1 P7313: 335-1333-xx Qty 1
User Manual – Printed. Includes Reply Card and CD	1 each	1 each	020-2640-xx Qty 1
BNC (M)-to-Minigrabber Adapter	1 each	1 each	013-0342-xx Qty 1
Anti-static Wrist Strap	1 each	1 each	006-3415-xx Qty 1
Magnifying Glasses	1 each	1 each	378-0486-xx Qty 1
Calibration Data Report	1 each	1 each	—
Accessory Box and Contents	1 each	1 each	P7380: 020-2557-xx P7313: 020-2636-xx
Attachment Kit	1 each	1 each	016-1953-xx Qty 1
Color Band Kit	1 each	1 each	016-1948-xx Qty 1
Large Resistor, 1/8 W, 20 mil dia Tip-Clip™ Assembly	3 each	—	020-2598-xx Qty 10
Small Resistor, 1/16 W, 8 mil dia Tip-Clip Assembly	3 each	—	020-2599-xx Qty 10
Short Flex, Large Resistor 1/8 W Tip-Clip Assembly	3 each	—	020-2601-xx Qty 10
Probe Tip-Clip Assembly, Short Flex – Small Resistor	3 each	3 each	020-2600-xx Qty 10
Medium Flex, Large Resistor 1/8 W Tip-Clip Assembly	3 each	—	020-2603-xx Qty 10
Probe Tip-Clip Assembly, Medium Flex – Small Resistor	3 each	3 each	020-2602-xx Qty 10
Probe Tip-Clip Assembly, Long Flex – 1/8 watt	3 each	—	020-2605-xx Qty 10
Long Flex, Small Resistor Tip-Clip Assembly	3 each	3 each	020-2604-xx Qty 10
Tip-Clip Ejector (kit of 3)	1 each	1 each	—
Adhesive Tip-Clip Tape (strip of 10)	3 each	3 each	—
High Bandwidth Flex Tip-Clip, 8 mil	—	3 each	020-2639-xx Qty 10
High Bandwidth Flex Tip-Clip 90°, 8 mil	—	3 each	020-2638-xx Qty 10
Wire Replacement Kit	—	1 each	020-2644-xx Qty 1

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## ► Recommended Accessories

Description	P7380	P7313	Part Number
P7380HHA Handheld Probe Adapter (includes Variable Spacing Tip-Clip™ Kit)	Yes	Yes (> 8 GHz BW)	P7380HHA
Variable Spacing Tip-Clip Kit (kit of 3)	Yes	Yes (> 8 GHz BW)	020-2596-xx

## ► Optional Accessories

Description	P7380	P7313	Part Number
Probe Positioner	Yes	Yes	PPM100
Probe Positioner	Yes	Yes	PPM203B
PPM203B, PPM100 Adapter Fixture for the P7380	Yes	Yes	013-0339-00
Calibration Fixture	Yes	Yes	067-0419-xx
CSA/TDS8200 Series TekConnect® Probe Interface	Yes	Yes	80A03
Deskew Fixture	Yes	Yes	067-1586-00

## Service Options

- Opt. C3** – Calibration Service 3 Years.
- Opt. C5** – Calibration Service 5 Years.
- Opt. D3** – Calibration Data Report 3 Years (with Opt. C3).
- Opt. D5** – Calibration Data Report 5 Years (with Opt. C5).
- Opt. R3** – Repair Service 3 Years.
- Opt. R5** – Repair Service 5 Years.

## Language Options

- Opt. L0** – English Manual.
- Opt. L5** – Japanese Manual.
- Opt. L7** – Simplified Chinese Manual.

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 Last Updated 1 November, 2004

Our most up-to-date product information is available at:  
[www.tektronix.com](http://www.tektronix.com)



Product(s) are manufactured in ISO registered facilities.  
 Product(s) complies with IEEE Standard 488.1-1987, RS-232-C, and with Tektronix Standard Codes and Formats.

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11/04 HB/WOW

51W-17891-2

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