Differential SMA Probe Family

P7313SMA Datasheet

The P7313SMA probe provides a high fidelity, low noise, differential input connection for Tektronix real-time oscilloscopes. This probe also includes features that enable proper termination for high-speed serial buses.

Notice to EU customers

This product is not updated to comply with the RoHS 2 Directive 2011/65/EU and will not be shipped to the EU. Customers may be able to purchase products from inventory that were placed on the EU market prior to July 22, 2017 until supplies are depleted. Tektronix is committed to helping you with your solution needs. Please contact your local sales representative for further assistance or to determine if alternative product(s) are available. Tektronix will continue service to the end of worldwide support life.

Features & benefits

- >13.0 GHz bandwidth, 16 GHz with DSP filtering
- 50 Ω termination network, differential SMA inputs
- Industry-leading differential return loss and VSWR
- High-bandwidth differential amplifier with excellent CMRR
- Internal termination voltage generator can be controlled by the oscilloscope, by an external source, or automatically by the probe
- Phase-matched SMA cables (38 inch length, <1 ps skew) with cable loss compensation

- Switchable gain for extended dynamic range
- Auxiliary (inverted) output for use with spectrum analyzers, network analyzers, or as a clock recovery trigger source
- TekConnect™ Interface

Applications

- PCI Express
- Serial ATA
- USB
- MIPI M-PHY
- HDMI
- DisplayPort

Tektronix Differential SMA probes

Tektronix differential SMA probes are designed for measuring differential signals in a 50 Ω signaling environment, providing the ability to convert from a differential SMA signal path to a single oscilloscope input channel. Many of today's high-speed serial data standards employ differential signaling on multiple lanes that are challenging to measure simultaneously on a single oscilloscope. The Tektronix Differential P7300 SMA Probes provide the ability to measure a high-speed differential signal on each channel of a multiple-channel oscilloscope. The right oscilloscope can simultaneously acquire up to four high-speed differential signals with the use of four differential SMA probes. As an added benefit, the SMA inputs on the probes connect to high-quality 50 Ω terminations that offer industry-leading return loss, a critical specification that is very important in compliance testing as frequencies increase.

Tektronix Differential P7300 SMA Probes also provide a common mode DC voltage input to the termination network. The termination voltage can be supplied either externally by the user or internally by the oscilloscope. In addition, there is also an automatic mode that senses the common mode voltage of the input signal and automatically sets the termination voltage to match. The P7313SMA has an extended termination voltage range that makes it ideal for testing differential standards with high common mode voltages such as HDMI.

Taken together, the high-speed differential amplifier, superior 50 Ω terminations, low return loss, flexible termination voltage, and quality phase-matched SMA cables create a world-class differential acquisition system when used with Tektronix oscilloscopes.

Specifications

All specifications are guaranteed unless noted otherwise.

Bandwidth, typical	>13.0 GHz (16 GHz with DSP filtering)
Rise time	
10 to 90%	<40 ps
10 to 80%, typical	<25 ps
Attenuation	2.5X or 12.5X, user selectable
Differential input range	0.800 V_{p-p} (2.5X)
	3.6 V_{p-p} (12.5X)
Common Mode input range	+3.6/-2.5 V
Termination voltage range	+3.6/-2.5 V
Noise, referred to input	<13 nV/√Hz (2.5X)
	<40 nV/√Hz (12.5X)
Differential return loss	<30 dB to 500 MHz (VSWR<1.065:1)
	<20 dB to 6.5 GHz (VSWR<1.22:1)
	<15 dB to 10 GHz (VSWR<1.43:1)
	<12 dB to 13 GHz (VSWR<1.67:1)
CMRR	>50 dB to 1 GHz
	>35 dB to 2.5 GHz
	>25 dB to 5 GHz
	>20 dB to 10 GHz
	>15 dB to 13 GHz
Maximum voltage (non destructive)	±5 V (DC + peak AC)
Interface	TekConnect®

Ordering information

Models

P7313SMA >13.0 GHz Differential SMA Probe for TekConnect® Interface

Includes standard accessories listed below, Calibration Data Report (Opt. D1), Certificate of Traceable Calibration, One year warranty

Standard accessories

Description	Reorder part number
Pouch, nylon carrying case with inserts	016-1952-xx
User manual – printed Includes Reply Card and CD	020-2720-xx English 020-2737-xx Simplified Chinese 020-2738-xx Japanese
Phase-matched dual SMA cables (38 in.), 1 pair	174-5771-xx
SMA 50 Ω terminator, 3 each	015-1022-xx
SMA Short	015-1020-xx
SMA female to BNC male adapter	015-0572-xx
Banana plug to 0.080 in. diameter pin jack cable adapter, red (4 ft.)	012-1674-xx
Banana plug to 0.080 in. diameter pin jack cable adapter, black (4 ft.)	012-1675-xx
0.040 in. diameter pin jack to 0.08 in. diameter Pin Plug Adapter, Black, 2 each	012-1676-xx
Antistatic wrist strap	006-3415-xx

Recommended accessories

- Phase Adjuster, 2 required (part number 015-0708-xx)
- DSA8300 Series TekConnect Probe Interface (part number 80A03)
- Real-time Spectrum Analyzer TekConnect Probe Adapter (part number RTPA2A)

Options

Service options

Opt. C3 Calibration Service 3 Years

Opt. C5 Calibration Service 5 Years

Opt. CA1 Single Calibration or Functional Verification

Opt. D3 Calibration Data Report 3 Years (with Opt. C3)

Opt. D5 Calibration Data Report 5 Years (with Opt. C5)

Opt. R5 Repair Service 5 Years (including warranty)

Language options

Opt. L0 English manual

Opt. L5 Japanese manual

Opt. L7 Simplified Chinese manual

Datasheet

Tektronix is registered to ISO 9001 and ISO 14001 by SRI Quality System Registrar.

Product(s) complies with IEEE Standard 488.1-1987, RS-232-C, and with Tektronix Standard Codes and Formats.

For Further Information. Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology. Please visit www.tek.com.

21 Mar 2017   51W-17350-8

www.tek.com

Tektronix®