

5.0 GHz Differential Probe with SMA Input

P7350SMA Data Sheet



Features & Benefits

- <100 ps Rise Time (Guaranteed)
- 5.0 GHz Bandwidth (Typical)
- Dual SMA Inputs to Internal 50 Ω Termination Network
- Internal Differential Amplifier with High CMRR
- DC Bias Port for Common Mode Voltage Termination (LVPECL and CML bias capability)
- Good Differential Input Return Loss
- Low Input Skew
- Supplied with Low-loss Matched-delay Cables
- TekConnect™ Interface Preserves Signal Integrity to 10 GHz and Beyond to Meet Present and Future Bandwidth Needs

Applications

- Communications (Gigabit Ethernet, Fibre Channel, Infiniband)
- Semiconductor Characterization and Validation (PCI-Express, Serial ATA, IEEE 1394, USB 2.0, RAMBUS, DDR)

Tektronix brings you the first available high-speed differential SMA input probe. The P7350SMA provides a tool for measuring differential signals in a 50 Ω signaling environment. Before the introduction of the P7350SMA, most serial data compliance measurements required cabling a differential signal to two oscilloscope channels and applying waveform math to calculate the difference. By integrating a dual 50 Ω termination network and a differential amplifier in the probe head, the P7350SMA measures a differential signal pair on each channel of a multiple channel oscilloscope. Since many of the new high-speed serial data standards define differential signaling on multiple channels, the P7350SMA provides a more efficient measurement solution.

The P7350SMA probe architecture includes an input termination network, a differential buffer amplifier, and a common mode DC bias port. Since many differential data signals operate with a nonzero DC common mode voltage, the DC bias port allows for more flexible interfacing to these logic families. For applications requiring a common mode DC termination voltage, that voltage can be supplied to the P7350SMA DC bias port through a standard banana plug connector. For other differential measurement applications, such as AC-coupled and some DC-coupled high-frequency 8B/10B encoded data streams, the DC bias port can simply be left unconnected.

Input signals use SMA connectors to attach to the input termination network, implemented on a laser-trimmed hybrid circuit for signal fidelity and high-frequency response. The linear buffer amplifier converts the differential input signal to a single-ended output and drives the output signal down the probe cable at full bandwidth.

An active differential buffer amplifier in the probe head enables the P7350SMA probe to move the measurement interface from the oscilloscope front panel to the circuit-under-test. This can reduce the length of electrical interconnect cabling, which for multi-gigabit data signals also reduces frequency-dependent loss distortion in signal measurements. The P7350SMA is connected to an oscilloscope with the patented TekConnect Interface.

Characteristics

Rise Time –

<100 ps 10% - 90% (guaranteed)

<65 ps 20% - 80% (typical)

Bandwidth (Probe Only) – 5.0 GHz (typical)

Input – SMA

Attenuation – 6.25x

Differential Input Resistance – 100 Ω ±2%

Common Mode Input Resistance – 50 Ω ±1%

Input Skew – <1 ps

Differential Input Range – ±2.5 V (20 °C to 30 °C)

Common Mode Input Range – +6.25 V to -5 V

Maximum Termination Resistor Power – <0.5 W per side*1

Max Voltage (Nondestruct) – ±15 V (DC plus peak AC)

CMRR – >60 dB at DC, >55 dB at 1 MHz, >50 dB at 30 MHz, >30 dB at 1 GHz (typical)

*1 See manual for calculation

Differential Input Return Loss

Frequency	Differential Return Loss
625 MHz (fundamental for 1.25 Gb/s)	>20 dB
1.25 GHz (fundamental for 2.5 Gb/s)	>16 dB
1.56 GHz (fundamental for 3.125 Gb/s)	>14 dB
2.50 GHz	>12 dB
3.125 GHz	>10 dB

Noise – Approximately 46 nV/root Hz

Interface – TekConnect

Cable Length – 1.2 m

Ordering Information

P7350SMA

5.0 GHz Differential SMA Probe for TekConnect Interface.

Includes

Product Name/Description	Part Number	Quantity
50 Ω Terminator	015-0122-xx	2 each
Matched pair SMA Cables, 12 inches	174-4866-xx	1 set
Banana Plug Shorting Strap	012-1667-xx	1 each
BNC-M to SMA-F Adapter	015-0572-xx	1 each
Cable Marker Set (5 colors)	016-1886-xx	1 each
Wrist Strap	006-3415-xx	1 each
Certificate of Traceable Calibration		1 each
Instruction Manual	071-1264-xx	1 each

Recommended Accessories

Product Name/Description	Part Number	Quantity
SMA-M to SMA-M Adapter	015-1011-xx	2 each
SMA Phase Adjuster Adapter	015-0708-xx	2 each
BNC to Banana Adapter	103-0090-xx	1 each
TekConnect Calibration Fixture	067-0422-xx	1 each

Service Options

Opt. C3 – Calibration service 3 years

Opt. C5 – Calibration service 5 years

Opt. D1 – Calibration data report

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

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Updated 30 October 2008

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29 May 2009

60W-16671-0

