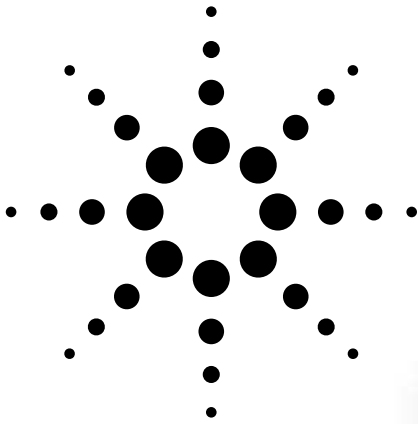


Agilent N1025A

1 GHz Active Differential Probe

Product Overview



Measuring the performance of high-speed digital circuits has become very challenging with the proliferation of differential signaling technologies. Low Voltage Differential Signaling (LVDS), Gigabit Ethernet, Fibre Channel, FireWire®, InfiniBand® and Rambus® are just a few of the circuit architectures available to the digital designer today. If a high quality connector has not been designed into the PCB, then probing the board is the only solution. In order to keep pace with demanding applications like these, Agilent Technologies offers the N1025A high-performance active differential probe. With one full gigahertz of bandwidth, excellent common-mode rejection ratio (CMRR), and low noise, the N1025A is ideal for today's high-speed data communications applications.

Wide Dynamic Range

The N1025A probe provides a range of sensitivities from $\times 1$ gain to $\div 10$ and $\div 20$ attenuation (with plug-on attenuators) for diverse signals. The sensitivity can be adjusted continuously from 2 mV/div to 2 V/div (2 V/div is achieved with plug-on attenuator). DC CMRR is greater than 10,000:1 (80 dB). OFFSET up/down buttons allow OFFSET control from the probe amplifier body. Momentarily holding down both buttons will zero the OFFSET. A supplied AC coupling capacitor head (0.1 mF) allows operation with large common-mode or differential DC inputs.

Autobalance

Holding both offset buttons down for two seconds with the input connections removed invokes autobalance. This provides the highest accuracy on all ranges by removing residual DC OFFSET from the probe.

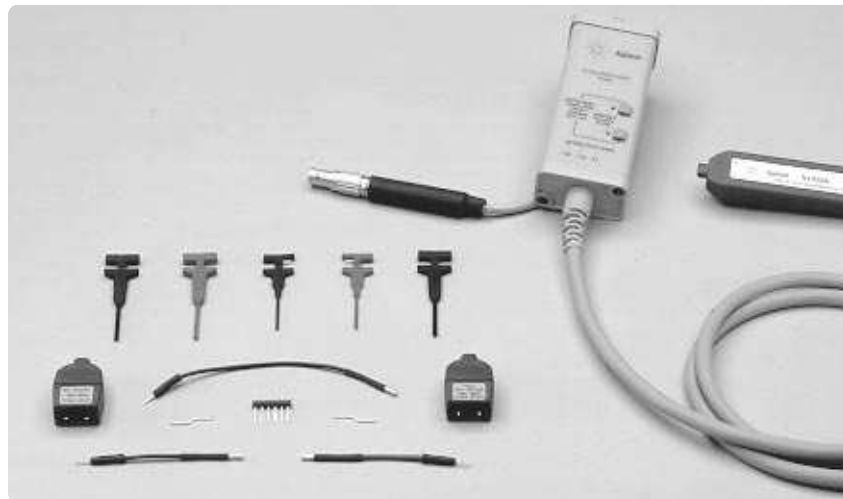
Low Noise

At full gain, the noise is less than 35 nV/root Hz, allowing direct measurement of low-amplitude and high-bandwidth signals. This industry leading performance is needed for LVDS applications.



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Input Characteristics

The input capacitance is modeled by 1.5 pF to ground from each input, plus 0.10 pF from input to input. This is equivalent to 0.9 pF differential input capacitance. Input resistance is 1 MOhm, including the accessory plug-on attenuator head. An AC coupling plug-on accessory features a 0.1 mF coupling capacitor for each input. Low-frequency CMRR is reduced when using this accessory.

Use with other Instruments

Instruments with 50 Ohm inputs, such as spectrum, network and time interval analyzers, pose a challenge when the signal to be measured is differential or high-impedance. Low noise, high bandwidth, and clean phase response make the N1025A probe an ideal signal conditioner to solve these problems.

Specifications

Bandwidth: 1 GHz

Gain: x1 ($\div 10$ and $\div 20$ with plug-on attenuators)

DC accuracy: 1% typical (probe only)

Input impedance: 2 MOhm in parallel with 0.9 pF between inputs
1 MOhm in parallel with 1.5 pF each input to ground

Differential mode range:
 ± 400 mV (x1) ± 4 V ($\div 10$) ± 8 V ($\div 20$)

Offset Range:
 ± 1.6 V (x1) ± 16 V ($\div 10$) ± 32 V ($\div 20$)

Common mode range:
 ± 16 V (x1) ± 42 V ($\div 10$) ± 42 V ($\div 20$)

Noise: < 35 nV/ $\sqrt{\text{Hz}}$ (x1) from 10 MHz to 1 GHz

CMRR: $> 10,000:1$ at 60 Hz

Standard accessories:

- $\div 10$ Plug-On Attenuator
- $\div 20$ Plug-On Attenuator
- Plug-On AC Coupler

Probe connection accessory kit:

- Flex Lead Set (1) Input "Y" Lead (1)
- Mini Clip, 0.8 mm (3) Mini Clip, 0.5 mm (2)
- Ground Lead (1) Offset Pins, Round (4) Square Pin Header Strip (1)

Connector type: 3.5mm male SMA

Cable length: 43 inches

Connector adaptor: Part #11901B

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