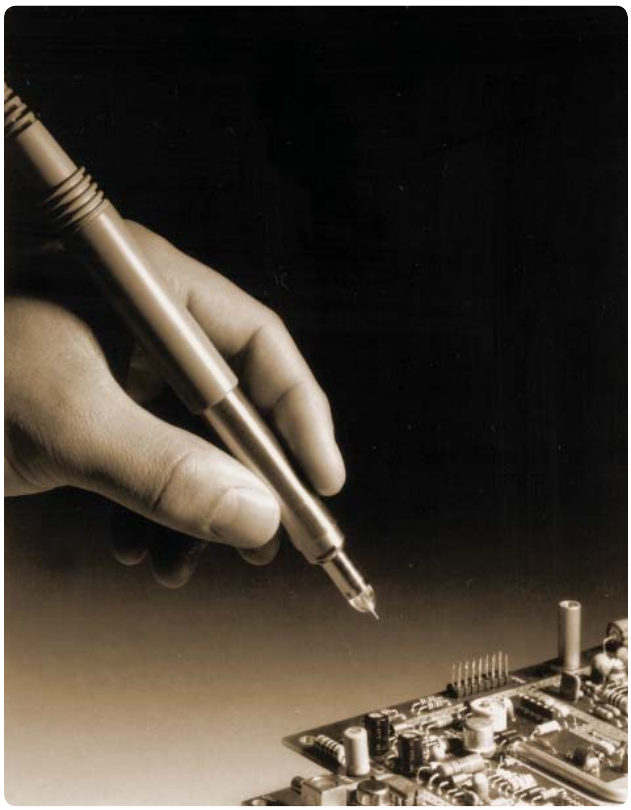
Agilent 85024A
High Frequency Probe
300 kHz to 3 GHz

Technical Overview

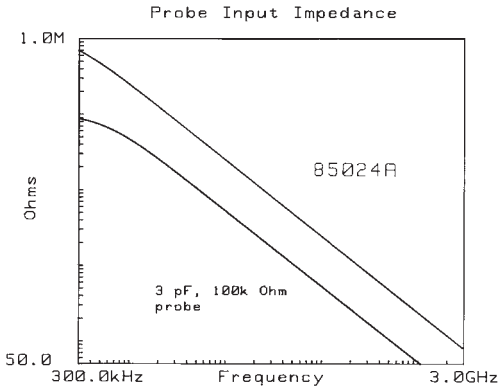


Excellent probing capability for demanding applications

Agilent Technologies

Extend High Frequency Probing Applications

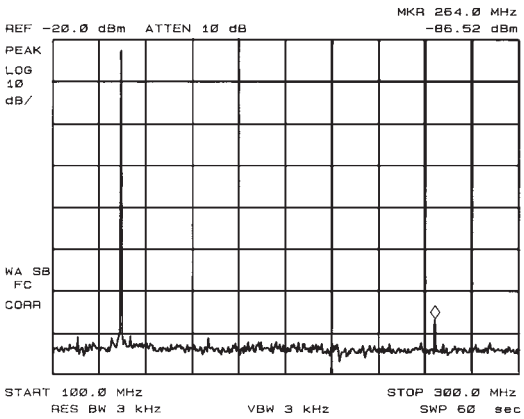
The Agilent Technologies 85024A high frequency probe offers excellent performance. The probe employs a GaAs IC to obtain extremely low input capacitance of only 0.7 pF shunted by 1 MΩ of resistance. Because of this low input capacitance, high frequency probing is possible without adversely loading the circuit under test. Also, the 1 MΩ shunt resistance guarantees minimal circuit loading at lower frequencies. Since the probe has excellent sensitivity, it is well-suited for use with analyzers offering exceptional dynamic range. The 85024A is an excellent accessory for high frequency test equipment, especially Agilent RF network or signal/spectrum analyzers which supply probe power from the front panel.



Probe with less error due to higher input impedance. For example, in a 50 Ω system at 500 MHz, the 85024A presents 455 Ω which produces a 10% signal loss from loading effects, while a 3 pF, 100 kΩ probe presents 106 Ω causing a 32% signal loss.

Signal/Spectrum Analysis

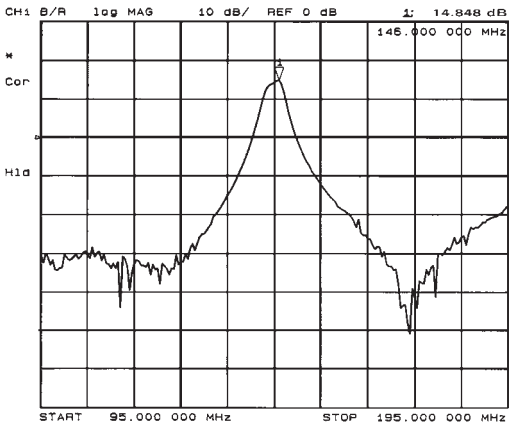
Troubleshooting RF and IF signal paths to identify problem areas in a system is convenient and accurate with an 85024A and a signal/spectrum analyzer. Measurements of frequency, power, modulation, distortion, conversion loss, and spectral purity are possible within a circuit. High sensitivity and low distortion levels ensure the probe's ability to detect small signals or search for spurious responses. In fact, the sensitivity of most 85024A applications is limited only by the noise floor of the spectrum analyzer itself. Add a tracking generator to easily perform swept in-circuit measurements.



Troubleshoot IF paths for low level spurious responses.

Network Analysis

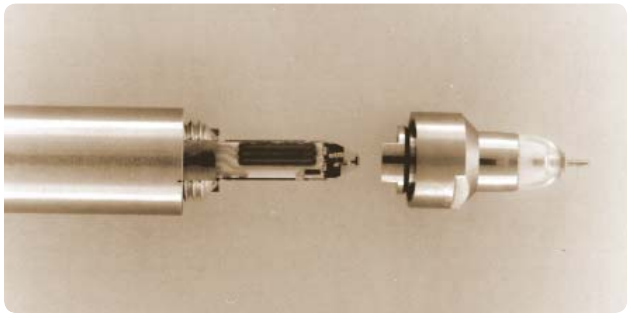
When used with a network analyzer, this versatile probe makes it easy to measure the gain, attenuation, phase linearity, or group delay of individual circuit stages. Also, investigate multi-stage circuits to rapidly determine the location of faults in a system. Low input capacitance and high shunt resistance minimizes the loading to the circuit under test. Excellent frequency response and unity gain of the Agilent 85024A guarantee high accuracy in swept measurements.



Excellent flatness maintains accuracy in swept measurements.

Advanced Design

Simplicity and reliability are inherent in the design of the 85024A. The front end was designed using a custom GaAs IC to provide low input capacitance. A retractable metal sleeve protects the probe from physical damage to the tip when not in use and, more importantly, from electrostatic discharge (ESD) damage to the probe. By retracting the metal sleeve, the user establishes himself at the same potential as the high frequency probe. Thus, it may be handled with less possibility of electrostatic damage. Finally, the entire probe front end is easily disassembled for quick replacement in the field.



A replaceable state-of-the-art GaAs IC provides high performance and extends the lifetime of the 85024A.

Compatible with Many Agilent Instruments

Direct compatibility with many RF analyzers further leverages the performance and flexibility of the 85024A high frequency probe. Signal/spectrum analyzers that supply probe power from the front panel include the Agilent E444xA PSA Series high performance spectrum analyzers, N9020A MXA mid-range signal analyzers, N9010A EXA economy signal analyzers, E44xxB ESA Series portable spectrum analyzers, and 8560 Series, as well as the 8590 and 71100 Series. Network analyzers such as the 4395, 871x, 875x, 872x, E5071C ENA, and certain PNA-L models are also directly compatible. In addition, utilize the high frequency probe with other instruments by making use of an external power supply, such as the Agilent E3620A dual-output or E3630A triple-output with an adapter cable (order the 85024A-001 for the adapter cable).

Specifications

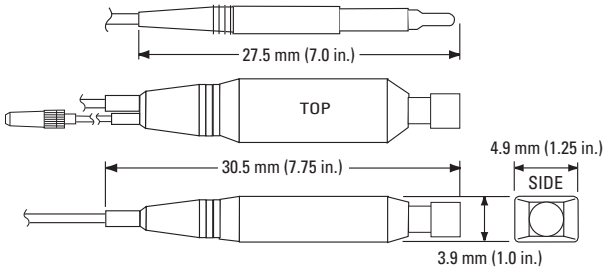
(Terminated with 11880-60001 type-N adapter)

Specifications describe the warranted performance over the temperature range of 25 °C, ±5 °C (except where noted). **Supplemental characteristics** are intended to provide information useful in applying the instrument by giving unwarranted performance parameters. These are denoted as "typical," "nominal," or "approximate."

Input capacitance (at 500 MHz)	< 0.7 pF (nominal)
Input resistance	1 MΩ (nominal)
Bandwidth	300 kHz to 3 GHz (nominal) Usable to 100 kHz
Average gain	0 dB ± 1.25 dB
Average gain is defined as the average of the maximum and minimum gains over the frequency range of 300 kHz to 1 GHz (maximum gain + minimum gain)/2.	
Frequency response (relative to average gain):	
300 kHz to 1 GHz	±1.25 dB
1 GHz to 3 GHz	±2.5 dB
Average noise level	< 1 mV, 10 Hz to 10 MHz
Input voltage for < 1 dB compression	0.3 V

Supplemental Characteristics

Noise figure	
Below 100 MHz	< 50 dB
100 MHz to 3 GHz	< 25 dB
Pulse transition time	200 psec
Distortion (at 0.3 V)	< –30 dBc
Maximum safe input	
Probe alone	±1.5 V peak RF, ±50 V DC
Probe with 10:1 divider	±15 V peak RF, ±200 V DC
10:1 divider characteristics	
Input capacitance	< 0.7 pF
Input resistance	1 MΩ
Input voltage for 1 dB compression	3 V
Power	
Supplied by certain Agilent instruments or Agilent power supply (E3620A, E3630A, or E3631A, 85024A-001 required)	+15 V/130 mA –12.6 V/45 mA
Weight	Net 0.255 kg (0.563 lb), Shipping 1.49 kg (3.3 lb)
Dimensions	Probe assembly length 1245 mm (49 in)



Accessories Furnished with the 85024A

11880-60001	Type-N male adapter
11881-60001	10:1 divider
01123-61302	2.5-inch ground lead
5060-0549	Spanner tip assembly
8710-1806	Probe tip nut driver
10229A	Hook tip
	30 mil spare probe tips
	12 mil spare probe tips

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Product specifications and descriptions in this document subject to change without notice.

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