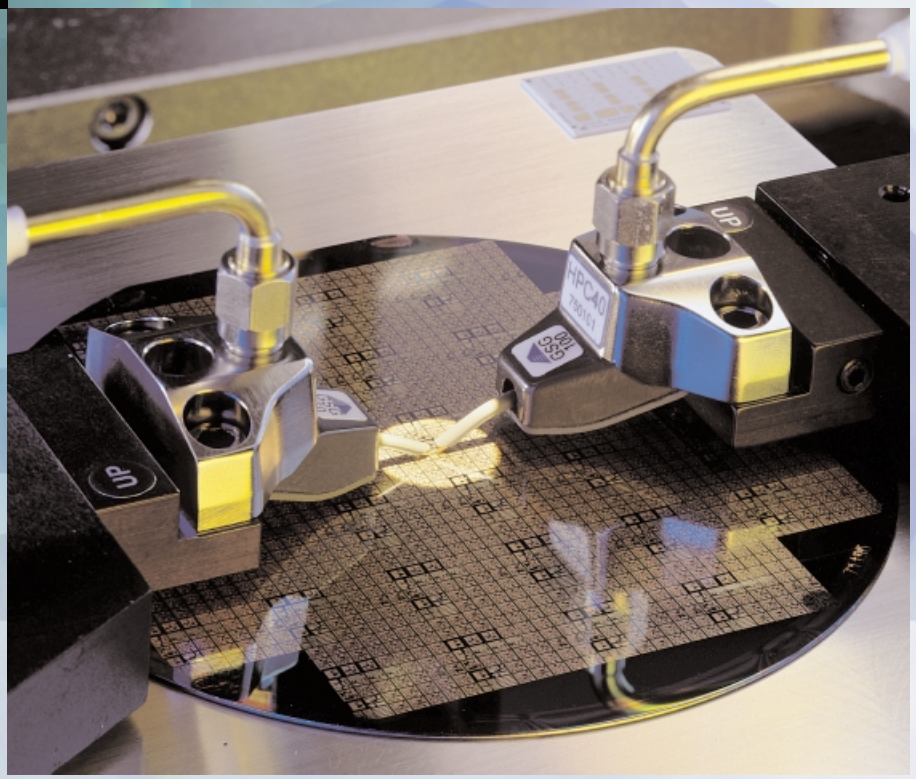




High Performance Characterization Probes

On-wafer device characterization measurements demand the best performance from a probe. That's why Cascade Microtech developed its HPC-series probes.

Unlike general-purpose probes that tradeoff electrical performance for production ruggedness, our HPC-series probes are designed to tackle the exacting demands of on-wafer, S-parameter characterization measurements.

Each HPC-series probe features our no-compromise Air Coplanar™ probe technology. This innovation, combined with our years of extensive probing experience and superior manufacturing techniques, guarantees you accurate measurements...the first time...every time.

CASCADE® MICROTECH

Innovating Test Technologies
For Better Measurements Faster



Probe with Confidence

Nothing should stand between you and your measurements. And, Cascade Microtech has been dedicated to supplying you with innovative, transparent probing solutions for over 17 years.

Our HPC-series probes are the result of this dedication to industry-leading measurement research, coupled with our low-loss, low-VSWR "coplanar waveguide in air" probe construction. Each HPC-series is precisely fabricated to ensure metrology grade measurement accuracy combined with precise probe mechanics.

Beryllium copper tips are standard, with tungsten tips optionally available for superior performance and probe life on aluminum pads. High-performance ground-signal-ground (G-S-G) with center-to-center contact spacing of 100 or 150 µm is standard. Versions with 125, 200, or 250 µm spacing are available upon request.

Seamless frequency coverage from dc to 40 GHz is supported with our HPC40 featuring a 2.92mm (K) connector. For measurements to 50 and 65 GHz, respectively, our HPC50 and HPC65 employ the 2.4-mm-compatible, 1.85-mm (V) connector.

HPC-series probes have an insertion loss less than 0.7 dB, return loss of greater than 17 dB, and measurement repeatability better than -65dB (all data @40 GHz). In addition, the HPC-series provides 1A DC current, 5 W power handling, and -65°C to 200°C temperature range ratings to support your most demanding measurement needs.

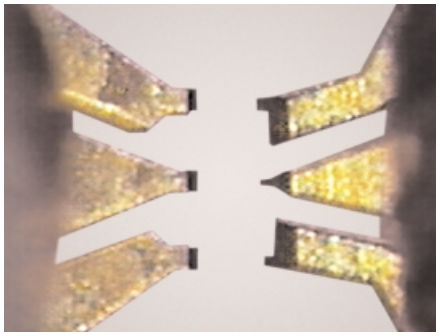
Individual S-parameter test data is supplied with each HPC-series probe to guarantee compliance to specifications. Included with the test data are Short-Open-Load calibration coefficients optimized for each probe pitch. Vector network analyzer calibration kits, modified with these HPC probe coefficients, will improve system accuracy, providing you with the best possible measurements for circuit modeling or process control monitoring. Add Cascade's WinCal software to your order for automatic calibration kit setup, advanced calibration algorithms, and measurement extraction with most Agilent Technologies and Anritsu vector network analyzers.

Features

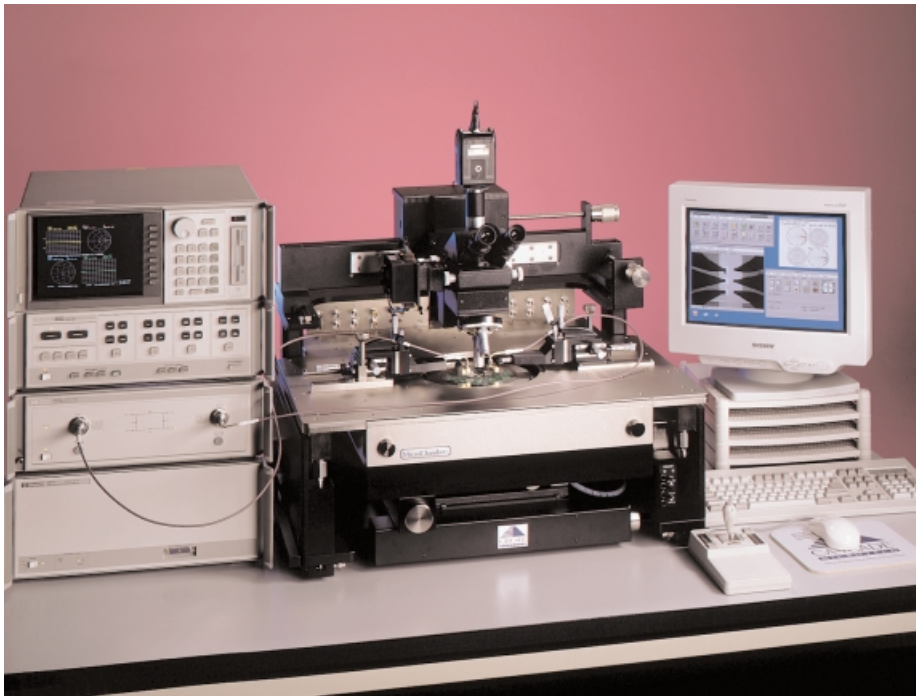
- Breakthrough Air Coplanar™ reduced contact tip
- Low insertion loss and VSWR
- Excellent crosstalk characteristics
- Designed for suppression of unwanted modes
- Wide operating temperature range (-65°C to 200°C)
- 100 or 150 µm standard pitch (125, 200 or 250 µm available)
- Compatible with Cascade Microtech WinCal software for automatic VNA calibration

Benefits

- Save valuable wafer space with the ability to probe pads as small as 50 µm (excellent tip visibility / reduced contacts)
- Increase wafer yield and reduce measurement guardbands (probe repeatability and crosstalk)
- Ideal for noise parameter or load pull characterization (low insertion loss)

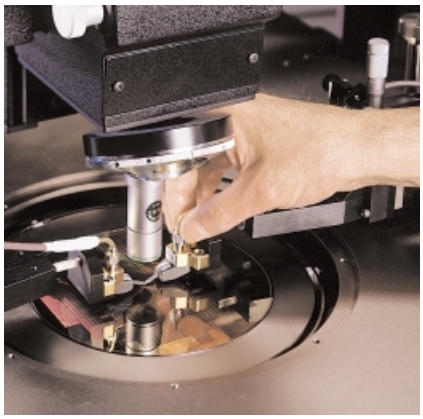


Air Coplanar technology provides excellent tip visibility, ease of alignment, and consistent probing marks. Probe down to 50 um pads with the HPC series reduced contact area tip (right).



The Winning Solution

To ensure successful measurements from probe tip-to-VNA, rely on Cascade Microtech for a complete customized RF/Microwave analytical test system. In addition to our Summit-series probe station and HPC-series probes, you should consider the following accessories:

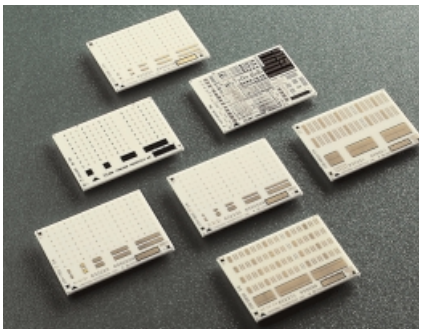


High repeatability, low-loss cables qualified for the most demanding on-wafer applications are available in configurations insuring compatibility with your Cascade Microtech probes and probe station.

Impedance Standard Substrates

To achieve greater accuracy and better repeatability in on-wafer calibration of vector network analyzers.

Part #	Probe Pitch
114-456 ISS	100-150 µm
101-190 ISS	200-250 µm

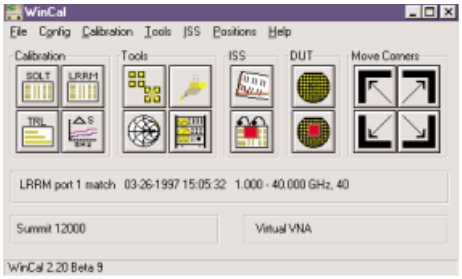


Precision impedance standard substrates (ISS) provide one and two-port calibration elements for calibration of your VNA.

Cables

Our low-loss, thermally stable cables ensure both higher quality measurements and longer lasting calibrations. Each cable has an integrated elbow male connector at one end, and a female connector at the other.

Cable Part #	Frequency	Connector
101-162	dc - 40 GHz	2.92-mm (“K”)
103-202	dc - 50 GHz	2.4-mm
104-540	dc - 65 GHz	1.85-mm (“V”)



WinCal™ VNA Calibration Software

WinCal software provides the simplest, most accurate, and repeatable network analyzer on-wafer calibrations. One-step pad parasitic removal routines are provided, along with the ability to monitor system drift and perform quick, convenient recalibration.

Part #	Probe Station
VNACAL-WIN	semi-auto Summit PS21 Automatic
VNACAL-WIN-M	All Others

Other WinCal Features:

- Automatically steps you through NIST-verified LRRM calibration method
- Conveniently retrieves calibration coefficients for probes and calibration substrates
- Allows reading, displaying, and storing S-parameters in Touchstone file format
- Quickly locates, displays, and archives measurement data
- And much more...

Specifications

Frequency Range:	HPC40 - dc to 40 GHz HPC50 - dc to 50 GHz HPC65 - dc to 65 GHz
Connector:	HPC40 - 2.92-mm - K HPC50 - 1.85-mm - V HPC65 - 1.85-mm - V
Insertion Loss (standard versions):	
dc to 40 GHz	<0.75 dB (<0.65 dB typical)
40 to 50 GHz	<0.8 dB
50 to 65 GHz	<1.2 dB
Return Loss/VSWR (standard versions):	
dc to 40 GHz	> 17 dB / 1.33:1 (> 20 dB / 1.22:1 typical)
40 to 50 GHz	> 15 dB / 1.44:1
50 to 65 GHz	> 11 dB / 1.8:1
Crosstalk @ 40 GHz:	< - 50 dB (< 0.3%) typical
Electrical Repeatability:	< - 60 dB (< 0.1%) typical
Probe Tip Material:	
Standard	Beryllium-Copper (Be-Cu)
Also available	Tungsten (W)
Contact Configuration:	Ground-Signal-Ground
Probe Pitch:	
Standard	100 µm, 150 µm
Also available	125 µm, 200 µm, 250 µm
Recommended Overtravel:	50 µm
Maximum Safe Overtravel:	250 µm
Contact Life:	> 200,000 cycles typical
Maximum RF Power (CW @ 40 GHz)	5 Watts
Maximum DC Current	1 Amp

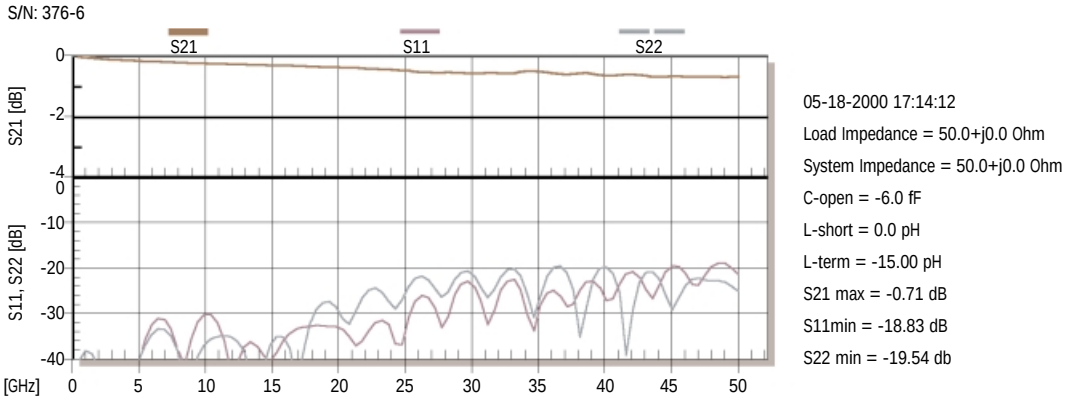
All specifications are applicable at 25 °C operating temperature.

Ordering Information

40 GHz, G-S-G, BeCu	HPC40-GSG-XXX
50 GHz, G-S-G, BeCu	HPC50-GSG-XXX
65 GHz, G-S-G, BeCu	HPC65-GSG-XXX
40 GHz, G-S-G, Tungsten	HPC40-W-GSG-XXX
50 GHz, G-S-G, Tungsten	HPC50-W-GSG-XXX
65 GHz, G-S-G, Tungsten	HPC65-W-GSG-XXX

XXX = 100, 125, 150, 200 or 250

Typical HPC-series probe performance: HPC-GSG 100



CASCADE MICROTECH

Innovating Test Technologies for better measurements faster

Cascade Microtech, Inc., 2430 NW 206th Avenue,
Beaverton, Oregon 97006, USA
Toll Free: 1-800-550-3279
Phone: 503-601-1000 Fax: 503-601-1002
Europe: +44 1295-812828 Japan: 03-5478-6100
Email: sales@cmicro.com www.cascademicrotech.com

Copyright © 2000 Cascade Microtech, Inc. Air Coplanar, WinCal and the Cascade Microtech logo are trademarks of Cascade Microtech, Inc. All other trademarks are the property of their respective owners. All specifications subject to change.

Agilent Technologies
Innovating the HP Way

Channel Partner

HPCDS-1000
Data subject to change without notice