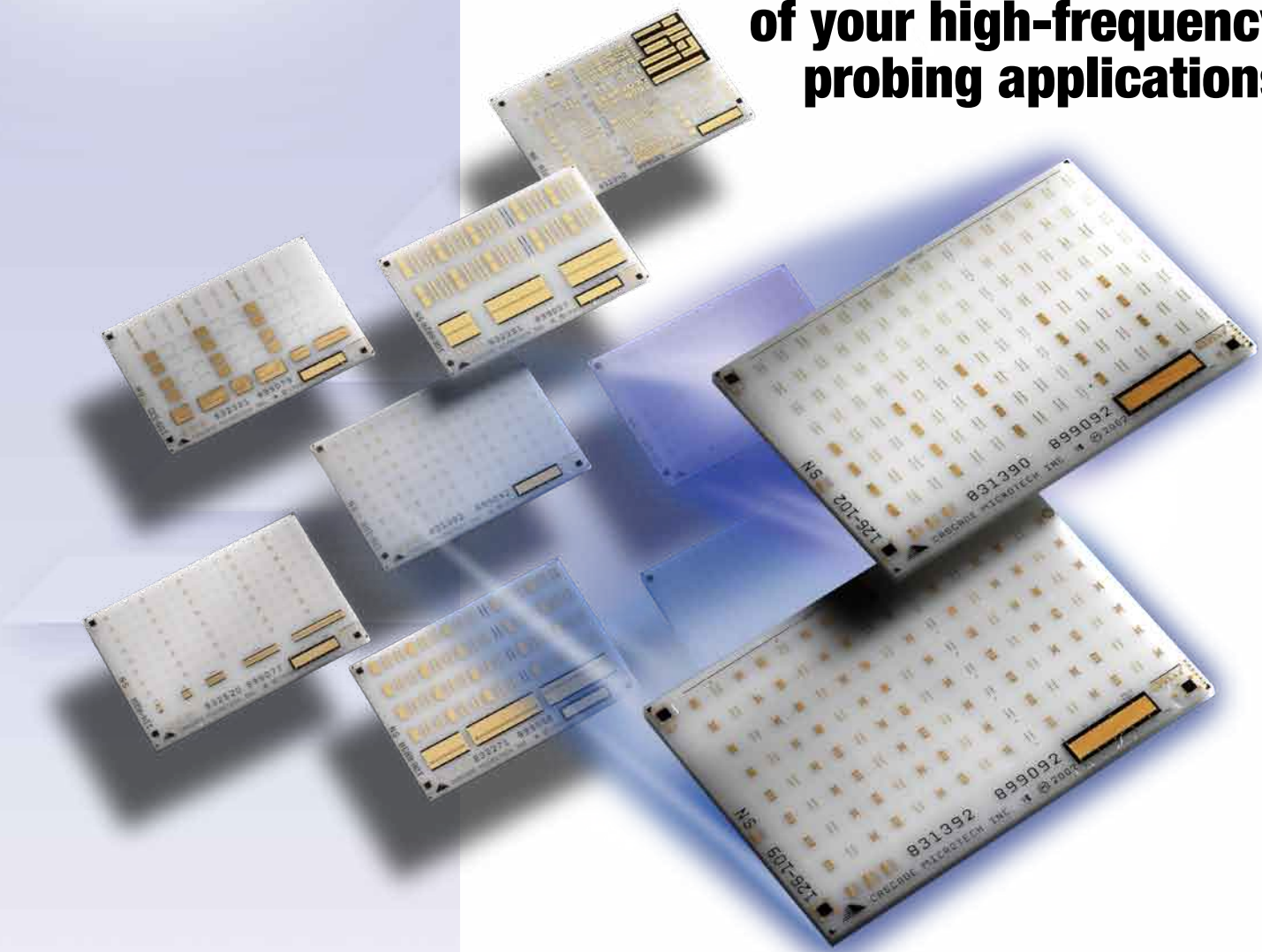


See It. Touch It.
Measure It.[®]

Impedance Standard Substrates to support all of your high-frequency probing applications



Using Cascade Microtech's family of Impedance Standard Substrates (ISS) ensures greater accuracy and better repeatability in on-wafer calibration of vector network analyzers.

- Precision 2-port, 3-port, and 4-port network analyzer measurements
- Multiport applications
- Differential applications

Features

- Non-dispersive calibration standards, usable through 110 GHz
- Supports SOLT, SOLR, TRL, and LRM/LRRM calibrations
- Dedicated substrates for GS/SG and GSG contact configurations maximizes the number of usable sites per ISS
 - Supports 50 μm to 3000 μm pitches
- Dedicated substrates for dual signal RF probes
 - Supports 100 μm to 250 μm pitches
- Dedicated General purpose thru substrates to enable differential/multiport calibration up to 1250 μm
- Alignment marks provided to improve probe placement accuracy
- Layouts optimized for use with autoprobers

- Precision DC-trimmed, 50 ohm terminations
- NIST verified LRM/LRRM calibration accuracy with VNA calibration software for Summit-series probe stations
- General purpose elements for membrane and other fixed position RF probe cards

Benefits

- Fast, accurate, and repeatable high-frequency wafer probe calibrations
- Durable, precision elements
- Dedicated substrates for W-band and wide-pitch calibrations
- LRM/LRRM calibrations with WinCal calibration software for 2-port VNAs provide highest accuracy in the industry
- Auto-calibration compatibility allows “single button” probe calibration
- Enables differential calibrations
- 4-port calibration capability

Specifications

Substrate

Material: Alumina 99.6%
 Thickness: 625 μm \pm 25 μm
 (25 mils \pm 1 mil)
 Dielectric constant: 9.9
 Loss factor (@ 1 MHz): 0.001

Supported probe heads

Footprints: GS, SG, GSG
 –Pitch: 50 to 3000 μm (2 to 50 mils)
 Footprints: GSGSG, GSGSG, SGSG, SGS
 –Pitch: 100 to 250 μm (4 to 10 mils)
 Footprints: GSSG, GSS, SSG, SS
 –Pitch: 100 to 150 μm (4 to 6 mils)

Calibration standards

Spaced on 1270 x 1270 μm centers (50 x 50 mil centers)

50 ohm terminations:

DC accuracy: \pm 0.3% (except 106-686 which is \pm 1%)

TCR: +50 ppm/ $^{\circ}\text{C}$ (NiCr) to
 -125 ppm/ $^{\circ}\text{C}$ (TaN)

Stability: 0.5%

Maximum power: 0.25 W

VSWR for 101-190 and 114-456 only

with 25 μm (1 mil) overlap:

<26.5 GHz 1.03:1

26.5 to 50 GHz 1.05:1

50 to 65 GHz 1.07:1

65 to 75 GHz 1.09:1

75 to 110 GHz 1.10:1

Thru lines (101-190 only):

Impedance: nominally 50 ohms

Physical length: 200 μm (8 mils)

Shorts (101-190 only):

50 x 500 μm bars (2 x 20 mils)

Additional verification lines:

Impedance: nominally 50 ohms

Scale (located right corner):

Upper scale: 180 mils @ 125 μm
 (5 mils)/div.

Lower scale: 4.5 mm @ 100 μm (4mils)/div.

Standard accessories

Wafer map indicating location of trimmed match standards (114-456 and the 129-XXX series have a trim indicated by mark on substrate)

Optional accessories

WinCal XE software, full version (USB)

..... 142-171

WinCal XE software, 30-day demo (USB)

..... 142-173

Absorbing ISS holder 116-344

(recommended for 104-783, 126-102,

129-XXX series and 138-XXX series)

Ordering Information

Part #	Description	Cal Sites	Pitch μm
005-016	General purpose	Cal sites vary	
101-190	LRM	27 GSG	100-250
103-726	GS	27 GS or SG	100-250
104-783	W-band	27 GSG	75-150
104-909	Narrow pitch	13 GSG, 7 GS, 7 SG	50-150
106-682	Wide pitch GSG	8 GSG	250-1250
106-683	Wide pitch GS/SG	8 GS, 8 SG	250-1250
106-686	GP membrane	25 loads	80-3000
108-010	Very wide pitch GSG	4 GSG	150-3000
108-011	Very wide pitch GS/SG	4 GS, 4 SG	150-3000
109-531	Right angle	5 N-E, 5 N-W, 5 E-W	100-500
114-456	ACP-RC	27 GSG	100-150
126-102	Dual/Differential	21 GSGSG, SGS, SGSG, GSGS	150
129-239	Dual/Differential	21 GSGSG, SGS, SGSG, GSGS	100-125
129-240	Dual/Differential	21 GSGSG, SGS, SGSG, GSGS	150-225
129-241	Dual/Differential	14 GSGSG, SGS, SGSG, GSGS	250
129-246	Dual/Differential	21 GSSG, SSG, GSS	100-150
129-247	Dual/Differential	21 GSSG, SSG, GSS	175-250
129-248 ¹	General purpose thru	qty 4 each, Straight, Cross, Loop back thrus	GSGSG (300-650) GSSG (300-950)
129-249 ¹	General purpose thru	qty 4 each, Straight, Cross, Loop back thrus	GSGSG (700-1250) ² GSSG (1000-1250) ²
138-356	Waveguide Infinity Probe	20 GSG for 50 μm 20 GSG for 75 μm	GSG 50-75
138-357	Waveguide Infinity Probe	12 GSG for 100-125 μm 16 GSG for 150 μm	GSG 100-150

1: Requires p/n 106-682 (GSGSG) or 106-683 (GSSG) ISS for wide pitch Differential/Multiport applications.

2: Qty 2 each for pitches 1000-1250 μm



Cascade Microtech, Inc.
 2430 NW 206th Ave., Beaverton, Oregon 97006, USA
 Toll Free: +1-800-550-3279 Phone: +1-503-601-1000
 Europe: +44-1295-812828 China: +86-21-6340-4183
 Japan: +81-3-5478-6100 Singapore: +65-6873-7482
 Taiwan: +886-3-5722810

Email: sales@cmicro.com <http://www.cascademicrotech.com>

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ISS-DS-0107
 Data subject to change
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