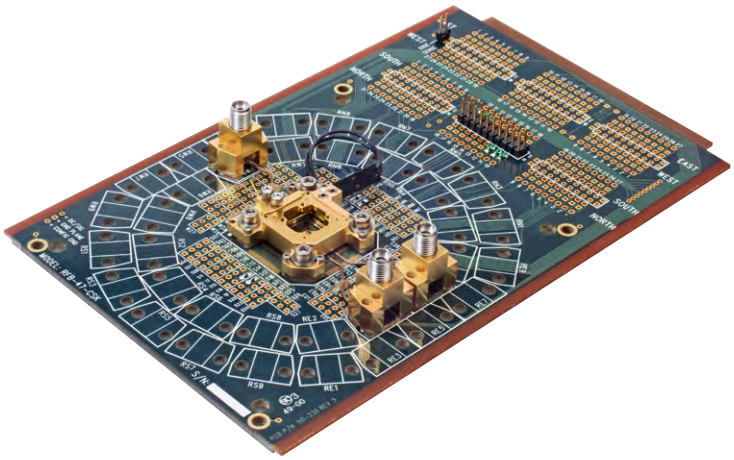
Pyramid P30

RF Pyramid Probe® Card for Filters and Switches

Overview

FormFactor's P30 RF Pyramid Probe cards have been specifically designed to ensure your success for the high-volume production test of RF filters and switches used in cell phones, base stations and wireless devices. The P30 probe card is a superior, cost-effective alternative to coaxial-style RF probe cards for high-volume testing of RF filters and switches. The P30's outstanding RF performance, isolation, low ground inductance and contact resistance are identical to the flagship wireless RF Pyramid Probe cards. Application-focused, the P30 is optimized for peripheral pads, 50 Ω impedance transmission lines and DC control lines.FormFactor's innovative Pyramid Plus™ manufacturing process ensures a lower cost for test, while delivering superior RF signal integrity — all in a single solution.



Features / Benefits

Superior signal performance	• High-bandwidth RF transmission lines to probe tips guarantee performance and ensure low signal loss • Low-inductance ground planes prevent device resonance and maximize isolation • Consistent low contact resistance and low-inductance probe tips ensure accurate and repeatable high-speed digital measurements
Mechanical robustness	• MicroScrub® technology provides consistent low contact resistance and inductance on a variety of pad materials and flip-chip bumps • High-density photolithographically placed contact probe tips are stable over lifetime of product • Low maintenance and permanent probe tip placement improve test cell uptime, reducing the cost of ownership compared to other probing technologies
Versatile and cost-effective	• Lower maintenance overhead with less cleaning and no need for probe tip alignment • Field-replaceable cores feature fully integrated test-vendor identification capabilities
Advanced membrane technology	• FormFactor's industry-leading Pyramid Plus™ manufacturing process delivers higher performance and offers unique features that lower your cost of test

Mechanical Specifications

Minimum pitch	50 µm
Dimensional stability for lifetime	10 µm for single temperature
Probe tip size	12 µm Al, Cu (nominal), 18 µm Low K/PoAA (nominal), 25 µm Au solder balls (nominal)
Probe tip material	Non-oxidizing nickel alloy
Temperature range	-50°C to 125°C
Pad and bump materials	Al, Cu, Au, all types of solder balls
Spring rate	1.67 g/mil
Edge sense	Optional
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Spring rate	1.67 g/mil
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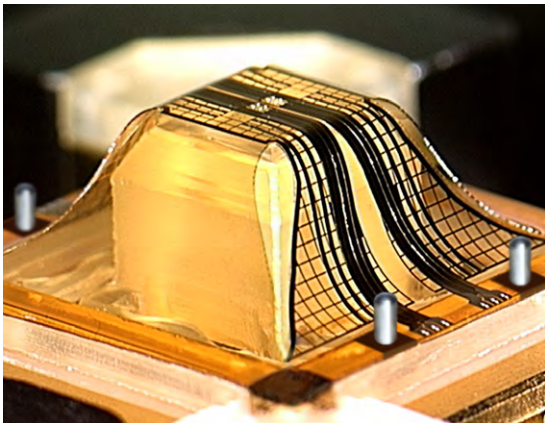
Electrical

Leakage	1 nA/V
Contact resistance	0.1 to 0.2 Ω (Al pads), 0.005 to 0.010 Ω (Au pads)
Maximum current/tip	1 A (Au pads), 200 mA (Al pads, Cu pads and solder balls)
Maximum power	+33 dBm CW, +39 dBm pulsed
Max power 50 Ω Co-Planar Waveguide (CPW)	+33 dBm CW, +39 dBm pulsed

Signal Trace Performance

RF signal line impedance	50 Ω nominal, Range 50 Ω only
Ground inductance (typical)	0.04 nH
Return loss (S11)	>10 dB @ specified bandwidth
Input reflection	±80 mrho @ 50 Ω
Signal trace length matching	Custom line match ±1.5 ps (3 ps window)



The P30 core design features controlled impedance signal traces that extend to the probe tip, in a reduced membrane area.

Series Path Resistance (SPR)

DC resistance	1 Ω
Microstrip	1.2 Ω
Co-Planar Waveguide (CPW)	0.8 Ω

Typical Isolation Measurments

2 GHz	50 dB to 70 dB
10 GHz	~50 dB
20 GHz	~45 dB

Pyramid Core Options

I/O capacity	42
Maximum RF channels	14
XY area (mm)	4.1 x 4.1

RF Bandwidth and Risetime Performance

Membrane	PCB	Conector	Bandwidth	Risetime
Microstrip	Coax	K or V	20 GHz	22 ps
CPW	Coax	K or V	20GHz	15 ps

PYRAMID P30-DS-0418

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