

# EPS150TESLA

150 mm Manual Probing Solution  
for High-Power Applications



## DATA SHEET

The EPS150TESLA is a very cost-effective and simple, yet highly precise probing solution for high-voltage, high-current and high-power measurements of power devices on substrates and wafers up to 150 mm.

The ergonomically-designed EPS150TESLA allows precise, yet intuitive single-handed operation. A pull-out stage allows quick and safe loading and unloading of the DUT.

The unique SIGMA™ options allow seamless integration, ensuring accurate measurement results, ease-of-use, and fast system configuration and set-up for various devices. The SIGMA option for Agilent B1505A with “Agilent-verified” cabling and connections eliminates risks of misconfiguration and inaccurate measurement results.

High-temperature chucks up to 300°C and up to 3,000 V isolation in combination with low-leakage performance provide an excellent measurement environment for vertical devices. High-voltage (up to 3,000 V) and high-current probe arms (up to 40 A pulsed) use standard tips and/or replaceable HCP probe tips to lower your measurement costs. The chuck design with SIGMA options enables precise measurement of leakage current down to a few picoAmps.

## FEATURES / BENEFITS

Operator safety and device protection	Safety category 1 interlocks on a dark box door Dedicated chuck design for highest isolation Unique high-voltage probe arm design with protected guard area
Measurement accuracy	Low-noise test environment with EMI-shield concept extended for high-voltage, high-current and high-power applications SIGMA options for seamless integration of measurement equipment for best measurement accuracy
Low cost-of-ownership	Probe concept allows expansion for other applications such as RF (S-parameter) measurements Unique high-voltage and high-current probe arms designed for standard probe tips and/or replaceable HCP probe tips

## POWER HANDLING (CHUCK\*)

Maximum voltage	3,000 V (triax and coax) [Thermal Chuck: capable of 3 kV @ 200°C and 2.5 kV @ 300°C]
Maximum current	30 A (pulsed), 2 A (DC)

\* In combination with EPS-ACC-150T-AG SIGMA. Up to 10 kV coax and 100 A performance available on special request.

## MEASUREMENT PERFORMANCE

### EPS150TESLA Chuck (Triaxial Configuration)

	Thermal Chuck @ Ambient	Thermal Chuck @ 300°C	Non-Thermal Chuck* @ Ambient
<b>Chuck leakage</b>			
10V (typical)	100 fA	200 fA	50 fA
3kV (typical)	10 pA	50 pA**	1 pA
<b>Chuck resistance</b>	<b>Ambient</b>		<b>Ambient</b>
Force-Guard (10 V)	25 TΩ		25 TΩ
Force-Shield (10 V)	3 TΩ		3 TΩ
Guard-Shield (10 V)	500 GΩ		500 GΩ
<b>Probe leakage</b>	<b>Ambient</b>		<b>Ambient</b>
10 V (typical)	< 10 fA		< 10 fA
3 kV (typical)	< 1 pA		< 1 pA

\* Performance valid when using the chuck dry air purging with -65°C dew-point air.

\*\* At 2.5 kV

## CHUCK SYSTEM

Diameter	150 mm
DUT sizes supported	10 mm x 10 mm, 2 inch, 4 inch and 6 inch wafers
Surface	Gold-plated
Supported wafer thickness	≥100 μm
Configuration	Triaxial design

## NON-THERMAL CHUCK SYSTEM

Flatness	≤10 μm
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## THERMAL CHUCK SYSTEM

Temperature range	+30°C to 300°C
Resolution	0.1°C
Accuracy	± 1°C and ± 0.5% above 100°C
Flatness	≤ 10 μm at ambient, ≤ 30 μm at 200°C
Transition rate (from 30°C to 300°C)	36 min.

## MECHANICAL PERFORMANCE

### Chuck Stage

Travel	155 mm x 155 mm (6 inch x 6 inch)
Resolution	5 $\mu$ m
Planarity over 150 mm (6 inch)	< 10 $\mu$ m
Load stroke, Y axis	90 mm
Z height adjustment range	10 mm
Z contact / separation / load stroke	0-3 mm adjustable
Theta travel (fine)	$\pm 8^\circ$
Theta resolution	$7.5 \times 10^{-3}$ gradient

### Platen

Platen space (typical)	Universal platen: space for up to eight RPP210
Z-Height adjustment range	Maximum 20 mm (depending on configuration)
Minimum platen-to-chuck height	16 mm (universal platen)
Separation lift	200 $\mu$ m
Separation repeatability	< 1 $\mu$ m
Vertical rigidity / force	5 $\mu$ m / 10 N (0.2 mils / 2.2 lb.)
Accessory mounting	Magnetic

### Manual Microscope Stage (On Bridge)

Travel range	50 mm x 50 mm (2 inch x 2 inch)
Resolution	$\leq 5 \mu$ m (0.2 mils)
Microscopes	For stereo microscopes with large working distance

## MICROSCOPE

Type	Trinocular stereo zoom
Zoom range	1 : 6.7
Magnification	15-100x
Camera port	For cameras with C-mount
Illumination	Long life-time LED ring light

## PHYSICAL DIMENSIONS

Station	880 mm (W) x 840 mm (D) x 1470 mm (H) (34.6 inch x 33.1 inch x 57.8 inch)
Station weight	~ 150 kg (~ 330 lb.)

## SAFETY

Interlock	Hardware (safety category 1)
Interlock connector	BNC-Twinax (specific interlock cables available for various measurement instruments, e.g. Agilent B1505A)

## FACILITY REQUIREMENTS

Power	Base machine (without accessories*): 100 - 240 VAC 50/60 Hz, 50 VA with fix connection of L, N and PE.
Vacuum	-0.8 bar
Compressed air	4 bar

\* See Probe Station Accessory Catalog for power requirements for accessories and ERS AirCool3 Facility Planning Guide for power requirements for thermal chuck.

## ORDERING INFORMATION

Part Number	Description
EPS150TESLA	150 mm manual probing solution* for high-power applications (chuck option required)
OPT-EPS-150T-NT	Non-thermal chuck for EPS150TESLA
OPT-EPS-150T-300C	Thermal chuck for EPS150TESLA (ambient to 300°C, capable of 3 kV/200°C and 2.5 kV/300°C)
EPS-ACC-150T-AG**	SIGMA for Agilent B1505A, complete application integration including positioners, probes, tips, cables, adapters and interface
EPS-ACC-150T-AG-LT**	SIGMA for Agilent B1505A light, application integration including cables, adapters and interface
EPS-ACC-150T-AG-MS	Mount for Agilent B1505A module selector
EPS-ACC-150T-PCA	Probe card holder option for EPS150TESLA for non-arcing 4.5-inch probe cards
EPS-ACC-HDTV	Digital high-definition TV option for EPS packages containing C-mount HDTV camera, cables, power supply and 22" monitor, with crosshair overlay

\* The EPS150TESLA manual probing solution includes: MPS150 probe station with a 150 mm chuck stage, a platen (20 mm height adjustment), fine chuck rotation, manual scope transport on bridge, camera-ready stereo zoom microscope with 15x - 100x magnification and LED illumination, vibration-isolation solution, EMI-shielded safety enclosure, mounted on a table, tweezers, and all tools for setup and operation. Requires thermal or non-thermal chuck option.

\*\*SIGMA kit designed for B1505A supporting MCSMU, MPSMU, HCSMU, HPSMU and HVSMU in combination with Protection Adapters #N1261A-001/-002/-003/-004, #16493S-010/-011 and Bias T #N1260A.

## REGULATORY COMPLIANCE

Certification	CE
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## WARRANTY

Warranty*	Fifteen months from date of delivery or twelve months from date of installation
Service Contracts	Single and multi-year programs available to suit your needs

\*See Cascade Microtech's Terms and Condition of Sales for more details.

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