

Cascade Microtech, Inc.

SPECIFICATION SHEET



The ultimate high-throughput
failure analysis tool

PA300BEP

Semi-automatic Backside Emission Probe System

The PA300BEP Backside Emission Probe System is a versatile, high-performance probe system for use with upward-looking observation systems. The PA300BEP offers easy wafer handling, automatic stepping and simple vertical probe card alignment in one unique, ergonomic wafer prober.

The patent-pending PA300BEP is a high-precision semiautomatic probe system designed for probing different substrates by contacting the device under test (DUT) with probes from the contact side (top side) and inspecting or stimulating the backside with upward-looking observation system. The PA300BEP is optimized for use with systems from Hamamatsu and other vendors.

The flexibility of the system is further enhanced by the easy-to change chuck inserts for 200 mm and 300 mm wafers, wafer parts and single chips. For photo emission and thermal emission applications, dedicated versions of the chuck inserts are available, delivering maximum transmission of emissions from the DUT. Electrical driving of the DUT can be done with ProbeHeads™ or a probe card. The possibility of using high-pin-count probe cards with high probing forces makes the PA300BEP capable of fulfilling any probing task.

The PA300BEP has been designed to be extremely stable, enabling test structures smaller than 1 μm to be probed. Shrinking geometries have also increased the need for probing with vertical probe cards. For this reason, the PA300BEP is the world's only probe system for observation systems that can be enhanced with unique MicroAlign™ technology. Aligning a vertical probe card has never been easier – you simply need to run the MicroAlign alignment wizard and probe-to-pad alignment is finished in less than five minutes.

Offering full prober control with or without a PC, the ProberBench™ Operating Environment provides precise control. The software automatically adjusts for navigation in Backside (BSM) or Topside (TSM) Modes, removing all the guesswork. The unique QuietMode™ technology, which safely removes all power from motors, reduces electrical noise during sensitive measurements. Plus, powerful tools such as WaferMap™ and VideoTracker™ are available in the ProberBench software suite.

The system is designed for optimal support of BSM probing applications. However, the system can be reconfigured within 30 minutes for the optional TSM probing setup. This allows maximum application flexibility with the chosen emission microscope.

FEATURES AND BENEFITS

Backside investigation and stimulation	Unique design compatible with upward-looking observation systems Dedicated chucks for photo and thermal emission investigations testing
Application flexibility	Easy-to-change chuck inserts handle wafers up to 300 mm, wafer parts and single chips Topside Mode option for maximum application flexibility Easily align vertical probe cards with proven MicroAlign technology
Excellent contact performance	Guaranteed stability over long measurement times Probe features smaller than 1 μm with the PH400 ProbeHead Automated probing on small pads
Ease of use	No need to adjust for backside capabilities Ergonomic, easy wafer loading due to large load stroke

SPECIFICATIONS*

XY Stage

XY movement	300 mm
Y load stroke	190 mm
Repeatability	$\pm 5 \mu\text{m}$, $\pm 10 \mu\text{m}$ with TSM option
Overall accuracy	$\pm 10 \mu\text{m}$, $\pm 15 \mu\text{m}$ with TSM option
Maximum speed	3 mm/sec

Theta Alignment

Theta movement range	$\pm 5^\circ$
Resolution	0.0001 $^\circ$

Chuck Transmission

Visual light	Yes (chuck with glass insert)
Thermal waves	Yes (chuck with glass insert)

Electrical Stimulation / Measurements

ProbeHeads	Compatible vacuum or magnetic adapter
Probe cards	4.5 inch and 6 inch standard probe cards (up to 18 in on request)
Vertical probe cards	Yes, by choosing MicroAlign option (BSM only)
Maximum probe force	2.5 kg for standard chuck (higher forces on request)

Utilities

Vacuum	Less than 200 mbar abs
Compressed air	6-10 bar
Power	115/230 V, 50/60Hz, 1250 VA

Microscope

Top down microscope	Semi-automatic microscope stage with several microscope options
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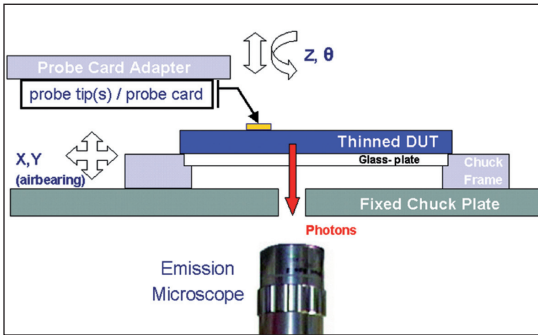
*Data, design and specification depend on individual process conditions and can vary according to equipment configurations.
Not all specifications may be valid simultaneously.

PHYSICAL DIMENSIONS

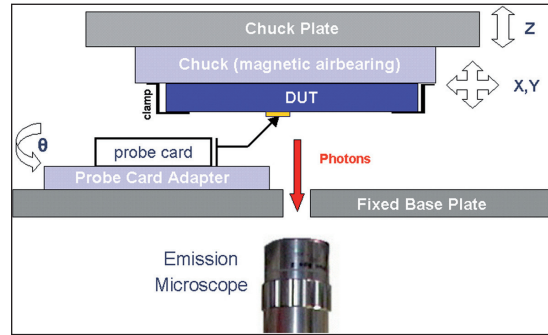
Weight	800 kg (including electronics rack)
Dimensions	1250 mm x 1250 mm x 950 mm*
Dimensions electronics rack	555 mm x 780 mm x 1005 mm

*Depending on system configuration

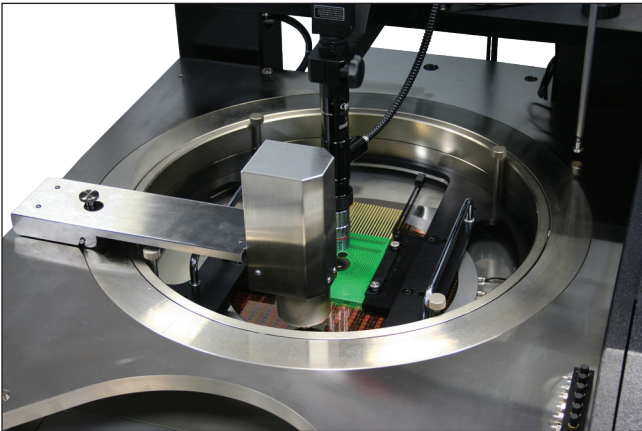
APPLICATIONS



Backside emission detection on BEP



Topside emission detection on BEP



PA300BEP with top camera for MicroAlign technology

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Data subject to change without notice

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Cascade Microtech, Inc.
toll free: +1-800-550-3279
phone: +1-503-601-1000
email: cmi_sales@cmicro.com

Cascade Microtech GmbH
phone: +49-811-60005-0
email: cmg_sales@cmicro.com

Cascade Microtech Japan
phone: +81-3-5615-5150
email: cmj_sales@cmicro.com

Cascade Microtech Shanghai
phone: +86-21-3330-3188
email: cmc_sales@cmicro.com

Cascade Microtech Singapore
phone: +65-6873-7482
email: cms_sales@cmicro.com

Cascade Microtech Taiwan
phone: +886-3-5722810
email: cmt_sales@cmicro.com

www.cascademicrotech.com

