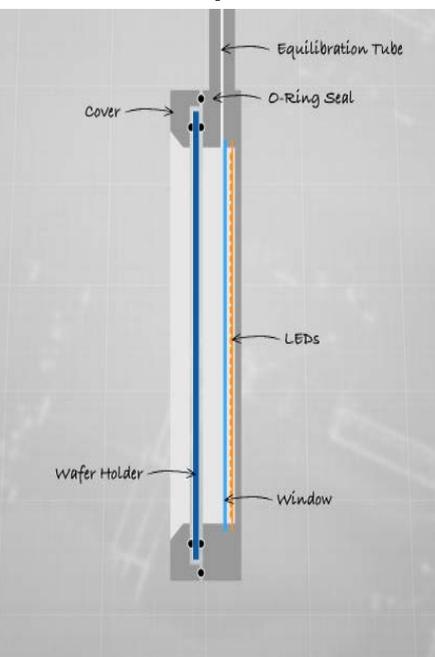


WAFER HOLDER — SINGLE IL WITH BACKSIDE ILLUMINATION

PRODUCT INFORMATION SHEET



Schematic diagram of the Single IL wafer holder with LEDs



The Single IL wafer holders have been used for more than 15 years in MEMS industry and research. Wafer holders are available for wafers with 3", 4", 5", 6", and 8" diameters. The Single series wafer holder protects the wafer's back side and the edge from the etchant solution.

A unique feature of the IL series is an integrated halogen lamp or an LED array for inspection of the membrane thickness. Silicon membranes of about 22 µm or less are optically transmissive and appear in different shades of brown depending on their thickness. The backside illumination feature is a tool which helps to overcome some of the shortcomings of time-based etch stops.

The holder is made entirely from PEEK; it is suitable for nearly all etchants (KOH, TMAH, HF, H3PO4, etc.)

The wafer is sealed by a double precision O-ring system that reduces mechanical stress on the wafer to a minimum. The cover-ring on the front side holds the wafers in place, fixed by six screws. Since the customer-specific wafer thickness is manufactured as a recess into the cover-ring, all screws can be tightened using a regular wrench, regardless of the applied torque. This ensures a minimum mechanical stress on the fragile wafer.

Upon ordering the holder, the wafer thickness machined as a recess into the cover-ring needs to be specified. The holder tolerates wafers with a thickness of +/- 80 µm around the specified target thickness. If more flexibility is required, additionally cover-rings with different recesses can always be ordered.

Furthermore, the volume between the wafer and holder body is connected by a venting tube to the ambient atmosphere in order to avoid pressure caused by temperature changes.

In order to keep maintenance costs low, all O-rings have dimensions in accordance with the American AS-568 standards.

TECHNICAL SPECIFICATIONS

Product code	Single4 IL	Single6 IL	Single8 IL
Wafer size	4" or 100 mm	6" or 150 mm	8" or 200 mm
Internal dimensions			
Width of the O-ring seal	1.78 mm	1.78 mm	2.62 mm
Recommended edge exclusion width	7 mm	10 mm	9 mm
Diameter of usable area	86 mm	130 mm	182 mm
Diameter of optical area	86 mm	130 mm	182 mm
External dimensions			
Diameter	140 mm	183 mm	240 mm
Thickness with halogen bulb	23 mm (+9 mm)	23 mm (+10 mm)	25 mm (+11 mm)
Thickness with LEDs	18 mm (+9 mm)	18 mm (+10 mm)	20 mm (+11 mm)
Etchant compatibility	KOH, TMAH, HF and various acids	KOH, TMAH, HF and various acids	KOH, TMAH, HF and various acids
Temperature range	5° C - 150° C	5° C - 150° C	5° C - 150° C

AMMT

AMMT GmbH — Advanced Micromachining Tools
Anselm-Feuerbach-Strasse 6, 67227 Frankenthal, Germany
Tel.: +49-6233-4960014, Fax:+49-6233-436214
E-Mail: info@ammt.com, http://www.ammt.com

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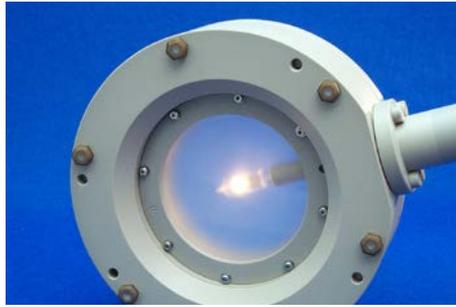
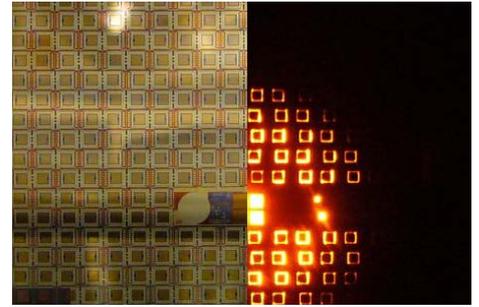


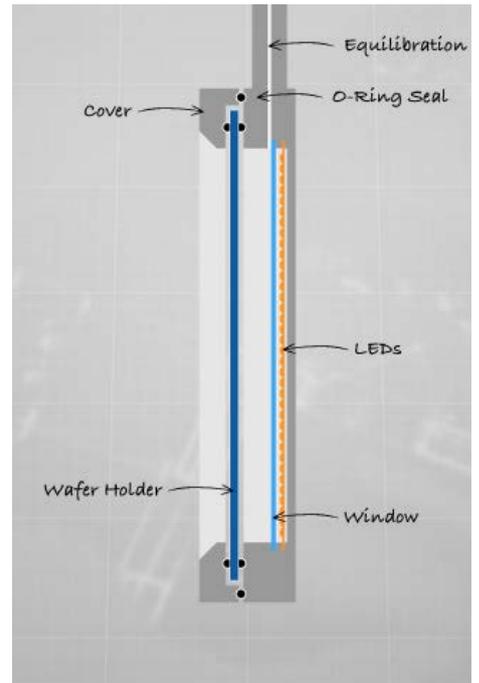
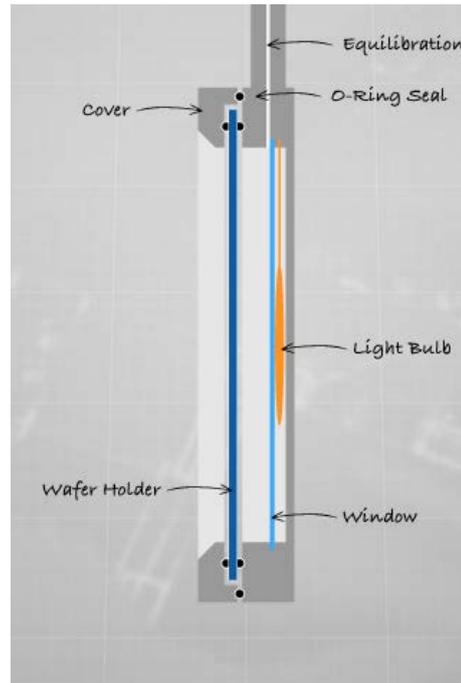
Image of a Single 100 IL



(left side) Wafer without illumination — with illumination turned on (right side), silicon membranes of about 22 μm or less are optically transmissive and appear in different shades of brown depending on their thickness

OPTIONS

The Single IL wafer holder is available with a halogen bulb or LEDs for backside illumination.



NOTE

The halogen bulb version is also available in a Tandem configuration.

AMMT manufactures wafer holders for all sizes of wafers. Holders for single chips and rectangular substrates are available as well. Please inquire for specifications and prices.