

POLOS® BEAM

Maskless lithography enables nanopatterning at will, without the need for slow and expensive photomasks. This convenience is especially useful for research and rapid prototyping use. The POLOS® Beam compliments the existing benefits by bringing it to the desktop without any compromise in performance.



The Beam Engine focuses a UV laser beam into a diffraction-limited spot and scans the spot to expose any arbitrary pattern on a photoresist. To expose large wafers, precision steppers move the wafer and allows multiple exposures to be stitched. The Beam Engine is capable of producing features smaller than (CD) 0.8 μm across a 4" wafer.

COMPACT

Full-featured maskless lithography, smaller than a desktop computer.

POWERFUL

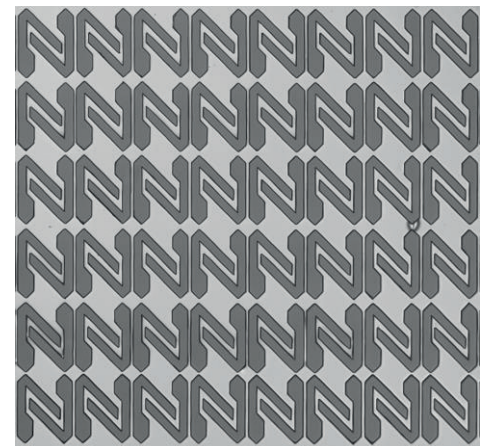
Sub-micron resolution while exposes a writefield in less than two seconds.

ULTRAFAST AUTOFOCUS

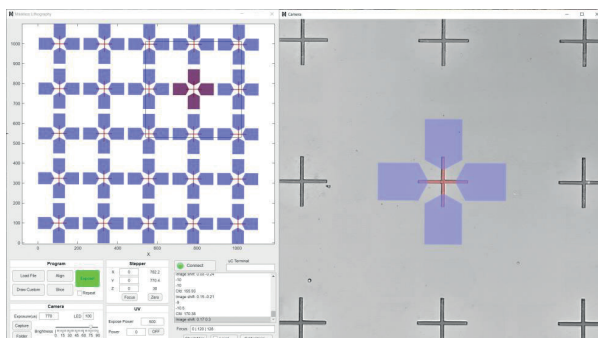
Piezo actuators reach focus in less than a second when combined with our closed looped focus optics.

NO-FUSS MULTILAYER

Semi-automatic alignment allows multilayer alignment to be completed within minutes.



Array of resist micropatterns on silicon substrate. Each cell is 50 x 63 μm , with 3 μm spacing between adjacent patterns. Resist used AZ 5214 E.



The included software makes quick work of any patterning job; just load, align and expose. Navigation is similar to CNC systems

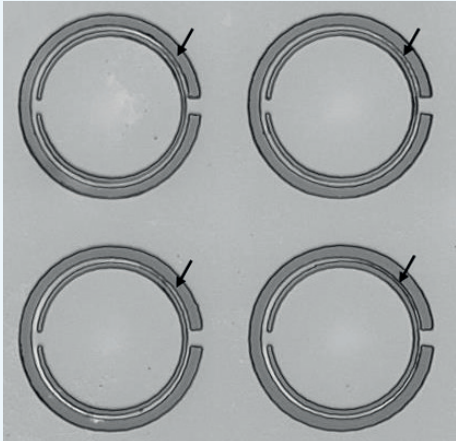
During multilayer exposures, the GDS pattern is overlaid for visualization. The control GUI (left window) has a minimap of the loaded GDS that allows navigation to any area on the wafer with 1 click.

SPECIFICATIONS

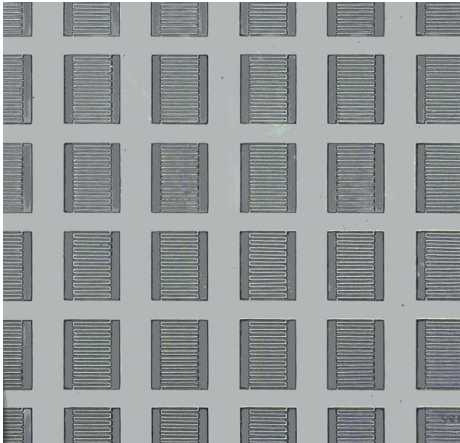
Patterning		
Minimum Linewidth		0.8 μm
Minimum Pitch		1.6 μm achievable
Exposure Time		< 2 s for 1 writefield
Maximum writefield		400 μm x 400 μm
Laser Wavelength		405 nm (375 optional)
Galvo	Z-working height	10 mm
	Repeatability	< 100 nm (static)
	Speed	up to 200 mm/s

Stepping		
Motorized stepper	XY-alignment Resolution	0.1 μm
	XY-stage Repeatability (1 σ)	0.1 μm
	Movement area	130 mm x 130 mm
Writing area		106 mm x 106 mm (> 5")
Wafer alignment		Multilayer processes supported

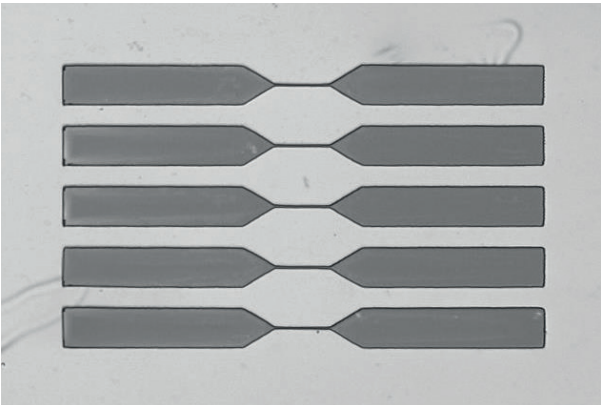
General		
Accepted file formats		.bmp, .png, .tiff, .gds Custom shapes can directly be drawn in software.
Software	Patterning	Beam Xplorer
	Design	KLayout (most powerful), MS Paint/Powerpoint (rapid prototyping)
Weight		20 kg
System size		330 x 310 x 340 mm



Split-ring resonator arrays. The separation distance on the right is 1.5 μm (arrows), separation distance on the left is 2 μm . The outer ring is 80 μm across.



Interdigitated Capacitors (IDCs) with 2 μm fingers. Resist used: AZ5214E.



0.8 μm tapered middle section with 20 x 90 μm contact pads on the side. Resist used: AZ5214E.