PROJECTION SCANNER

SUSS DSC300 Gen3

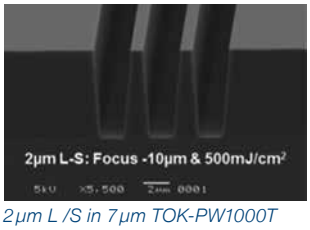
PROJECTION LITHOGRAPHY SCANNER FOR WLP, 2.5D & 3D PACKAGING, BUMPING AND FAN-OUT APPLICATIONS

SUSS MicroTec introduces its next generation projection scanner – the DSC300 Gen3. This proprietary scanning lithography platform touts triple digit throughput with fine (2 µm) resolution capabilities at the lowest cost of ownership (CoO) among 1X projection lithography systems.

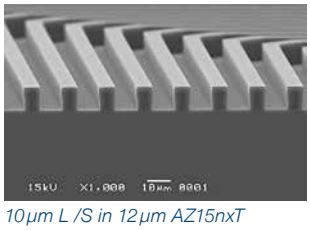
Re-engineered with a large diamond shaped scan beam and highly minimized overhead time – the DSC300 Gen3 Scanner delivers 300 mm wafer throughput of > 90 wph at 400 mJ/cm² and > 80 wph at 1000 mJ/cm².
Its enhanced 1X Wynne-Dyson optics and four recipe selectable numerical apertures enable the achievement of fine 2 µm features in thin resist, as well as > 100 µm DoF in thick resist. The DSC300's full-field imaging technology supports industry roadmaps for large die patterning and mixed die packaging in heterogeneous integration without stitching or pattern size limits.
The state-of-the-art vision and alignment system includes both on-axis and off-axis cameras for maximum flexibility and an overlay accuracy of ≤ 1.0 µm (mean + 3 σ). The DSC300 Gen3 is also equipped with proprietary Optical Magnification Correction and Beam Steering Technology which is invaluable in compensating for large amounts of die shift in FOWLP applications, as well as common wafer run-in and run-out. Symmetric magnification to ± 200 ppm (± 30 µm on a 300 mm wafer) is available without throughput or resolution impact.

HIGHLIGHTS

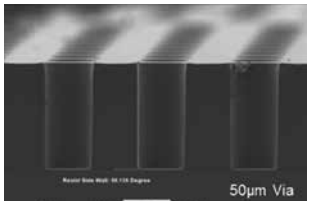
+ > 90 wph for 300 mm wafers at 400 mJ/cm² dose
+ Lowest cost of ownership among 1X projection lithography tools
+ 2/2 µm L/S resolution and ≤ 1.0 µm overlay (mean + 3 σ)
+ Full-field large-die patterning with no stitching
+ Active optical magnification compensation and beam steering to correct die shift errors in FOWLP



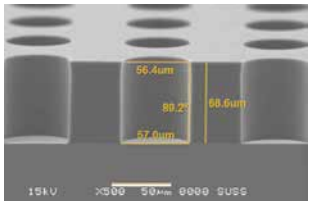
2 µm L /S in 7 µm TOK-PW1000T



10 µm L /S in 12 µm AZ15nxT



50 µm vias in 115 µm ASAHI-CX-A240



50 µm vias in 63 µm TOK CR-4000

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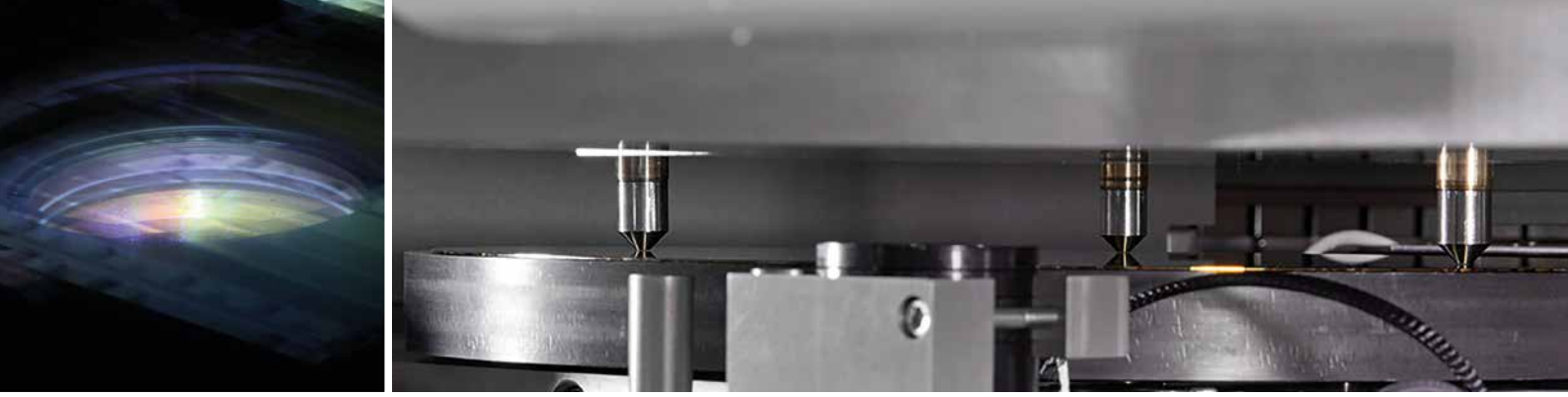

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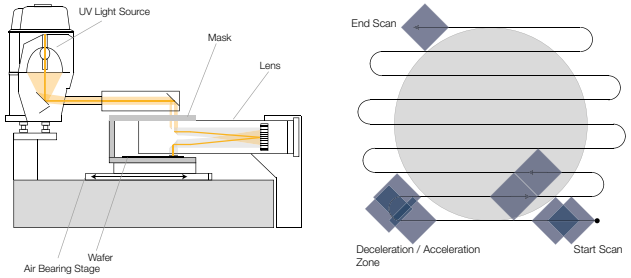
TECHNICAL DATA

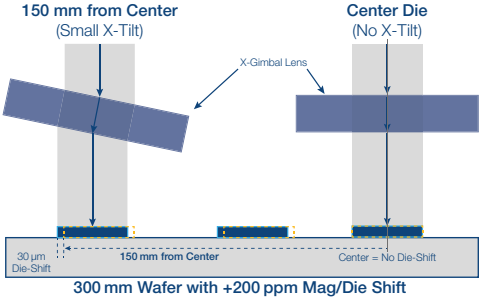
CORE TECHNOLOGY: *Scanning Projection Lithography*

Mask and wafer are co-mounted on a scanning stage. The system scans in a serpentine pattern with controlled velocity in the x-axis and precision stepping in the y-axis. Excellent exposure uniformity is achieved over the entire exposure area by scanning with a high intensity homogenized beam, overlapping adjacent scans, and precisely controlling the scan velocity.



Continuous serpentine scanning technique with diamond shaped beam

NEW TECHNOLOGY: *Optical Die Shift Compensation*



X-Gimbal lens angle adjusted in sync with stage position to compensate for mag/die shift

EXPOSURE SYSTEM	
Exposure Mode	Full-field projection scanning (Dyson optics)
Resolution	2 µm L/S 2 µm resist
Numerical Aperture	Four selectable: 0.15, 0.14, 0.10, 0.07 NA
Imaging	Non-contact, single-side exposure
Wavelength Selection	350-450 nm selectable
Exposure Uniformity	< ± 3 %
Environmental Control	ECU (± 0.2 °C)
ALIGNMENT SYSTEM	
Top-side Alignment	Optical: On-axis and off-axis IR: Off-axis (optional)
Back-side Alignment	IR TSA (optional)
Overlay Accuracy (Tool to Self)	Optical: ≤ 1.0 µm (mean + 3 σ) IR: ≤ 2.5 µm (mean + 3 σ)
Run-in / Run-out Control	Mask cooling (standard) Optional Optical Mag Correction and Beam Steering: Symmetric correction: ± 200 ppm
Fan-Out Die Shift Compensation	Optional Optical Mag Correction and Beam Steering: Symmetric correction: ± 200 ppm
WAFER AND MASK HANDLING	
Wafers	300 mm (optional 200 mm and 330 mm)
Allowable Warpage	< 2 mm (standard); up to 5 mm (customized)
Carrier Mounted Substrates	Yes
Thin Substrates w/o Carrier	Thickness down to 200 µm
Wafer Loading	Fully automated
Mask Loading	Fully automated
Mask	Full field (entire substrate layout)
Mask Sizes	14" (300 mm wafers); Optional 9" (200 mm wafers)
Pellicle Mask Handling	Optional
DIMENSIONS	
Width x Depth x Height	3220 mm x 4197 mm x 2466 mm (incl. peripherals)
Weight	Main tool: 4587 kg; EFEM: 562 kg; ECU: 290 kg

Visit **www.suss.com/locations**
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