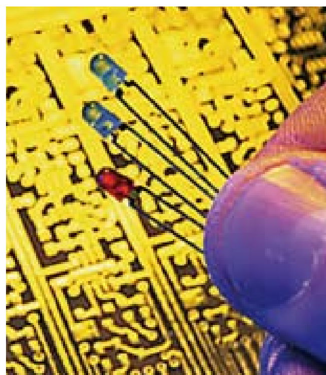
MA100/150e Gen2

Dedicated Mask Aligner for Compound Semiconductors

Your Needs	Our MA100/150e Gen2 Solutions
High Throughput	• Simultaneous handling of 3 wafers allows > 145wph incl. autoalignment and exposure • High intensity exposure optics reduces required process time • Leading edge pattern recognition minimizes operator assistance and manual operation • One toolset designed for multiple wafer sizes saves time at wafer size changeover
High Yield	• SUSS Diffraction Reducing Optics allow proximity printing for challenging resolution requirements • Industry leading light uniformity leads to excellent CD uniformity • SUSS DirectAlign and ThermAlign Technology offer submicron overlay to enlarge your process window
Reliable compound semiconductor wafer handling	• Dedicated handling systems for fragile, warped and transparent wafers

Automated 4“ and 6“ Mask Aligner for High Volume Production



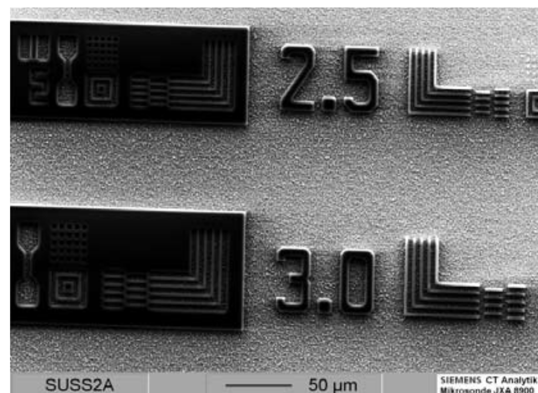
With the MA100/150e Gen2 SUSS MicroTec has developed a dedicated mask aligner solution for processing High Brightness LEDs (HB-LEDs), as well as other compound semiconductors, such as power devices or RF-MEMS. With its high precision alignment, customized substrate handling for fragile, warped and transparent wafers and its high resolution exposure optics the MA100/150e Gen2 supports the general need to further cut down costs and increase production efficiency

High Throughput by Fast Wafer Processing

The MA100/150e Gen2 linear handling system is capable of transporting simultaneously three wafers, which results in an extremely fast cycle time of up to 145 wafers per hour (215 wph first mask). A sophisticated multi size toolset (2/3”, 3/4”, 4/6” chuck and mask holder) minimizes the time required for wafer size changeover.

High Yield by Optimized Exposure Optics

With a resolution down to 2.5 µm L/S at 20 µm exposure gap the SUSS Diffraction Reducing Exposure Optics is able to overcome all lithography challenges of a compound semiconductor manufacturing process. On 100mm wafers the UV400 optics with 350 W lamp house delivers an industry leading broadband intensity of 65 mW/cm^2 with a light uniformity of < 2.5 % (100 mm) and < 3.0 % (150 mm) that leads to a superior CD control.



2.5 and 3 µm lines and spaces pattern. Printed in DNR-L300-D1 resist on 2“ sapphire/GaN wafers, proximity exposure: 20 µm

MA100/150e Gen2 Mask Aligner

TECHNICAL DATA

EXPOSURE SYSTEM	
Optics available	UV400
Resolution	> 0.7 µm L/S (vacuum contact, 100 mm) > 1.0 µm L/S (vacuum contact, 150 mm)
Standard intensity	65 mW/cm²
Intensity uniformity	± 2.5 %, 100 mm ± 3.0 %, 150 mm
Lamp sizes	350 W, 1000 W

ALIGNMENT SYSTEM	
Alignment accuracy (TSA)	< ±1.0 µm < ±0.7 µm (DirectAlign)
Alignment accuracy (BSA),	< ±1.5 µm
Alignment gap	up to 300 µm (TSA) up to 2500 µm (BSA)
Alignment target	standard: cross or customer designed
Autoalignment system	Cognex 8100 pattern recognition (AL8000)
Algorithm	PatMax and CNL

MA100/150e Gen2 Performance

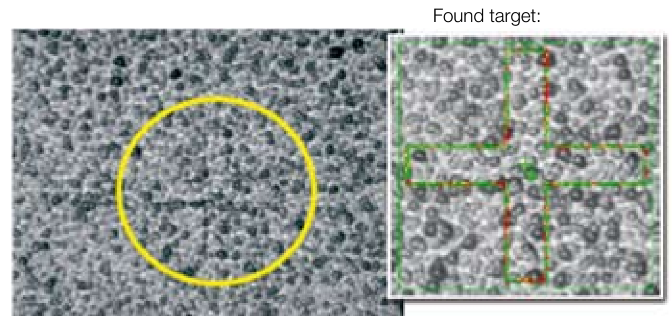
U400			
Optics Type:	**2“**	**4“**	**6“**
Vacuum Contact	0,7 µm	0,7 µm	1,0 µm
Hard Contact	1,0 µm	1,0 µm	1,5 µm
Soft Contact	2,0 µm	2,0 µm	2,5 µm
Proximity [20µm]	2,5 µm	2,5 µm	3,0 µm

Achievable resolution depends on contact quality, optics type, wafer size, wafer flatness, resist type, clean room class and, therefore, might vary for different processes (1 µm thick resist, lines & spaces)

Wafer Handling, Utilities, Dimensions	
Substrate/wafer size	from 2“ up to 150 mm round substrates
Type of handling system	linear robot handling
Warped wafer capability	yes
Throughput	> 145 wph (proximity) > 215 (first mask)
Control System	Windows
Footprint	2.2 m²
max. UV-emission (in all operator accessible areas)	3 µW/cm²

High Yield by Submicron Alignment

The MA100/150e Gen2 is equipped with a motorized topside alignment system with an alignment accuracy of < ± 0.7 µm (DirectAlign). The bottomside alignment option (BSA) offers an alignment accuracy of < ± 1.5 µm with features accurately aligned to the topside. Alignment microscope, camera system and advanced alignment software of the MA100/150 Gen2 are tailored to the specific requirements of HB-LED manufacturing, offering excellent contrast even on transparent or textured wafers. Targets can be found even if the surface background changes on each wafer.



Alignment scene of a blurred wafer target, used for LED applications. Pattern recognition is based on PatMax® software from Cognex.

Simultaneous transport of 3 wafers + Short transport distances	Robust technology + Simplicity	Linear Transportation + High transfer precision
High Throughput	High Uptime	High Precision

Visit **www.suss.com/locations** for your nearest representative or call:

SUSS MicroTec Lithography Division

Phone: +49 89 32007 0

Email: info@suss.com

Data, design and specification depend on individual process conditions and can vary according to equipment configurations. Not all specifications may be valid simultaneously. Illustrations, photos and specifications in this brochure are not legally binding. SUSS reserves the right to change machine specifications without prior notice.

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