microMIRA™

HIGH THROUGHPUT LASER LIFT-OFF FOR MICROLED APPLICATION

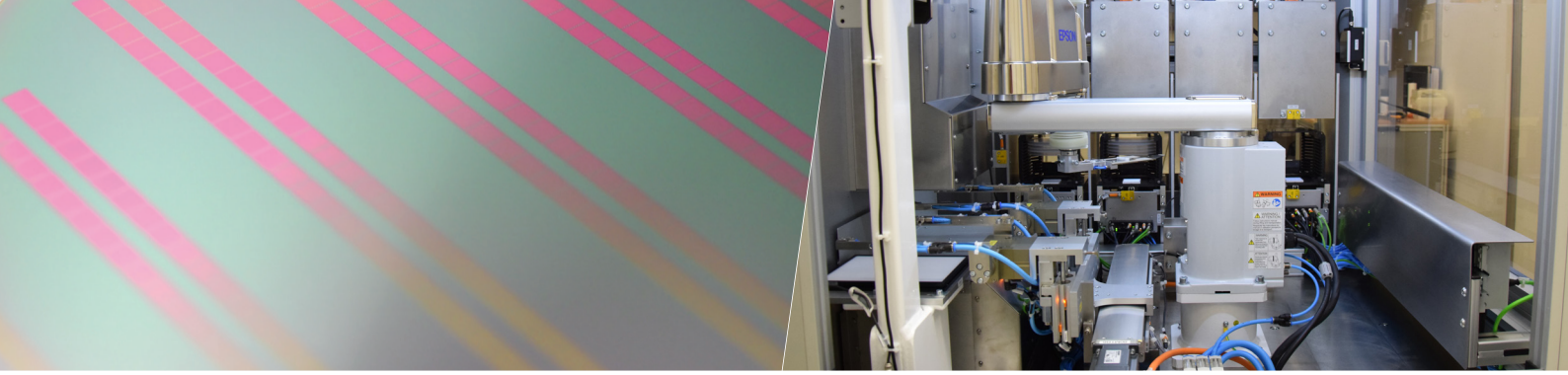
3D-Micromac's microMIRA™ LLO system provides highly uniform, force-free lift-off of different layers on wafers at high processing speed. The unique line beam system is built on a highly customizable platform that can incorporate different laser sources, wavelengths and beam paths to meet each customer's unique requirements.

The laser system can be used for a variety of applications, such as GaN lift-off from glass and sapphire substrates in microLED display manufacturing as well as semiconductor manufacturing. Additional applications include laser annealing and crystallization for surface modification.

HIGHLIGHTS

- Force-free and extremely fast line beam laser processing
- No damage due to thermo-mechanical effects
- Low production costs
- Elimination of costly and polluting wet chemical processes
- Integration of adjacent manufacturing steps for higher fab productivity

3D MICROMAC



microMIRA™ 200 - SYSTEM CONFIGURATION FOR MICROLED APPLICATION

Laser Lift-Off (LLO) of GaN on sapphire wafers to silica, sapphire or other materials	• Auxiliary processes available
Suitable for	• microLED • miniLED • Vertical LED • LED
Substrate size	• Wafer up to 8" (200 mm)
Laser source and beam path	• Excimer laser source LEAP 1.25 or • UV ps laser 248 nm wavelength • Line beam dimensions at sample surface: 205 mm x 0.33 mm for 8" wafer
Throughput	• One wafer/minute for 8" GaN on Sapphire including process and handling time (depending on system setup and customers workpiece)
Positioning system	• High precision, direct driven Y, Z axis (with optional theta-stage) • Y axis: positioning accuracy ± 5 µm, repeatability ± 1.5 µm • Z axis: positioning accuracy ± 3 µm, repeatability ± 1.5 µm
Alignment	• Manual, semi-automated or fully-automated work piece alignment with • X, Y system and optical measurement system • Automatic Z positioning and surface mapping
Software microMMI™	• Control and supervise of all hardware components and machining parameters • Different user levels (administrator, supervisor, operator) • Data input file types: DXF, CSV, Gerber, CLI, others on request
Options	• Beam analysis and power measurement • Debonding module • Quality inspection • Automatic handling system • Cleaning module • Up to 4 SMIF load ports • Other auxiliary modules available on request
Standards	• Laser class 1 housing with integrated control panel • Certified laser window or overview camera (webcam) • Clean room class specification: ISO 3 for handling and frontside ISO 5 for lift-off process and laser beam system • Active exhaust system available as option
System dimensions	• 6,500 mm x 5,700 mm x 2,200 mm incl. handling and laser source

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