



Automatic
LASER DICING SYSTEM

Incorporating the Technology of Water Jet Guided Laser (Microjet®)

200 series
LDS 200 M
LDS 200 C
LDS 200 A

Expand your capabilities with the latest development in laser technology

The LDS 200



Ease of use

A large color TFT flat screen with touch panel allows comfortable operation of all machine functions. Using the latest generation of real-time processors creates an entirely new concept in CNC control and man-machine communication.



Low Cost of Ownership

The LDS incorporates the combined technology of water jet guided laser to eliminate time and money spent on conventional saws: no blade change, no blade dressing. The LDS has only negligible need of consumables. In fact, the laser beam has no wear.



New Capabilities

The laser allows multi-directional cutting, a totally new feature, allowing new designs in chip geometry. Holes, slots, T-cuts, round chips, any contour is cut with the same precision as in standard patterns.



Flexibility

The LDS is available with a Megasonic-cleaning station and cassette loading unit, to tailor the LDS to your demands of automation. The basic version is easily upgradeable to a fully automatic, from-cassette-to-cassette dicing system.

D at a glance



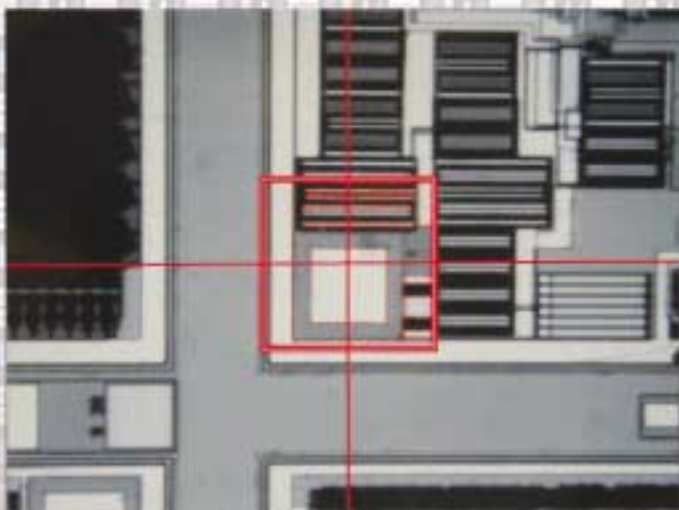
High Accuracy

A stable structure made of granite is the key for high precision, ensuring an outstanding, dynamic response. Linear motors are used in achieving high speed and accuracy. Furthermore, the system is designed for future cutting speeds made possible by new laser sources.



Reliability

Component parts for the LDS are backed by the reliability of our carefully chosen suppliers, each one a market leader within their own field. In addition, a vast array of sensors provides constant control and allows continuous diagnostic transparency thru a modem connection.



Fast Process Control

Due to the integration of the latest software in image processing, nothing is faster in the market for alignment and quality control. Wafer alignment and kerf check is executed in milliseconds.



High Processing Speed

Especially in the case of thin wafers, unprecedented speeds have been achieved resulting in a significant increase in throughput. In addition, throughput becomes faster and simpler due to no tool change.

COMPARISON of DICING by SAW and LASER-Microjet®

	Abrasive Sawing	Laser-Microjet® Cutting
Cost of Ownership :		
Principal Consumables of machine	Blades DI-water	Laser lamps or diodes Water jet nozzles Electricity
Costs of machine consumables	9	1
Dicing tape	Saw Tape	LaserTape®
Costs of tape	1	1
Investment costs	Fully automatic system	Fully automatic system
Clean room space	1	1.1
Operator assistance	1.6	1
Throughput :		
Wafer thickness 50 microns	1	5
Wafer thickness 300 microns	1	1
Wafer thickness 700 microns	3	1
Dicing quality :		
Consistency in dicing quality	Limited because of blade wear	Excellent because of no tool wear
Chipping	Yes	No
Fracture strength for thin wafers	Low	High
Minimum kerf width	25 microns	40 microns
Particle contamination	Partial	Partial
Processing capabilities :		
Cutting	Only straight cuts	Multi-directional cuts
Scribing	Only straight lines	Multi-directional lines
Drilling	Not possible	Holes, slots
Marking	Not possible	Any contour
Inking	Not possible	Possible
Chip geometries	Only rectangular, hexagonal, one size on wafer	Round, hexagonal-compact, rectangular with different sizes on wafer, L-shape, ... any imaginable 2D-contour

Summary :

- Although the investment costs are higher for the laser than for the saw, the savings gained in consumables is huge, resulting in an economizing of up to \$ 1.5 Million (over 5 years).
- The advantage in high throughput in the case of thin wafers allows the laser to replace several saws. In addition, the indicated laser dicing speeds in the table do not represent process-limited restrictions. The Laser Dicing System is prepared for new generations of lasers.
- The benefits in dicing quality of a non-mechanical ablation by the laser are significant, the kerf width may be reduced in the near future so that narrow street widths of 50 microns are possible.
- The point-shape tool laser allows multi-directional processing. This present "nice-to-have-feature" will become in the future all the more important. The chip designer will benefit of totally new possibilities with the laser. Chips can be adapted to an optimal implementation, for example round chips, L-shape chips, hexagonal chips, etc. Holes and slots can be drilled on the same machine and defective chips can be definitively destroyed by the laser.