

Abstract:

“Method of radiatively grooving a semiconductor substrate”.

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A method of radiatively scribing a substantially planar semiconductor substrate using a laser scribing apparatus, whereby a non-penetrative groove is formed along a scribeline that extends between opposing rows of semiconductor devices on a target surface of the substrate, whereby a Cartesian coordinate system XYZ can be defined in which:

- Said target surface lies in the XY plane;
- Said groove extends parallel to the Y direction, with a width in the X direction;

in which method:

- The substrate is clamped on a movable substrate holder so as to present said target surface to a laser scribing head;
- Relative motion is effected between said substrate holder and said scribing head, so as to cause laser radiation from the head to translate along a course of said scribeline,

wherein, when viewed in said XY plane, the laser scribing head produces a two-dimensional array of laser beam spots.

In a particular embodiment, the spots in said array extend substantially parallel to both the Y and the X directions.

In a possible refinement of this method:

- In at least a first part of the array, when viewed parallel to the X direction, laser beams at the extremities of said array have a lower intensity than laser beams in a central portion of the array.

In a further possible refinement:

- In at least a second part of the array, when viewed parallel to the Y direction, at least one laser beam at an extremity of said array has an intensity that is lower than the average intensity of the laser beams in said second part.

Figs. 1, 3.