METHOD AND APPARATUS FOR SCRIBING A SUBSTANTIALLY PLANAR SEMICONDUCTOR SUBSTRATE WITH ON-THE-FLY CONTROL OF SCRIBING ALIGNMENT

Abstract

A method of scribing a substantially planar substrate comprising semiconductor material along at least one scribeline parallel to a major surface of the substrate, comprising the steps of:

- providing at least one laser beam;
- causing said laser beam to impinge on said major surface, the point of impingement of the beam constituting a light spot, the substrate being positioned with respect to the laser beam such that said light spot is disposed at least proximal to said scribeline;
- causing relative motion of the substrate with respect to the laser beam, such that the light spot is caused to translate substantially along the scribeline,

whereby localized energy is transferred from the laser beam to the substrate along the course of said scribeline, in which method positioning of the light spot with respect to the scribeline is monitored using a procedure that comprises the following steps:

- illuminating at least a portion of the major surface proximal to the light spot using a flash of light, produced during said relative motion;
- during said illumination, using an image recording device to capture an image of said portion, including said light spot;
- using image recognition software to analyze said image and to determine momentary position information for the light spot relative to the scribeline;
- using said momentary position information to regulate a setpoint for a position of the laser beam relative to the substrate.

In a particular set-up, the laser beam is a pulsed laser beam and the image is at least partially captured during a radiating pulse of the laser beam.

[Figs. 1 and 3]