METHOD OF SINGULATING A THIN SEMICONDUCTOR WAFER

Abstract

A method of singulating a semiconductor wafer by partitioning it along a network of scribelines, the wafer having two substantially parallel major surfaces that are separated from one another by a thickness $T < 200$ µm, said scribelines extending along a first of said major surfaces, which method comprises the following steps:

- adhering the second major surface of the wafer to an elastic foil, which is clamped to a wafer table so as to present the first major surface to a radiative scribing tool;
- using the radiative scribing tool to produce at least one pulsed laser beam having a pulse duration $P \leq 75$ ps;
- causing said laser beam to scan along each of said scribelines so as to create a radiative scribe with a depth $D < T$, thereby leaving the second major surface intact;
- laterally stretching said foil so as to sever the second major surface along the path of said radiative scribes.

Preferentially, $P < C_{PP}$, in which C_{PP} is the Time Constant of phonon-phonon coupling in the wafer at the location of incidence of the laser beam. A typical value for $F = T - D$ lies in the range 5-50 µm, for example in the range 10-30 µm.

[Figs. 2 and 3]