**[0039]** FIGS. 5A through ~~5D~~ 5E are schematic diagrams that illustrate example embodiments of the relative sizes and orientations of the primary and secondary images formed on the wafer surface by the dual-beam ultra-fast laser annealing system of FIG. 1;

**[0040]** FIG. 6 is another schematic diagram of an example dual-beam ultra-fast laser annealing system that includes more details of the thermal emission detection system incorporated therein;

**[0041]** FIG. 7 is a close-up view of an example collection optical system used to collect reflected light from the wafer surface from the secondary laser beam;

**[0042]** FIGS. 8A through 8C illustrate an example embodiment of a scanning optical system that has an F-theta configuration and illustrates how the scanning optical system scans the secondary laser beam and the secondary image from one edge of the wafer to the other;

**[0043]** FIG. 9 is a view of the scanning optical system of FIGS. 8A through 8C from another direction and shows how the scanning optical system can be configured so that the secondary laser beam has an incident angle that is substantially the Brewster angle for silicon;

**[0044]** FIG. 10A is similar to FIG. 6 and illustrates an example embodiment of a laser annealing system that includes a single rapidly scanned laser beam; and

**[0045]** FIG. 10B is similar to FIG. 10A and illustrates an example embodiment wherein the scanning secondary laser beam from the secondary laser system is used to anneal a layer of photoresist supported on the wafer surface.

## DETAILED DESCRIPTION

**[0046]** Reference is now made in detail to embodiments of the disclosure, examples of which are illustrated in the accompanying drawings. Whenever possible, the same or like reference numbers and symbols are used throughout the drawings to refer to the same or like parts.

**[0047]** The fabrication of certain types of semiconductor devices, such as image sensors and high-power devices, involves the use of relatively thin semiconductor wafers. FIG. 1A is