

INFRARED-BASED METROLOGY FOR DETECTION OF STRESS AND DEFECTS AROUND THROUGH SILICON VIAS

ABSTRACT

An approach for IR-based metrology for detecting stress and/or defects in around TSVs (12, 58, 76) of semiconductor devices is provided.

Specifically, in a typical embodiment, a beam of IR light (52, 72) will be emitted from an IR light source (50, 70) through the material around the TSV (13, 58, 76). Once the beam of IR light (52, 72) has passed through the material around the TSV (12, 58, 76), the beam will be analyzed using one or more algorithms to determine information about TSV stress and/or defects such as imbedded cracking, etc. In one embodiment, the beam of IR light (72) may be split into a first portion (72A) and a second portion (72B). The first portion will be passed through the material around the TSV while the second portion is routed around the TSV (76). After the first portion has passed through the material around the TSV, the two portions may then be recombined, and the resulting beam may be analyzed as indicated above.

FIG. 2