Abstract

SEMICONDUCTOR DEVICE AND METHOD OF FORMING SUPPORTING LAYER OVER SEMICONDUCTOR DIE IN THIN FAN-OUTWAFER LEVEL CHIP SCALE PACKAGE

A semiconductor device includes a semiconductor die. An encapsulant is formed around the semiconductor die. A build-up interconnect structure is formed over a first surface of the semiconductor die and encapsulant. A first supporting layer is formed over a second surface of the semiconductor die as a supporting substrate or silicon wafer disposed opposite the build-up interconnect structure. A second supporting layer is formed over the first supporting layer an includes a fiber enhanced polymer composite material comprising a footprint including an area greater than or equal to an area of a footprint of the semiconductor die. The semiconductor die comprises a thickness less than 450 micrometers (µm). The thickness of the semiconductor die is at least 1 µm less than a difference between a total thickness of the semiconductor device and a thickness of the build-up interconnect structure and the second supporting layer.

(Fig. 5a)