

Abstract

SEMICONDUCTOR DEVICE AND METHOD OF FORMING TMV AND TSV IN WLCSP USING SAME CARRIER

A semiconductor device has a semiconductor die mounted over a carrier. An encapsulant is deposited over the semiconductor die and carrier. An insulating layer is formed over the semiconductor die and encapsulant. A plurality of first vias is formed through the insulating layer and semiconductor die while mounted to the carrier. A plurality of second vias is formed through the insulating layer and encapsulant in the same direction as the first vias while the semiconductor die is mounted to the carrier. An electrically conductive material is deposited in the first vias to form conductive TSV and in the second vias to form conductive TMV. A first interconnect structure is formed over the insulating layer and electrically connected to the TSV and TMV. The carrier is removed. A second interconnect structure is formed over the semiconductor die and encapsulant and electrically connected to the TSV and TMV.

(Fig 4)