Abstract

SEMICONDUCTOR DEVICE AND METHOD OF FORMING AN INDUCTOR WITHIN INTERCONNECT LAYER VERTICALLY SEPARATED FROM SEMICONDUCTOR DIE

A semiconductor device has an adhesive layer formed over a carrier. A semiconductor die has bumps formed over an active surface of the semiconductor die. The semiconductor die is mounted to the carrier with the bumps partially disposed in the adhesive layer to form a gap between the semiconductor die and adhesive layer. An encapsulant is deposited over the semiconductor die and within the gap between the semiconductor die and adhesive layer. The carrier and adhesive layer are removed to expose the bumps from the encapsulant. An insulating layer is formed over the encapsulant. A conductive layer is formed over the insulating layer in a wound configuration to exhibit inductive properties and electrically connected to the bumps. The conductive layer is partially disposed within a footprint of the semiconductor die. The conductive layer has a separation from the semiconductor die as determined by the gap and insulating layer.

(Fig. 4k)