

Abstract

SEMICONDUCTOR DEVICE AND METHOD OF FORMING INTEGRATED PASSIVE DEVICE

An IPD semiconductor device has a capacitor formed over and electrically connected to a semiconductor die. An encapsulant is deposited over the capacitor and around the semiconductor die. A first interconnect structure is formed over a first surface of the encapsulant by forming a first conductive layer, forming a first insulating layer over the first conductive layer, and forming a second conductive layer over the first insulating layer. The second conductive layer has a portion formed over the encapsulant at least 50 micrometer away from a footprint of the semiconductor die and wound to operate as an inductor. The portion of the second conductive layer is electrically connected to the capacitor by the first conductive layer. A second interconnect structure is formed over a second surface of the encapsulant. A conductive pillar is formed within the encapsulant between the first and second interconnect structures.

(Fig. 5a)