

Abstract

A semiconductor device has a first semiconductor die and a modular interconnect structure adjacent to the first semiconductor die. An encapsulant is deposited over the first semiconductor die and modular interconnect structure as a reconstituted panel. An interconnect structure is formed over the first semiconductor die and modular interconnect structure. An active area of the first semiconductor die remains devoid of the interconnect structure. A second semiconductor die is mounted over the first semiconductor die with an active surface of the second semiconductor die oriented toward an active surface of the first semiconductor die. The reconstituted panel is singulated before or after mounting the second semiconductor die. The first or second semiconductor die includes a microelectromechanical system (MEMS). The second semiconductor die includes an encapsulant and an interconnect structure formed over the second semiconductor die. Alternatively, the second semiconductor die is mounted to an interposer disposed over the interconnect structure.

(Fig.6b)