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ABSTRACT

BOC SEMICONDUCTOR PACKAGE INCLUDING A SEMICONDUCTOR DIE AND A SUBSTRATE BONDED CIRCUIT SIDE DOWN TO THE DIE

A BOC (board-on-chip) semiconductor package includes a semiconductor die having die contacts, a substrate bonded circuit side down to the die, and an adhesive layer bonding the substrate to the die. The substrate includes a circuit side having a pattern of conductors and wire bonding sites, and a back side having an array of external contacts (e.g., BGA solder balls) in electrical communication with the conductors. The bonding sites on the conductors overhang the peripheral edges of the substrate such that access is provided for bonding wires to the bonding sites and to the die contacts. Because the substrate is bonded circuit side down to the die, a loop height of the wires, and an overall height (profile) of the package are reduced by a thickness of the substrate. In addition, a planarity of molded segments that encapsulate the wires is improved, and mold bleed during molding of the molded segments is reduced. A method for fabricating the BOC package includes the steps of: providing the die with the die contacts, providing the substrate with the conductors and the overhanging wire bonding sites on the circuit side and external contacts on the back side, bonding the substrate circuit side down to the die, wire bonding the wires to the wire bonding sites and to the die contacts, and then forming the molded segments to encapsulate the wires.

FIGURE: NONE