

QUAD FLAT NO-LEAD (QFN) PACKAGE WITHOUT LEADFRAME AND DIRECT CONTACT INTERCONNECT BUILD-UP STRUCTURE AND METHOD FOR MAKING THE SAME

ABSTRACT

A method and related structure for a quad flat no-lead (QFN), dual flat no-lead (DFN) or small outline no-lead (SON) package without a leadframe. Disposing semiconductor chips face-up on a temporary carrier, disposing a first encapsulant layer around the semiconductor chip, the active layer and conductive stumps, forming a conductive layer and conductive contacts over the planar surface, disposing encapsulant over the first encapsulant layer, conductive layer and conductive contacts, forming a photoresist over the encapsulant with openings, forming conductive pads within the openings, forming a solderable metal system (SMS) or applying an organic solderability preservative (OSP) over the conductive pads, and cutting through the encapsulant around the chip to form the outline of a package.

FIG. 3A