ABSTRACT

FLIP CHIP ASSEMBLY WITH VIA INTERCONNECTION

A flip chip assembly, and methods of forming the same, including a single layer or multilayer substrate in which via holes serve as connections between a semiconductor chip and the substrate. The assembling steps comprise attaching an integrated circuit chip to a rigid or flexible dielectric substrate having a plurality of via holes for connecting respective traces in the substrate with respective input/output terminal pads of the integrated circuit chip. The via holes are aligned and placed on top of the pads so that these pads can be totally or partially exposed through the opposite side of the substrate. Electrically conductive material is subsequently deposited in the via holes as well as on the surface of the pads to provide electrical connections between the integrated circuit chip and the traces of the dielectric circuitry. After via holes are connected, means in bring in chip and substrate attachment can be removed or left as an integral part of the assembly since these connections can also provide mechanical support. The contacting materials include electroless plated metals, electrochemical plated metals, solders, epoxy and conductive polymers.

FIG. 3D