Abstract

SEMICONDUCTOR DEVICE AND METHOD FOR FORMING PASSIVE CIRCUIT ELEMENTS WITH THROUGH SILICON VIAS TO BACKSIDE INTERCONNECT STRUCTURES

A semiconductor wafer contains a substrate having a plurality of active devices formed thereon. An analog circuit is formed on the substrate. The analog circuit can be an inductor, metal-insulator-metal capacitor, or resistor. The inductor is made with copper. A through substrate via (TSV) is formed in the substrate. A conductive material is deposited in the TSV in electrical contact with the analog circuit. An under bump metallization layer is formed on a backside of the substrate in electrical contact with the TSV. A solder material is deposited on the UBM layer. The solder material is reflowed to form a solder bump. A wire bond is formed on a top surface of the substrate. A redistribution layer is formed between the TSV and UBM. The analog circuit electrically connects through the TSV to the solder bump on the back side of the substrate. (Fig. 5)