Abstract

SEMICONDUCTOR DEVICE AND METHOD OF MAKING INTEGRATED PASSIVE DEVICES

A semiconductor device has integrated passive circuit elements. A first substrate is formed on a backside of the semiconductor device. The passive circuit element is formed over the insulating layer. The passive circuit element can be an inductor, capacitor, or resistor. A passivation layer is formed over the passive circuit element. A carrier is attached to the passivation layer. The first substrate is removed. A non-silicon substrate is formed over the insulating layer on the backside of the semiconductor device. The non-silicon substrate is made with glass, molding compound, epoxy, polymer, or polymer composite. An adhesive layer is formed between the non-silicon substrate and insulating layer. A via is formed between the insulating layer and first passivation layer. The carrier is removed. An under bump metallization is formed over the passivation layer in electrical contact with the passive circuit element. A solder bump is formed on the under bump metallization. (Fig. 4)