Abstract

SEMICONDUCTOR DEVICE AND METHOD OF FORMING INDUCTOR OVER INSULATING MATERIAL FILLED TRENCH IN SUBSTRATE

A semiconductor device has a trench formed in a substrate. The trench has tapered sidewalls and depth of 10-120 micrometers. A first insulating layer is conformally applied over the substrate and into the trench. An insulating material, such as polymer, is deposited over the first insulating layer in the trench. A first conductive layer is formed over the insulating material. A second insulating layer is formed over the first insulating layer and first conductive layer. A second conductive layer is formed over the second insulating layer and electrically contacts the first conductive layer. The first and second conductive layers are isolated from the substrate by the insulating material in the trench. A third insulating layer is formed over the second insulating layer and second conductive layer. The first and second conductive layers are coiled over the substrate to exhibit inductive properties.

(Fig. 3g)