Integrated Circuit and Method of Using Porous Silicon to Achieve Component Isolation in Radio Frequency Applications

ABSTRACT

The invention relates to an improved substrate (100) using a layer (112) or region (130) of porous silicon that is created in the bulk silicon substrate material (110) to increase the resistivity of the substrate (100) thus making it suitable for passive component integration directly on the motherboard (200) or chip (230) and useful for high frequency applications due to its low loss, low dielectric properties. One or more passive components such as inductors (214), resistors (212) and capacitors (216) can be integrated on the device (140) over the porous silicon region (130). The high resistivity of the device makes it ideal for integration on a single platform using conventional wafer fab processes since loss at radio frequencies is comparably less when compared to a pure silicon substrate.

FIGURE 6

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