

ACOUSTIC RESONATOR

ABSTRACT

A plurality of acoustic resonators (217) are manufactured in a batch process by forming cavities (204) in a substrate (200) and filling the cavities with a sacrificial layer (210). An FBAR membrane comprising a bottom electrode (212), a piezoelectric layer (214), and a top electrode (216) is formed over each cavity (204) and the sacrificial layer (210). The substrate (200) is then thinned and the substrate (200) is separated into a plurality of dice using a scribe and break process. The sacrificial layer (210) is then removed and the FBAR filter (226) is mounted in a package (228) with thermal vias (238) being thermal communication with underside of the FBAR filter. The production method improves thermal properties by increasing the efficiency of heat dissipation from the FBAR filter. In addition, electromagnetic interference is decreased by reducing the distance between a primary current flowing over the surface of the FBAR filter and an image current flowing in a ground plane beneath the FBAR filter.

Figure 8