

ABSTRACT OF THE DISCLOSURE

FULLY DIFFERENTIAL CAPACITIVE ARCHITECTURE FOR MEMS ACCELEROMETER

A fully differential microelectromechanical system (MEMS) accelerometer configured to measure Z-axis acceleration is disclosed. This may avoid some of the disadvantages in traditional capacitive sensing architectures—for example, less sensitivity, low noise suppression, and low SNR, due to Brownian noise. In one embodiment, the accelerometer comprises three silicon wafers, fabricated with electrodes forming capacitors in a fully differential capacitive architecture. These electrodes may be isolated on a layer of silicon dioxide. In some embodiments, the accelerometer also includes silicon dioxide layers, piezoelectric structures, getter layers, bonding pads, bonding spacers, and force feedback electrodes, which may apply a force to the proof mass region. Fully differential MEMS accelerometers may be used in geophysical surveys, e.g., for seismic sensing or acoustic positioning.

FIG. 1