

ABSTRACT

Condenser microphones, amplifiers and biasing circuits are formed on the same semiconductor chip. In one embodiment, a microphone sensor is formed on a semiconductor chip. The sensor includes a diaphragm and a
5 backplate, where the backplate is separated from the diaphragm by a predetermined amount to form an air-gap. Further, a biasing capacitor, that stores bias charge, is formed directly on either the diaphragm or the backplate to save chip space. In another embodiment, a semiconductor chip, that has an open v-shaped cavity etched from the bottom side of the
10 chip, is described. Such inventive chip includes a sensor, having a diaphragm and a backplate, that is formed above the cavity on the top side of the chip. The chip further a biasing resistor and/or an amplifier which is formed on the top side of the chip. In addition, a biasing capacitor is formed directly on the backplate. As stated, the bias capacitor, formed on the
15 microphone diaphragm or preferably the backplate, saves chip space by integrating the bias capacitor with the microphone plates. Further, when the capacitor is formed on the sensor backplate, the design strengthens the backplate against cracking. In addition, no special design is required for the bias capacitor since it automatically scales with the microphone capacitor.

This Sheet Has Been Replaced

