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(54) **RESONATOR AND METHOD OF FORMING THE SAME**

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(57) **ABSTRACT**

Various embodiments may relate to a resonator. The resonator may include a support including a substrate portion, and a membrane portion extending from the substrate portion over a cavity. The resonator may also include a piezoelectric layer on the membrane portion. The resonator may further include an electrode on the piezoelectric layer. The substrate portion may include dopants of a first conductivity type. The membrane portion may include dopants of a second conductivity type different from the first conductivity type. A ratio of a thickness of the membrane portion to a combined thickness of the electrode and the piezoelectric layer may be above 3:1 for temperature compensation.

