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(54) **QUARTZ CRYSTAL RESONATOR AND MANUFACTURING METHOD**

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(57) **ABSTRACT**

A quartz crystal resonator including a quartz crystal obtained from a quartz bar is provided. The quartz bar has a light axis, an electrical axis along a length of the quartz bar, and a mechanical axis that are perpendicular to one another. The quartz crystal has a major face cut from the quartz bar along a cutting plane. The cutting plane has a first angle of about 35° to about 36° with the light axis and has a second angle with the electric axis. The first angle is obtained by rotation about the electric axis, and the second angle is obtained by rotation about the light axis, such that the quartz crystal has a vibration frequency deviation inflection point in a range from about 30° C. to about 45° C. Methods for making the quartz crystal are also provided.