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Velocity-Controlled Piezoelectric Switching Energy Harvesting Device

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Abstract

The main purpose of this paper is to design the interface circuit of the piezoelectric energy harvesting device which can be suitable for a resistive load o a capacitive load. The vibrating velocity is detected to control the active rectifier to make the power factor correction of the piezoelectric layers. However, there are switching losses in the active rectifier in practice. The dead time and an inductor are thus taken into consideration to minimum the switching loss. The proposed circuit can increase 4 times than typical interface circuit of the piezoelectric layer, and can increase the charging speed of the capacitive storage buffer as well.

Key words

Piezoelectric layers, power factor correction, power harvesting, capacitive storage

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