A Wide-input high-PCE rectifier based on AC magnitude coupling adjustment

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Abstract

This letter presents a novel structure of passive rectifier unit working in very high frequency (VHF) which could be used in implant devices in medical field or in sensor devices in internet of things (IoT) applications. The proposed rectifier utilized AC magnitude coupling adjustment technology which can effectively improve the PCE performance when the input voltage is high. Thus, the rectifier can hold high power convention efficiency (PCE) in a wide input range. The proposed AC magnitude coupling adjustment technology is based on tuning the capacitance, thus can adjust the coupled AC magnitude on the gate of the corresponding MOSFET. According to our simulation, the proposed rectifier structure can effectively improve the PCE performance when the input voltage is high, which can achieve a PCE higher than 60% in a wide input voltage range from about 0.8V to 3.3V.

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