Abstracts

A planar 4.5-GHz DC-DC power converter

S. Djukic, D. Maksimovic and Z. Popovic. "A planar 4.5-GHz DC-DC power converter." 1999 Transactions on Microwave Theory and Techniques 47.8 (Aug. 1999 [T-MTT] (Mini-Special Issue on Low-Power/Low-Noise Technologies for Mobile Wireless Communications)): 1457-1460.

In this paper, we present two DC-DC converters that operate at a microwave frequency. The first converter consists of a class-E switched-mode microwave amplifier, which performs the DC-AC conversion, and two half-wave diode rectifier outputs. The class-E MESFET amplifier has a minimum power-added efficiency of 86%, corresponding drain efficiency of 95%, and 120 mW of output power at 4.5 GHz. The diode rectifier has a maximum conversion efficiency of 98% and an overall efficiency of 83%. The second converter consists of a high-efficiency class-E oscillator and a diode rectifier. The class-E oscillator has a maximum efficiency of 57% and maximum output power of 725 mW. The DC-DC converter is planar and compact, with no magnetic components, and with a maximum overall DC-DC conversion efficiency of 64% for a DC input of 3 V, and the output voltage across a 87-/spl Omega/ load of 2.15 V.

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