Abstracts

Miniature Low Cost DDS Single Sideband Upconverters-Packaging Options Using Si and GaAs ICs

A. Chu, J.F. Devine and H.S. Babbitt, III. "Miniature Low Cost DDS Single Sideband Upconverters-Packaging Options Using Si and GaAs ICs." 1994 MTT-S International Microwave Symposium Digest 94.2 (1994 Vol. II [MWSYM]): 1133-1136.

A family of upconverters integrating a Direct Digital Synthesizer (DDS), a Single Side-Band Modulator (SSBM), and voltage controlled oscillator (VCO) was fabricated using different packaging technologies. Results indicate that the packaging option has direct impact on the speed of the digital circuit and on component interactions in the RF circuit. As the number of interfaces was reduced, the DDS output frequency increased from 200 to 560 MHz. Likewise, impedance matching on both IF and LO ports of the Ku-band subharmonic SSBM increased carrier and sideband suppressions over 10 dB to 32 and 43 dB, respectively. The paper discusses design trade-offs associated with the selection of the type of SSBM, available packaging options that influence performance, size, cost, and an approach to evaluate the effect of component interactions in the design of MCMs and MMICs.

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