Abstracts

Iterative Synthesis of Varactor-Multiplier Microwave Networks and a Doubler with 0.17 Watt Output at 47 GHz

D.H. Steinbrecher, M.E. Goff and A.H. Solomon. "Iterative Synthesis of Varactor-Multiplier Microwave Networks and a Doubler with 0.17 Watt Output at 47 GHz." 1967 G-MTT International Microwave Symposium Program and Digest 67.1 (1967 [MWSYM]): 157-160.

The use of dynamic impedance contours in the design and evaluation of microwave varactor circuits has been described by Kurokawa. His work was directed primarily toward parametric amplifiers. Kurokawa developed lossless circuit models to represent input and pump coupling networks for varactor diodes in microwave circuits. C. B. Swan used similar methods in the evaluation of a microwave varactor tripler. Swan included one component of circuit loss in his model and explained the characteristics of optimum dynamic impedance contours for a tripler. We present optimum contours for the input and output networks of all varactor multipliers and a simple calculation of overall circuit efficiency in the presence of lossy coupling networks. We also present the results for a varactor doubler designed for 23.5-47 GHz with an output power of 173 mW and an efficiency of 33%.

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