Abstracts

Microstrip GaAs nonlinear transmission-line (NLTL) harmonic and pulse generators

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The design, simulation, and measurement of novel microstrip-based GaAs monolithic-microwave integrated-circuit (MMIC) nonlinear transmission-line (NLTL) harmonic and pulse generators is reported. The advantages of microstrip-based NLTL's are compressed size and flexible aspect ratio where these parameters are important in standard MMIC foundries. The disadvantages are the need for via holes causing limited bandwidth (up to 40 GHz) and lower performance than coplanar-waveguide based NLTL. Both harmonic and pulse-generator designs have been fabricated utilizing standard GaAs foundries with foundry models used in the design and simulation. Small- and large-signal measurements have been performed on the MMIC demonstrators for design validation.

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