Abstracts

94-GHz Beam-Lead Balanced Mixer

P.T. Parrish, A.G. Cardiasmenos and I. Galin. "94-GHz Beam-Lead Balanced Mixer." 1981 Transactions on Microwave Theory and Techniques 29.11 (Nov. 1981 [T-MTT]): 1150-1157.

Using a newly developed GaAs beam-lead diode, we have developed and evaluated a balanced mixer at 94 GHz. The various components of the mixer were separately optimized using carefully designed low-frequency model studies as our primary design aid. These studies included the determination of guide impedance and guide wavelength for suspended stripline, and optimization of a waveguide to suspended stripline transition, low-pass filters, and diode location. This 94-GHz mixer exhibits an average single sideband (SSB) conversion loss of 6.2 dB over a 6-GHz RF bandwidth. Together with a bipolar IF amplifier, the system exhibits a 4.5-5.1-dB double sideband (DSB) noise figure over a 50-700-MHz IF bandpass. LO-to-RF isolation was greater that 27 dB over this range of operating frequencies. Finally, severe environmental test were successfully performed on the mixer between sucessive electrical characterization.

❑ Return to main document.