Abstracts

Subharmonically Pumped Millimeter-Wave Mixers

E.R. Carlson, M.V. Schneider and T.F. McMaster. "Subharmonically Pumped Millimeter-Wave Mixers." 1978 Transactions on Microwave Theory and Techniques 26.10 (Oct. 1978 [T-MTT] (Special Issue on Microwave and Millimeter-Wave Integrated Circuits)): 706-715.

The two-diode subharmonically pumped stripline mixer has a pair of diodes shunt mounted with opposite polarities in a stripline circuit between the signal and local oscillator inputs. The circuit has low noise and conversion loss and substantial AM local oscillator noise cancellation.The local oscillator frequency is about half the signal frequency. A novel diode chip, the notch-front diode, which has ohmic contacts on the chip faces adjacent the face containing the diode junctions, was developed for these circuits. The notch-front diode permits the low parasitic reactance of the waveguide diode mount to be achieved in stripline circuits. The best performance for a two-diode subharmonically pumped mixer with notch-front diodes was a 400 K mixer noise temperature, obtained at 98 GHz which is comparable to the best fundamental mixers in this frequency range. The performance over a 47-110-GHz frequency range for this circuit with commercial beam-lead diodes is also presented.

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