Abstracts

A Novel Biased Anti-Parallel Schottky Diode Structure for Subharmonic Mixing

T.-H. Lee, C.-Y. Chi, J.R. East, G.M. Rebeiz and G.I. Haddad. "A Novel Biased Anti-Parallel Schottky Diode Structure for Subharmonic Mixing." 1994 Microwave and Guided Wave Letters 4.10 (Oct. 1994 [MGWL]): 341-343.

Subharmonically pumped mixers using zero-biased anti-parallel Schottky diode pairs produce good results, but require a larger LO power than biased Schottky diodes. Presented here is a novel planar-diode anti-parallel pair that allows independent biasing of the two diodes. This diode pair is integrated into a quasi-optical wideband receiver and the RF measurements on a 1.2-µm anode diameter pair show a reduced LO power requirement at 180 GHz by a factor of 2 to 3 with a similar DSB conversion loss and noise temperature (9.7 dB and 1850° K) to an unbiased Schottky diode pair. This structure has potential for applications at submillimeter-wave frequencies where a large amount of LO power is not easily available.

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