Abstracts

Planar multibarrier 80/240-GHz heterostructure barrier varactor triplers

J.R. Jones, W.L. Bishop, S.H. Jones and G.B. Tait. "Planar multibarrier 80/240-GHz heterostructure barrier varactor triplers." 1997 Transactions on Microwave Theory and Techniques 45.4 (Apr. 1997 [T-MTT]): 512-518.

Prototype planar four barrier GaAs/Al/sub 0.7/Ga/sub 0.3/As heterostructure barrier varactors (HBV's) for frequency tripling from 80 to 240 GHz have been fabricated using a process in which the device surface channel is etched prior to the formation of the contact pad-to-anode air-bridge finger. Formation of the device air-bridge finger after etching the surface channel is facilitated by a trench planarization technique and yields a device with minimal parasitic capacitances. Planar four-barrier HBV triplers with nominal 10-/spl mu/m diameter anodes have been tested in a crossed-waveguide tripler block; as much as 2 mW of power has been generated at 252 GHz with a flange to-flange tripling efficiency of 25%. These devices are the first planar or multibarrier HBV triplers reported and their output powers are nearly double that of previous whisker-contacted single-barrier HBVs.

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