Abstracts

Frequency Tripler with Integrated Back-to-Back Barrier-N-N/sup +/ (bbBNN) Varactor Diodes in a Novel Split-Waveguide Block at 220 GHz

D. Choudhury, A.V. Raisanen, R.P. Smith, S.C. Martin, J.E. Oswald, R.J. Dengler, M.A. Frerking and P.H. Siegel. "Frequency Tripler with Integrated Back-to-Back Barrier-N-N/sup +/ (bbBNN) Varactor Diodes in a Novel Split-Waveguide Block at 220 GHz." 1994 MTT-S International Microwave Symposium Digest 94.2 (1994 Vol. II [MWSYM]): 771-774.

A frequency tripler has been developed using an integrated planar back-to-back barrier-n-n+ (bbBNN) varactor device in a waveguide mount at 220 GHz. The multiplier is based on a novel split-waveguide block design and a new fully integrated planar device architecture. Planar GaAs bbBNN devices have been combined with quartz microstrip filters in a wafer level circuit integration process. A flange-to-flange tripling efficiency of 5%, the highest yet reported from a bbBNN structure at this frequency, has been obtained. Details of the device fabrication process, block design and measured performance are presented.

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