Abstracts

12% efficiency and 9.5 dBm output power from InP-based heterostructure barrier varactor triplers at 250 GHz

X. Melique, A. Maestrini, E. Lheurette, P. Mounaix, M. Favreau, O. Vanbesien, J.M. Goutoule, G. Beaudin, T. Nahri and D. Lippens. "12% efficiency and 9.5 dBm output power from InP-based heterostructure barrier varactor triplers at 250 GHz." 1999 MTT-S International Microwave Symposium Digest 99.1 (1999 Vol. I [MWSYM]): 123-126 vol.1.

9.5 dBm and 12.3% maximum efficiency demonstrated for a 250 GHz Heterostructure Barrier Varactor (HBV) tripler. These state-of-the-art performances can be explained by the highly nonlinear capacitance-voltage characteristics of InGaAs-InAlAs-AlAs diodes having a zero-bias capacitance of 1fF//spl mu/m/sup 2/, a capacitance ratio of 6:1 and a breakdown voltage of 12 V for two barriers. Also the potential of nonlinear transmission lines for harmonic multiplication were investigated for vertically and laterally stacked devices.

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