Abstracts

Optimization of the QWITT Diode Using Equivalent Circuit Models

M.J. Paulus, D.W. Whitson, C.E. Stutz, K.R. Evans, E.T. Koenig and R. Neidhard. "Optimization of the QWITT Diode Using Equivalent Circuit Models." 1990 MTT-S International Microwave Symposium Digest 90.2 (1990 Vol. II [MWSYM]): 769-772.

We experimentally investigate an equivalent circuit and an equivalent circuit/distributed impedance model or the QWITT diode. Both models incorporate a negative inductor to model the finite lifetime of carriers in the quantum well. For the latter model one can optimize the cut-off frequency and the negative resistance with respect to the drift region length, W. It is predicted and experimentally confirmed at low values of W that the cut-off frequency increases with W. The two models diverge as W increases and the drift angle is found to be a good predictor for this behavior.

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