Abstracts

Millimeter-Wave Double-Drift Hybrid Read Profile Si IMPATT Diodes

C.K. Pao, J.C. Chen, R.K. Rolph, A.T. Igawa and M.I. Herman. "Millimeter-Wave Double-Drift Hybrid Read Profile Si IMPATT Diodes." 1990 MTT-S International Microwave Symposium Digest 90.2 (1990 Vol. II [MWSYM]): 927-930.

Double-drift Si IMPATT diodes with hybrid Read profiles were designed, fabricated and tested for millimeter-wave frequency operation. Vapor phase epitaxy (VPE) growth was used to achieve well controlled abrupt n-type doping transitions. We achieved 1.95 W with 11.7 percent efficiency at Q-band (40.6 GHz). At V-band, we achieved 1.05 W with 13.6 percent efficiency (61 GHz) and an injection locked amplifier achieved 20 dB gain, 800 mW and 2 GHz bandwidth with greater than 10 percent efficiency Finally, at W-band, we achieved 612 mW with 5.7 percent efficiency (93 GHz) and for long pulse operation 1.08 W peak power at 96 GHz.

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