Abstracts

InGaAs Field-Effect Transistors with Submicron Gates for K-Band Applications

G.A. Johnson, V.J. Kapoor, D. Schmitz and H. Jurgensen. "InGaAs Field-Effect Transistors with Submicron Gates for K-Band Applications." 1992 Transactions on Microwave Theory and Techniques 40.3 (Mar. 1992 [T-MTT]): 429-433.

Depletion mode InGaAs microwave power MIS-FET's with 0.7 µm gate lengths and 0.2 mm gate widths have been fabricated using an epitaxial process. The devices employed a plasma deposited silicon dioxide gate insulator. The RF power performance at 18 GHz, 20 GHz, and 23 GHz is pre-sented. An output power density of 1.04 W/mm with a corrsponding power gain and power-added efficiency of 3.7 dB and 40%, respectively, was obtained at 18 GHz. This is the highest output power density obtained for an InGaAs based transistor on InP at K-band. Record output power densities for an InGaAs MISFET were also obtained at 20 GHz and 23 GHz. The output power was demonstrated to be stable within 3% over 17 hours of continuous operation at 18 GHz.

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