Abstracts

Indium Gallium Arsenide Microwave Power Transistors

G.A. Johnson, V.J. Kapoor, M. Shokrani, L.J. Messick, R. Nguyen, R.A. Stall and M.A. McKee. "Indium Gallium Arsenide Microwave Power Transistors." 1991 Transactions on Microwave Theory and Techniques 39.7 (Jul. 1991 [T-MTT]): 1069-1075.

Depletion-mode InGaAs microwave power MISFET's with 1 µm gate lengths and up to 1 mm gate widths have been fabricated using an ion-implanted process. The devices employed a plasma-deposited silicon/silicon dioxide gate insulator. The dc current-voltage (1-V) characteristics and RF power performance at 9.7 GHz are presented. The output power, power-added efficiency, and power gain as a function of input power are reported. An output power of 1.07 W at 9.7 GHz with a corresponding power gain and power-added efficiency of 4.3 dB and 38%, respectively, was obtained. The large-gate-width devices provided over twice the previously reported output power for InGaAs MISFET's at X band. In addition, the first report of RF output power stability of InGaAs MISFET's over a 24 h period is also presented. An output power stability within 1.2% over 24 h of continuous operation was achieved. In addition, a drain current drift of 4% over 10/sub 4/ s was obtained.

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