Abstracts

High-power V-band Ga/sub 0.51/In/sub 0.49/P/In/sub 0.2/Ga/sub 0.8/As pseudomorphic HEMT grown by gas source molecular beam epitaxy

M. Zaknoune, O. Schuler, S. Piotrowicz, F. Mollot, D. Theron and Y. Crosnier. "High-power V-band Ga/sub 0.51/In/sub 0.49/P/In/sub 0.2/Ga/sub 0.8/As pseudomorphic HEMT grown by gas source molecular beam epitaxy." 1999 Microwave and Guided Wave Letters 9.1 (Jan. 1999 [MGWL]): 28-30.

A 0.1-/spl mu/m T-gate pseudomorphic Ga/sub 0.51/In/sub 0.49/P/In/sub 0.2/Ga/sub 0.8/As/GaAs high electron mobility transistor (PM-HEMT) has been successfully developed on GaAs substrate. Each technological step has been optimized as the growth by gas source molecular beam epitaxy (GSMBE), the ohmic contacts, and the gate recess for high-frequency applications. This device with a single /spl delta/ doping exhibits excellent dc and radio frequency (RF) performances with a current density of 700 mA/mm in combination with a high breakdown voltage of 9 V, an extrinsic transconductance Gm higher than 700 mS/mm, and a current gain cutoff frequency Ft of 120 GHz at V/sub ds/=2 V. Power measurements at 60 GHz have been performed on these devices. They have demonstrated a maximum output power density of 560 mW/mm with 4.6-dB power gain and a power-added efficiency (PAE) of 22.5%, These are the first power results at V-band ever reported for GaInP/InGaAs/GaAs pseudomorphic HEMTs.

❑ Return to main document.