Abstracts

High-frequency SiGe-n-MODFET for microwave applications

M. Zeuner, T. Hackbarth, G. Hock, D. Behammer and U. Konig. "High-frequency SiGe-n-MODFET for microwave applications." 1999 Microwave and Guided Wave Letters 9.10 (Oct. 1999 [MGWL]): 410-412.

n-type SiGe modulation-doped hetero field-effect transistors (MODFET's) with a 0.25-/spl mu/m Schottky-gate on a Si/sub 0.55/Ge/sub 0.45/ buffer are presented. The layer structure was designed to enable elevated sheet carrier densities of n/sub s/=7.0/spl times/10/sup 12/ cm/sup -2/ at moderate electron mobilities of 1050 cm/sup 2//Vs. Reducing the thickness of the cap layers enhances the control of the gate on the 2DEG and leads to a high transconductance of 320 mS/mm. Targeting analog applications, we focused on large current densities around 400 mA/mm. Due to advanced RF-characteristics the 100-GHz hurdle of f/sub max/ was passed for the first time with f/sub max/(U)=120 GHz and f/sub t/ was determined at 42 GHz.

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