Abstracts

InAlAs/InGaAs metamorphic low-noise HEMT

M. Kawano, T. Kuzuhara, H. Kawasaki, F. Sasaki and H. Tokuda. "InAlAs/InGaAs metamorphic low-noise HEMT." 1997 Microwave and Guided Wave Letters 7.1 (Jan. 1997 [MGWL]): 6-8.

An In/sub 0.52/Al/sub 0.48/As/In/sub 0.53/Ga/sub 0.47/As metamorphic low-noise high electron mobility transistor (HEMT) has been developed. A growth temperature by molecular beam epitaxy (MBE) and a thickness of a linearly graded InAlAs buffer layer have been optimized in order to reduce the density of lattice-misfit dislocation. Relatively high sheet electron density and mobility of 2.6/spl times/10/sup 12/ cm/sup -2/ and 9500 cm/sup 2//V sec at room temperature, respectively, are obtained. A 0.1-/spl mu/m-gate low-noise HEMT is fabricated using the developed epitaxial wafer A minimum noise figure of 0.48 dB with an associated gain of 14.2 dB has been obtained at 18 GHz.

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