Abstracts

A High Performance, High Yield, Dry-Etched, Pseudomorphic HEMT for W-Band Use

N.I. Cameron, M.R.S. Taylor, H. McLelland, M. Holland, I.G. Thayne, K. Elgaid and S.P. Beaumont. "A High Performance, High Yield, Dry-Etched, Pseudomorphic HEMT for W-Band Use." 1995 MTT-S International Microwave Symposium Digest 95.2 (1995 Vol. II [MWSYM]): 435-438.

A GaAs pseudomorphic HEMT process has been optimised for high performance and yield at w-band. Several key nano-fabrication techniques are explored for performance, manufacturability and process sensitivity. The molecuar beam epitaxially grown pHEMT layer is optimised for reduced short channel effects, high transconductance (690 mS/mm) and reliability. Electron-beam lithography produces ultra short T-gates with high reproducibility. Selective reactive ion etching enables both the depth and width of the gate recess to be accurately controlled. 0.2 µm pHEMTs with two 50 µm gate fingers exhibit average values for f/sub T/ and f/sub max/ of 121 and 157 GHz with low standard deviations of 4.6 and 2.9 GHz respectively.

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