Abstracts

A Dielectric-Defined Process for the Formation of T-Gate Field-Effect Transistors

G.M. Metze, J.F. Bass, T.T. Lee, D. Porter, H.E. Carlson and P.E. Laux. "A Dielectric-Defined Process for the Formation of T-Gate Field-Effect Transistors." 1991 Microwave and Guided Wave Letters 1.8 (Aug. 1991 [MGWL]): 198-200.

A novel process for the fabrication of Tee- or Gamma-shaped gate structures is presented. This process was utilized to fabricate 0.25 µm x 60µm and 0.25 Km x 150 Km T-gate MESFET's. From s-parameter data up to 40 GHz, extrapolated cut-off frequencies (f/sub t/), as high as 55-65 GHz were obtained. This represents some of the highest f/sub t/'s ever reported for a MESFET. DC yields as high as 80% over 3" wafers, were obtained using this dielectric defined T-gate (DDTG) process. Further, step-stress measurements indicate device reliability comparable to our normal MESFET process. Relative to multilayer resist processing techniques usually employed to form T-gates, we believe the DDTG process will substantially increase the yield, uniformity and reliability of FET-like devices/circuits employing T-gates with geometries at or below 0.25 µm.

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