Abstracts

Transferred Electron Logic Devices for Gigabit-Rate Signal Processing (Dec. 1976 [T-MTT])

C.L. Upadhyayula, R.E. Smith, J.F. Wilhelm, S.T. Jolly and J.P. Paczkowski. "Transferred Electron Logic Devices for Gigabit-Rate Signal Processing (Dec. 1976 [T-MTT])." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 920-926.

A new approach for designing transferred electron logic devices (TELD's) is presented and experimental results described. Electrolytic thinning of GaAs wafers has been used to maintain uniform nd product across the wafers and minimize variations in the device characteristics. TELD's have been fabricated and their performance studied. The devices are evaluated as threshold Iogic elements. The parameters studied are 1) switching characteristics, 2) shortest pulses that can be processed, and 3) device delay and dissipation. Experimentally, pulses as small as 80 ps wide have been processed through transferred electron logic gates (TELG's) with device delays of the order of 50 ps and delay-dissipation product of 5-10 pJ, which make them suitable for gigabit-rate signal processing.

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