

# Abstracts

## Modeling of the Transverse Delays in GaAs MESFET's

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A.K. Goel and C.R. Westgate. "Modeling of the Transverse Delays in GaAs MESFET's." 1988 *Transactions on Microwave Theory and Techniques* 36.10 (Oct. 1988 [T-MTT]): 1411-1417.

When a signal is applied to the gate electrode in a MESFET, the depletion layer under the gate is not formed instantaneously, resulting in additional propagation delays. We have developed a comprehensive model of these delays in the GaAs MESFET's. The MESFET has been modeled as two lossy transmission lines coupled to each other via the gate-drain capacitances. In addition to the intrinsic MESFET elements, e.g. the internal capacitances and the internal resistances, the model also includes the gate and drain metallization resistances, source and drain contact resistances, and the electrode parasitic capacitances in the MESFET. The electrode capacitances were determined by using the method of moments in conjunction with a Green's function appropriate for the geometry of the MESFET. The model has been used to study the dependence of the delay time and the rise time on the gate length, device width, and resistivity of the gate material. Results can be used for the optimization of high-speed circuits, in particular, picosecond circuits.

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