# Abstracts

## Design, Fabrication, and Evaluation of 2 and 3-Bit GaAs MESFET Analog-to-Digital Converter IC's

*L.C. Upadhyayula, W.R. Curtice and R. Smith. "Design, Fabrication, and Evaluation of 2 and 3-Bit GaAs MESFET Analog-to-Digital Converter IC's." 1983 Transactions on Microwave Theory and Techniques 31.1 (Jan. 1983 [T-MTT] (Joint Special Issue on Monolithic Microwave IC's)): 2-10.*

The analog-to-digital converter (A/D) is a critical component of a signal processing system. GHz-rate A/D's will be required in many future systems. While Si bipolar based A/D's can easily meet 4-6-bit resolution requirements, excessive power dissipation (1 W per bit) limits their operation to 100-400-MHz sampling rates. Recently, GaAs MES-FET's have demonstrated high frequency operation with relatively low power dissipation. This paper describes the design of 2- and 3-bit A/D's using GaAs MESFET's. Monolithic integrated A/D circuits were fabricated and successfully operated at gigahertz sampling rates. This sampling rate is the highest reported for any A\D technology at room temperature. The power dissipation is 150-200 mW per bit. With further improvements in comparator sensitivity, the design can be extended to 4-bit A/D for GHz rate operation.

❑ Return to main document.