Abstracts

Saturated Resistor Load for GaAs Integrated Circuits

C.-P. Lee, B.M. Welch and R. Zucca. "Saturated Resistor Load for GaAs Integrated Circuits." 1982 Transactions on Microwave Theory and Techniques 30.7 (Jul. 1982 [T-MTT] (Joint Special Issue on GaAs IC's)): 1007-1013.

Saturated resistors, two-terminal load devices, have been fabricated and evaluated as pull-up loads for GaAs digital integrated circuits. The saturated resistor loads exhibit superior device characteristics compared with FET active loads. Up to 100-percent improvement in the uniformity of the saturation current has been obtained. Ring oscillators with saturated resistor pull-up loads have shown ~20-percent lower speed-power products than ring oscillators with FET active loads. This superior circuit performance is attributed to 1) no gate capacitance, and 2) less backgating effect. Reliability studies using accelerated aging have shown that circuits are more reliable when saturated resistor loads are used.

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