Abstracts

GaAs MESFET Regenerator for Phase-Shift Keying Signals at the Carrier Frequency

S. Komaki, O. Kurita and T. Memita. "GaAs MESFET Regenerator for Phase-Shift Keying Signals at the Carrier Frequency." 1976 Transactions on Microwave Theory and Techniques 24.6 (Jun. 1976 [T-MTT] (Special Issue on Microwave Field-Effect Transistors)): 367-372.

This paper describes a GaAs metal-semiconductor FET (GaAs MESFET) phase regenerator for biphase phase-shift keying (PSK) signals at the carrier frequency. By using this regenerator, decision and reshaping of the signals can be made without detection, thus repeaters can be simplified. This paper shows that phase regeneration is characterized by the symbol m, which denotes the ratio of the normal signal to the phase-inverted signal. Ideal phase regeneration is obtained for m = 1. An analysis of the ratio m for the MESFET regenerator is presented, and it is shown that, if the gate bias or the local-oscillator power level are selected at a slightly higher point than that minimizing the conversion loss, then m = 1.03 is obtained at an excess loss of 3 dB. To verify this analysis, the ratio m was measured experimentally and it was found to agree with the analysis. Static and dynamic characteristics were also measured, and it is shown that the MESFET regenerator has decision and reshaping ability.

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