Abstracts

Design and performance of a Ka-band monolithic phase shifter utilizing nonresonant FET switches

K. Maruhashi, H. Mizutani and K. Ohata. "Design and performance of a Ka-band monolithic phase shifter utilizing nonresonant FET switches." 2000 Transactions on Microwave Theory and Techniques 48.8 (Aug. 2000 [T-MTT]): 1313-1317.

This paper describes design consideration and performance of a Ka-band monolithic phase shifter utilizing nonresonant FET switches. The switches show broad-band on/off characteristics up to 60 GHz without using inductors; thus, robust circuit design is possible for a switched-line phase shifter. To determine circuit topology, we introduce a schematic design approach. As a result, desired phase shift as well as good matching characteristics can be realized. The developed 4-bit monolithic phase shifter demonstrates an overall phase deviation less than 5/spl deg/ rms and an insertion loss variation less than 0.65 dB rms from 33 to 35 GHz. For all 16 states, the insertion loss is measured to be 13.1/spl plusmn/1.1 dB and the VSWR is less than 1.6. The chip size of the monolithic phase shifter is 2.5 mm/spl times/2.2 mm.

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