Abstracts

A novel structure of tightly coupled lines for MMIC/MHMIC couplers and phase shifters

Yansheng Xu and R.G. Bosisio. "A novel structure of tightly coupled lines for MMIC/MHMIC couplers and phase shifters." 1997 Transactions on Microwave Theory and Techniques 45.9 (Sep. 1997 [T-MTT]): 1594-1599.

In this paper, a new structure of tightly coupled lines compatible with monolithic-microwave integrated-circuit/miniature hybrid-microwave integrated-circuit (MMIC/MHMIC) technology is introduced. Different from previous designs, short subsections of two or more different coupled lines are alternatively connected together to achieve the needed performance of a single-section coupler or phase shifter. Theoretical calculations are given and some typical design data are provided. A design example of a wide-band coplanar-waveguide (CPW) quadrature coupler using standard MMIC foundry technology is provided. Only metal-insulator-metal (MIM) capacitors and air-bridges are used to achieve tight coupling-no via holes are necessary. Experimental results are in good agreement with simulations. The proposed structure of coupled lines is very flexible and easily achieves very tight coupling factors.

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