Abstracts

Reduced-Size Branch-Line and Rat-Race Hybrids for Uniplanar MMIC's

T. Hirota, A. Minakawa and M. Muraguchi. "Reduced-Size Branch-Line and Rat-Race Hybrids for Uniplanar MMIC's." 1990 Transactions on Microwave Theory and Techniques 38.3 (Mar. 1990 [T-MTT]): 270-275.

A new method of miniaturizing branch-line 90° hybrids and 180° rat-race hybrids is proposed. The method utilizes combinations of short high-impedance transmission lines and shunt lumped capacitors. The new hybrids are fabricated on GaAs substrates and the validity and effectiveness of the method are confirmed through experiments at 25 GHz and 11 GHz. The fabricated hybrids demonstrate excellent design accuracy even at high frequencies, with a circuit size that is more than 80 percent smaller than conventional hybrids. These hybrids are particularly suitable for uniplanar MMIC's where necessary shunt connections are easily made.

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