Abstracts

Multiconductor Couplers

Y. Tajima and S. Kamihashi. "Multiconductor Couplers." 1978 Transactions on Microwave Theory and Techniques 26.10 (Oct. 1978 [T-MTT] (Special Issue on Microwave and Millimeter-Wave Integrated Circuits)): 795-801.

Analysis of electromagnetic fields of interdigitated couplers and derivation of propagation parameters such as the line impedances and wavelengths for even and odd modes resulted in designs of couplers with an arbitrary number of strips. Calculations were carried out on two-, three-, four-, and six-strip couplers and showed that results for two- and four-strip couplers were consistent with available published data. The three-strip coupler, which was designed and fabricated, achieved 3-dB coupling with a simpler configuration than Lange's interdigitated coupler and with characteristics consistent with calculated data. Coupling as tight as 1.5 dB was achieved by a six-strip coupler which was designed with a part of the ground plane of the microstrip substrate removed. This coupler can be used as the middle part of a three-section coupler for which test data shows a wide range of balanced coupling, from 2.5 to 12 GHz, with a coupling unbalance of less than ±0.6 dB. It was concluded from the calculation that couplers with more than six strips would not be very practical.

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