Abstracts

A 26-GHz Band Integrated Circuit of a Double-Balanced Mixer and Circulators

H. Ogawa, M. Akaike, M. Aikawa, T. Karaki and J. Watanabe. "A 26-GHz Band Integrated Circuit of a Double-Balanced Mixer and Circulators." 1982 Transactions on Microwave Theory and Techniques 30.1 (Jan. 1982 [T-MTT]): 34-41.

Integration of a double-balanced mixer and ferrite-disk type circulators have been successfully achieved in the 26-GHz band. The total single-sideband noise figure of the integrated circuit, composed of a mixer and two circulators, is 8.5 dB, including the noise contribution from an IF amplifier. The double-balanced mixer is composed of microstrip lines, slot lines, coupled slot lines, coplanar lines, Au wires, and four beam lead Schottky-barrier diodes. The minimum conversion loss of the mixer is 5.3 dB at a signal frequency of 25.4 GHz. Isolation between RF and LO ports is greater than 30 dB. The ferrite-disk type circulator is produced by a newly developed precise machining technique. The minimum insertion loss of the circulator is 0.45 dB, and the isolation is greater than 20 dB. The integrated circuit with the ferrite-disk type circulators will be extended to the millimeter-wave band.

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