Abstracts

Miniaturized three-dimensional MMIC K-band upconverter

K. Nishikawa, I. Toyoda and T. Tokumitsu. "Miniaturized three-dimensional MMIC K-band upconverter." 1997 Microwave and Guided Wave Letters 7.8 (Aug. 1997 [MGWL]): 230-232.

A miniaturized K-band balanced upconverter that effectively uses the three-dimensional monolithic microwave integrated circuit (MMIC) structure is presented in this paper. This upconverter consists of two unit mixers with stacked matching circuits and a newly developed Marchand balun. This balun is composed of two broad-side couplers and realizes a great reduction in circuit area. Each component's area is less than 0.13 mm, resulting in a total area of only 0.55 mm/sup 2/. This three-dimensional MMIC upconverter achieves conversion gains of greater than 1 dB and local oscillator (LO) leakage suppression rates of greater than 30 dB over the 17-18.5-GHz frequency band.

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