Abstracts

A Monolithic Broadband Doubly Balanced EHF HBT Star Mixer with Novel Microstrip Baluns (1995 Vol. I [MWSYM])

Y.I. Ryu, K.W. Kobayashi and A.K. Oki. "A Monolithic Broadband Doubly Balanced EHF HBT Star Mixer with Novel Microstrip Baluns (1995 Vol. I [MWSYM])." 1995 MTT-S International Microwave Symposium Digest 95.1 (1995 Vol. I [MWSYM]): 119-122.

This paper describes a planar MMIC HBT Schottky diode mixer utilizing novel baluns fabricated on a 4 mil thick GaAs substrate. The balun is based on the Marchand balun structure and is implemented in a microstrip environment. The balun structure consists of 7 closely coupled microstrip lines and backside vias. Four 10x10 μm^2 HBT Schottky diodes in a star configuration provide the mixing function. The HBT diodes have cut-off frequencies in excess of 750 GHz. The mixer achieves 8- 10 dB conversion loss and very low spurious responses over a 26-40 GHz RF and LO bandwidth and DC - 11 GHz IF. This IF bandwidth is broader than a previously demonstrated CPW star mixer using InGaAs HEMT technology, and easier to integrate into an assembly due to its microstrip implementation.

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