Abstracts

A new uniplanar broad-band singly balanced diode mixer

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A new type of completely uniplanar broad-band singly balanced diode mixer, which utilizes a coplanar waveguide (CPW) and slot line as the main transmission lines, is presented. With the radio frequency (RF) swept from 7.1 to 10.5 GHz and the local oscillator (LO) of 3.5 dBm at 7 GHz, the mixer exhibits a conversion loss from 6 to 10 dB. The LO-to-RF isolation is better than 20 dB, and the LO-to-intermediate frequency (IF) and RF-to-IF isolations are more than 36 dB. The mixer also exhibits good return losses at all three ports. It has several desirable features such as simplicity, wide bandwidth, good interport isolations, easy mounting of solid-state devices, and no via-hole ground connections. The uniplanar nature of this mixer makes it very suitable for low-cost microwave and millimeter-wave integrated circuits.

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