Abstracts

A wide bandwidth monolithic BST reflection-type phase shifter using a coplanar waveguide Lange coupler

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A monolithic reflection-type phase shifter fabricated on BST/sapphire is presented here. The phase shifter consists of a coplanar waveguide (CPW) Lange coupler, meandered line inductors, and ferroelectric tunable capacitors. The CPW Lange coupler has a bandwidth of about 52% for 1-dB amplitude balance with center frequency of 2.7 GHz and the isolation is better than 18 dB in the frequency range of 1-3.7 GHz. The phase shifter using the CPW Lange coupler has a phase shift range of more than 90/spl deg/ with an insertion loss of better than 2 dB and a return loss of better than 14 dB in the frequency range of 1.85-2.56 GHz over a bias voltage range from 0 V to 160 V. A figure of merit of 89/spl deg//dB at 1.87 GHz and better than 44/spl deg//dB from 1.52 to 2.56 GHz was obtained with 160 V. Total size of the monolithic BST phase shifter is 11.2 mm/spl times/4.9 mm/spl times/0.43 mm.

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