Abstracts

One and two-bit low-loss cascadable MEMS distributed X-band phase shifters

J.S. Hayden and G.M. Rebeiz. "One and two-bit low-loss cascadable MEMS distributed X-band phase shifters." 2000 MTT-S International Microwave Symposium Digest 00.1 (2000 Vol. I [MWSYM]): 161-164.

A wideband distributed coplanar waveguide (CPW) phase shifter has been developed for X-band operation. The design is based on the distributed MEMS transmission line (DMTL) loaded with high capacitance-ratio varactors. The varactors are fabricated using a series combination of MEMS bridges and fixed-value MIM capacitors. A high-capacitance ratio varactor (1.5 to 2.5) results in a large loading on the CPW line and therefore a large phase shift. A distributed phase shifter was fabricated on a 500 /spl mu/m quartz substrate, and achieved a true-time delay operation from 1-10 GHz with a measured reflection coefficient less than -15 dB, and 180/spl deg//dB of insertion loss at 8-10 GHz. This design can be cascaded to result in a 2-bit, 0/90/180/270/spl deg/ phase shifter with linear phase shifts up to 15 GHz.

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