Abstracts

Low-loss cascadable MEMS distributed X-band phase shifters

J.S. Hayden and G.M. Rebeiz. "Low-loss cascadable MEMS distributed X-band phase shifters." 2000 Microwave and Guided Wave Letters 10.4 (Apr. 2000 [MGWL]): 142-144.

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 (1.5-2.5) 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 to 10 GHz with a reflection coefficient less than /spl sim/15 dB, and 1800/dB of insertion loss at 8-10 GHz. It is possible with this design to cascade the DMTL to result in 2- and 3-bit phase shifters with excellent wideband performance at X-band frequencies.

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