Abstracts

Characterization and Simulation of Bi-Quadratic Coplanar Waveguide Tapers for Time-Domain Applications

W. Thomann, B. Isele, F. Stockeler, R. Weigel and P. Russer. "Characterization and Simulation of Bi-Quadratic Coplanar Waveguide Tapers for Time-Domain Applications." 1993 MTT-S International Microwave Symposium Digest 93.2 (1993 Vol. II [MWSYM]): 835-838.

The design and performance of a novel coplanar waveguide (CPW) taper for picosecond pulse applications is described. We have investigated tapers with largely differing widths varying from 62.5 µm to 900 µm. The circuit characteristics were simulated both in time domain and frequency domain using a 3D transmission-line-matrix (TLM) method. We found an optimum bi-quadratic shape which reduces the reflections from more than 5 % to below 2 % in comparison to a linear taper. The circuits were measured in the frequency range up to 40 GHz with a wafer prober. At 40 GHz, the insertion loss values were less than 0.4 dB. For a double taper risetimes of 6.4 ps were achieved which correspond to a bandwidth of 55 GHz.

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