Abstracts

A Termination Scheme for High-Speed Pulse Propagation on a System of Tightly Coupled Coplanar Strips

A realistic termination scheme is proposed for closely coupled IV-conductor microstrips. The design aims to achieve satisfactorily low signal reflection and good fabrication feasibility for the planar MMIC (Monolithic Microwave Integrated Circuit) process. The matched termination network (MTN) for a lossless three-line coupled microstrip structure is presented. High-speed pulse transmission along terminated tightly coupled microstrip lines is analyzed using modal analysis in the frequency domain. Theoretical results for the propagating and reflected waveforms are obtained by applying the inverse discrete Fourier transform (IDFT) to the system responses. These responses are obtained by applying the theory of multiconductor transmission lines to a dispersive database which has been computed using the spectral-domain approach (SDA). The response of a six-line closely coupled microstrip circuit terminated by the proposed termination scheme is measured using the HP8510B network analyzer. The measured results show that the reflected signal is below -30 dB and the results are in good agreement with the theoretical waveforms.

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