Abstracts

Phase Compensation and Waveform Reshaping of Picosecond Electrical Pulses Using Dispersive Microwave Transmission Lines

Y. Qian and E. Yamashita. "Phase Compensation and Waveform Reshaping of Picosecond Electrical Pulses Using Dispersive Microwave Transmission Lines." 1991 Transactions on Microwave Theory and Techniques 39.6 (Jun. 1991 [T-MTT]): 924-929.

In this paper we study the phase compensation effect of microwave transmission line dispersion and propose a simple, effective method for reshaping and compressing picosecond electrical pulses generated from photoconductive switches. We show that a piece of a dispersive strip transmission line can be used as a "phase equalizer" to compensate the phase distortion included in asymmetric pulses, resulting in effective reshaping and compression of these ultrashort pulses. Initial design formulas of the strip transmission lines for this purpose are presented, together with computer simulation results which confirm the theoretical predictions. Finally we present experimental results to show the substantial pulse reshaping effect, as well as a comparison between theory and measurement.

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