Abstracts

New uniplanar subnanosecond monocycle pulse generator and transformer for time-domain microwave applications

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This paper presents the development of a new monocycle pulse generator and pulse-to-monocycle-pulse transformer operating in the subnanosecond regime. These circuits employ Schottky diodes, step recovery diodes, and simple charging and discharging circuitry, and are completely fabricated using coplanar waveguides. Simple transient analysis and design of the circuits are presented along with their operating principles. The pulse-to-monocycle-pulse transformer converts a 1 V 300 ps pulse into a 0.7-V 350 ps monocycle pulse. The monocycle pulse generator produces a monocycle pulse having 333 ps pulsewidth and more than 2 V from an input square wave of 10 MHz repetition rate. The generated monocycle pulses have very symmetrical positive and negative portions and low ringing level.

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