Abstracts

Diode Circuits for Pulse Regeneration and Multiplexing at Ultrahigh Bit Rates

U. Barabas, U. Wellens, U.K. Langmann and B.G. Bosch. "Diode Circuits for Pulse Regeneration and Multiplexing at Ultrahigh Bit Rates." 1976 Transactions on Microwave Theory and Techniques 24.12 (Dec. 1976 [T-MTT] (1976 Symposium Issue)): 929-935.

Clocked step-recovery diode (SRD) circuits are investigated for regenerating and multiplexing PCM-type signals in the range from 0.1 to a few gigabits per second. One regenerator type is particularly suited for operating with signals in the 1-V range, whereas a differential version employing a magic T was developed for handling signals of down to about 5 mV. By making use of line transformers as coupling networks, high-level versions have been cascaded. Experiments performed at 0.3 and 1 Gbit/s yielded voltage amplifications (peak amplitudes) of 2.5-5.5 for single stages, and insertion power gains of 7-11 dB for 2-3 stage cascades. Diode stages have also been used for multiplexing 4 and 2 individual bit streams to give a combined output signal at 1 and 2 Gbit/s, respectively. In a preliminary multiplexer experiment an output at 4.5 Gbit/s was obtained. Finally, possibilities are discussed for improving the performance of the regenerators/multiplexers and for their applications.

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