Abstracts

Self-Oscillating GaAs FET Demodulator and Downconverter for Microwave Modulated Optical Signals

C. Rauscher, L. Goldberg and A.M. Yurek. "Self-Oscillating GaAs FET Demodulator and Downconverter for Microwave Modulated Optical Signals." 1986 MTT-S International Microwave Symposium Digest 86.1 (1986 [MWSYM]): 721-724.

Recovery of a high-frequency modulation signal from an optical carrier is accomplished by employing a commercially available single-gate GaAs FET in a multifunctional role. The transistor serves simultaneously as detector, tunable local oscillator, harmonic generator, and mixing element, thereby achieving demodulation and downconversion all in one. Implementation of the concept is illustrated with an experimental circuit that uses a device with sub-quarter-micron gate geometry and provides an output response in the designated 3-to-7-GHz intermediate-frequency interval. Circuit characteristics are reported for various frequency ranges of optical carrier modulation, demonstrating practicability of the approach up through 90 GHz.

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