Abstracts

Design Consideration for Frequency-Stabilized MIC IMPATT Oscillators in the 26-GHz Band

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A 26-GHz frequency-stalbilized MIC IMPATT oscillator using a dielectric resonator has been developed. In designing such an oscillator in the high-frequency range, many parameters affecting frequency stability should be considered. This paper discusses oscillation frequency variations caused by deviations in the resonant frequency of dielectric resonators, in diode reactance, and in the electrical length between the diode and resonator, all of which are due to temperature variation. Design criteria for a highly frequency-stabilized oscillator are also presented. With these techniques, we have obtained an MIC IMPATT oscillator with frequency stability of less than ±5.0x10/sup -5/, output power deviation of less thau ±2.0 dB, and output power of more than 23 dBm over the temperature range of 0°C to 50°C.

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