Abstracts

An Impedance Model for the Quasi-Optical Diode Array

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A circuit representation is presented for the quasi-optical impedance of an infinite array of strips or slots periodically loaded with two terminal semiconductor devices (diode array). The circuit elements are obtained by method of moments analysis of the equivalent waveguide discontinuity problem. A set of design curves for the circuit model components at 99 GHz is provided. The curves are applicable at other frequencies by scaling. For the strip array, the results indicate the presence of a substantial capacitance in parallel with the diode. This capacitance can be substantially reduced by incorporation of an appropriately designed "rectangular unit cell." A slot version of the diode array has also been simulated and modeled, and may prove useful in future applications.

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