Abstracts

Resonant tunneling of microwave energy in thin film multilayer metal/dielectric structures

A. Eriksson, A. Deleniv and S. Gevorgian. "Resonant tunneling of microwave energy in thin film multilayer metal/dielectric structures." 2002 MTT-S International Microwave Symposium Digest 02.3 (2002 Vol. III [MWSYM]): 2009-2012 vol.3.

Multilayer metal/dielectric structures, typically consisting of sub-micrometer thickness dielectric and metal layers (two or more), are highly transparent at microwave frequencies, if properly designed. The high transparency is due to the resonant tunneling of microwave power through metal layers, provided that they are thinner than the skin depth, and the metal/dielectric layers are designed (dielectric constant, thickness, conductivity, lateral dimension) to provide a coherent phase distribution. A method, combining axial and radial resonance conditions, is used to optimize the multilayer electrodes in a circular parallel-plate disk resonator and achieve substantial quality factor enhancement in comparison with thick metal electrodes.

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