Abstracts

Effective Conductivity and Microwave Reflectivity of Thin Metallic Films (Short Papers)

R.C. Hansen and W.T. Pawlewicz. "Effective Conductivity and Microwave Reflectivity of Thin Metallic Films (Short Papers)." 1982 Transactions on Microwave Theory and Techniques 30.11 (Nov. 1982 [T-MTT]): 2064-2066.

Thin metallic films have reduced conductivity when thickness is not larger than electron mean free path, a phenomenon studied by Lord Thompson. Formulas given by Liao are valid for small thickness; a general formula is available for all ranges of film thickness. The result is in terms of an exponential integral which is easily computed, and is graphed. A simple and accurate formula for calculating microwave reflection from a thin metallic film is developed. The equivalent circuit has the film surface resistivity in shunt with 120 pi (or the substrate impedance). Examples of surface resistivity and reflection coefficient for a gold film are given graphically.

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