Abstracts

Physics and compact modeling of SOI substrates with buried ground plane (GPSOI) for substrate noise suppression

S. Stefanou, J.S. Hamel, M. Bain, P. Baine, B.M. Armstrong, H.S. Gamble, R. Mauntel and M. Haung. "Physics and compact modeling of SOI substrates with buried ground plane (GPSOI) for substrate noise suppression." 2001 MTT-S International Microwave Symposium Digest 01.3 (2001 Vol. III [MWSYM]): 1877-1880 vol.3.

The physical mechanisms responsible for superior crosstalk suppression are identified in a new class of silicon-on-insulator substrate (GPSOI) that incorporates a buried metallic ground plane below the active silicon and buried oxide layers. It has been shown that this technology exhibits a factor of ten reduction in crosstalk power between components through the substrate compared to existing state-of-the-art silicon-based substrates using standard s/sub 21/ magnitude measurements in a microwave coplanar transmission test structure. The dominant crosstalk mechanisms are identified and compared to other existing crosstalk suppression technologies using numerical electromagnetic simulations and lumped element compact model development.

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