Abstracts

Atomic layer deposition (ALD) technology for reliable RF MEMS

N. Hoivik, J.W. Elam, S.M. George, K.C. Gupta, V.M. Bright and Y.C. Lee. "Atomic layer deposition (ALD) technology for reliable RF MEMS." 2002 MTT-S International Microwave Symposium Digest 02.2 (2002 Vol. II [MWSYM]): 1229-1232 vol.2.

A nano-layer inorganic coating technology has been developed to protect RF MEMS from electrical shorting as well as long-term reliability failures due to charging or moisture. The combination of alumina dielectric and zinc-oxide conducting layers can be constructed one atomic layer at a time. At 177/spl deg/C, the released RF MEMS devices can be coated on a wafer or as a single device with conformal, inorganic coverage where the thickness and electrical conductivity can be controlled to meet desired values. With additional chemical treatment, the surface could be made hydrophobic to avoid moisture-induced stiction. The long-term reliability problem is the main barrier that impedes the growth of RF MEMS applications. This novel atomic layer deposition (ALD) technology can help in overcoming this limitation.

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