Abstracts

Characteristics of trenched coplanar waveguide for SiMMIC applications

Z.R. Hu, V.F. Fusco, J.A.C. Stewart, Y. Wu, H.S. Gamble, B.M. Armstrong and N.B. Buchanan. "Characteristics of trenched coplanar waveguide for SiMMIC applications." 1997 MTT-S International Microwave Symposium Digest 2. (1997 Vol. II [MWSYM]): 735-738.

A novel low loss trenched aluminium CPW transmission line structure, fabricated on a selection of high, medium and low resistivity silicon substrate materials, is reported. In comparison with conventional aluminium conductor CPW line structures, RF losses are reduced. For 10 K/spl Omega/ cm high resistivity material, this reduction may be as much as 0.5 dB/cm at 30 GHz, achieved by etching longitudinal trenches in the silicon substrate material. For medium resistivity substrates (700-1000 /spl Omega/ cm,) a 13 /spl mu/m deep trench reduces measured line loss from 3.9 dB/cm to 3.4 dB/cm at 30 GHz. For low resistivity silicon substrate material (10-20 /spl Omega/ cm), RF losses can be improved by 36 dB/cm at 30 GHz with 80 /spl mu/m deep trenches. The effect of the trench depth on the characteristic impedance of these CPW lines is reported.

❑ Return to main document.