Abstracts

W-band micromachined finite ground coplanar (FGC) line circuit elements

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This paper describes the development and characterization of Si-micromachined Finite Ground Coplanar (FGC) circuit components between 2 and 110 GHz. FGC lines are micromachined to eliminate the dielectric in the aperture regions, where the electromagnetic fields concentrate, in an effort to further improve their propagation characteristics and to provide loss levels only demonstrated by membrane lines. Measured results have shown a loss improvement of 1 dB/cm at 94 GHz. A micromachined FGC bandpass filter has shown a .8 dB improvement in insertion loss at 94 GHz over a conventional FGC line. Therefore, this approach offers an excellent alternative to the membrane technology, exhibiting very low loss, no dispersion, and mode free operation without using membranes to support the metallic structures.

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