Abstracts

Silicon Micromachined Waveguides for Millimeter-Wave and Submillimeter-Wave Frequencies

W.R. McGrath, C. Walker, M. Yap and Y.-C. Tai. "Silicon Micromachined Waveguides for Millimeter-Wave and Submillimeter-Wave Frequencies." 1993 Microwave and Guided Wave Letters 3.3 (Mar. 1993 [MGWL]): 61-63.

Rectangular waveguide is commonly used up to high millimeter-wave frequencies. However, conventional machining techniques for waveguides operating above a few hundred GHz are complicated and costly. The development of silicon micro-machining techniques to create silicon-based waveguide circuits, which can operate up to high submillimeter-wave frequencies, is reported. As a first step, WR-10 waveguide has been fabricated from (110) silicon wafers. Insertion loss measurements of gold plated silicon waveguide show performance comparable to standard metal waveguides. It is suggested that active devices and planar circuits can be integrated with the waveguides, solving the traditional mounting problems.

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