TRAVELING-WAVE MEMBRANE PHOTOMIXERS


Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA 91109

C. Kadow‡ and A.C. Gossard

Materials Department, University of California – Santa Barbara, Santa Barbara, CA 93106

Abstract

Traveling-wave photomixers\(^1\) have superior performance when compared with lumped area photomixers\(^2\) in the 1 to 3 THz frequency range. Their large active area and distributed gain mechanism assure high thermal damage threshold and elimination of the capacitive frequency roll-off. However, the losses experienced by the RF wave traveling along the coplanar strips waveguide (due to underlying semi-infinite GaAs substrate) were a serious drawback. In this paper we present device designs and an experimental setup that make possible the realization of photomixers on membranes which eliminate the losses.

Present address: †Department of Information Engineering, University of Siena, Italy; ‡Nortel Networks, Wilmington, MA 01887.
