Abstracts

A Low-Noise 86-90 GHz Uniplanar Schottky-Receiver

G. Gauthier, T.P. Budka, W.Y. Ali-Ahmad, D.F. Filipovic and G.M. Rebeiz. "A Low-Noise 86-90 GHz Uniplanar Schottky-Receiver." 1993 MTT-S International Microwave Symposium Digest 93.1 (1993 Vol. I [MWSYM]): 325-328.

A millimeter-wave Schottky-receiver based on a coplanar-waveguide (CPW) fed double-slot antenna is described. The double-slot antenna is backed by an extended hemispherical silicon substrate lens. The design is uniplanar and requires no via holes or a backing ground-plane. The receiver results in a 6.9 dB measured double sideband (DSB) conversion loss at 86-90 GHz and a DSB noise temperature of 1200K. The DSB conversion loss drops to 5.7 dB when the residual matching-cap reflection loss (0.9 dB) and IF reflection loss (0.3 dB) are calibrated out of the measurements. The CPW-fed double-slot antenna results in a low-cost millimeter-wave uniplanar receiver with a performance that is within 3 dB of the best waveguide mixers at millimeter-wave frequencies.

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