Abstracts

A monolithic GaAs PIN switch network for a 77 GHz automotive collision warning radar (1997 [RFIC])

J. Putnam, M. Barter, K. Wood and J. LeBlanc. "A monolithic GaAs PIN switch network for a 77 GHz automotive collision warning radar (1997 [RFIC])." 1997 Radio Frequency Integrated Circuits (RFIC) Symposium 97. (1997 [RFIC]): 225-228.

This paper presents the design, fabrication, and performance of a 77 GHz monolithic GaAs PIN switch network developed for an automotive collision warning radar. The RF front end of the radar contains three control circuits which were initially realized by a hybrid approach using a duroid circuit and beam lead diodes. These three circuits were sucessfully integrated into a single 77 GHz MMIC. The MMIC uses vertical GaAs PIN diodes with a switching cutoff frequency of over 3000 GHz, attaining low insertion loss and high isolation. Insertion loss is comparable to that obtained with a hybrid circuit, while the isolation improved from a typical level of 16 dB for a single hybrid switch to over 25 dB in the MMIC. The use of GaAs PIN diodes also allowed switching speeds of less than 2 ns to be attained, a key requirement for the radar.

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