Abstracts

Low-cost GaAs pHEMT MMIC's for millimeter-wave sensor applications

H.J. Siweris, A. Werthof, H. Tischer, U. Schaper, A. Schafer, L. Verweyen, T. Grave, G. Bock, M. Schlechtweg and W. Kellner. "Low-cost GaAs pHEMT MMIC's for millimeter-wave sensor applications." 1998 Transactions on Microwave Theory and Techniques 46.12 (Dec. 1998, Part II [T-MTT] (1998 Symposium Issue)): 2560-2567.

A set of coplanar monolithic microwave integrated circuits for millimeter-wave sensor applications is described. It consists of a highly integrated transceiver chip, a voltage controlled oscillator, a harmonic mixer, and a general-purpose medium-power amplifier. The circuits operate in the 76-77 GHz frequency range and have been fabricated by a production oriented GaAs pHEMT technology. The transceiver chip combines a transmitter with 9-dBm output power and a receiver with an overall conversion gain of 1 dB. The voltage-controlled oscillator is tunable over a 0.8 GHz bandwidth. It includes a buffer amplifier and generates an output power of 10 dBm. The harmonic mixer achieves 18 dB conversion loss when mixing with the fifth harmonic of the LO signal. The two-stage MPA delivers 13 dBm of output power along with a gain of 7.5 dB. The chip set is suited for the cost effective realization of automotive radar systems as well as various sensors for industrial applications.

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