

InP MMICs for V-band FMCW radar

K. Sasaki, J. Utsu, K. Matsugatani, K. Hoshino, T. Taguchi and Y. Ueno. "InP MMICs for V-band FMCW radar." 1997 MTT-S International Microwave Symposium Digest 2. (1997 Vol. II [MWSYM]): 937-940.

We have developed InP based MMICs for V-band frequency modulated continuous wave (FMCW) radar. For the transistor of these MMICs, we used the InAlAs/InGaAs on InP pseudomorphic high electron mobility transistor (HEMT) with a 0.5 μm gate length. Because of the high electron mobility and the high sheet charge density, the HEMT performed with sufficient output power gain in the millimeter-wave frequency range. Millimeter-wave circuitry consists of four kinds of MMIC chips; 30 GHz voltage controlled oscillator (VCO), 30/60 GHz frequency doubler, 60 GHz amplifier and 60 GHz single-balanced mixer. We carried out a prototype experiment of radar transceiver utilizing these MMICs and confirmed FMCW radar operation.

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