Abstracts

50-GHz IC Components Using Alumina Substrates

Y. Tokumitsu, M. Ishizaki, M. Iwakuni and T. Saito. "50-GHz IC Components Using Alumina Substrates." 1983 Transactions on Microwave Theory and Techniques 31.2 (Feb. 1983 [T-MTT] (Special Issue on Millimeter-Waves)): 121-128.

This paper discusses the feasibility of employing alumina substrates instead of fused quartz or sapphire substrates in millimeter-wave integrated circuits (IC's), an attractive prospect since alumina boasts considerable advantages over either of the other materials. Millimeter-wave 50-GHz components were developed on alumina substrates. These included passive components, a mixer, an ASK modulator, and an oscillator. Empirical results for both oscillator stabilization using a dielectric resonator and a new application of a GaAs FET in a millimeter-wave oscillator-doubler are presented. Examples of integrated systems using millimeter-wave IC'S are also presented. These systems include a compact Doppler radar front-end for an automobile ground-speed sensor, and a transmitter/receiver for digital radio equipment. All of them are fabricated on alumina substrates.

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