Abstracts

V-band planar Gunn oscillators and VCOs on AlN substrates using flip-chip bonding technology

K. Watanabe, T. Deguchi and A. Nakagawa. "V-band planar Gunn oscillators and VCOs on AlN substrates using flip-chip bonding technology." 1999 MTT-S International Microwave Symposium Digest 99.1 (1999 Vol. I [MWSYM]): 13-16 vol.1.

This paper presents the development of V-band planar Gunn oscillators using novel flip-chip GaAs Gunn diodes mounted on aluminum nitride (AlN) substrates. Due to using flip-chip bonding technology and unpackaged Gunn diodes, the Gunn oscillator can be expected to realize low-cost mass production. The Gunn oscillator generates an output power of 63.1 mW at 58.73 GHz with 2.57% conversion efficiency. An excellent phase noise of-87.67 dBc/Hz at 100 kHz off carrier has been achieved. A varactor tunable Gunn VCO with a tuning range of 450 MHz at a center frequency of 60.14 GHz is also demonstrated.

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